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Appendices

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Systematic review and economic modelling of effectiveness and cost utility of surgical treatments for men with benign prostatic enlargement

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November 2008

Health Technology Assessment
NIHR HTA Programme
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Appendix 1

Search strategies

Clinical effectiveness

MEDLINE (1966–September Week 3 2006), EMBASE (1980–2006 Week 38), MEDLINE In-Process (27 September 2006)

Ovid Multifile Search. URL: http://gateway.ovid.com/athens/

1 prostatic hyperplasia/su use mesz
2 prostate hypertrophy/su use emez
3 prostatic hyperplasia/ use mesz
4 prostate hypertrophy/ use emez
5 bladder neck obstruction/ use mesz
6 bladder obstruction/ use emez
7 (benign prostat$ adj1 (hyperplas$ or hypertroph$ or obstruct$ or enlarge$ or disease)).tw.
8 (bph or bpo or bpe).tw.
9 bladder neck obstruct$.tw.
10 bladder outlet obstruct$.tw.
11 bladder outflow obstruct$.tw.
12 or/3-11
13 exp prostatectomy/ use mesz
14 exp prostate surgery/ use emez
15 (transurethral adj3 (resect$ or electroresect$ or incision$ or diatherm$)).tw.
16 (transurethral adj3 (vapori$ or electrovapori$ or evapori$)).tw.
17 (transurethral adj3 (ablat$ or thermo$ or inject$ or coagulat$)).tw.
18 exp electrosurgery/
19 laser surgery/
20 laser coagulation/
21 holmium laser/ use emez
22 yag laser/ use emez
23 (laser adj3 (resect$ or ablat$ or coagulat$ or incision$ or vapori$)).tw.
24 (laser adj3 (enucleat$ or prostatect$)).tw.
25 ((holmium or yag or nd or green light) adj3 laser$).tw.
26 (photoselectiv$ adj1 vapori$).tw.
27 (gyrus or (plasma adj3 (electrovapori$ or vapori$))).tw.
28 (needle adj3 ablat$).tw.
29 (microwave adj3 thermo$).tw.
30 (coretherm or prostatron or targis or thermatrx or prolieve).tw.
31 (high intensity adj3 ultrasound).tw.
32 (ethanol adj3 inject$).tw.
33 ((water or cooled) adj3 thermotherapy).tw.
34 ultrasound, high-intensity focused, transrectal/
35 high intensity focused ultrasound/
36 stents/
37 (prostat$ adj3 (stent$ or spiral$)).tw.
38 (turp or tuvp or tevap or tvp or tuevap).tw.
39 (tuip or vlap or holrp or holep or tuna or tumt).tw.
40 (ilc or tulip or hifu).tw.
41 or/18-23,25-29,31-36,40
42 12 and 41
43 or/1-2,13-17,24,30,37-39,42
44 prostate cancer/ or bladder cancer/ use emez
45 prostatic neoplasms/ or bladder neoplasms/ use mesz
46 (cancer$ or carcinoma$ or neoplasm$).tw.
47 or/44-46
48 47 not 12
49 43 not 48
50 animal/ not human/ use mesz
51 (animal/ or nonhuman/) not human/ use emez
52 49 not (50 or 51)
53 clinical trial.pt. use mesz
54 exp controlled clinical trials/ use mesz
55 randomised controlled trial/ use emez
56 clinical trial/ use emez
57 random allocation/ use mesz
58 randomization/ use emez
59 random$.tw.
60 meta analysis.tw.
61 meta analysis.pt. use mesz
62 meta analysis/ use emez
63 review.ab.
64 review.pt. use mesz
65 systematic review/ use emez
66 or/53-65
67 52 and 66
68 remove duplicates from 67

Science Citation Index (1981–23 September 2006), ISI Proceedings (1990–18 March 2006)

Web of Knowledge. URL: http://wok.mimas.ac.uk/

#1 TS=(benign prostat* SAME (hyperplas* OR hypertroph* or obstruct* or enlarge* or disease*))
#2 TS=(bph OR bpo OR bpe)
#3 TS=bladder neck obstruct*
#4 TS=bladder outlet obstruct*
#5 TS=bladder outflow obstruct*
#6 #1 OR #2 OR #3 OR #4 OR #5
#7 TS=prostatectomy
#8 TS=(prostat* SAME (surgery or surgical))
#9 TS=transurethral
#10 TS=electrosurg*
#11 TS=(laser SAME (surgery OR resect* OR ablat* or coagulat*))
#12 TS=(laser SAME (incision* OR enucleat* OR prostatect*))
#13 TS=(laser SAME (holmium OR yag OR nd OR green light))
#14 TS=vapori*
#15 TS=electrovapori*
#16 TS=(needle same ablat*)
#17 TS=(microwave SAME thermo*)
#18 TS=(high intensity SAME ultrasound)
#19 TS=(ethanol SAME inject*)
#20 TS=(prostat* SAME (stent* OR spiral*))
#21 #7 or #8 OR #9 OR #10 OR #11 or #12 or #13 or #14 OR #15 or #16 or #17 or #18 OR #19 OR #20
#22 #6 AND #21
#23 TS=(turp OR tuvp OR tevap OR tvp OR tuevap)
#24 TS=(tuip OR vlap OR holrp OR holep OR tuna OR tumt)
#25 TS=(ilc OR tulip OR hifu)
#26 #22 OR #23 OR #24 OR #25
#27 TS=prostat* cancer*
#28 TS=prostat* neoplasm*
#29 TS=prostat* carcinoma*
#30 #27 or #28 or #29
#31 #30 NOT #6
#32 #26 not #31
#33 TS=randomised
#34 TS=randomized
#35 TS=randomly
#36 TS=clinical trial*
#37 TS=controlled trial*
#38 #33 or #34 or #35 or #36 or #37
#39 #32 and #38#

BIOSIS (1985–22 September 2006)

Edina. URL: http://edina.ac.uk/

((al: (random*) or al: (trial*)) and ((((((((((al: (tuna) and al: (prostat*)) or (al: (tumt))) or (al: (vlap) or al: (holrp) or al: (holep))) or (al: (tvp) or al: (tuevap) or al: (tuip))) or (al: (turp) or al: (tuvp) or al: (tevap))) or (al: (thermatrx) or al: (prolieve))) or (al: (coretherm) or al: (prostatron) or al: (targis)))) or (((((((al: (transurethral)) or (al: (tulip) or al: (ilc))) or (al: (hifu) or al: ((ultrasound n1 high intensity))))) and ((((al: (bladder n1 obstruct*)) or (al: (bph) or al: (bpe) or al: (bpo))) or (al: ((benign n1 prostat*)) or al: ((prostat* n1 hyperplasia)) or al: ((prostat* n1 hypertroph*)))))) or (((((((al: (ablat*) or al: (thermo*)) or (al: (electrovapor*) or al: (vapor*))) or (al: ((laser n3 coagulat*)) or al: ((holmium n1 laser*)) or al: ((yag n1 laser*)))) or (al: ((minimal* n1 invasiv*)) or al: (electrosurg*) or al: ((laser n3 surg*))))) and ((((al: (bladder n1 obstruct*)) or (al: (bph) or al: (bpe) or al: (bpo))) or (al: ((benign n1 prostat*)) or al: ((prostat* n1 hyperplasia)) or al: ((prostat* n1 hypertroph*)))))))))))

Cochrane Library (2006 Issue 1)

URL: www3.interscience.wiley.com/

#1 MeSH descriptor Prostatic Hyperplasia explode all trees with qualifier: SU in MeSH
#2 MeSH descriptor Prostatic Hyperplasia explode all trees in MeSH products
#3 MeSH descriptor Bladder Neck Obstruction explode all trees in MeSH products
#4 prostate hypertrophy in Keywords or bladder obstruction in Keywords or benign prostat* in All Fields or bladder near/3 obstruct* in All Fields in all products
#5 bph in All Fields or bpo in All Fields or bpe in All Fields in all products
#6 (#2 OR #3 OR #4 OR #5)
#7 MeSH descriptor Prostatectomy explode all trees in MeSH products
#8 MeSH descriptor Electrosurgery explode all trees in MeSH products
#9 MeSH descriptor Laser Surgery, this term only in MeSH products
#10 MeSH descriptor Laser Coagulation, this term only in MeSH products
#11 holmium laser in Keywords or yag laser in Keywords or laser in All Fields in all products
#12 electrovaporis* in All Fields or vaporis* in All Fields or ablat* in All Fields or thermo* in All Fields in all products
#13 MeSH descriptor Ultrasound, High-Intensity Focused, Transrectal, this term only in MeSH products
#14 hifu in All Fields or tulip in All Fields or ilc in All Fields in all products

#15 MeSH descriptor Stents explode all trees in MeSH products
#16 (#7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15)
#17 (#6 AND #16)
#18 (#1 OR #17)
#19 coretherm in All Fields or prostatron in All Fields or targis in All Fields or thermatrx in All Fields or prolieve in All Fields in all products
#20 turp in All Fields or tuvp in All Fields or tevap in All Fields or tvp in All Fields or tuevap in All Fields in all products
#21 tuip in All Fields or vlap in All Fields or holrp in All Fields or holep in All Fields in all products
#22 tuna in All Fields or tumt in All Fields in all products
#23 (#18 or #19 OR #21 OR #22)

DARE and HTA databases (March 2006)
NHS Centre for Reviews and Dissemination. URL: www.york.ac.uk/inst/crd/crddatabases.htm

benign hyperplasia/ or bph or bpe
or
benign and prostate
or
transurethral and prostate
or
turp or tuip or tuvp or tuna or tumt or hifu

National Research Register (2006 Issue 1)
URL: www.nrr.nhs.uk/

#1 Prostatic Hyperplasia [su] explode all trees (MeSH)
#2 Prostatic Hyperplasia explode all trees (MeSH)
#3 Bladder Neck Obstruction explode all trees (MeSH)
#4 (benign prostat*)
#5 (bladder near obstruct*)
#6 (bph or bpo or bpe)
#7 (#2 OR #3 OR #4 OR #5 or #6)
#8 Prostatectomy explode all trees (MeSH)
#9 Electrosurgery explode all trees (MeSH)
#10 Laser Surgery single term (MeSH)
#11 Laser Coagulation single term (MeSH)
#12 laser*
#13 (electrovaporis* or vaporis* or ablat* or thermo*)
#14 Ultrasound, High-Intensity Focused, Transrectal single term (MeSH)
#15 (hifu or tulip or ilc)
#16 Stents explode all trees (MeSH)
#17 (#8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16)
#18 (#7 AND #17)
#19 (#1 OR #18)
#20 (coretherm or prostatron or targis or thermatrx or prolieve)
#21 (turp or tuvp or tevap or tvp or tuevap)
#22 (tuip or vlap or holrp or holep)
#23 (tuna or tumt)
#24 (#19 OR #21 OR #22 or #23)

Clinical Trials (March 2006)
URL: http://clinicaltrials.gov/ct/gui/c/r

Benign prostatic hyperplasia or bph or turp or tuip or tuvp or tuna or tnmt or hifu

Current Controlled Trials (March 2006)
URL: www.controlled-trials.com/

(prostat% and hyperplasia)or (prostat% and transurethral) or bph or bpe oor turp or tuip or tuvp or tuna or tnmt or hifu

Cost-effectiveness and quality of life

MEDLINE (1966–March Week 2 2006), EMBASE (1980–2006 Week 11), MEDLINE In-Process (20 March 2006)
Ovid Multifile Search. URL: http://gateway.ovid.com/athens/

1. prostatic hyperplasia/su use mesz
2. prostate hypertrophy/su use emez
3. prostatic hyperplasia/ use mesz
4. prostate hypertrophy/ use emez
5. bladder neck obstruction/ use mesz
6. bladder obstruction/ use emez
7. (benign prostat$ adj1 (hyperplas$ or hypertroph$ or obstruct$ or enlarge$ or disease)).tw.
8. (bph or bpo or bpe).tw.
9. bladder neck obstruct$.tw.
10. bladder outlet obstruct$.tw.
11. bladder outflow obstruct$.tw.
12. or/3-11
13. exp prostatectomy/ use mesz
14. exp prostate surgery/ use emez
15. (transurethral adj3 (resect$ or electroresect$ or incision$ or diatherm$)).tw.
16. (transurethral adj3 (vapori$ or electrovapori$ or evapori$)).tw.
17. (transurethral adj3 (ablat$ or thermo$ or inject$ or coagulat$)).tw.
18. exp electrosurgery/

19. laser surgery/
20. laser coagulation/
21. holmium laser/ use emez
22. yag laser/ use emez
23. (laser adj3 (resect$ or ablat$ or coagulat$ or incision$ or vapori$)).tw.
24. (laser adj3 (enucleat$ or prostatect$)).tw.
25. ((holmium or yag or nd or green light) adj3 laser$).tw.
26. (photoselectiv$ adj1 vapori$).tw.
27. (gyrus or (plasma adj3 (electrovapori$ or vapori$))).tw.
28. (needle adj3 ablat$).tw.
29. (microwave adj3 thermo$).tw.
30. (coretherm or prostatron or targis or thermatrx or prolieve).tw.
31. (high intensity adj3 ultrasound).tw.
32. (ethanol adj3 inject$).tw.
33. ((water or cooled) adj3 thermotherapy).tw.
34. ultrasound, high-intensity focused, transrectal/
35. high intensity focused ultrasound/
36. stents/
37. (prostat$ adj3 (stent$ or spiral$)).tw.
38. (turp or tuvp or tevap or tvp or tuevap).tw.
39. (tuip or vlap or holrp or holep or tuna or tumt).tw.
40. (ilc or tulip or hifu).tw.
41. or/18-23,25-29,31-36,40
42. 12 and 41
43. or/1-2,13-17,24,30,37-39,42
44. prostate cancer/ or bladder cancer/ use emez
45. prostatic neoplasms/ or bladder neoplasms/ use mesz
46. (cancer$ or carcinoma$ or neoplasm$).tw.
47. or/44-46
48. 47 not 12
49. 43 not 48
50. animal/ not human/ use mesz
51. (animal/ or nonhuman/) not human/ use emez
52. 49 not (50 or 51)
53. exp "costs and cost analysis"/
54. economics/
55. exp economics,hospital/
56. exp economics,medical/
57. economics,pharmaceutical/
58. exp budgets/
59. exp models, economic/
60. exp decision theory/
61. ec.fs. use mesz
62. monte carlo method/
63. markov chains/
64. exp quality of life/
65. "Value of Life"/
66. cost of illness/
67. exp health status indicators/
68. cost$.ti.
69. (cost$ adj2 (effective$ or utilit$ or benefit$ or minimis$)).ab.
70. economics model$.tw.
71. (economics$ or pharmacoeconomic$ or pharmo-economic$).ti.
72. (price$ or pricing$).tw.
73. (financial or finance or finances or financed).tw.
74. (value adj2 (money or monetary)).tw.
75. quality adjusted life.tw.
76. disability adjusted life.tw.
77. (qaly? or qald? or qale? or qtime? or daly?).tw.
78. (euroqol or euro qol or eq5d or eq 5d).tw.
79. (hql or hqol or h qol or hrqol or hr qol).tw.
80. (hye or hyes).tw.
81. (health adj3 (indicator? or status or utilit?)).tw.
82. markov$.tw.
83. monte carlo.tw.
84. (decision$ adj2 (tree? or analy$ or model$)).tw.
85. or/53-84
86. 52 and 85
87. remove duplicates from 86

Science Citation Index (1981–1 March 2006)

Web of Knowledge. URL: http://wok.mimas.ac.uk/

#1 TS=(benign prostat* SAME (hyperplas* OR hypertroph* or obstruct* or enlarge* or disease*))
#2 TS=(bph OR bpo OR bpe)
#3 TS=bladder neck obstruct*
#4 TS=bladder outlet obstruct*
#5 TS=bladder outflow obstruct*
#6 #1 OR #2 OR #3 OR #4 OR #5
#7 TS=prostatectomy
#8 TS=(prostat* SAME (surgery or surgical))
#9 TS=transurethral
#10 TS=electrosurg*
#11 TS=(laser SAME (surgery OR resect* OR ablat* or coagulat*))
#12 TS=(laser SAME (incision* OR enucleat* OR prostatect*))
#13 TS=(laser SAME (holmium OR yag OR nd OR green light))
#14 TS=vapori*
#15 TS=electrovapori*
#16 TS=(needle same ablat*)
#17 TS=(microwave SAME thermo*)
#18 TS=(high intensity SAME ultrasound)
#19 TS=(ethanol SAME inject*)
#20 TS=(prostat* SAME (stent* OR spiral*))
#21 #7 or #8 OR #9 OR #10 OR #11 or #12 or #13 or #14 OR #15 or #16 or #17 or #18 OR #19 OR #20
#22 #6 AND #21

#23 TS=(turp OR tuvp OR tevap OR tvp OR tuevap)
#24 TS=(tuip OR vlap OR holrp OR holep OR tuna OR tumt)
#25 TS=(ilc OR tulip OR hifu)
#26 #22 OR #23 OR #24 OR #25
#27 TS=prostat* cancer*
#28 TS=prostat* neoplasm*
#29 TS=prostat* carcinoma*
#30 #27 or #28 or #29
#31 #30 NOT #6
#32 #26 not #31
#33 TS=(cost* SAME (effective* OR utility* OR benefit* OR minimis*))
#34 TS=(economic* same evaluat*)
#35 TS=(price OR pricing)
#36 TS=(financial OR finance OR finances OR financed)
#37 TS=(value SAME (money OR monetary))
#38 #33 or #34 or #35 or #36 or #37
#39 #32 and #38
#40 TS=quality of life
#41 TS=quality adjusted life
#42 TS=disability adjusted life
#43 TS=(qaly* OR qald* OR qale* OR qtime* OR daly)
#44 TS=(euroqol* OR euro qol* OR eq5d OR eq 5d)
#45 TS=(hql OR hqol OR h qol OR hrqol OR hr qol)
#46 TS=health* year* equivalent*
#47 TS=(hye OR hyes OR hui OR hui1 OR hui2 OR hui3)
#48 TS=(health utilit* OR disutilit*)
#49 #40 or #41 or #42 or #43 or #44 or #45 or #46 or #47 or #48
#50 #32 and #49
#51 TS=willingness to pay
#52 TS=standard gamble
#53 TS=(markov OR monte carlo)
#54 TS=(decision SAME (tree* OR analy* OR model*))
#55 #51 or #52 or #53 or #54
#56 #32 and #55
#57 #39 or #50 or #56

NHS Economic Evaluation Database (March 2006)
NHS Centre for Reviews and Dissemination. URL: www.york.ac.uk/inst/crd/crddatabases.htm

benign hyperplasia/ or bph or bpe
or
benign and prostate
or
transurethral and prostate
or
turp or tuip or tuvp or tuna or tumt or hifu

Health Management Information Consortium (March 2006)
Ovid. URL: http://gateway.ovid.com/athens/

1. benign prostat$.tw
2. (bph or bpo or bpe).tw
3. (bladder adj3 obstruct$).tw
4. or/1-3
5. prostatectomy/
6. prostatectomy.yw
7. (coretherm or prostatron or targis or thermatrx or prolieve).tw
8. (turp or tuvp or tevap or tvp or tuevap).tw
9. (tuip or vlap or holrp or holep).tw
10. (tuna or tumt).tw
11. (prostat$ adj3 (laser$ or electro$ or vapor$ or ablat$ or thermo$ or resect$)).tw
12. (prostat$ adj3 transurethral).tw
13. or/5-12
14. 4 or 13
15. (tuna and fish).mp
16. 14 not 15

Conference proceedings

European Association of Urology

17th Congress, 2002. *Eur Urol Suppl* January 2002;**1**(1).

18th Congress, 2003. *Eur Urol Suppl* February 2003;**2**(1).

19th Congress, 2004. *Eur Urol Suppl* January 2004;**3**(2).

20th Congress, 2005. *Eur Urol Suppl* March 2005;**4**(3).

URL: www.sciencedirect.com/

American Urological Association
Annual Meetings 2002–5.

URL: www.abstracts2view.com/aua/index.php

British Association of Urological Surgeons
Annual Scientific Meeting, 2001. *BJU Int* June 2001;**88**(Suppl1).

Annual Scientific Meeting, 2002. *BJU Int* July 2002;**90**(Suppl1).

Annual Scientific Meeting, 2003. *BJU Int* June 2003;**91**(Suppl2).

Annual Scientific Meeting, 2004. *BJU Int* June 2004;**93**(Suppl4).

Annual Scientific Meeting, 2005. *BJU Int* June 2005;**95**(Suppl5).

URL: www.blackwell-synergy.com/

BPH or bengn prostatic or benign hyperplasia turp or tuip or tuvp or tuna or tnmt or hifu

Websites consulted

American Urological Association. URL: www.auanet.org/. Accessed July 2005 and January 2006.

British Association of Urological Surgeons. URL: www.baus.org.uk/. Accessed July 2005 and January 2006.

Clinical Evidence. URL: www.clinicalevidence.com/. Accessed July 2005 and January 2006.

European Association of Urology. URL: www.uroweb.org/. Accessed July 2005 and January 2006.

Laserscope. URL: www.laserscope.com/. Accessed July 2005 and January 2006.

National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), Urologic Diseases in America. URL: http://kidney.niddk.nih.gov/statistics/uda/. Accessed July 2005 and January 2006.

TriP database. URL: www.tripdatabase.com/index.html. Accessed July 2005 and January 2006.

Urologix. URL: www.urologix.com/. Accessed July 2005 and January 2006.

Appendix 2

Study eligibility form

Study eligibility form			
Assessor initials: _____ Date assessed: _____			
Study identifier (surname of first author and year of publication)	Yes ⇩ Go to Next Question ⇩	Unclear ⇩	No ⇩ **Exclude**
Type of study Q1. Is the study an RCT with follow-up of at least 3 months?	Yes ⇩ Go to Next Question ⇩	Unclear ⇩	No ⇩ **Exclude**
Participants in the study Q2. Are the participants in the study men with BPE?	Yes ⇩ Go to Next Question ⇩	Unclear ⇩	No ⇩ **Exclude**
Interventions in the study Q3. Does the study compare two or more of the following interventions: TURP; TUVP; TUIP; transurethral laser prostatectomy; TUNA; TUMT; HIFU; gyrus bipolar electrovaporisation; stents; water thermotherapy?	Yes ⇩ Go to Next Question ⇩	Unclear ⇩	No ⇩ **Exclude**
Outcomes in the study Q4. Does the study report one or more of the following outcomes: symptom score; quality of life; flow rate?	Yes ⇩ **Include**, subject to clarification of 'unclear' points	Unclear ⇩	No ⇩ **Exclude**
Final decision	Include	Unclear	Exclude

Appendix 3

Data extraction form

Effectiveness of surgical treatments for men with benign prostatic enlargement

Reviewer ID: ☐ Date: ☐

Study	
Study ID: **Country:** **Funding:** government/private/manufacturer/pharmaceutical/ not funded/other (specify) **Duration of study** (recruitment dates): **Length of follow-up**:	RCT ☐ Quasi-RCT ☐ Cohort study ☐ Unclear ☐

Intervention groups		
Intervention 1	**Intervention 2**	**Intervention 3**

Participants

Criteria for inclusion:

Peak urine flow rate (voiding volume): _____ Other:

Mean urine flow rate: _____

Residual urine volume: _____

Symptom score (list type of scale used): _____

(report only if used as a **diagnostic** tool)

Global physician assessment: _____

Criteria for exclusion (circle all that apply *and* describe)

Age (> 75 years for example):

Prostate size (> denoted size):

Prostate cancer:

Medications (current/contraindicated):

Previous treatment:

Infections:

Urinary retention (definition):

Co-morbidity/limited life expectancy:

Other:

Participant characteristics			
	Intervention 1	**Intervention 2**	**Intervention 3**
Eligible			
Enrolled			
No completed trial			
Lost to follow-up			
Age (mean, SD): < 60 60–80 > 80			
Ethnicity			
Symptom score: Mean ± SD Mild/mod/severe No. patients with score: 0–7 8–19 20–35 *Write name of scale*			
Peak urine flow (PUF) Q_{max} (ml/s), mean±SD			
Mean urine flow (MUF) (ml/s), mean±SD			
Total voided volume (ml), mean±SD			
Residual volume (ml), mean±SD			
Prostate size (ml), mean±SD			
Quality of life score, mean±SD			
Sexually active/not **Sexual function score**, mean±SD			
Comments (other indications – retention, recurrent UTIs, bleeding, stones)			

Intervention characteristics			
	Intervention 1	**Intervention 2**	**Intervention 3**
Frequency (MHz)			
Temperature			
Power (W)			
Duration of procedure (minutes)			
Intervention performed by consultant/trainee/not mentioned No. of years of experience of operating surgeon			
Catheter protocol Yes/no/unclear If yes, mention duration			
Preprocedural antibiotics Yes/no/unclear			
Others			
Comments:			

Complications			
Periprocedural *(intraoperative and immediate postoperative)*	**Intervention 1** ***N* =**	**Intervention 2** ***N* =**	**Intervention 3** ***N* =**
Intraoperative complications (bladder perforation, aborted procedure/device failure/rectal perforation, haemorrhage), number *n*/*N* (%)			
Blood transfusion, number *n*/*N* (%)			
Urinary tract infection (including epididymitis), number *n*/*N* (%)			
Urinary retention, number *n*/*N* (%)			
Catheter duration (days)			
Re-catheterization, number *n*/*N* (%)			
Co-interventions, number *n*/*N* (%)			
Clot retention, number *n*/*N* (%)			
TUR syndrome, number *n*/*N* (%)			
Cardiovascular events			
Mortality, number *n*/*N* (%)			
Mortality, number *n*/*N* (%)			
Incontinence, number *n*/*N* (%)			
Septicaemia, number *n*/*N* (%)			
Other (list if > 1%)			
Notes: indicate whether denominator is different from total *N*.			

Complications			
Postoperative *(at 3–12 months)*	**Intervention 1** ***N* =**	**Intervention 2** ***N* =**	**Intervention 3** ***N* =**
Irritative urinary symptoms, number *n*/*N* (%)			
Stricture (urethral/bladder neck), number *n*/*N* (%)			
Urinary incontinence, number *n*/*N* (%)			
Retrograde ejaculation, number *n*/*N* (%)			
Erectile dysfunction, number *n*/*N* (%)			
Re-operation rate, number *n*/*N* (%)			
Urinary tract infections, number *n*/*N* (%)			
Retention, number *n*/*N* (%)			
Other (list if > 1%)			
Postoperative (> 12 months; mention follow-up period)			
Irritative urinary symptoms, number *n*/*N* (%)			
Stricture (urethral/bladder neck), number *n*/*N* (%)			
Urinary incontinence, number *n*/*N* (%)			
Retrograde ejaculation, number *n*/*N* (%)			
Erectile dysfunction, number *n*/*N* (%)			
Re-operation rate, number *n*/*N* (%)			
Urinary tract infections, number *n*/*N* (%)			
Retention, number *n*/*N* (%)			
Other (list if > 1%)			
Notes: indicate whether denominator is different from total *N*.			

Outcomes and results – SYMPTOM SCORES			
At 3 months	**Intervention 1** ***N =***	**Intervention 2** ***N =***	**Intervention 3** ***N =***
Symptom score, mean ± SD *#1 write name of scale*			
Change in mean symptom score, mean ± SD *#1 write name of scale*			
Quality of life score (disease specific), mean ± SD			
Change in quality of life score (disease specific), mean ± SD			
Any other quality of life score (such as SF-36), mean ± SD Name of QOL instrument			
Change in any other quality of life score (such as SF-36), mean ± SD Name of QOL instrument			
Global assessment 'improvement in symptoms: subject rating' (% and # improved/total) Follow-up duration at time of assessment:			
Global assessment 'improvement in symptoms: MD rating' (% and # improved/total) Follow-up duration at time of assessment:			
Hospital length of stay, mean ± SD			
Rehospitalization, number and %			

Outcomes and results – SYMPTOM SCORES			
At 12 months or more (follow-up _____)	**Intervention 1** ***N*** **=**	**Intervention 2** ***N*** **=**	**Intervention 3** ***N*** **=**
Symptom score, mean ± SD #1 *write name of scale*			
Change in mean symptom score, mean ± SD #1 *write name of scale*			
Quality of life score (disease specific), mean ± SD			
Change in quality of life score (disease specific), mean ± SD			
Any other quality of life score (such as SF-36), mean ± SD Name of QOL instrument			
Change in any other quality of life score (such as SF-36), mean ± SD Name of QOL instrument			
Global assessment 'improvement in symptoms: subject rating' (% and # improved/total) Follow-up duration at time of assessment:			
Global assessment 'improvement in symptoms: MD rating' (% and # improved/total) Follow-up duration at time of assessment:			
Notes: please note *p*-values and measures of dispersions (within and between group) IF PROVIDED.			

Outcomes and results – UROFLOWMETRY			
At 3 months	**Intervention 1** ***N* =**	**Intervention 2** ***N* =**	**Intervention 3** ***N* =**
Peak urine flow (PUF) maximum flow rate (Q_{max}) (ml/s), mean±SD			
Change in peak urine flow (PUF) maximum flow rate (Q_{max}) (ml/s), mean±SD			
Mean urine flow (MUF) (ml/s), mean±SD			
Change in mean urine flow (MUF) (ml/s), mean±SD			
Total voided volume (ml), mean±SD			
Change in total voided volume (ml), mean±SD			
Residual volume (ml), mean±SD			
Change in residual volume (ml), mean±SD			
Mean detrusor pressure			
Change in detrusor pressure			
Prostate size (ml), mean±SD			
At 12 months or more (follow-up _____)			
Peak urine flow (PUF) maximum flow rate (Q_{max}) (ml/s), mean±SD			
Change in peak urine flow (PUF) maximum flow rate (Q_{max}) (ml/s), mean±SD			
Mean urine flow (MUF) (ml/s), mean±SD			
Change in mean urine flow (MUF) (ml/s), mean±SD			
Total voided volume (ml), mean±SD			
Change in total voided volume (ml), mean±SD			
Residual volume (ml), mean±SD			
Change in residual volume (ml), mean±SD			
Mean detrusor pressure			
Change in detrusor pressure			
Prostate size (ml), mean±SD			
Notes: please note *p*-values and measures of dispersions (within and between group) IF PROVIDED.			

Additional information/other comments

Contact with author

Date: ……/……/…… Signature: ……

Appendix 4

Quality assessment form: randomised controlled trials

Study identifier: **Date completed:** **Assessor initials:**

Criteria	Yes	No	Unclear	Comments
1. Was the assignment to the treatment groups really random? Adequate approaches to sequence generation • computer-generated random tables • random number tables Inadequate approaches to sequence generation • use of alternation, case record numbers, birth dates or week days				
2. Was the treatment allocation concealed? Adequate approaches to concealment of randomisation • centralised or pharmacy-controlled randomisation • serially numbered identical containers • on-site computer-based system with a randomisation sequence that is not readable until allocation • other approaches with robust methods to prevent foreknowledge of the allocation sequence by clinicians and patients Inadequate approaches to concealment of randomisation • use of alternation, case record numbers, birth dates or week days • open random number lists • serially numbered envelopes (even sealed opaque envelopes can be subject to manipulation)				
3. Were the groups similar at baseline in terms of prognostic factors?				
4. Were the eligibility criteria specified?				
5. Was the intervention (and comparison) clearly defined?				
6. Were the groups treated in the same way apart from the intervention received?				
7. Was follow-up long enough to detect important effects on outcomes of interest?				
a. For short-term outcomes, at least 3 months				
b. For long-term outcomes, at least 1 year				

8. Were the outcome assessors blinded to the treatment allocation?				
9. Were the care providers blinded?				
10. Were the patients blinded?				
11. Were the point estimates and measures of variability presented for the primary outcome measures?				
12. Was the withdrawal/dropout rate likely to cause bias?				
13. Did the analyses include an intention to treat analysis?				
14. Was the operation undertaken by someone experienced in performing the procedure?				

Appendix 5
Included studies

Abbou 1995[143]
Primary reference
Abbou C-C, Payan C, Viens-Bitker C, Richard F, Boccon-Gibod L, Jardin A, *et al*. Transrectal and transurethral hyperthermia versus sham treatment in benign prostatic hyperplasia: a double-blind randomized multicentre clinical trial. *Br J Urol* 1995;**76**:619–24.

Ahmed 1997[124]
Primary reference
Ahmed M, Bell T, Lawrence WT, Ward JP, Watson GM. Transurethral microwave thermotherapy Prostatron version 2.5) compared with transurethral resection of the prostate for the treatment of benign prostatic hyperplasia: a randomized, controlled, parallel study. *Br J Urol* 1997;**79**:181–5.

Albala 2002[170]
Primary reference
Albala DM, Fulmer BR, Turk TM, Koleski F, Andriole G, Davis BE, *et al*. Office-based transurethral microwave thermotherapy using the TherMatrx TMx-2000. *J Endourol* 2002;**16**:57–61.

Secondary references
Albala DM, Koleski F, Nuzzarello J, Davis BE, Eure GR, Andriole G, *et al*. Periurethral prostatic microwave thermotherapy using the Thermatrx TMX-2000TM: follow-up of a randomized, blinded, sham-controlled study in patients with BPH. *J Urol* 2000;**163**:269.

Albala DM, Andriole G, Davis B. Transurethral microwave thermotherapy (TUMT) using the thermatrx TMX-2000: durability exhibited in a study comparing TUMT with a sham procedure in patients with benign prostatic hyperplasia. Abstract no. 1746. 2003. Annual Meeting of the American Urological Association.

Albala DM, Andriole G, Davis B, Eure GR, Kabalin JN, Lingeman JE, *et al*. Transurethral microwave thermotherapy (TUMT) using the thermatrx TMX-2000: long-term results in a study comparing TUMT with a sham oricedure in patients with benign prostatic hyperplasia. Abstract no. 1551. 2005. Annual Meeting of the American Urological Association.

Kabalin JN, Albala DM, Koleski F, Andriole G, Sundaram C, Davis BE, *et al*. Office-based transurethral microwave thermotherapy for benign prostatic hyperplasia (BPH) using the TherMatrxTM TMx-2000TM: results of a multi-center prospective randomized sham-controlled trial. *J Urol* 2001;**165**:367–8.

Bdesha 1994[125]
Primary reference
Bdesha AS, Bunce CJ, Snell ME, Witherow RO. Sham controlled trial of transurethral microwave therapy with subsequent treatment of the control-group. *J Urol* 1994;**152**:453–8.

Secondary reference
Bdesha AS, Bunce CJ, Kelleher JP, Snell ME, Vukusic J, Witherow OR. Transurethral microwave treatment for benign prostatic hypertrophy: a randomised controlled clinical trial. *BMJ* 1993;**306**:1293–6.

Blute 1996[126]
Primary reference
Blute ML, Patterson DE, Segura JW, Tomera KM, Hellerstein DK. Transurethral microwave thermotherapy v sham treatment: double-blind randomized study. *J Endourol* 1996;**10**:565–73.

Bouchier-Hayes 2006[141]
Primary reference
Bouchier-Hayes DM, Anderson P, Van Appledorn S, Bugeja P, Costello AJ. KTP laser versus transurethral resection: early results of a randomized trial. *J Endourol* 2006;**20**:580–5.

Brehmer 1999[171]
Primary reference
Brehmer M, Wiksell H, Kinn A. Sham treatment compared with 30 or 60 min of thermotherapy for benign prostatic hyperplasia: a randomized study. *BJU Int* 1999;**84**:292–6.

Carter 1999[127]
Primary reference
Carter A, Sells H, Speakman M, Ewings P, MacDonagh R, O'Boyle P. A prospective randomized controlled trial of hybrid laser treatment or transurethral resection of the prostate, with a 1-year follow-up. *BJU Int* 1999a;**83**:254–9.

Secondary references
Carter A, Sells H, Speakman M, Ewings P, O'Boyle P, MacDonagh R. Quality of life changes following KTP/Nd:YAG laser treatment of the prostate and TURP. *Eur Urol* 1999b;**36**:92–8.

Pearcy R, Carter A, Sells H, O'Boyle P, MacDonagh R, Speakman M, *et al*. Long term follow up of hybrid KITP/ND:YAG laser treatment of the prostate versus TURP: a prospective randomised trial, 18 month results. *J Urol* 1999;**161**:390.

Çetinkaya 1996[196]

Primary reference

Çetinkaya M, Ulusoy E, Adsan O, Saglam H, Ozturk B, Basay S. Comparative early results of transurethral electroresection and transurethral electrovaporization in benign prostatic hyperplasia. *Br J Urol* 1996;**78**:901–3.

Chacko 2001[154]

Primary reference

Chacko KN, Donovan JL, Abrams P, Peters TJ, Brookes ST, Thorpe AC, *et al*. Transurethral prostatic resection or laser therapy for men with acute urinary retention: the CLasP randomized trial. *J Urol* 2001;**166**:166–70.

Chapple 1995[91]

Primary reference

Chapple CR, Rosario DJ, Wasserfallen M, Woo HH. A randomised study of the urolume stent vs prostatic surgery. *J Urol* 1995;**153**:436A.

Christensen 1990[135]

Primary reference

Christensen MM, Aagaard J, Madsen PO. Transurethral resection versus transurethral incision of the prostate. A prospective randomized study. *Urol Clin North Am* 1990;**17**:621–30.

Secondary reference

Aagaard J, Chopin D, Knes J, Madsen PO. Transurethral resection TURP vs incision TUIP of the prostate: a prospective randomized study. *J Urol* 1990;**143**:411A.

Cimentepe 2003[175]

Primary reference

Cimentepe E, Unsal A, Saglam R. Randomized clinical trial comparing transurethral needle ablation with transurethral resection of the prostate for the treatment of benign prostatic hyperplasia: results at 18 months. *J Endourol* 2003;**17**:103–7.

Costello 1995[123]

Primary reference

Costello AJ, Crowe HR, Jackson T, Street A. A randomised single institution study comparing laser prostatectomy and transurethral resection of the prostate. *Ann Acad Med* 1995;**24**:700–4.

Cowles 1995[163]

Primary reference

Cowles RS, III, Kabalin JN, Childs S, Lepor H, Dixon C, Stein B, *et al*. A prospective randomized comparison of transurethral resection to visual laser ablation of the prostate for the treatment of benign prostatic hyperplasia. *Urology* 1995;**46**:155–60.

d'Ancona 1998[166]

Primary reference

d'Ancona FC, Francisca EA, Witjes WP, Welling L, Debruyne FM, de la Rosette JJ. Transurethral resection of the prostate vs high-energy thermotherapy of the prostate in patients with benign prostatic hyperplasia: long-term results. *Br J Urol* 1998;**81**:259–64.

Secondary reference

d'Ancona FC, Francisca EA, Witjes WP, Welling L, Debruyne FM, de la Rosette JJ. High energy thermotherapy versus transurethral resection in the treatment of benign prostatic hyperplasia: results of a prospective randomized study with 1 year of followup. *J Urol* 1997;**158**:120–5.

Dahlstrand 1993[167]

Primary reference

Dahlstrand C, Geirsson G, Fall M, Pettersson S. Transurethral microwave thermotherapy versus transurethral resection for benign prostatic hyperplasia: preliminary results of a randomized study. *Eur Urol* 1993;**23**:292–8.

Secondary references

Dahlstrand C, Fall M, Geirsson G, Petterson DE. Transurethral microwave thermotherapy versus transurethral resection for benign prostatic hyperplasia: results of a randomized study. *J Urol* 1993;**149**:250A.

Dahlstrand C, Geirsson G, Walden M. Prospective randomized study between transurethral resection (TURP) and transurethral microwave treatment (TUMT) for benign prostatic hyperplasia. *Scand J Urol Nephrol Suppl* 1993;**151:**32–3.

Dahlstrand C, Walden M, Geirsson G, Sommar S, Pettersson S. Transurethral microwave thermotherapy versus transurethral resection for BPH. *Prog Clin Biol Res* 1994;**386**:455–61.

Dahlstrand 1995[168]

Primary reference

Dahlstrand C, Walden M, Geirsson G, Pettersson S. Transurethral microwave thermotherapy versus transurethral resection for symptomatic benign prostatic obstruction: a prospective randomized study with a 2-year follow-up. *Br J Urol* 1995;**76**:614–18.

Secondary reference

Walden M, Acosta S, Carlsson P, Pettersson S, Dahlstrand C. A cost-effectiveness analysis of transurethral resection of the prostate and transurethral microwave thermotherapy for treatment of benign prostatic hyperplasia: two-year follow-up. *Scand J Urol Nephrol* 1998;**32**:204–10.

de la Rosette 2003[169]

Primary reference

de la Rosette JJ, Floratos DL, Severens JL, Kiemeney LA, Debruyne FM, Pilar LM. Transurethral resection vs microwave thermotherapy of the prostate: a cost-consequences analysis. *BJU Int* 2003;**92**:713–18.

Secondary references

Floratos DL, Kiemeney LA, Rossi C, Kortmann BB, Debruyne FM, de la Rosette JJ. Long-term followup of randomized transurethral microwave thermotherapy versus transurethral prostatic resection study. *J Urol* 2001;**165**:1533–8.

Francisca EA, d'Ancona FC, Meuleman EJ, Debruyne FM, de la Rosette JJ. Sexual function following high energy microwave thermotherapy: results of a randomized controlled study comparing transurethral microwave thermotherapy to transurethral prostatic resection. *J Urol* 1999;**161**:486–90.

Francisca EA, d'Ancona FC, Hendriks JC, Kiemeney LA, Debruyne FM, de la Rosette JJ. A randomized study comparing high-energy TUMT to TURP: quality-of-life results. *Eur Urol* 2000;**38**:569–75.

de Sio 2006[65]

Primary reference

de Sio M, Autorino R, Quarto G, Damiano R, Perdona S, di Lorenzo G, *et al*. Gyrus bipolar versus standard monopolar transurethral resection of the prostate: a randomized prospective trial. *Urology* 2006;**67**:69–72.

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Primary reference

de Wildt MJ, Hubregtse M, Ogden C, Carter SS, Debruyne FM, de la Rosette JJ. A 12-month study of the placebo effect in transurethral microwave thermotherapy. *Br J Urol* 1996;**77**:221–7.

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de la Rosette JJ, de Wildt MJ, Alivizatos G, Froeling FM, Debruyne FM. Transurethral microwave thermotherapy (TUMT) in benign prostatic hyperplasia: placebo versus TUMT. *Urology* 1994;**22**:58–63.

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Donovan 2000[136]

Primary reference

Donovan JL, Peters TJ, Neal DE, Brookes ST, Gujral S, Chacko KN, *et al*. A randomized trial comparing transurethral resection of the prostate, laser therapy and conservative treatment of men with symptoms associated with benign prostatic enlargement: the CLasP study. *J Urol* 2000;**164**:65–70.

Secondary references

Brookes ST, Donovan JL, Peters TJ, Abrams P, Neal DE. Sexual dysfunction in men after treatment for lower urinary tract symptoms: evidence from randomised controlled trial. *BMJ* 2002;**324**:1059–61.

Donovan JL, Brookes ST, Kennedy LG, Abrams P, Peters TJ, Neal DE. The CLasP randomised controlled trial: comparing laser therapy, conservative management and TURP for men with lower urinary tract symptoms. *J Urol* 1998;**159**:248.

Dørflinger 1992[180]

Primary reference

Dørflinger T, Jensen FS, Krarup T, Walter S. Transurethral prostatectomy compared with incision of the prostate in the treatment of prostatism caused by small benign prostate glands. *Scand J Urol Nephrol* 1992;**26**:333–8.

Dunsmuir 2003[137]

Primary reference

Dunsmuir WD, McFarlane JP, Tan A, Dowling C, Downie J, Kourambas J, *et al*. Gyrus bipolar electrovaporization vs transurethral resection of the prostate: a randomized prospective single-blind trial with 1 y follow-up. *Prostate Cancer Prostatic Dis* 2003;**6**:182–6.

Secondary reference

Love CJ, Dowling C, Pham T, Tan A, McFarlane JP, Dunsmuir WD. Gyrus (R) bipolar electrovaporization versus transurethral resection of the prostate: a randomized prospective trial with 1-year follow-up. *J Urol* 2003;**169**:390.

Ekengren 2000[142]

Primary reference

Ekengren J, Haendler L, Hahn RG. Clinical outcome 1 year after transurethral vaporization and resection of the prostate. *Urology* 2000;**55**:231–5.

Erdağı 1999[128]

Primary reference

Erdağı U, Akman RY, Sargin SY, Yazicioglu A. Transurethral electrovaporization of the prostate versus transurethral resection of the prostate: a prospective randomized study. *Arch Ital Urol Androl* 1999;**71**:125–30.

Fowler 2005[57]

Primary reference

Fowler C, McAllister W, Plail R, Karim O, Yang Q. Randomised evaluation of alternative electrosurgical modalities to treat bladder outflow obstruction in men with benign prostatic hyperplasia. *Health Technol Assess* 2005;**9**:1–30.

Secondary reference

McAllister WJ, Karim O, Plail RO, Samra DR, Steggall MJ, Yang Q, *et al*. Transurethral electrovaporization of the prostate: is it any better than conventional transurethral resection of the prostate? *BJU Int* 2003;**91**:211–14.

Fung 2005[155]

Primary reference

Fung BT, Li SK, Yu CF, Lau BE, Hou SS. Prospective randomized controlled trial comparing plasmakinetic vaporesection and conventional transurethral resection of the prostate. *Asian J Surg* 2005;**28**:24–8.

Gallucci 1998[138]

Primary reference

Gallucci M, Puppo P, Perachino M, Fortunato P, Muto G, Breda G, *et al*. Transurethral electrovaporization of the prostate vs. transurethral resection. Results of a multicentric, randomized clinical study on 150 patients. *Eur Urol* 1998;**33**:359–64.

Secondary reference

Puppo P, Perachino M, Breda G, Boccafoschi C, Comeri G, Francesca F, *et al*. Transurethral electrovaporization of the prostate (TVP): a multicentric randomized comparative study vs TURP. *J Urol* 1996;**155**(5Suppl):408A

Gotoh 1999[156]

Primary reference

Gotoh M, Okamura K, Hattori R, Nishiyama N, Kobayashi H, Tanaka K, *et al*. A randomized comparative study of the Bandloop versus the standard loop for transurethral resection of the prostate. *J Urol* 1999;**162**:1645–7.

Gujral 2000[139]

Primary reference

Gujral S, Abrams P, Donovan JL, Neal DE, Brookes ST, Chacko KN, *et al*. A prospective randomized trial comparing transurethral resection of the prostate and laser therapy in men with chronic urinary retention: the CLasP study. *J Urol* 2000;**164**:59–64.

Gupta 2006[187]

Primary reference

Gupta N, Sivaramakrishna, Kumar R, Dogra PN, Seth A. Comparison of standard transurethral resection, transurethral vapour resection and holmium laser enucleation of the prostate for managing benign prostatic hyperplasia of >40 g. *BJU Int* 2006;**97**:85–9.

Hammadeh 2003[129]

Primary reference

Hammadeh MY, Madaan S, Hines J, Philp T. 5-year outcome of a prospective randomized trial to compare transurethral electrovaporization of the prostate and standard transurethral resection. *Urology* 2003;**61**:1166–71.

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Hammadeh MY, Fowlis GA, Singh M, Philp T. Transurethral electrovaporization of the prostate – a possible alternative to transurethral resection: a one-year follow-up of a prospective randomized trial. *Br J Urol* 1998a;**81**:721–5.

Hammadeh MY, Madaan S, Singh M, Philp T. Two-year follow-up of a prospective randomised trial of electrovaporization versus resection of prostate. *Eur Urol* 1998b;**34**:188–92.

Hammadeh MY, Madaan S, Singh M, Philp T. Two years follow up of a prospective randomised trial of electro-vaporisation of the prostate vs standard TURP. *J Endourol* 1998c;**12**:S175.

Hammadeh MY, Madaan S, Singh M, Philp T. Three years follow up of a prospective randomised trial comparing transurethral electrovaporization of the prostate to standard TURP. *J Endourol* 1999;**13**:A29.

Hammadeh MY, Madaan S, Singh M, Philp T. A 3-year follow-up of a prospective randomized trial comparing transurethral electrovaporization of the prostate with standard transurethral prostatectomy. *BJU Int* 2000;**86**:648–51.

Hammadeh MY, Madaan S, Hines J, Philp T. The efficacy and durability of transurethral electrovaporisation of the prostate: 5 years result of a prospective randomised trial. *Eur Urol Suppl* 2003;**2**:168.

Helke 2001[202]

Primary reference

Helke C, Manseck A, Hakenberg OW, Wirth MP. Is transurethral vaporesection of the prostate better than standard transurethral resection? *Eur Urol* 2001;**39**:551–7.

Hellström 1986[157]

Primary reference

Hellström P, Lukkarinen O, Kontturi M. Bladder neck incision or transurethral electroresection for the treatment of urinary obstruction caused by a small benign prostate? A randomized urodynamic study. *Scand J Urol Nephrol* 1986;**20**:187–92.

Hill 2004[144]

Primary reference

Hill B, Belville W, Bruskewitz R, Issa M, Perez-Marrero R, Roehrborn C, *et al*. Transurethral needle ablation versus transurethral resection of the prostate for the treatment of symptomatic benign prostatic hyperplasia: 5-year results of a prospective, randomized, multicenter clinical trial. *J Urol* 2004;**171**:2336–40.

Secondary references

Bruskewitz R, Issa MM, Roehrborn CG, Naslund MJ, Perez-Marrero R, Shumaker BP, *et al*. A prospective, randomized 1-year clinical trial comparing transurethral needle ablation to transurethral resection of the prostate

for the treatment of symptomatic benign prostatic hyperplasia. *J Urol* 1998;**159**:1588–93.

Naslund M, Oesterling JE, Issa M, Roehrborn CG, Bruskewitz R, Perez-Marrero R, *et al*. Long term follow-up of a prospective, randomized clinical trial comparing transurethral needle ablation (TUNA) to transurethral resection of the prostate (TURP) for the treatment of benign prostatic hyperplasia (BPH). *J Endourol* 1997;**11**:S188.

Naslund M, Perez-Marrero R, Roehrborn C, Bruskewitz R, Issa M. Intermediate term outcomes of TUNA for BPH: 36 month results of the TUNA vs TURP US randomized study. *J Urol* 1999;**161**:389.

Roehrborn CG, Burkhard FC, Bruskewitz RC, Issa MM, Perez-Marrero R, Naslund MJ, *et al*. The effects of transurethral needle ablation and resection of the prostate on pressure flow urodynamic parameters: analysis of the United States randomized study. *J Urol* 1999;**162**:92–7.

Hindley 2001[176]

Primary reference

Hindley RG, Mostafid AH, Brierly RD, Harrison NW, Thomas PJ, Fletcher MS. The 2-year symptomatic and urodynamic results of a prospective randomized trial of interstitial radiofrequency therapy vs transurethral resection of the prostate. *BJU Int* 2001;**88**:217–20.

Secondary reference

Mostafid AH, Harrison NW, Thomas PJ, Fletcher MS. A prospective randomized trial of interstitial radiofrequency therapy versus transurethral resection for the treatment of benign prostatic hyperplasia. *Br J Urol* 1997;**80**:116–22.

Hon 2006[70]

Primary reference

Hon NHY, Brathwaite D, Hussain Z, Ghiblawi S, Brace H, Hayne D, *et al*. A prospective, randomized trial comparing conventional transurethral prostate resection with plasmakinetic vaporization of the prostate: physiological changes, early complications and long-term follow-up. *J Urol* 2006;**176**:205–9.

Jahnson 1998[181]

Primary reference

Jahnson S, Dalen M, Gustavsson G, Pedersen J. Transurethral incision versus resection of the prostate for small to medium benign prostatic hyperplasia. *Br J Urol* 1998;**81**:276–81.

Kabalin 1995[177]

Primary reference

Kabalin JN, Gill HS, Bite G, Wolfe V. Comparative study of laser versus electrocautery prostatic resection: 18-month followup with complex urodynamic assessment. *J Urol* 1995;**153**:94–7.

Secondary reference

Kabalin JN. Laser prostatectomy performed with a right angle firing neodymium:YAG laser fiber at 40 watts power setting. *J Urol* 1993;**150**:95–9.

Kaplan 1998[55]

Primary reference

Kaplan SA, Laor E, Fatal M, Te AE. Transurethral resection of the prostate versus transurethral electrovaporization of the prostate: a blinded, prospective comparative study with 1-year followup. *J Urol* 1998;**159**:454–8.

Keoghane 2000[164]

Primary reference

Keoghane SR, Lawrence KC, Gray AM, Doll HA, Hancock AM, Turner K, *et al*. A double-blind randomized controlled trial and economic evaluation of transurethral resection vs contact laser vaporization for benign prostatic enlargement: a 3-year follow-up. *BJU Int* 2000;**85**:74–8.

Secondary references

Jenkinson C, Gray A, Doll H, Lawrence K, Keoghane S, Layte R. Evaluation of index and profile measures of health status in a randomized controlled trial. Comparison of the Medical Outcomes Study 36-Item Short Form Health Survey, EuroQol, and disease specific measures. *Med Care* 1997;**35**:1109–18.

Keoghane S, Cranston D, Lawrence K, Doll H. The Oxford laser prostate trial: a prospective randomised controlled trial of contact vaporisation of the prostate versus TURP. *J Urol* 1995;**153**:230A.

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Appendix 6

Detailed quality assessment for each of the included studies

Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7a	Q7b	Q8	Q9	Q10	Q11	Q12	Q13	Q14
Abbou 1995	Y	U	Y	Y	Y	U	Y	Y	U	U	Y	N	U	Y	U
Ahmed 1997	U	N	N	Y	Y	N	Y	N	U	U	U	Y	N	Y	U
Albala 2002	U	U	Y	Y	Y	Y	Y	Y	Y	U	Y	N	U	U	U
Bdesha 1994	U	N	Y	Y	Y	Y	Y	N	Y	U	Y	Y	U	Y	U
Blute 1996	Y	N	Y	Y	U	Y	Y	U	Y	U	Y	Y	U	U	U
Brehmer 1999	U	U	N	Y	Y	Y	Y	Y	U	U	Y	N	U	U	U
Bouchier-Hayes 2006	U	U	U	Y	Y	Y	U	U	U	U	U	Y	U	U	N
Carter 1999	Y	N	Y	Y	Y	N	Y	Y	U	U	U	Y	U	U	U
Çetinkaya 1996	U	U	Y	Y	Y	Y	Y	N	U	U	U	Y	U	U	U
Cimentepe 2003	U	U	Y	Y	Y	N	Y	Y	U	U	U	Y	U	U	U
Chacko 2001	Y	Y	Y	Y	Y	N	Y	N	N	N	N	Y	N	Y	U
Christensen 1990	U	U	U	Y	Y	Y	Y	Y	U	U	U	Y	U	U	U
Costello 1995	N	U	Y	Y	Y	N	Y	N	U	U	U	Y	U	U	U
Cowles 1995	Y	Y	N	Y	Y	Y	Y	Y	U	U	U	Y	U	Y	U
d'Ancona 1998	U	U	N	Y	Y	N	Y	Y	U	U	U	Y	U	U	U
Dahlstrand 1993	U	U	N	Y	Y	U	Y	Y	U	U	Y	Y	U	U	U
Dahlstrand 1995	U	U	Y	Y	Y	N	Y	Y	U	U	Y	Y	U	U	U
de la Rosette 2003	U	U	Y	Y	Y	N	Y	Y	U	U	U	Y	U	U	U
de Sio 2006	Y	U	Y	Y	Y	Y	Y	Y	U	U	U	U	U	U	U
de Wildt 1996	U	U	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	U	U	U
Donovan 2000	Y	Y	U	Y	Y	U	Y	N	U	U	N	Y	U	Y	U
Dørflinger 1992	U	U	Y	Y	Y	Y	Y	Y	U	U	U	N	U	U	U
Dunsmuir 2003	U	Y	U	Y	Y	Y	Y	Y	N	Y	N	Y	U	N	U
Ekengren 2000	U	U	N	N	Y	Y	N	Y	U	U	U	Y	U	U	Y
Erdağı 1999	U	N	N	Y	Y	Y	Y	N	U	U	U	Y	U	U	U
Fowler 2005	Y	N	Y	Y	Y	Y	Y	Y	U	U	U	Y	U	U	U
Fung 2005	Y	U	Y	Y	Y	Y	Y	N	Y	N	Y	Y	N	Y	U
Galluci 1998	U	U	U	Y	Y	U	Y	Y	U	U	U	Y	N	Y	U
Gotoh 1999	U	U	Y	Y	Y	Y	Y	N	U	U	U	Y	N	U	Y
Gujral 2000	Y	Y	U	Y	Y	U	Y	N	U	U	N	Y	U	Y	U
Gupta 2006	U	U	Y	Y	Y	Y	Y	Y	U	U	U	Y	U	U	N
Hammadeh 2003	U	N	N	Y	Y	N	Y	Y	Y	N	N	Y	U	U	N
Helke 2001	U	U	N	Y	Y	Y	Y	Y	U	U	U	Y	U	U	Y
Hellström 1986	U	U	Y	Y	Y	Y	Y	N	U	U	U	Y	N	U	U
Hill 2004	Y	U	Y	Y	Y	U	Y	Y	U	U	U	Y	U	U	U
Hindley 2001	U	U	Y	Y	Y	Y	Y	Y	U	U	U	Y	U	U	U
Hon 2006	Y	Y	Y	Y	Y	Y	Y	Y	Y	U	U	Y	U	Y	U
Jahnson 1998	U	U	N	Y	Y	Y	Y	Y	U	U	U	Y	U	U	U
Kabalin 1995	U	U	Y	Y	Y	N	Y	Y	U	U	U	Y	U	U	U
Kaplan 1998	U	U	Y	Y	Y	Y	Y	Y	Y	U	N	Y	U	N	U
Keoghane 2000	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	U	Y	N

continued

Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7a	Q7b	Q8	Q9	Q10	Q11	Q12	Q13	Q14
Kim 2006a	U	U	Y	U	U	U	Y	Y	U	U	U	Y	U	N	U
Kim 2006b	U	U	Y	U	U	U	Y	N	U	U	U	Y	N	Y	U
Kuntz 2004	Y	U	Y	Y	Y	Y	Y	Y	U	U	U	Y	U	U	U
Küpeli 1998a	U	U	Y	Y	Y	Y	Y	N	U	U	U	Y	N	U	U
Küpeli 1998b	Y	U	Y	Y	Y	N	Y	Y	U	U	U	Y	U	U	U
Küpeli 2001	U	U	Y	Y	Y	Y	Y	N	U	U	U	Y	U	U	U
Kursh 2003	Y	N	Y	Y	Y	N	Y	Y	U	U	U	Y	U	Y	U
Larson 1998	U	U	N	Y	Y	Y	Y	N	Y	U	Y	Y	N	U	U
Li 1987	U	Y	Y	U	Y	Y	Y	N	U	U	U	Y	U	U	Y
Liedberg 2003	U	N	Y	Y	Y	Y	Y	Y	N	U	U	Y	U	U	U
Liu 2006	U	N	Y	Y	Y	Y	Y	Y	U	U	U	Y	U	U	Y
Mårtenson	U	U	Y	Y	Y	N	Y	Y	U	U	U	Y	U	U	U
McAllister 2000	Y	U	Y	Y	Y	U	Y	Y	U	U	U	Y	U	Y	U
Montorsi 2004	U	U	N	Y	Y	Y	Y	Y	N	N	N	Y	U	U	N
Mottet 1999	Y	U	Y	Y	Y	N	Y	Y	U	U	U	Y	U	U	Y
Nathan 1996	U	U	Y	Y	Y	Y	Y	N	U	U	U	Y	N	Y	U
Nawrocki 1997	U	U	Y	Y	Y	Y	Y	N	U	U	Y	Y	N	U	U
Netto 1999	U	U	Y	Y	Y	Y	Y	Y	U	U	U	Y	U	U	U
Nielsen 1998	Y	U	Y	Y	Y	Y	N	Y	U	U	U	N	U	U	U
Nuhoğlu 2005	U	U	Y	Y	Y	Y	Y	Y	U	U	U	Y	U	U	U
Nuhoğlu 2006	U	U	Y	Y	Y	Y	N	Y	U	U	U	Y	U	U	U
Ogden 1993	U	N	Y	Y	Y	Y	Y	N	N	N	Y	Y	U	U	U
Patel 1997	U	U	U	Y	Y	Y	Y	N	U	U	U	Y	U	U	U
Riehmann 1994	U	U	N	Y	Y	Y	Y	Y	U	U	U	U	Y	U	U
Rodrigo Aliaga 1998	U	U	N	Y	N	U	Y	N	U	U	U	Y	U	U	U
Saporta 1996	U	U	Y	Y	Y	N	U	Y	U	U	U	Y	U	U	U
Seckiner 2006	U	U	Y	Y	Y	Y	Y	Y	U	U	U	Y	N	U	U
Sengor 1996	U	U	Y	Y	Y	Y	Y	U	U	U	U	Y	U	U	U
Shingleton 2002	Y	U	Y	Y	Y	U	Y	Y	U	U	U	Y	U	U	U
Shokeir 1997	U	U	Y	Y	Y	Y	Y	Y	U	U	U	Y	U	U	U
Singh 2005	U	U	Y	Y	Y	U	Y	N	U	U	U	Y	U	U	Y
Soonwalla1992	U	U	Y	Y	Y	Y	Y	Y	U	U	U	Y	U	U	U
Suvakovic 1996	U	U	Y	Y	Y	N	Y	Y	U	U	U	Y	U	U	U
Talic 2000	U	U	Y	Y	Y	Y	Y	N	U	U	U	U	U	U	U
Tefekli 2005	U	U	Y	Y	Y	Y	Y	Y	U	U	U	Y	U	N	Y
Trachtenberg 1998	U	Y	Y	Y	Y	Y	Y	N	Y	U	Y	N	U	U	U
Tkocz 2002	U	U	Y	Y	Y	Y	Y	Y	U	U	U	Y	U	U	U
Tuhkanen 2001	U	U	Y	Y	Y	N	Y	Y	U	U	U	N	U	U	Y
Tuhkanen 2003	U	U	Y	Y	U	N	Y	Y	U	U	U	U	U	U	Y
van Melick 2003	U	Y	Y	Y	Y	N	Y	Y	U	U	U	Y	U	U	N
Wagrel 2002	U	U	Y	Y	Y	Y	Y	Y	U	U	U	Y	U	Y	U
Wang 2002	U	U	Y	Y	Y	Y	Y	Y	U	U	U	Y	U	U	U
Westenberg 2004	U	U	Y	Y	Y	N	Y	Y	U	U	U	Y	U	U	U
Wilson 2006	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	Y	U	U	U
Zerbib 1994	U	U	N	Y	Y	Y	Y	N	Y	N	Y	Y	U	U	U
Zorn 1999	U	U	Y	Y	Y	U	Y	Y	U	U	U	Y	U	U	Y

N, no; U, unclear; Y, yes.

Appendix 7

Characteristics of included studies

Abbreviations used throughout this appendix are as follows: APSA, American Physicians Scientist Association; AUA, American Urological Association; AUA SI, American Urological Association symptom index; ASA, American Society of Anaesthesiologists; BOO, bladder outlet obstruction; BPH, benign prostate hyperplasia; BSFQ, brief sexual function questionnaire; B-TURP, bipolar transurethral resection of the prostate; B-TUVP, bipolar transurethral vaporisation of the prostate; B-TUVRP, bipolar transurethral vaporection of the prostate; CLVP, contact laser vaporisation; DRE, digital rectal exmination; ICS, International Continence Society; IPSS, International Prostate Symposium Score; ISC, intermittent self catheterisation; IQR, interquartile range; LUT, lower urinary tract; MI, myocardial infaction; MUF, mean urine flow; NSAID, non-steroidal anti-inflammatory drugs; PCAR, presumed circle area ratio; $Pdet_{max}$; maximal detrusor pressure; PSA, prostate-specific antigen; PVR, post-voiding residual urine volume; Q_{max}, peak flow rate; QoL, quality of life; RCT, randomised controlled trial, TEAP, transurethral ethanol ablation of the prostate; TRUS, transrectal ultrasound; TUIP, transurethral incision of the prostate;TUMT, transurethral microwave thermotherapy; TUNA, transurethral needle ablation; TUR, transurethral resection; TURP, transurethral resection of the prostate; TUVP, transurethral electrovaporisation of the prostate; TUVRP, transurethral vaporesection of the prostate; URA, urethral resistance factor; US, ultrasound; UT, urinary tract; urinary tract infection; VLAP, visual laser ablation of prostate; WHO, World Health Organization.

TUMT vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Ahmed 1997[124] Study design: RCT Location: UK Length follow-up: 6 months	Inclusion criteria: residual urine volume ≤300 ml; AUA score ≥ 12; urine flow rate < 15 ml/s; prostate volume 25–100 ml by TRUS; symptomatic uncomplicated BPH > 1 year; $Pdet_{max}$ > 70 cmH_2O; informed consent; obstructed on Abrams–Griffiths nomogram; suitable for either treatment Exclusion criteria: < 55 years; prostate cancer (by TRUS scan); previous prostatic surgery; acute or chronic retention; mental incapacity; severe cardiovascular disease; rectal surgery or disease (except haemorrhoids); pelvic mass surgery; cardiac pacemaker; metallic implants; uncontrolled coagulation disorder; meatal stricture; upper U-tract dilatation; obstructive uropathy; serum creatinine > 150 mmol/l; bladder calculi; bladder diverticula; recurrent prostatic haematuria; 'active' drugs; previous medication for BPH; prostatic abscess; active UTI; recurrent UTI; prominent middle lobe; < 25 mm between bladder neck and verumontanum Number of eligible patients: 60 Number of patients randomised: 60	TUMT (n = 30) vs TURP (n = 30)	Mean age (range) (years): 69.36 (56–88) Mean prostate size (95% CI) (mm): 36.6 (31.8–41.4) (TRUS) Mean AUA score (95% CI): 18.5 (17.1–20.1) Mean Q_{max} (95% CI) (ml/s): 10.1 (9.2–10.9) Mean residual volume (95% CI) (ml): 94.4 (70.0–112.8) Sexually active: 19/30 Mean $Pdet_{max}$ (95% CI) (cmH_2O): 98.5 (70.1–116.9) Intervention performed by M Ahmed Temperature: 43.5°C Power: 70 W Other: anaesthesia: topical anaesthesia with Instillagel® (CliniMed; 3/30 had parenteral pethidine); antibiotics: gentamicin, oral trimethoprim 200 mg twice a day for 5 days; Prostanec™ (TechnoMed, Lyon, France) treatment catheter	Mean age (range) (years): 69.45 (58–82) Mean prostate size (95% CI) (mm): 46.1(38.1–54.1) (TRUS) Mean AUA score (95% CI): 18.4 (16.7- 20.1) Mean Q_{max} (95% CI) (ml/s): 9.5 (8.9–10.1) Mean residual volume (95% CI) (ml): 109.1 (88.2–130) Sexually active: 18/30 Mean $Pdet_{max}$ (95% CI) (cmH_2O): 96.7 (85.5–103.9) Intervention performed by surgeon of senior registrar grade or above Other: standard technique	Symptom score (AUA) Q_{max} Detrusor pressure Residual volume Prostate volume Blood transfusion UTI Catheter duration Septicaemia Stricture Retrograde ejaculation Erectile dysfunction Reoperation

TUMT vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Dahlstrand 1993 Study design: RCT Location: Sweden Length follow-up: 12 months Links with: Dahlstrand 1994;Dahlstrand 1993 and 1993 (abstracts)	Inclusion criteria: residual urine volume ≤350 ml; Madsen score ≥8; prostate length 35–50 mm from TRUS; Q_{max} < 15 m/s (twice); BPH; anaesthetic risk group 1–3; obstructive symptoms > 3 months. Exclusion criteria: < 45 years; suspicion of or known prostate cancer or bladder cancer; previous surgery for cancer of prostate or radiotherapy; rectal surgery; previous surgery or heat treatment for BPH; large median lobe; neurogenic bladder disorder; mental incapacity, dementia or inability to give informed consent; neurological disorders that may affect bladder function; peripheral arterial disease (intermittent claudication or Leriche's syndrome); disorder of haemostasis or serum creatinine > 2 mg/dl; uncontrolled cardiac dysrhythmias or cardiac pacemaker; total hip replacement or other metallic implants; indwelling or condom catheter; post-void residual urine > 350 ml; urethral stricture; bladder stones; α-adrenergic blockers (within 4 weeks); antiandrogen medication within 1 year or other medication that might affect prostate or bladder; bacterial prostatitis or UTI at time of treatment; prostatic urethral length of > 50 mm or < 35 mm by TRUS; anaesthesia risk category 4 or 5 (ASA class 4 or 5). Number of eligible patients: 83 Number of patients randomised: 79	TURP ($n = 40$) vs TUMT ($n = 39$) Additional information: position of treatment catheter checked with TRUS	Mean age (years): 68 Mean Madsen±SD (range): 11.2±3.1 (8–18) Mean Q_{max}±SD (range) (ml/s): 8.0±2.8 (3–14) Mean residual volume±SD (range) (ml): 105±88 (10–380) Mean prostate size (ml): 33 Intervention performed by single physician with Prostatron® Power: 60W Temperature: urethral, 44.5°C; rectal, 42.5°C Catheter protocol: if no voiding, indwelling catheter for 3–5 days Other: no general anaesthesia but intraurethral topical lidocaine HCl jelly 2% and NSAIDs; postoperative: oral norfloxacin 400 mg twice a day for 5 days	Mean age (years): 70 Mean Madsen±SD (range): 13.3±4.2 (8–22) Mean Q_{max}±SD (range) (ml/s): 7.9±3.2 (1–14) Mean residual volume±SD (range) (ml): 116±97 (15–346) Mean prostate size (ml): 37 Sexually active 16/40 Intervention performed by urologists at senior registrar level or above Other: resectoscope with Charrière of 24–48, down to surgical capsule and extended from bladder neck to verumontanum	Symptom score (Madsen) Q_{max} Residual volume Prostate size Retrograde ejaculation UTI Retention Catheter duration Reoperation Incontinence Length of hospital stay

continued

TUMT vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Dahlstrand 1995 Study design: RCT Location: Sweden Length follow-up: 2 years Links with: Walden 1998	Inclusion criteria: residual urine volume ≤350 ml; Madsen score ≥8; prostate length 35–50 mm from TRUS Exclusion criteria: prostate cancer or bladder cancer; previous surgery for cancer of prostate; previous treatment for BPH; indwelling catheter; urethral stricture; large median lobe; neurogenic bladder disorder; metallic hip implant Number of eligible patients: 72 Number of patients randomised: 69	TUMT ($n = 37$) vs TURP ($n = 32$) Additional information: it is unclear whether this study is the same as Dahlstrand 1993. Several attempts were made to contact the authors	Mean age±SD (years): 67.9±9 Mean Madsen±SD: 12.1±3 Mean prostate size±SD (mm): 43.4±4.4 (TRUS) Mean Q_{max}±SD (ml/s): 8.6±32.5 Mean residual volume ±SD (ml): 194±78 Catheter protocol: yes Temperature: maximum 44.5°C; minimum 42.5°C Power: 60 W Other: nafloxacin 400 mg; local anaesthetic; Prostatron (TechnoMed) with Prostasoft version 2.0	Mean age±SD (years): 70±6 Mean Madsen±SD: 13.6±3.9 Mean prostate size±SD (mm): 44.8±5.9 (TRUS) Mean Q_{max}±SD (ml/s): 8.6±3.0 Mean residual volume±SD (ml): 1104±95	UTI Urinary retention Catheter duration Clot retention Symptom score (Madsen) Length of hospital stay Q_{max} Residual volume

TUMT vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
d'Ancona 1998 Study design: RCT Location: Netherlands Recruitment dates: January 1994–August 1995 Median length follow-up: 2.5 years Links with: d'Ancona 1997	Inclusion criteria: unequivocal BPH candidates for TURP; Q_{max} 15 ml/s; residual volume < 350 ml; Madsen score ≥8; prostate length 25–50 mm; prostate volume 30–100 ml; minimum voided volume 100 ml; ≥45 years old Exclusion criteria: prostate cancer; previous prostate surgery; urinary retention requiring catheterisation; medications prescribed for prostate/ bladder treatment; neurogenic disorders affecting bladder function; diabetic neuropathy; possible microwave-sensitive implants (pacemaker, hip prosthesis); renal impairment or obstructed bladder neck due to enlarged median lobe of prostate Number of patients randomised: 52	TUMT ($n = 31$) vs TURP ($n = 21$) Additional information: performed by two experienced urologists	Mean age±SD (years): 69.6±8.5 Mean Madsen score±SD: 13.8±4.2 Mean IPSS score±SD: 16.7 ±5.6 Mean Q_{max}±SD (ml/s): 9.3±3.4 Mean residual volume±SD (ml): 91±105 Mean prostate size±SD (ml): 45±15 Mean total voided volume±SD (ml): 178±84.1 Mean PdetQ_{max}±SD (cmH_2O): 65.4±24.9 Power: 70 W Catheter protocol: catheter with leg bag immediately after treatment Intervention performed by two experienced urologists Other: mean total energy (kJ) 151.8 (SD 45.5) with Prostatron (EDAP) v.2.5; no anaesthesia but sedative given intravenously if required; diclofenac suppository (100 mg) and midazolam (2 mg) given	Mean age±SD (years): 69.3±5.9 Mean Madsen score±SD: 13.3±4.2 Mean IPSS score±SD: 18.3±6.3 Mean Q_{max}±SD (ml/s): 9.3±3.9 Mean residual volume±SD (ml): 49.5±69.9 Mean prostate size±SD (ml): 43±12 Mean total voided volume±SD (ml): 193.5±85.7 Mean PdetQ_{max}±SD (cmH_2O): 77.7±40.0 Intervention performed by two experienced urologists	Symptom score (IPSS/ Madsen) Improvement > 50% Q_{max} Total voided volume Residual volume Prostate size PdetQ_{max} Blood transfusion Catheter duration Mortality Irritative urinary symptoms Reoperation UTI Length of hospital stay

continued

TUMT vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
de la Rosette 2003 Study design: RCT Location: Netherlands Recruitment dates: January 1996–March 1997 Median length follow-up: 33 months Links with: Francisca 1999; Francisca 2000; Floratos 2001	Inclusion criteria: peak urine flow rate ≤15 ml/s; residual urine volume ≤350 ml; Madsen score ≥8; urethral length ≥25 mm. Exclusion criteria: age < 45 years; prostate size < 30 ml; prostate carcinoma; previous prostatic surgery; acute prostatitis; UTI; severe co-morbidity; symptoms < 3 months; neurological disorders affecting lower UT function; isolated prostate middle lobe protruding in bladder; urethral stricture Number of eligible patients: 155 Number of patients randomised: 144	TUMT ($n = 78$) vs TURP ($n = 66$)	Mean age±SD (years): 67±8.3 Mean prostate size±SD (ml): 51±20 Mean IPSS±SD: 20±6.7 Mean QoL±SD: 4±0.9 Mean Q_{max}±SD (ml/s): 9.2±3.1 Mean residual volume±SD (ml): 65±84 Catheter protocol: yes	Mean age±SD (years): 66±8.2 Mean prostate size±SD (ml): 52±19 Mean IPSS±SD: 20±6.3 Mean QoL±SD: 4±1.1 Mean Q_{max}±SD (ml/s): 8.0±2.9 Mean residual volume±SD (ml): 91±98 Catheter protocol: yes	Catheter duration Mortality Symptom score (IPSS) Quality of life score Prostate volume Length of hospital stay Q_{max} Residual volume

TUMT vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Wagrell 2002 Study design: RCT Location: Sweden, Denmark and USA Recruitment dates: November 1998–November 1999 Median length follow-up: 24 months Links with: Kobelt 2004; Nordling 2005 (abstract); Wagrell 2003 and 2003 (abstracts)	Inclusion criteria: peak urine flow rate ≤13 ml/s; IPSS score ≥13; prostate volume 30–100 ml Number of eligible patients: 154 Number of patients randomised: 146	TUMT ($n = 99$) vs TURP ($n = 46$)	Mean age±SD (years): 67±8 Mean IPSS±SD: 21±5.4 Mean Q_{max}±SD (ml/s): 7.6±2.7 Mean residual volume±SD (ml): 106±77 Mean prostate size±SD (ml): 48.9±15.8 Mean $Pdet_{max}$±SD (cmH_2O): 73.7± 29.7 Temperature: 55°C Catheter protocol: indwelling Foley catheter Intervention performed by clinicians with average age and experience Other: given as outpatient procedure requiring sedoanalgesic±local anaesthetic; diazepam, ketorolac, or ketobemidone or combinations of these	Mean age±SD (years): 69±8 Mean IPSS±SD: 20.4±5.9 Mean Q_{max}±SD (ml/s): 7.9±2.7 Mean residual volume±SD (ml): 94±82 Mean prostate size±SD (ml) by TRUS: 52.7±17.3 Mean $Pdet_{max}$±SD (cmH_2O): 79.4±35.3 Catheter protocol: catheter for 3–4 days Intervention performed by clinicians with average age and experience	Symptom score (IPSS) Quality of life Q_{max} Residual volume Detrusor pressure Prostate size UTI Retention Clot retention TUR syndrome Erectile dysfunction Incontinence Mortality Septicaemia Catheter duration

continued

TUMT vs sham

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Abbou 1995 Study design: RCT Location: France Length follow-up: 12 months	Inclusion criteria: peak urine flow rate < 15 ml/s with voided volume of 150 ml (twice); residual urine volume measured by suprapubic ultrasound on 2 days < 300 ml; symptomatic prostatism symptoms for ≥ 3 months; serum creatinine level 160 µmol/l; written informed consent; prostate weight 30–80 g by TRUS; intravenous pyelogram (IVP) with cysturethrogram; APSA < 10 ng/ml or PSA < 15 ng/ml for a prostate weight ≥ 60 g Exclusion criteria: < 50 years; urinary bacterial infection; confirmed or suspicion of cancer by DRE; previous prostate or bladder surgery; PSA 4–10 ng/ml entered after transrectal biopsy of prostate for cancer; mental incapacity; any chronic disease potentially hindering follow-up; diabetes; participating in any clinical protocol in last 3 months; any other urological disease; any medical treatment for voiding disorders within 15 days of inclusion; diuretics in previous 3 months; anticoagulant therapy; allergy to lidocaine or colorectal disease Number of patients randomised: 97	TUMT ($n = 66$) vs sham ($n = 31$)	Mean age ± SD (years): 65 ± 8 Mean Madsen score ± SD: 10.9 ± 4.3 Mean Q_{max} ± SD (ml/s): 10.4 ± 2.7 Mean total voided volume ± SD (ml): 249 ± 82 Mean residual volume ± SD (ml): 66 ± 60 Mean prostate size ± SD (g): 45 ± 15 Temperature: 45°C Other: used three devices for TURP: Thermex II (Israel), Prostcare (France), BSD-50 (USA)	Mean age ± SD (years): 66 ± 7 Mean Madsen score ± SD: 12.8 ± 4.5 Mean Q_{max} ± SD (ml/s): 9.9 ± 2.5 Mean total voided volume ± SD (ml): 242 ± 89 Mean residual volume ± SD (ml): 41 ± 42 Mean prostate size ± SD (g): 44 ± 11 Temperature: 37°C Other: used three devices: Prostathermer system (Israel), Prostcare (France), Primus (Belgium)	Duration of operation Acute retention UTI Intraoperative complications Symptom score (Madsen)

TUMT vs sham

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Albala 2002 Study design: RCT Location: USA Length follow-up: 12 months Links with: Albala 2000,2003,2005 (abstracts); Kabalin 2001 (abstract)	Inclusion criteria: peak urine flow rate < 12 ml/s; age 50–80 years; residual volume < 125 ml; AUA SI score > 13; bother score > 11; prostate volume 30–100 ml without significant intravesical middle lobe Exclusion criteria: PSA 4–10 ng/ml entered after transrectal biopsy of prostate for cancer Number of patients randomised: 190	TUMT ($n = 125$) vs sham ($n = 65$) Additional information: performed in urology offices or clinics	Mean age ± SD (years): 65.2 ± 7.3 Mean AUA SI score ± SD: 22.2 ± 5.0 Mean Q_{max} ± SD (ml/s): 8.9 ± 3.0 Mean residual volume ± SD (ml): 57.9 ± 53.9 Mean prostate size ± SD (ml): 50.5 ± 18.6 (TRUS) Mean QoL index: 11.4 Temperature: 50–55°C; power cut-off at rectal temperature > 42.5°C Power: 60–90 W Catheter protocol: Foley catheter left in place 2–4 days postopoperatively Other: Toradol® (Roche; 10 mg) and lorazepam (2 mg) given orally before treatment; lidocaine jelly for 15 minutes preoperatively	Mean age ± SD (years): 64.6 ± 7.1 Mean AUA SI score ± SD: 22.7 ± 5.7 Mean Q_{max} ± SD (ml/s): 8.4 ± 2.0 Mean residual volume ± SD (ml): 52.6 ± 51.9 Mean prostate size ± SD (ml): 47.1 ± 17.9 (TRUS) Other: procedure same as TUMT but without microwave energy	Symptom score (AUA SI) Q_{max} Urinary retention Recatheterisation

continued

TUMT vs sham

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Bdesha 1994 Study design: RCT Location: UK Length follow-up: 12 months Links with: Bdesha 1993	Inclusion criteria: prostatism of at least 6 months; peak urine flow rate < 15 ml/s; residual volume < 200 ml but > 50 ml; AUA score > 14 Exclusion criteria: acute retention; prostatic surgery; upper UT dilatation; impaired renal function; significant median lobe hypertrophy; UT pathology; bladder neck to verumontanum > 40 mm Number of eligible patients: 42 Number of patients randomised: 42	TUMT ($n = 22$) vs sham ($n = 20$)	Mean age (years): 63.7 Mean AUA score (95% CI): 19.2 (16.3–22.1) Mean Q_{max} (95% CI) (ml/s): 12.3 (10.7–13.9) Mean residual volume (95% CI) (ml): 104 (85–125) (TRUS) Temperature: < 42.5°C rectal temperature cut-off Frequency: 915 MHz Power: 20 W Catheter protocol: 18Fr catheter	Mean age (years): 62.6 Mean AUA score (95% CI): 18.8 (16.0–21.7) Mean Q_{max} (95% CI) (ml/s): 10.8 (9.2–12.4) Mean residual volume (95% CI) (ml): 80 (57–103) (TRUS) Temperature: < 42.5°C rectal temperature Other: procedure as TUMT but without active microwave	Duration of operation Symptom score (AUA) Q_{max} Residual volume Retrograde ejaculation Erectile dysfunction Retention Length of hospital stay

TUMT vs sham

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Blute 1996 Study design: RCT Location: US Length follow-up: 12 months	Inclusion criteria: symptomatic BPH; peak urine flow rate < 10 ml/s; residual volume 100–200 ml; Madsen score > 8; prostate length 35–50 mm from TRUS Exclusion criteria: prostate cancer; transurethral or rectal surgery; urinary retention; any medications that affect prostate symptoms; antiandrogen therapy; upper UT pathology shown by ultrasound; metallic implants; symptoms suggesting neuropathological bladder; serum creatinine > 2 mg/dl; bladder stones; uncontrolled dysrhythmias or cardiac pacemaker; asymmetric median lobe enlargement; patients at high risk from prostatic disease Number of patients randomised: 115	TUMT ($n = 78$) vs sham ($n = 37$) Additional information: sham group offered TUMT at 3 months	Mean age±SD (years): 66.9±7.8 Mean Madsen score±SD: 13.9±3.4 Mean AUA score±SD: 19.9±7.2 ($n = 37$) Mean Q_{max}±SD (ml/s): 7.3±1.6 Mean MUF±SD (ml/s): 4.0±1.1 Mean residual volume±SD (ml): 140.4±35.8 Mean prostate size±SD (ml): 37.4±14.2 (TRUS) Antibiotics: given pretherapy Other: procedure: rectal thermometry probe inserted and treatment catheter with Foley balloon located by transabdominal ultrasound and TRUS; anaesthesia: 71/78 (89%) had only local anaesthetic (lidocaine), 7/78 had midazolam–fentanyl intravenously; blood pressure, pulse and temperature monitored every 15 minutes during treatment; observation for 2 hours	Mean age±SD (years): 66.9±7.1 Mean Madsen score±SD: 14.9±3.1 Mean AUA score±SD: 20.8±6.7 Mean Q_{max}±SD (ml/s): 7.4±1.7 (n=36) Mean MUF±SD (ml/s): 3.9±1.1 ($n = 36$) Mean residual volume±SD (ml): 145.2±35.6 Mean prostate size±SD (ml): 36.1±13.4 (TRUS) Antibiotics: given pretherapy Other: procedure: no sedation; urethral coolant circulated; NSAIDs given pretherapy	Duration of operation Symptom score (Madsen, AUA) Global assessment Q_{max} Residual volume Intraoperative complications Retention Retrograde ejaculation Erectile dysfunction

continued

TUMT vs sham

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Brehmer 1999 Study design: RCT Location: Sweden Length follow-up: 12 months	Inclusion criteria: LUTS dominated by hesitancy, slow urination and an enlarged prostate; peak urine flow rate < 15 ml/s Exclusion criteria: suspected prostate cancer; surgery for prostate disease; prostate size > 350 ml; indwelling catheter; median prostatic lobe; neurological disease Number of patients randomised: 30	TUMT ($n = 16$) vs sham ($n = 14$)	Mean age (range) (years): 70.4 (53–83) all patients.	Mean age (range) (years): 70.4 (53–83) all patients.	Reoperation Symptom score (ICS) Global assessment Q_{max}
de Wildt 1996 Study design: RCT Location: the Netherlands and UK (two centres) Recruitment dates: June 1991–December 1992 Length follow-up: 12 months Links with: de la Rosette 1994;Francisca 1997	Inclusion criteria: peak urine flow rate < 15 ml/s during two voids of > 150 ml; > 45 years; residual volume < 300 ml; Madsen > 8; symptom duration > 3 months Exclusion criteria: prostate cancer; history of TURP or TUIP; isolated enlargement of middle lobe; length of prostate urethra < 35 mm; prostate size < 30 ml; drugs affecting bladder function; bacterial prostatitis; UTI; urethral stricture; neurogenic bladder dysfunction; diabetes mellitus; intravesical pathology (stones, neoplasm); metallic pelvic implants; disorders of blood flow or coagulation; mental incapacity or inability to give informed consent Number of patients randomised: 93	TUMT ($n = 47$) vs sham ($n = 46$) Additional information: if patient saw no improvement in 3 months after sham or TUMT, a second TUMT was performed on request	Mean age±SD (years): 66.3±8.1 Mean Madsen score±SD (95% CI): 13.7±3.4 (12.7–14.7) Mean Q_{max}±SD (ml/s): 9.2±2.5 Mean residual volume±SD (ml): 93.9±75.4 Mean prostate size±SD (ml): 48.6±16.6 Mean voided fraction±SD (%): 74.9±16.6 Other: interventions described previously in Carter 1991	Mean age±SD (years): 63.9±6.0 Mean Madsen score±SD (95% CI): 12.9±3.1 (11.9–13.9) Mean Q_{max}±SD (ml/s): 9.6±2.7 Mean residual volume±SD (ml): 84.7±66.1 Mean prostate size±SD (ml): 49±20.0 Mean voided fraction±SD (%): 77.3±15.7 Other: procedure as TUMT but without microwave activation	Symptom score (Madsen) Q_{max} Residual urine Voided fraction Mortality Urinary retention Catheterisation Reoperation

TUMT vs sham

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Larson 1998 Study design: RCT Location: USA (five centres) Recruitment dates: September 1994–June 1996 Length follow-up: 12 months	Inclusion criteria: peak urine flow rate < 12 ml/s during two voids of > 125 ml within 30 days of enrolment; 45–85 years; AUA score > 9; preprostatic urethral length 3–5 cm from cystoscopy or TRUS; life expectancy ≥ 1 year Exclusion criteria: prostate or bladder cancer; enlarged or prominent prostatic middle lobe on cystoscopy; prostate size > 100 ml by TRUS; alpha-antagonists within 4 weeks or antiandrogens within 3 months; acute UTI within 1 week of enrolment as determined by positive urine culture; acute urinary retention; previous prostate surgery or non-medical treatment for BPH other than balloon dilatation < 12 months; gross haematuria not due to BPH; concomitant medications that could affect outcome study measures; co-existing disease that could mimic obstructive bladder neck syndrome; co-existing illness or specific obstructive symptoms caused by neurogenic bladder; bladder stones; renal failure; cardiac failure; urethral stricture (inability to pass 22Fr urethroscope easily); severe bladder neck contracture; urinary sphincter abnormalities; prostatitis or hepatic failure; continuous or intermittent catheterisation within 2 weeks of procedure; penile implant or artificial urinary sphincter; previous pelvic or rectal surgery that would increase patient risk or render study procedures more difficult; metallic pelvic implants; cardiac pacemaker; desire for future offspring; likely non-compliance with study follow-up evaluation requirements Number of patients randomised: 169	TUMT ($n = 125$) vs sham ($n = 44$) Additional information: 27/44 sham patients (61%) elected to undergo microwave treatment within 12 months of sham procedure.	Mean age (95%CI) (years): 65.9 (63.4–68.3) Mean AUA score (95% CI): 20.8 (19.8–21.9) ($n = 124$); 50/124 (42%) AUA 9–19, 69/124 (58%) AUA > 20 Mean Q_{max} (95% CI) (ml/s): 7.8 (7.4–8.2) ($n = 106$) Mean residual volume (95% CI) (ml): 99.1 (82.0–116.1) ($n = 105$) Mean prostate volume (95% CI) (ml): 38.1 (35.1–41.2) Mean QoL score (95% CI): 4.2 (4.0–4.4) Frequency: 902–928 MHz Temperature: target urethral temperature 40 ± 1°C Catheter protocol: catheter for 30–60 hours Antibiotics: preprocedural antibiotics at discretion of investigator Other: Targis™ (formerly T_3) thermoablation system used; did not use heated pad on lower abdomen to reduce awareness of heating procedure	Mean age (95%CI) (years): 66.0 (64.7–67.4) Mean AUA score (95% CI): 21.3 (19.3–23.3) ($n = 42$); 15/42 (43%) AUA 9–19, 20/42 (57%) AUA > 20 Mean Q_{max} (95% CI) (ml/s): 7.8 (7.0–8.6) ($n = 39$) Mean residual volume (95% CI) (ml): 103.6 (79.4–127.8) ($n = 39$) Mean prostate volume (95% CI) (ml): 44.7 (38.8–50.5) Mean QoL score (95% CI): 4.0 (3.6–4.3) Temperature: urethral 8–20°C Catheter protocol: catheter for 30–60 hours Antibiotics: preprocedural antibiotics at discretion of investigator Other: procedure same as TUMT but without microwave activity	Duration of operation Symptom score (AUA) Q_{max} Prostate size Residual volume Urinary retention Incontinence Epididymitis Stricture Retrograde ejaculation Reoperation Rehospitalisation Quality of life

continued

TUMT vs sham

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Nawrocki 1997 Study design: RCT Location: UK Recruitment dates: June 1991–December 1992 Length follow-up: 6 months	Inclusion criteria: peak urine flow rate < 15 ml/s; residual volume ≤ 350 ml; voided volume ≥ 150 ml; symptoms of LUT dysfunction due to BPH and meriting surgical treatment; $Pdet_{max}$ ≥ 70 cm water Exclusion criteria: complications of BOO; previous prostate or pelvic surgery or radiotherapy; urinary retention; recurrent UTI; treatment or medication that might affect UT function; renal failure; bladder calculus; bladder diverticulum; suspicion of malignancy from DRE; abnormal PSA level or other clinical features; short prostate (< 30 mm on TRUS); prominent prostate middle lobe projecting asymmetrically into bladder; urethral stricture; presence of metal within lower trunk or upper legs; uncontrolled cardiac dysrhythmias or presence of cardiac pacemaker; neurological disorders that might affect lower body; inability to understand treatment procedure, investigations or to give informed consent Number of patients randomised: 78	TUMT ($n = 38$) vs sham ($n = 40$) Additional information: an additional control group had no treatment; all procedures as outpatients	Median age (range) (years): 70 (56–80) Median AUA score (range): 19 (7–31) Mean Q_{max} ± SD (ml/s): 8.83 ± 2.32 Mean total voided volume ± SD (ml): 252.1 ± 64.79 Mean residual volume ± SD (ml): 85.7 ± 56.6 Mean prostate size ± SD (ml): 41.2 ± 14.6 Mean $Pdet_{max}$ ± SD (cmH_20): 99.7 ± 27.09 Other: used Prostasoft version 2.0 with local anaesthesia	Median age (range) (years): 70 (56–80) Median AUA score (range): 17.5 (7–28) Mean Q_{max} ± SD (ml/s): 9.44 ± 2.78 Mean total voided volume ± SD (ml): 269.1 ± 72.29 Mean residual volume ± SD (ml): 96.5 ± 56.3 Mean prostate size ± SD (ml): 46.7 ± 16.8 Mean $Pdet_{max}$ ± SD (cmH_20): 103.9 ± 33.24 Other: as for TUMT but without microwave activity; used heat pad (as can be purchased for rheumatic complaints) on lower abdomen	Duration of operation Symptom score (AUA) Q_{max} Total voided volume Residual volume Detrusor pressure Acute retention Prostate size

TUMT vs sham

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Ogden 1993 Study design: RCT Location: UK Recruitment dates: from September 1991 Length follow-up: 3 months	Inclusion criteria: peak urine flow rate < 15 ml/s on two occasions; residual volume ≤350 ml; Madsen score > 8 for 6 months, prostate urethral length 35–50 mm Exclusion criteria: prostate cancer from DRE; heat to prostate or pelvic surgery/radiotherapy; urinary retention requiring catheterisation; alpha-blockers within 4 weeks; antiandrogens within 1 year; anything affecting prostate or bladder; prostatitis or UTI; renal dysfunction; peripheral arterial disease with intermittent claudication or Leriche's syndrome; diabetic neuropathy; UT disease; bladder disease; mental incapacity, dementia, inability to give informed consent; neurological disorders affecting bladder function; disorders of blood flow or coagulation; history of uncontrolled cardiac arrhythmias or cardiac pacemaker; metallic pelvic implant; prominent isolated median lobe (from cystoscopy); intravesical pathology (stones, neoplasm or diverticula); renal impairment due to chronic retention; urethral stricture inhibiting catheterisation Number of eligible patients: 43 Number of patients randomised: 43	TUMT ($n = 22$) vs sham ($n = 21$) Additional information: if patient saw no improvement in 3 months after sham or TUMT, a second TUMT was performed on request	Mean age (95% CI): 68.3 (64.1–72.5) Mean Madsen score (95% CI): 14.5 (12.9–16.1) Mean Q_{max} score (95% CI) (ml/s): 8.5 (7.5–9.5) Mean total voided volume (95% CI) (ml): 267 (235–297) Mean residual volume (95% CI) (ml): 147 (116–177) Mean prostate size (95% CI) (ml): 38.1 (32.4–43.8) (TRUS) Mean QoL score (95% CI): 13.4 (10.7–16.1) Catheter protocol: catheter inserted for retention for 1 week	Mean age (95% CI): 67.1 (63.7–70.3) Mean Madsen score (95% CI): 14.2 (12.7–15.7) Mean Q_{max} score (95% CI) (ml/s): 8.6 (7.6–9.6) Mean total voided volume (95% CI) (ml): 285 (235–334) Mean residual volume (95% CI) (ml): 118 (84.8–151) Mean prostate size (95% CI) (ml): 35.4 (27.4–43.4) (TRUS) Mean QoL score (95% CI): 13.3 (9.2–17.4) Catheter protocol: catheter inserted for retention for 1 week	Symptom score (Madsen) Quality of life Q_{max} Total voided volume Residual volume UTI Urinary retention

continued

TUMT vs sham

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Trachtenberg 1998 Study design: RCT Location: USA and Canada Length follow-up: 6 months Links with: Roehrborn 1998;Tan 2005;Roehrborn 1997 (abstract)	Inclusion criteria: peak urine flow rate < 1 ml/s; > 55 years; AUA > 13; voided volume > 125 ml; PSA level < 10 ng/ml; prostate size 25–100 ml Exclusion criteria: prostate cancer; bladder neck to verumontanum measurement > 30 mm Number of patients randomised: 220	TUMT ($n = 147$) vs sham ($n = 73$) Additional information: at 6 months postoperatively patients unblended and sham-treated patients given choice to receive active treatments; sham was identical to TUMT but without power	Mean age (range) (years): 66.2 (54.4–82.7) Mean AUA score (range): 23.6 (12–35) Mean AUA SI bother score (range): 18.5 (0–28) Mean Q_{max} (range) (ml/s): 7.7 (4.0–11.5) Mean urine flow (ml/s): 4.3 Mean total voided volume (ml): 254 Mean residual volume (range) (ml): 79.7 (0.0–248) Mean prostate size (range) (ml): 48.1 (25.2–96.5) Mean QoL score (0–21) (range): 14.3 (4.0–21.0) Frequency: 915 MHz Temperature: max of 50°C in urethra and 42.5°C in rectum Power: 90 W Intervention performed by physician and assistant Other: Dornier Uroware used; antibiotics at investigators choice; interstitial intraprostatic temperature monitoring	Mean age (range) (years): 66 (55.1–78.1) Mean AUA score (range): 23.9 (13–35) Mean AUA SI bother score (range): 18.6 (0–28) Mean Q_{max} (range) (ml/s): 8.1 (4.0–11.9) Mean urine flow (ml/s): 4.5 Mean total voided volume (ml): 251 Mean residual volume (range) (ml): 67.5 (0.0–241) Mean prostate size (range) (ml): 50.5 (24.9–99.6) Mean QoL score (0–21) (range): 14.4 (2.0–21.0) Intervention performed by physician and assistant Other: sham procedure was identical to TUMT but without power; antibiotics at investigators choice; no interstitial intraprostatic temperature monitoring in sham group	Duration of operation Intraoperative complications Symptom score (AUA) Q_{max} Mean urine flow rate Irritative urinary symptoms Stricture Retrograde ejaculation Erectile dysfunction UTI Retention

TUMT vs sham					
Study details	**Participant characteristics**	**Intervention/ comparator**	**Intervention population characteristics**	**Comparator population characteristics**	**Outcomes**
Zerbib 1994 Study design: RCT Location: France Length follow-up: 3 months	Inclusion criteria: candidates for prostatectomy. All had failed one conservative treatment, e.g. alpha-blockers Exclusion criteria: anterior rectal wall thickness > 10 mm or < 2 mm; anterior to posterior thickness of prostate > 55 mm Number of patients randomised: 68	TUMT ($n = 38$) vs sham ($n = 30$) Additional information: mean age for all patients 69.5 ± 10.44 (53–88)	Mean Q_{max} ± SD (ml/s): 7.6 ± 3.8 Mean total voided volume ± SD (ml): 151 ± 92.0 Mean residual volume ± SD (ml): 110 ± 88.8 Mean prostate size for all patients ± SD (ml): 41.5 ± 15.6 (15–90) Temperature: intraprostatic temperature maintained at 43 ± 0.5°C Other: 1-hour session per week for 5 consecutive weeks	Mean Q_{max} ± SD (ml/s): 10.6 ± 5.8 Mean total voided volume ± SD (ml): 145 ± 86.3 Mean residual volume ± SD (ml): 84.2 ± 76.6 Mean prostate size for all patients ± SD (ml): 41.5 ± 15.6 (15–90) Temperature: intraprostatic temperature maintained at 37 ± 0.5°C by radiofrequency power Other: 1-hour session per week for 5 consecutive weeks	Q_{max} Residual volume

TUNA vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Cimentepe 2003 Study design: RCT Location: Turkey Recruitment dates: May 1999–May 2000 Length follow-up: 18 months	Inclusion criteria: peak urine flow rate < 15 ml/s; IPSS score > 13; prostate weight 20–70 g; LUT symptoms due to BPH; > 40 years Exclusion criteria: previous prostate surgery; suspicion of cancer due to DRE and PSA levels; urethral stricture; bladder neck contracture; bladder stones or tumours; neurogenic bladder; prominent median lobe Number of patients randomised: 59	TUNA ($n = 26$) vs TURP ($n = 33$) Additional information: all patients sexually active. TUNA: temperature ≤ 50°C; maximum 100°C. Anaesthetic: spinal/ epidural for both procedures	Mean age ± SD years 60.1 ± 7.3 Mean IPSS score ± SD: 22.9 ± 3.8 Mean Q_{max} ± SD (ml/s): 9.8 ± 3.6 Mean residual volume ± SD (ml): 67.4 ± 294 Mean QoL score ± SD: 4.8 ± 0.75 Mean prostate size ± SD (g): 46.1 ± 11.2 Frequency: 465 kHz Temperature: ≤ 50°C, maximum 100°C Same urologists for both Antibiotic and analgesic therapy given to both groups postoperatively Catheter duration: 12–24 hours Other: anaesthetic: spinal or epidural	Mean age ± years 63.3 ± 5.9 Mean IPSS symptom score ± SD: 24.1 ± 3.8 Mean Q_{max} ± SD (ml/s): 9.2 ± 3.4 Mean residual volume ± SD (ml): 76.1 ± 50.1 Mean QoL score ± SD: 5.2 ± 0.65 Mean prostate size ± SD (g): 49.1 ± 17.1 Catheter duration: 48–72 hours Other: anaesthetic: spinal or epidural	Symptom score (IPSS) Q_{max} Quality of life Residual volume Prostate size Blood transfusion Incontinence Irritative symptoms Reoperation Stricture Retrograde ejaculation Erectile dysfunction Length of hospital stay

TUNA vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Hill 2004 Study design: RCT Location: USA Recruitment dates: November 1994–July 1995 Length follow-up: 12 months Links with: Bruskewitz 1998; Roehrborn 1999; Naslund 1997,1999 (abstracts)	Inclusion criteria: peak urine flow rate < 12 ml/s; AUA > 12; residual urine ≤ 350 ml; voided volume ≥ 125 ml; BPH with LUT symptom for > 3 months; prostate 20–100 g; > 50 years Exclusion criteria: prostate cancer (by biopsy); therapy affecting prostate physiology; urinary retention; UTI; compromised renal function; abnormal DRE; PSA > 10 ng/ml; significant prostate median lobe; medical conditions posing risk for these procedures Number of eligible patients: 121 Number of patients randomised: 121	TUNA ($n = 65$) vs TURP ($n = 56$)	Mean age ± SD or SE (years): 66 ± 1 Mean AUA score ± SD or SE: 23.9 ± 0.8 Mean Q_{max} ± SD or SE (ml/s): 8.8 ± 0.3 Mean residual volume ± SD or SE (ml): 91.8 ± 10.0 Mean QoL score ± SD or SE: 12.8 ± 0.5 Mean prostate size ± SD or SE (ml): 36.2 ± 1.5 (TRUS) Frequency: 460 kHz Power: 2–15 W for 5 minutes/ lesion; coagulation mode: 40–70 W Temperature: minimum of 50°C after 4 minutes; 100°C at needle tip. Temperature maintained for a minimum of 1 minute Catheter protocol: not usually left in; 40% had catheter 24–48 hours Antibiotics: broad-spectrum before treatment; postoperative antibiotics and oral anti-inflammatories	Mean age ± SD or SE (years): 66 ± 1 Mean AUA score ± SD or SE: 24.1 ± 0.8 Mean Q_{max} ± SD or SE (ml/s): 8.8 ± 0.3 Mean residual volume ± SD or SE (ml): 82.6 ± 9.5 Mean QoL score ± SD or SE: 12.8 ± 0.5 Mean prostate size ± SD or SE (ml): 35.7 ± 1.9 (TRUS) Catheter protocol: indwelling catheter for 24–48 hours Intervention performed by one urologist at each centre (minimum of 100 operations) Other: general or spinal anaesthesia	Blood transfusion Catheter duration Symptom score (AUA) Quality of life score Q_{max} Residual volume Prostate size Intraoperative complications UTI Stricture Incontinence Retrograde ejaculation Erectile dysfunction Length of hospital stay

continued

TUNA vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
			Other: anaesthesia: 2% lidocaine jelly intraurethrally for 10 minutes preoperatively or oral or intravenous sedation; 7% required spinal or general anaesthesia		
Hindley 2001 Study design: RCT Location: UK Length follow-up: 2 years Links with: Mostafid 1997	Inclusion criteria: age > 50 years; confirmed BOO due to BPH with fall in $PdetQ_{max}$ within obstructed area of Abrams–Griffiths nomogram; IPSS score > 13; residual urine volume ≤250 ml measured by US; IPSS QoL ≥3; written informed consent Exclusion criteria: previous illness/ surgery that might confound results of the study or pose additional risk to patient; confirmed or suspected malignancy of prostate by DRE or biopsy; PSA > 4 ng/ml unless cancer excluded by biopsy; previous prostatic surgery or thermotherapy; pharmacological treatment for BPH in last 6 months; confirmed or suspected bladder cancer; previous rectal surgery other than haemorrhoidectomy; previous pelvic irradiation; history of cystolithiasis, haematuria or bladder pathology, urethral strictures, bladder neck contracture, active UTI or prostatitis; previous history of neurogenic disorder including Parkinson's disease, multiple sclerosis, stroke and diabetic neuropathy; patients wishing to maintain potential fertility; PVR > 250 ml; (measured by US); compromised renal function with serum creatinine > 180 mg/l or radiological evidence of UT dilatation; inability to provide at least one voided volume of > 150 ml; inability to give informed consent Number of patients randomised: 50	TUNA ($n = 25$) vs TURP ($n = 25$)	Median age (IQR) (years): 66 (56–82) Median IPSS score (IQR): 20 (15–23) Mean $Q_{max} \pm$SD (ml): 8.5±3.7 Mean residual volume±SD (ml): 55±44 Mean $Pdet_{max} \pm$SD (cmH_2O): 92±12 Power: 10 W coagulation for 3 minutes Catheter protocol: after treatment, catheterised and allowed home on first postoperative day; catheter removed 7 days postoperatively Other: 7Fr RF needle electrode inserted into lateral prostate lobes with a catheterising endoscope; gentamicin (120 mg intravenously)	Median age (IQR) (years): 71 (56–88) Median IPSS score (IQR): 22 (18–25) Mean $Q_{max} \pm$SD (ml): 9.0±3.6 Mean residual volume±SD (ml): 74±53 Mean $Pdet_{max} \pm$SD (cmH_2O): 99±10 Intervention performed by experienced surgeon Catheter protocol: a 22Fr three-way urethral catheter inserted for bladder irrigation Other: standard procedure; gentamicin (120 mg intravenously); allowed home after successful voiding	Symptom score (IPSS) Quality of life Residual volume Detrusor pressure Q_{max} Blood transfusion UTI Clot retention Mortality Incontinence Irritative urinary symptoms Reoperation

TUNA vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Kim 2006a Study design: RCT Location: Korea Recruitment dates: January 1998–December 2002 Length follow-up: 12 months	Inclusion criteria: patients with symptomatic BPE Number of eligible patients: 235 Number of patients randomised: 220	TUNA (n = 110) vs TURP (n = 110)	Mean or median age (range) (years): 66.4 (48–80) Mean or median IPSS score: 20.8 Mean or median Q_{max} (ml/s): 7.0 Mean or median residual volume (ml): 257 Mean or median prostate size (ml): 40.6 Mean or median QoL score: 4.3 Other: VidaMed TUNA® system (VidaMed Inc.)	Mean or median age (range) (years): 67.4 (60–87) Mean or median IPSS score: 24.0 Mean or median Q_{max} (ml/s): 11.9 Mean or median residual volume (ml): 187 Mean or median prostate size (ml): 44.2 Mean or median QoL score: 4.7	Duration of operation Blood transfusion UTI Recatheterisation Incontinence Stricture Retrograde ejaculation Erectile dysfunction Reoperation Symptom score (IPSS) Quality of life Length of hospital stay Q_{max} Residual volume Prostate size

Stents vs TURP					
Study details	**Participant characteristics**	**Intervention/ comparator**	**Intervention population characteristics**	**Comparator population characteristics**	**Outcomes**
Chapple 1995 Study design: RCT (abstract) Location: UK Length follow-up: 3 months	Inclusion criteria: patients with obstructive BPH; symptomatic patients with urodynamic evidence of bladder outflow obstruction Number of patients randomised: 60	Stents ($n = 34$) vs TURP ($n = 26$)	Mean age (range) (years): 73 (65–90) Mean IPSS score: 19 ($n = 27$) Mean peak urine flow ± SD or SE (ml/s): 8.4 ± 0.5 ($n = 20$)	Mean age (range) (years): 72.6 (63–86) Mean IPSS score: 21.6 ($n = 20$) Mean peak urine flow ± SD or SE (ml/s): 8.0 ± 0.6 ($n = 14$)	Duration of operation Reoperation Symptom score (IPSS) Length of hospital stay Peak urine flow rate

TEAP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Kim 2006a Study design: RCT Location: Korea Recruitment dates: January 1998–December 2002 Length follow-up: 12 months	Inclusion criteria: patients with symptomatic BPE Number of eligible patients: 223 Number of patients randomised: 204	TEAP ($n = 94$) vs TURP ($n = 110$)	Mean or median age (range) (years): 66.2 (49–88) Mean or median IPSS score: 19.5 Mean or median Q_{max} (ml/s): 7.2 Mean or median residual volume (ml): 126.1 Mean or median prostate size (ml): 36.4 Mean or median QoL score: 4.4 Other: Prostajec™ device (American Medical Systems, Minnetonka, MN, USA)	Mean or median age (range) (years): 67.4 (60–87) Mean or median IPSS score: 24.0 Mean or median Q_{max} (ml/s): 11.9 Mean or median residual volume (ml): 187 Mean or median prostate size (ml): 44.2 Mean or median QoL score: 4.7	Duration of operation Blood transfusion UTI Recatheterisation Incontinence Stricture Retrograde ejaculation Erectile dysfunction Reoperation Symptom score (IPSS) Quality of life Length of hospital stay Q_{max} Residual volume Prostate size

Laser coagulation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Chacko 2001 CLasP study Study design: RCT Location: UK Length follow-up: 7.5 months	Inclusion criteria: acute painful urinary retention Exclusion criteria: prostate cancer or surgery; prostate size > 120 ml; life expectancy < 6 months; urinary retention associated with recent operation, constipation, neurogenic bladder dysfunction; drugs; serum creatinine > 250 µmol/l Number of eligible patients: 155 Number of patients randomised: 148	Laser coagulation ($n = 74$) vs TURP ($n = 74$)	Mean age ± SD (years): 74.2 ± 7.9 Mean IPSS score ± SD: 20.3 ± 9.3 Ethnicity (% white): 97.3 Median IPSS QoL score (IQR): 5 (4–6) Power: 30 W KTP; 60 W Nd:YAG for 60 seconds; depends on prostate size Energy: 33.93 kJ Catheter protocol: suprapubic voiding trial 1–2 weeks after discharge Other: anti-inflammatory suppository given; procedure: Nd:YAG/non-contact VLAP, side-firing fibre	Mean age ± SD (years): 72.7 ± 7.3 Mean IPSS score ± SD: 19.4 ± 7.6 Ethnicity (% white): 97.3 Median IPSS QoL score (IQR): 5 (4–6) Catheter protocol: suprapubic; duration depends on success of voiding after urine is clear Other: anti-inflammatory suppository given; procedure: standard electroresection	Blood transfusion Catheter duration Quality of life Length of hospital stay Reoperation TUR syndrome Cardiovascular events Intraoperative complications Septicaemia Mortality Incontinence

Laser coagulation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Costello 1995 Study design: RCT Location: Australia Length follow-up: 6 months	Inclusion criteria: candidates for TURP from documented prostatism Exclusion criteria: < 50 years; anticoagulant therapy; prostate cancer; chronic urinary retention Number of patients randomised: 71	Laser coagulation ($n = 34$) vs TURP ($n = 37$)	Mean age (range) (years): 67.9 (55–88) Mean Q_{max} (ml/s): 8.76 Mean prostate volume (range) (ml): 30.0 (13.9–77) (TRUS) Number sexually active: 16/34 (47%) Power: 60 W for 60 seconds; 21.7 kJ (9.7–33.9 kJ) Catheter protocol: two-way non-irrigating catheter Other: Nd:YAG; preoperative TRUS-guided six-sector biopsies; cephalosporin (500 mg) perioperatively	Mean age (range) (years): 68.2 (50–84) Mean Q_{max} (ml/s): 9.48 Mean prostate volume (range) (ml): 38.9 (12–70) (TRUS) Number sexually active: 11/37 (30%) Catheter protocol: 22Fr three-way catheter Other: conventional with 24Fr resectoscope and glycine irrigation; cephalosporin (500 mg) perioperatively; saline irrigation for 12–24 hours	Symptom score (AUA) Q_{max} MUF Residual volume Blood transfusion UTI Incontinence Stricture Retrograde ejaculation Reoperation Erectile dysfunction Length of hospital stay

Laser coagulation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Cowles 1995 Study design: RCT Location: US Recruitment dates: August 1991–June 1992 Length follow-up: 12 months	Inclusion criteria: candidates for surgical treatment for BOO from BPH Exclusion criteria: < 50 years; life expectancy < 6 months; prostate cancer; hormonal therapy; alpha-blockers; finasteride; physical status exceeding category III of American Society of Anesthesiologists; bladder neck to verumontanum < 2.4 cm; recent MI; coagulopathy; recent stroke; sepsis; clinically significant illnesses Number of patients randomised: 115	Laser coagulation ($n = 56$) vs TURP ($n = 59$)	Mean age±SD (range) (years): 65.8±6.7 (51–84) Mean AUA-6 score±SD (range): 18.7±6.0 (6–29) Mean Q_{max}±SD (range) (ml/s): 8.9±3.6 (2–18.1) Mean total voided volume±SD (range) (ml): 206.7±181.9 (2–800) Mean prostate volume±SD (range) (ml): 42.2±19.0 (7.7–93.9) Energy: mean 10.2 kJ (5.76–11.5); dependent on prostate size Power: 40 W Other: previous BPH 9/56 (16/1%); Nd:YAG laser (Trimedyne, CA) directed with Urolase™ fibre, 5.5±2.1 laser applications; general or regional anaesthesia	Mean age±SD (range) (years): 67±7.8 (50–83) Mean AUA-6 score±SD (range): 20.8±4.8 (7–30) Mean Q_{max}±SD (range) (ml/s): 9.5±5.2 (3–37.4) Mean total voided volume±SD (range) (ml): 206.7±181.9 (2–800) Mean prostate volume±SD (range) (ml): 38.6±20.2 (11.2–108.2) Other: previous BPH 17/59 (28.8%); standard prostate resection using wire loop electrocautery instruments under direct vision; general or regional anaesthesia	Symptom score (AUA-6) Quality of life Q_{max} Residual volume Length of hospital stay Blood transfusion UTI Urinary retention Clot retention Cardiovascular events Incontinence Stricture Erectile dysfunction Reoperation TUR syndrome

Laser coagulation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Donovan 2000 CLasP study Study design: RCT Location: UK Length follow-up: 7.5 months Links with: Brooks 2002; Donovan 1998 (abstract)	Inclusion criteria: LUT symptoms associated with BPH; urine flow rate < 15 ml/s but related to voided volume; IPSS ≥8. Exclusion criteria: prostate cancer; prostate size > 120 ml; life expectancy < 6 months; neurogenic bladder dysfunction; drugs; serum creatinine > 250 µmol/l Number of patients randomised: 340	Laser coagulation (n = 117) vs TURP (n = 117)	Mean age±SD (years): 67.4±8.1 Mean IPSS score±SD: 19.1±6.6 Mean Q_{max}±SD (ml/s): 10.4±2.9 Mean residual volume±SD (ml): 123.7±91.8 Mean prostate size±SD (ml): 40.7±21.4 Median IPSS QoL score (range): 5 (2–6) Number of patients obstructed: 90/115 (78.3%) Energy: mean total energy delivered 28.7 kJ Power: 40 W Other: Nd:YAG/non-contact VLAP, side-firing fibre	Mean age±SD (years): 66.4±7.9 Mean IPSS score±SD: 19.2±6.7 Mean Q_{max}±SD (ml/s): 10.3±2.7 Mean residual volume±SD (ml): 104.2±69.5 Mean prostate size±SD (ml): 38.1±19.1 Median IPSS QoL score (range): 4 (0–6) Number of patients obstructed: 91/116 (78.4%) Other: standard electroresection; anti-inflammatory suppository given	Symptom score (IPSS) Quality of life Q_{max} Residual volume Blood transfusion UTI Catheter duration Mortality Septicaemia Length of hospital stay

Laser coagulation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Gujral 2000 CLasP study Study design: RCT Location: UK Length follow-up: 7.5 months	Inclusion criteria: LUT symptoms associated with BPH with chronic retention; urine flow rate < 15 ml/s but related to voided volume; IPSS ≥8; residual urine volume ≥3000 on US Exclusion criteria: prostate cancer; previous prostate surgery; prostate size > 120 ml; long-term drugs affecting LUT; serum creatinine > 250 µmol/l; abnormal upper UT on renal tract US Number of eligible patients: 72 Number of patients randomised: 72	Laser coagulation ($n = 38$) vs TURP ($n = 44$) Additional information: all in chronic retention	Mean age±SD (years): 70.2±6.8 Ethnicity: all white males Mean IPSS score±SD: 120.9±6.4 Mean Q_{max}±SD (ml/s): 11.2±5.3 Mean residual volume±SD (ml): 438±151 Mean prostate size±SD (ml): 40.7±19.9 Median IPSS QoL score (range): 5.0±2.6 Mean energy: 33.8 kJ Power: median lobe 30 seconds at 60 W to each side Other: Nd:YAG source via Urolase™ (Bard, GA) right-angle laser fibre using standard fixed-spot technique; laser duration depends on prostate length; NSAIDs and prophylactic antibiotics given	Mean age±SD (years): 70.6±5.8 Mean IPSS score±SD: 19.5±7.2 Mean Q_{max}±SD (ml/s): 8.5±3.6 Mean residual volume±SD (ml): 545±275 Mean prostate size±SD (ml): 49.7±21.8 Median IPSS QoL score (range): 4.5±2.6 Other: standard electroresection; NSAIDs and prophylactic antibiotics given	Intraoperative complications Blood transfusion UTI Catheter duration Mortality Septicaemia Reoperation Length of hospital stay Symptom score (IPSS) Q_{max} Residual volume

Laser coagulation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Kabalin 1995 Study design: RCT Location: USA Length follow-up: 18 months Links with: Kabalin 1993	Inclusion criteria: symptomatic BOO due to BPH or patients request for surgery; urine flow rate < 15 ml/s; age > 50 years Exclusion criteria: prostate cancer or suspicion of; severe medical problems; coagulant disorder requiring anticoagulants; ASA class 4 or 5 Number of patients randomised: 25	Laser coagulation ($n = 13$) vs TURP ($n = 12$)	Mean age (years): 65 Mean AUA score±SE: 20.9±1.9 Mean Q_{max}±SE (ml/s): 8.5±1.1 Mean residual volume±SE (ml): 236±74 Mean prostate size (range) (g): 24 (15–45), $p < 0.02$ Mean $Pdet_{max}$±SE (cmH_2O): 91.3±5.2 Mean energy: 11.5 kJ (7.2–19.2) Power: 40 W Catheter protocol: Foley catheter with no postoperative irrigation; 18Fr 5-ml balloon Foley urethral catheter Other: Nd:YAG continuous-firing laser fibre; direct vision under 21Fr Storz parendoscope; Urolase right-angle firing; urinary retention: one patient	Mean age (years): 69 Mean AUA score±SE: 18.8±1.8 Mean Q_{max}±SE (ml/s): 9.0±1.1 Mean residual volume±SE (ml): 291±8.8 Mean prostate size (range) (g): 17 (10–30) Mean $Pdet_{max}$±SE (cmH_2O): 92.3±3.4 Catheter protocol: three-way Foley catheter left for ≥24 hours postoperatively Other: standard TURP electroresection with 26Fr Storz or 28Fr continuous flow resectoscope; gentamicin 3 days perioperatively; postoperative bladder irrigation; urinary retention: one patient	Duration of operation Symptom score (AUA) Global (patient) assessment Q_{max} Residual volume Detrusor pressure Prostate size Blood transfusion Catheter duration Mortality TUR syndrome Stricture Retrograde ejaculation Erectile dysfunction Reoperation

Laser coagulation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Kim 2006a Study design: RCT Location: Korea Recruitment dates: January 1998–December 2002 Length follow-up: 12 months	Inclusion criteria: patients with symptomatic BPE Number of eligible patients: 212 Number of patients randomised: 199	Laser coagulation ($n = 89$) vs TURP ($n = 110$)	Mean or median age (range) (years): 68.7 (50–89) Mean or median IPSS score: 21.1 Mean or median Q_{max} (ml/s): 8.6 Mean or median residual volume (ml): 219 Mean or median prostate size (ml): 42.7 Mean or median QoL score: 4.7 Other: procedure: Indigo 830e™ laser optic system (Ethicon Endosurgery)	Mean or median age (range) (years): 67.4 (60–87) Mean or median IPSS score: 24.0 Mean or median Q_{max} (ml/s): 11.9 Mean or median residual volume (ml): 187 Mean or median prostate size (ml): 44.2 Mean or median QoL score: 4.7	Duration of operation Blood transfusion UTI Recatheterisation Incontinence Stricture Retrograde ejaculation Erectile dysfunction Reoperation Symptom score (IPSS) Quality of life Length of hospital stay Q_{max} Residual volume Prostate size

Laser coagulation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Kursh 2003 Study design: RCT Location: USA (multicentre) Recruitment dates: November 1997–February 1999 Length follow-up: 24 months	Inclusion criteria: urine flow rate < 15 ml/s; prostatic length of 15 mm or more; residual urine 30–300 ml; AUA ≥ 13 Exclusion criteria: prostate cancer or suspected by DRE or PSA level > 4 ng/ml, excluded by biopsy; urinary retention; prostate < 75 ml; any condition/surgery/history of illness that (in the opinion of the investigator) might pose additional risk to the patient, e.g. unstable angina, significant renal impairment (creatinine > 1.8 mg/dl) or poorly controlled diabetes mellitus; acute urinary retention; cystolithiasis; neurogenic bladder; bladder neck contracture; anticholinergic medications, finasteride or phytotherapy within 1 month of enrolment; terazosin, doxazosin, tamsulosin within 14 days of enrolment Number of eligible patients: 73 Number of patients randomised: 72	Laser coagulation ($n = 37$) vs TURP ($n = 35$)	Mean age (range) (years): 67.6 (50–81) Ethnicity: 30 white (81%); 5 Asian (14%) 2 African American (5%) Median AUA score: 24 Median Q_{max} (ml/s): 9.2 ($n = 35$) Median residual volume (ml): 81.0 Median prostate size (ml): 41.5 Median QoL score: 11.0 Median sexual function score: 18.0 Problems from Symptom Index score (0–28): 17 Power: 20W Catheter protocol: catheter for 1 week. Other: procedure: interstitial laser coagulation, Indigo 830e (830 nm); general, topical or spinal anaesthesia; prophylactic antibiotics	Mean age (range) (years): 69.3 (50–81) Ethnicity: 29 white (83%); 6 Asian (17%) Median AUA score: 23 Median Q_{max} (ml/s): 9.1 Median residual volume (ml): 87.5 Median prostate size (ml): 40.0 Median QoL score: 11.0 Median sexual function score: 17.0 Problems from Symptom Index score (0–28): 19 Catheter protocol: catheter 1 day postoperatively before discharge Other: procedure: standard radiofrequency monopolar loop procedure; general or spinal anaesthesia; prophylactic antibiotics	Symptom score (AUA) Quality of life Sexual function Length of hospital stay Q_{max} Residual volume Prostate size Blood transfusion UTI Mortality Incontinence Reoperation Incontinence

Laser coagulation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Liedberg 2003 Study design: RCT Location: Sweden Recruitment dates: December 1997–February 2000 Length follow-up: 12 months	Inclusion criteria: urine flow rate < 15 ml/s but related to voided volume; IPSS ≥ 12 Exclusion criteria: prostate cancer; indwelling urinary catheter or suspicion of neurogenic bladder disturbance Number of eligible patients: 38 Number of patients randomised: 31	Laser coagulation ($n = 20$) vs TURP ($n = 11$)	Median IPSS score (IQR): 17 (17–24) Median Q_{max} (IQR) (ml/s): 8 (7–10) Median residual volume (IQR) (ml): 96 (64–190) Median prostate volume (IQR) (ml): 49 (41–61) Power: 20 W Temperature: target temperature 85°C for 3 minutes at each site Catheter duration: catheter for 1 week; removed when PVR < 150 ml Other: procedure: interstitial laser coagulation, Indigo 830e (830nm); general or spinal anaesthesia; norfloxacin (400 mg) while suprapubic tube in situ	Median IPSS score (IQR): 17 (17–24) Median Q_{max} (IQR) (ml/s): 8 (6–9) Median residual volume (IQR) (ml): 117 (67–200) Median prostate volume (IQR) (ml): 47 (37–61) Other: procedure: complete circumferential resection to prostatic capsule	IPSS score Q_{max} Residual volume Prostate volume Catheter duration Length of hospital stay Intraoperative complications UTI Stricture Retrograde ejaculation

Laser coagulation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Mårtenson 1999 Study design: RCT Location: Netherlands Recruitment dates: October 1994–April 1996 Length follow-up: 12 months	Inclusion criteria: Q_{max} < 15 ml/s; residual volume < 350 ml; age > 45; IPSS > 12 for > 3 months Exclusion criteria: prostate cancer; prostate size < 25 ml; urethral stricture; neurogenic bladder dysfunction; diabetes mellitus; UTI; bacterial prostatitis; use of drugs influencing bladder function Number of patients randomised: 44	Laser coagulation (n = 30) vs TURP (n = 14)	Mean IPSS score±SD: 21.7±6.1 Mean Q_{max}±SD (ml/s): 7.3±3.8 Mean total voided volume±SD (ml): 185±84 Mean residual volume±SD (ml): 116±146 Mean prostrate size±SD (ml): 46±20 Mean QoL index±SD: 4.1±1.4 Normal erectile function (%): 92% Intervention performed by one of the authors using video imaging technique Power: 10 W gradually reduced to 5 W Temperature: 85°C Catheter protocol: yes; catheter removed when adequate voiding demonstrated at one of scheduled follow-up visits (1–2 or 4 weeks)	Mean IPSS score±SD: 21.6±7.7 Mean Q_{max}±SD (ml/s): 9.3±3.2 Mean total voided volume±SD (ml): 230±107 Mean residual volume±SD (ml): 88±126 Mean prostrate size±SD (ml): 50±16 Mean QoL index±SD: 4.0±1.3 Normal erectile function: 89% Intervention performed by one of the authors using video imaging technique Catheter protocol: yes; catheter removed according to individual's needs Other: perioperative prophylaxis with co-trimoxazole–Sulfatrim for 7 days (960 mg twice a day)	IPSS score Quality of life index Q_{max} Total voided volume Residual volume Prostate size URA value Linn-PURR grade Blood transfusion UTI Catheter duration Clot retention Recatheterisation Irritative voiding complaints Transient haematuria Incontinence Reoperation rate

Laser coagulation vs TURP					
Study details	**Participant characteristics**	**Intervention/ comparator**	**Intervention population characteristics**	**Comparator population characteristics**	**Outcomes**
		Other: procedure: diode laser system (Indigo 830, Indigo Medical, USA); perioperative prophylaxis with co-trimoxazole–Sulfatrim® for 7 days (960 mg twice a day)			
McAllister 2000 Study design: RCT Location: UK Recruitment dates: March 1992 Length follow-up: 5 years Links with: Anson 1995	Inclusion criteria: suitable candidates for TURP; ASA class 1–3; urinary flow rates consistent with BOO; prostatic urethral length > 2.4 cm Exclusion criteria: prostate cancer by DRE; ASA class > 3; age ≤ 50; inability to provide informed consent; known history or suspicion of prostate carcinoma; renal impairment; life expectancy < 6 months; precluded from study by medications, e.g. anticoagulants Number of eligible patients: 151 Number of patients randomised: 151	Laser coagulation ($n = 76$) vs TURP ($n = 75$)	Mean age (95% CI) (years): 67.9 (66.3–69.5) AUA score (95% CI): 18.1 (17.1–19.1) Mean Q_{max} (95% CI) (ml/s): 9.6 (8.8–10.4) Total voided volume (95% CI) (ml): 234.1 (211.5–256.7) Residual volume (95% CI) (ml): 113 (91.4–134.6) Number sexually active: 27/76 Power: 60 W Catheter protocol: left at the discretion of the individual consultant; some received suprapubic catheter, others received urethral catheter Preprocedural antibiotics: yes Other: Nd:YAG laser energy	Mean age (95% CI) (years): 68.3 (66.5–70.1) AUA score (95% CI): 18.2 (17.1–19.3) Mean Q_{max} (95% CI) (ml/s): 10.0 (9.1–10.9) Total voided volume (95% CI) (ml): 234.3 (208.2–260.4) Residual volume (95% CI) (ml): 120.7 (93.0–148.4) Number sexually active: 24/75 Intervention performed by experienced consultant Catheter protocol: left at the discretion of the individual consultant; some received suprapubic catheter, others received urethral catheter Preprocedural antibiotics: yes	AUA score Q_{max} Residual volume Secondary haemorrhage Blood transfusion UTI Catheter duration Clot retention Cardiovascular events Reoperation rate Retrograde ejaculation Length of hospital stay

Laser coagulation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Rodrigo Aliaga 1998 Study design: RCT Location: Spain Length follow-up: 6 months	Inclusion criteria: patients with BPH; prostate size 20–60 g; symptom score ≤ 12 ml/s; IPSS score ≥ 15 Exclusion criteria: age < 50 years Number of patients randomised: 39	Laser coagulation ($n = 18$) vs TURP ($n = 21$) Additional information: patients left hospital 24–72 hours postoperatively if no complications	Mean IPSS score±SD: 24.2±7.7 Mean Q_{max}±SD (ml/s): 8.3±4.5 Mean residual volume±SD (ml): 89±92 Intervention performed by two surgeons who were different from those who performed the TURP procedure Catheter protocol: yes	Mean IPSS score±SD: 25.5±10.1 Mean Q_{max}±SD (ml/s): 7.0±8.1 Mean residual volume±SD (ml): 77±63 Intervention performed by two surgeons who were different from those who performed the laser procedure Catheter protocol: yes	Blood transfusion Irritative symptoms Retrograde ejaculation Quality of life Reoperation Symptom score (IPSS) Length of hospital stay Catheter duration Q_{max} Residual volume
Suvakovic 1996 Study design: RCT Location: UK Length follow-up: 12 months	Inclusion criteria: symptomatic BPH; Q_{max} < 15 ml/s for voided volume of ≥ 150 ml; age > 50; PSA level > 2.5 ng/ml; prostate volume < 40 ml; AUA > 15; prostate urethral length > 4 cm Exclusion criteria: prostate cancer Number of eligible patients: 20 Number of patients randomised: 20	Laser coagulation ($n = 10$) vs TURP ($n = 10$)	Mean age±SD (years): 67.5±8.7 Mean AUA score±SD: 15.7±5.1 Mean Q_{max}±SD (ml/s): 10.5±3.7 Mean residual volume±SD (ml): 47.4±48.1 Mean prostate size±SD (g): 23.6±6.4 Power: 60 W Catheter protocol: catheter for 24 hours Other: procedure: side-firing Nd:YAG laser; prophylactic antibiotics	Mean age±SD (years): 66.1±5.1 Mean AUA score±SD: 18.0±6.0 Mean Q_{max}±SD (ml/s): 11.1±6.4 Mean residual volume±SD (ml): 161.8±104 Mean prostate size±SD (g): 22±5 Catheter protocol: catheter for 48 hours Other: prophylactic antibiotics	Symptom score (AUA) Q_{max} Residual volume Duration of operation Catheter duration Retention Length of hospital stay

TUIP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Rodrigo Aliaga 1998 Study design: RCT Location: Spain Length follow-up: 6 months	Inclusion criteria: patients with BPH; prostate size 20–60 g; symptom score ≤ 12 ml/s; IPSS score ≥ 15 Exclusion criteria: age < 50 years Number of patients randomised: 31	TUIP ($n = 20$) vs TURP ($n = 21$) Additional information: patients left hospital 24–72 hours postoperatively if no complications	Mean IPSS score ± SD: 24.2 ± 7.7 Mean Q_{max} ± SD (ml/s): 8.7 ± 5.5 Mean residual volume ± SD (ml): 89 ± 92	Mean IPSS score ± SD: 24.4 ± 10.3 Mean Q_{max} ± SD (ml/s): 8.3 ± 4.5 Mean residual volume ± SD (ml): 146 ± 133	Blood transfusion Irritative symptoms Retrograde ejaculation Quality of life score (WHO) Reoperations Symptom score (IPSS) Length of hospital stay Catheter duration Q_{max} Residual volume

TUIP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Christensen 1990 Study design: RCT Location: US Recruitment dates: February 1985–August 1989 Length follow-up: 48 months Links with: Aagaard 1990 (abstract)	Inclusion criteria: BPH with LUT symptoms Exclusion criteria: prostate size > 20 g; previous prostatic or pelvic surgery; suspected prostate cancer; median lobe > 2 g; prostatic urethra > 3 cm; surgical or anaesthetic risk; overt neurological or psychiatric disease; UTI or urethral stricture excluded until condition had been corrected Number of eligible patients: 93 Number of patients randomised: 76	TUIP ($n = 38$) vs TURP ($n = 38$)	Median age (range) (years): 63 (51–77) Median symptom score (range): 16 (8–23) Median Q_{max} (range): 7.8 (2.8–28) Catheter protocol: 24Fr three-way catheter to closed drainage system, irrigation with normal saline; removed when urine was clear Other: guiding finger in rectum, Collings knife used for deep incision through interureteric ridge and bladder neck to verumontanum at 6 o'clock position	Median age (range) (years): 62 (42–78) Median symptom score (range): 16 (7–23) Median Q_{max} (range): 9.7 (1.7–29.4) Catheter protocol: 24Fr three-way catheter to closed drainage system, irrigation with normal saline; removed when urine was clear Other: complete resection, circumferentially the anatomic capsule from bladder neck to verumontanum; resected tissue examined histologically	Symptom scores Q_{max} Intraoperative complications Retrograde ejaculation Erectile dysfunction Length of hospital stay Mortality

TUIP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Dørflinger 1992 Study design: RCT Location: Denmark Length follow-up: 12 months	Inclusion criteria: bladder neck to seminal crest < 2 cm Exclusion criteria: prostatic cancer; previous prostatic or major pelvic surgery; high operative risk or overt neurological or psychiatric disease; patients with urethral stricture; prostate size > 20 g Number of patients randomised: 60	TUIP ($n = 29$) vs TURP ($n = 31$)	Median age (years): 69 Median Madsen score: 15 Median Q_{max} (ml/s): 10 Median total voided volume (ml): 200 Other: urinary retention, 9 (31%); 24Fr resectoscope and Collings knife used	Median age (years): 71 Median Madsen score: 15 Median Q_{max} (ml/s): 8 Median total voided volume (ml): 176 Other: urinary retention, 5 (16%); 24Fr resectoscope used and prostatic tissue resected in a standard fashion	Duration of operation Blood transfusion Catheter duration Reoperation rate Symptom score (Madsen) Q_{max} Total voided volume Length of hospital stay

TUIP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Hellström 1986 Study design: RCT Location: Finland Length follow-up: 6 months	Exclusion criteria: prostate size > 30 g Number of patients randomised: 24	TUIP ($n = 11$) vs TURP ($n = 13$)	Mean age ± SD (range) (years): 63 ± 7.04 (54–77) Mean Q_{max} ± SD (range) (ml/s): 8.6 ± 4.5 (2–16) Mean residual volume ± SD (range) (ml): 62 ± 74.5 (5–230) based on 9 participants Mean detrusor pressure ± SD (range) (cmH_2O): 35 ± 18.8 (7–68) Intervention performed by authors Catheter protocol: yes, 3 days Other: mean amount of prostatic tissue removed (range) (g): 0	Mean age ± SD (range) (years): 59 ± 2.92 (54–63) Mean Q_{max} ± SD (range) (ml/s): 7.5 ± 3.8 (1–14) Mean residual volume ± SD (range) (ml): 43 ± 49.6 (0–145) based on 12 participants Mean detrusor pressure ± SD (range) (cmH_2O): 58 ± 34.1 (14–149) Intervention performed by authors Catheter protocol: yes, 3 days Other: mean amount of prostatic tissue removed (range) (g): 7.9 (4.9–14)	Duration of operation Blood transfusion Stricture Retrograde ejaculation Length of hospital stay Q_{max} Residual volume Detrusor pressure

TUIP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Jahnson 1998 Study design: RCT Location: Sweden Recruitment dates: February–September 1991 Length follow-up (range): 2–60 months	Inclusion criteria: patients admitted from the waiting list for surgical treatment of BPH; no previous treatment for BPH; prostate weight at DRE 20–40 g; distance from verumontanum to bladder neck < 4 cm; informed consent obtained from the patient Exclusion criteria: bladder stone; bladder cancer; prostatitis; chronic cystitis; clinical prostatic cancer; prominent median lobe of the prostate; adequate follow-up difficult for geographical, psychological or social reasons Number of patients randomised: 85	TUIP ($n = 43$) vs TURP ($n = 42$)	Mean age (range) (years): 70.2 (52–87) Mean Madsen–Iversen score (range): 15.4 (6–27) Mean Q_{max} (95%CI): 9 (7.5–11) Mean residual volume (range) (ml): 139 (0–650) Catheter protocol: overnight Other: perioperative heparin, 13; mean resection weight (range (g): 18.8 (8–45); antibiotics, 17	Mean age (range) (years): 70.8 (56–85) Mean Madsen–Iversen score (range): 15.8 (5–28) Mean Q_{max} (95%CI): 8.5 (7.5–9.5) Mean residual volume (range) (ml): 109 (0–400) Catheter protocol: overnight Other: perioperative heparin, 17; antibiotics, 14	Duration of operation Intraoperative complications Blood transfusion Catheter duration Reoperation rate Symptom score (Madsen) Q_{max} Residual volume

TUIP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Li 1987 Study design: RCT Location: China (Hong Kong) Length follow-up: 3 months	Inclusion criteria: patients catheterised for retention; prostate size ≤30 g Exclusion criteria: renal impairment; ischaemic heart disease; stroke; diabetes mellitus Number of patients randomised: 59	TUIP ($n = 29$) vs TURP ($n = 30$)	Mean age ± SE (years): 65 ± 1.4 Catheter protocol: yes, three-way catheter removed on days 2–3 Preprocedural antibiotics: gentamicin (1 mg/kg) for 1 day preoperatively	Mean age ± SE (years): 70 ± 1.7 Catheter protocol: yes, three-way catheter removed on days 2–3 Preprocedural antibiotics: gentamicin (1 mg/kg) for 1 day preoperatively	Duration of operation Intraoperative complications Blood transfusion Recatheterisation Clot retention TUR syndrome Cardiovascular events Mortality Incontinence Septicaemia Stricture UTI Retention Length of hospital stay Q_{max}

TUIP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Nielsen 1998 Study design: RCT Location: Denmark Length follow-up: 2 and 12 months	Inclusion criteria: patients with BPH aged 60; informed consent obtained from the patient Number of patients randomised: 49	TUIP ($n = 24$) vs TURP ($n = 25$)	Median age (range) (years): 69 (60–85) Prostate weight (g): < 30 = 3 patients; 30–50 = 14 patients; > 50 = 7 patients Median Q_{max} (range) (ml/s): 5 (5–10) Catheter protocol: yes, as long as the urine became clear Other: acute retention: 8/24	Median age (range) (years): 73 (61–83) Prostate weight (g): <30 = 7 patients; 30–50 = 14 patients; >50 = 4 patients Median Q_{max} (range) (ml/s): 5 (5–13) Catheter protocol: yes, as long as the urine became clear Other: acute retention: 7/25	Duration of operation Blood transfusion Catheter duration Septicaemia Urine flow rate Incontinence Length of hospital stay
Riehmann 1995 Study design: RCT Location: US Recruitment dates: January 1985–August 1990 Mean length follow-up: 34 (7–82 months) Links with: Sparwasser 1995; Riehmann 1993 (abstract)	Inclusion criteria: patients with bladder outlet obstruction symptoms Exclusion criteria: prostatic urethra > 3 cm; median lobe > 2g; previous prostatic or major pelvic surgery; high operative risk or overt neurological or psychiatric disease Number of eligible patients: 120 Number of patients randomised: 117	TUIP ($n = 61$) vs TURP ($n = 56$)	Mean age (range) (years): 65 (51–77) Mean Madsen score: 15.5 Mean Q_{max} (ml/s): 9 ($n = 52$)	Mean age (range) (years): 64 (42–78) Mean Madsen score: 15 Mean Q_{max} (ml/s): 11 ($n = 50$)	Duration of operation Catheter duration Reoperation rate Symptom score (Madsen) Q_{max} Obstructive symptom score Overall subjective assessment Length of hospital stay Mortality Erectile dysfunction

TUIP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Saporta 1996 Study design: RCT Location: Israel Length follow-up: up to 36 months	Inclusion criteria: patients with obstructive BPH symptoms; prostate weight at DRE ≥ 40g Exclusion criteria: chronic urinary retention; urethral stricture, bladder cancer, prostatitis; clinical and suspicion of prostatic cancer; prominent median lobe of prostate; neurogenic bladder Number of patients randomised: 40	TUIP ($n = 20$) vs TURP ($n = 20$)	Mean age ± SD (years): 66.85 ± 2.28 Catheter protocol: 14Fr Foley through trocar cystostomy channel and 20Fr Foley through urethra; irrigated for 18–24 hours; 14Fr Foley removed next day, 20Fr 48 hours after procedure Other: anaesthesia: spinal, epidural or general; procedure: low pressure continuous flow with trocar cystostomy	Mean age ± SD (years): 71.45 ± 1.15 Catheter protocol: 20Fr Foley for 18–24 hours Other: anaesthesia: spinal, epidural, general or local; procedure: incision with Collings knife from interureteric ridge to verumontanum as deep as fat layer	Catheter duration Reoperation rate Symptom score (Madsen) Q_{max} Patient's global assessment

TUIP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Soonawalla 1992; Saporta 1996 Study design: RCT Location: India Length follow-up: ≤24 months	Inclusion criteria: patients with prostatic hypertrophy Exclusion criteria: prostatic cancer or suspicion of malignancy Number of patients randomised: 220	TUIP ($n = 110$) vs TURP ($n = 110$)	Mean age (years): 62.2 Catheter protocol: 24Fr Foley; 24–48hours Other: anaesthesia: general anaesthesia/local	Mean age (years): 65.0 Catheter protocol: 24Fr Foley; ≤48hours Other: anaesthesia: general anaesthesia/spinal/epidural	Duration of operation Blood transfusion Catheter duration Reoperation rate Q_{max} Mean urine flow Subjective evaluation UTI Urinary retention TUR syndrome Mortality Length of hospital stay Retrograde ejaculation

TUIP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Tkocz 2002	Inclusion criteria: prostate size < 30g	TUIP ($n = 50$) vs TURP ($n = 50$)	Mean age±SD (years): 3±6.7	Mean age±SD (years): 63±6.7	Symptom score (IPSS)
Study design: RCT	Exclusion criteria: median enlargement	Additional information: subarachnoid anaesthesia with hyperbaric lidocaine	Mean IPSS±SD: 17.1±2.2	Mean IPSS±SD: 17.1±1.9	Quality of life score
Location: Poland	Number of patients randomised: 100		Mean QoL±SD: 4.6±0.5	Mean QoL±SD: 4.4±0.3	Q_{max}
			Prostate size±SD (g): 27±2	Prostate size±SD (g): 28.2±2	Detrusor pressure
			Mean Q_{max}±SD: 7.6±1.8	Mean Q_{max}±SD: 6.9±1.5	Retrograde ejaculation
			Mean residual volume±SD (ml): 75±22	Mean residual volume±SD (ml): 68±21	Residual volume
			Mean $Pdet_{max}$±SD (cmH_2O): 84±10	Mean $Pdet_{max}$±SD (cmH_2O): 85±8	
			Catheter protocol: Foley 18Fr for 24 hours	Catheter protocol: Foley 18Fr for 24 hours	
				Other: procedure: bilateral incisions 24Fr resectoscope or Collings blade	

Laser vaporisation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Bouchier-Hayes 2006 Study design: RCT Location: Australia Recruitment date: January 2004 Length follow-up: 12 months	Inclusion criteria: peak urine flow rate ≤ 15 ml/s; IPSS ≥ 12; referred by family physician for LUTS; gland 15–85 ml (TRUS); obstructed on Abrams–Griffiths nomogram; able to complete quality of life, bother score and BSFQ questionnaires; able to give fully informed consent Exclusion criteria: age ≤ 50 years; known or suspected prostate cancer; neurogenic bladder; chronic retention; taking alpha-blocker or herbal medication believed active in prostate; permanently on anticoagulant; taking finasteride or dutasteride Number of eligible patients: 95 Number of patients randomised: 76	Laser vaporisation ($n = 38$) vs TURP ($n = 38$)	Mean age (range) (years): 65.2 (51–81) Mean prostate size (range) (ml): 42. 4 (16.5–82.6) Power: 80 W Intervention performed by registrars in training or fellows in the department, all of whom had performed < 5 laser prostatectomies each Catheter protocol: at the discretion of the operating surgeon Other: GreenLight™ laser system (KTP) (American Medical Systems, Minnetonka, MN, USA)	Mean age (range) (years): 66.2 (55–801) Mean prostate size (range) (ml): 33.2 (15.4–67.5) Intervention performed by registrars in training or fellows in the department, all of whom had performed between 35 and 325 TURPs Catheter protocol: at the discretion of the operating surgeon	Duration of operation Blood transfusion Catheter duration Recatheterisation Clot retention TUR syndrome Stricture Reoperation Length of hospital stay Rehospitalisation

Laser vaporisation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Carter 1999 Study design: RCT Location: UK Recruitment dates: June 1995–July 1996 Length follow-up: 12 months Links with: Carter 1999; Pearcy 1999 (abstract)	Inclusion criteria: based on British Laser Urological Evaluation Society (BLUES); $Q_{max} \leq 15$ ml/s; voided volume > 150 ml; PVR < 300 ml; IPSS ≥ 12 Exclusion criteria: prostate cancer (histological diagnosis); prostate size (TRUS) > 100 ml; history of urinary retention; neurogenic bladder dysfunction Number of eligible patients: 204 Number of patients randomised: 191	Laser vaporisation ($n = 95$) vs TURP ($n = 96$)	Mean age ± SD (years): 67.9 ± 7.8 Mean IPSS score: 20.3 Mean Q_{max} (ml/s): 9.0 Mean PSA (ng/ml): 3.8 ± 2.7 Mean residual volume (ml): 109 (estimated from graph) Mean prostate volume (ml): 41.6 ± 17.3 (TRUS) Intervention performed by one of three consultants, two senior registrars, one clinical research fellow or one staff-grade urologist Power: 30 W KTP, mean energy 12.3 ± 9.5 kJ; 60 W Nd:YAG, mean energy 26.1 ± 16.3 kJ Antibiotics: single-dose gentamicin at operation and catheter removal Catheter protocol: urethral catheter removed either 1 or 2 days or 1–2 weeks postoperatively Other: continued any prophylactic antithrombolytic therapy	Mean age ± SD (years): 67 ± 7.5 Mean IPSS score: 19.8 Mean Q_{max} (ml/s): 9.5 Mean PSA (ng/ml): 3.2 ± 2.4 Mean residual volume (ml): 135 (estimated from graph) Mean prostate volume (ml): 41.7 ± 19.4 (TRUS) Intervention performed by one of three consultants, two senior registrars, one clinical research fellow or one staff-grade urologist Catheter protocol: catheter removed postoperatively when clinically indicated Antibiotics: single-dose gentamicin at operation and catheter removal Other: conventional methods through 24- or 26Fr resectoscopes Discontinued any prophylactic antithrombolytic therapy 1 week before surgery	Duration of operation Symptom scores (IPSS) Quality of life Length of hospital stay Q_{max} Residual volume Blood transfusion UTI Urinary retention Catheter duration TUR syndrome Stricture Reoperation

Laser vaporisation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Keoghane 2000 Study design: RCT Location: UK Recruitment dates: January 1993–January 1995 Length follow-up: 5 years Links with: Jenkinson 1997; Keoghane 1996[a]; Keoghane 1996[b]; Keoghane 1996[c]; Keoghane 2000; Keoghane 1995 (abstract)	Inclusion criteria: BPE Exclusion criteria: surgery or instrumentation for BPE; prostate cancer; inability to understand English or refused consent forms or questionnaires Number of eligible patients: 152 Number of patients randomised: 148	Laser vaporisation ($n = 72$) vs TURP ($n = 76$)	Mean age (range) (years): 69 (51–95) Mean AUA score±SD: 19.9±7.7 ($n = 54$) Mean Q_{max}±SD (ml/s): 11.8±4.5 Mean prostate size±SD (ml): 54.2±26.3 ($n = 44$) Sexually active: 9/38 (24%) Mean SF-36 (physical)±SD: 43.69±12.58 ($n = 51$) Mean SF-36 (mental)±SD: 47.07±11.2 ($n = 51$) Mean EQ-5D±SD: 0.81±0.18 ($n = 62$) Mean bothersome score±SD: 5.90±3.03 ($n = 59$) Thermometer score: 75.8±17.1 ($n = 69$) Intervention performed by five surgeons with limited experience with laser procedure before study; consultant, senior registrar or registrar Energy (range) (kJ): 33.47 (18.74–44.96) Catheter protocol: three-way catheter left in place regardless of blood loss Antibiotics: oral ciprofloxacin 2 hours before surgery Other: Nd:YAG/SLT MD60; general or spinal anaesthesia determined by patients' medical condition and preference	Mean age (range) (years): 70 (47–84) Mean AUA score±SD: 19.4±6.5 ($n = 63$) Mean Q_{max}±SD (ml/s): 11.4±5.0 Mean prostate size±SD (ml): 51.9±24.1 ($n = 48$) Sexually active: 20/50 (40%) Mean SF-36 (physical)±SD: 44.66±12.12 ($n = 57$) Mean SF-36 (mental)±SD: 47.75±10.47 ($n = 57$) Mean EQ-5D±SD: 0.81±0.18 ($n = 65$) Mean bothersome score±SD: 5.99±2.40 ($n = 68$) Thermometer score: 78.3±3.2 ($n = 66$) Antibiotics: oral ciprofloxacin 2 hours before surgery Other: standard TURP with Storz equipment, continuous irrigation; general or spinal anaesthesia determined by patients' medical condition and preference	Symptom score (AUA) Quality of life Bothersome score Q_{max} Reoperation Mortality Intraoperative complications Blood transfusion UTI Urinary retention Catheter duration Cardiovascular events Incontinence Stricture Erectile dysfunction Retrograde ejaculation

Laser vaporisation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Mottet 1999 Study design: RCT Location: France Recruitment dates: February1995–February 1996 Length follow-up: 12 months Links with: Mottet 1997 (abstract)	Inclusion criteria: peak urine flow rate < 12 ml/s; age > 45 years; residual volume < 250 ml; AUA > 13; PSA < 10 ng/ml: informed consent Exclusion criteria: history of prostatic or urethral surgery; prostate > 60 g; diabetes, bladder or neurogenic disease Number of patients randomised: 36	Laser vaporisation ($n = 17$) vs TURP ($n = 13$) Additional information: one laser patient converted to TURP because of bleeding and endoscope malfunction	Mean age (range) (years): 67 (50–77) ($n = 23$) Mean Madsen score: 15 Mean IPSS score: 21.7 Mean Q_{max} (ml/s): 8.8 Mean prostate size (ml): 36.7 Intervention performed by same surgeons experienced in both techniques Power: 80 W holmium energy in pulsed mode; wavelength 2140 nm; 25 pulses at 60 W or 30 pulses at 80 W; energy 103.6 kJ Catheter protocol: 24Fr or 20Fr Foley catheter without irrigation, removed next day Other: saline irrigation through 24Fr cystoscope	Mean age (range) (years): 64 (50–77) Mean Madsen score: 17 Mean IPSS score: 23.7 Mean Q_{max} (ml/s): 7.7 Mean prostate size (ml): 34 Intervention performed by same surgeons experienced in both techniques Catheter protocol: catheter removed next day Other: glycine irrigation during procedure, saline irrigation until urine clears; spinal anaesthesia	Duration of operation Symptom scores (IPSS, Madsen) Length of hospital stay Q_{max} Prostate size Intraoperative complications Blood transfusion Catheter duration Stricture Reoperation Incontinence Retrograde ejaculation Erectile dysfunction

Laser vaporisation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Sengör 1996 Study design: RCT Location: Turkey Recruitment dates: June 1994–April 1995 Length follow-up: 6 months	Inclusion criteria: significant voiding symptoms to request therapy; $Q_{max} < 15$ ml/s; $Q_{ave} \leq 10$ ml/s; age > 50 years Exclusion criteria: prostate cancer; infections; induration or nodularity of prostate on DRE or PSA > 4.0 mg/ml examined for cancer Number of patients randomised: 60	Laser vaporisation ($n = 30$) vs TURP ($n = 30$) Additional information: patients with UTI treated with preoperative antibiotics	Mean age (range) (years): 61 (55–70) Mean AUA score±SD: 21.8±7.6 Mean Q_{max}±SD (ml/s): 8.7±2.3 Mean urine flow±SD (ml/s): 4.6±1.8 Mean residual volume±SD (ml): 110±68 Number sexually active: 23/30 (77%) Mean prostate volume (range) (ml): 55 (30–80) Power: 60 W continuous firing; 12.5–110 kJ energy (mean 46.6 kJ). Catheter protocol: suprapubic catheter	Mean age (range) (years): 66 (50–85) Mean AUA score±SD: 22.1±2.6 Mean Q_{max}±SD (ml/s): 8.4±2.8 Mean urine flow±SD (ml/s): 4.7±2.1 Mean residual volume±SD (ml): 155±40 Number sexually active: 27/30 (90%) Mean prostate volume (range) (ml): 47 (30–50) Catheter protocol: yes	Duration of operation Symptom score (AUA) Length of hospital stay Q_{max} Mean urine flow rate Residual volume Blood transfusion Retrograde ejaculation

Laser vaporisation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Shingleton 2002 Study design: RCT Location: US Length follow-up: 72 months Links with: Shingleton 1999;Shingleton 2001 (abstract)	Inclusion criteria: peak urine flow rate < 15 ml/s; age > 45 years; failure of medical therapy (α-blockers); able to undergo regional/general anaesthesia; medical therapy discontinued 1 month before surgery Exclusion criteria: presence or history of cancer Number of patients randomised: 100	Laser vaporisation ($n = 50$) vs TURP ($n = 50$)	Mean age±SD (years): 68.2±7.9 Ethnicity: 38/50 (76%) white Mean AUA-6 score±SD: 22.5±6 Mean Q_{max}±SD (ml/s): 7.6±3.4 Mean urine flow±SD (ml/s): 8.2±3.2 Other: KTP/Nd:YAG/PVP	Mean age±SD (years): 67.4±7.3 Ethnicity: 34/50 (68%) white Mean AUA-6 score±SD: 21±6.1 Mean Q_{max}±SD (ml/s): 6.5±4.0 Mean urine flow±SD (ml/s): 7.3±3.7	Intraoperative complications Blood transfusion Urinary retention Stricture Incontinence Retrograde ejaculation Cardiovascular events Reoperation Symptom score (AUA) Global assessment Q_{max} Prostate size

Laser vaporisation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Suvakovic 1996 Study design: RCT Location: UK Length follow-up: 12 months	Inclusion criteria: symptomatic BPH; Q_{max} < 15 ml/s for voided volume of ≥ 150 ml; age > 50; PSA > 2.5 ng/ml; prostate volume < 40 ml; AUA > 15; prostate urethral length > 4cm Exclusion criteria: prostate cancer Number of eligible patients: 20 Number of patients randomised: 20	Laser vaporisation (n = 10) vs TURP (n = 10)	Mean age±SD (years): 62.6±5.8 Mean AUA score±SD: 18.8±4.5 Mean Q_{max}±SD (ml/s): 12.2±3.8 Mean residual volume±SD (ml): 139.6±103 Mean prostate size±SD (g): 24±5.8 Catheter protocol: catheter for 24 hours Power: 40 W Other: contact Nd:YAG laser; prophylactic antibiotics	Mean age±SD (years): 66.1±5.1 Mean AUA score±SD: 18.0±6.0 Mean Q_{max}±SD (ml/s): 11.1±6.4 Mean residual volume±SD (ml): 161.8±104 Mean prostate size±SD (g): 22±5 Catheter protocol: catheter for 48 hours Other: prophylactic antibiotics	Symptom score (AUA) Q_{max} Residual volume Duration of operation Catheter duration Retention Length of hospital stay

Laser vaporisation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Tuhkanen 2001 Study design: RCT Location: Finland Recruitment dates: January 1995–November 1997 Length follow-up: 24 months Links with: Tuhkanen 1999	Inclusion criteria: BPH and BOO; obstructed if min. voiding pressure > 40 cm water Exclusion criteria: prostate cancer or surgery; urinary retention; prostate size (TRUS) < 40 ml or > 100 ml Number of patients randomised: 46	Laser vaporisation ($n = 21$) vs TURP ($n = 25$)	Mean age (range) (years): 67 (46–77) Mean Dan PSSI score (range): 23 (5–69) Mean Q_{max} (range) (ml/s): 7.2 (3.7–14.8) Mean urine flow (range) (ml/s): 3.6 (1.4–7.0) Mean residual volume (range) (ml): 144 (0–450) Mean prostate size (range) (ml): 55 (40–94) (TRUS) Mean $Pdet_{max}$ (range) (cmH_2O): 83 (47–137) Intervention performed by experienced urologist Catheter protocol: 24Fr urethral catheter inserted until urine was clear; no suprapubic catheter Other: 28Fr Storz (Wolf) resectoscope with glycine irrigant; spinal anaesthesia	Mean age (range) (years): 67 (55–78) Mean Dan PSSI score (range): 18.6 (5–40) Mean Q_{max} (range)(ml/s): 8.5 (2.3–17.2) Mean urine flow (range) (ml/s): 4.2 (1.0–9.2) Mean residual volume (range) (ml): 125 (0–350) Mean prostate size (range) (ml): 55 (42–83) (TRUS) Mean $Pdet_{max}$ (range) (cmH_2O): 79 (47–131) Intervention performed by experienced urologist Catheter protocol: 20Fr urethral catheter for 1 day; suprapubic catheter removed when patient could void and residual urine was < 150 ml Power: 40 W for 90 seconds; energy 1011 J/ml (519–1785) of tissue Other: non-contact Nd:YAG coagulation then contact Nd:YAG vaporisation; urethrocystoscopy with 25Fr Storz 30 wide-angle cystoscope and 14Fr suprapubic cystostomy catheter with saline irrigant; spinal anaesthesia	Duration of operation Symptom score (Dan PSS-1 score) Length of hospital stay Q_{max} Residual volume Prostate volume Detrusor pressure Mean urine flow rate Blood transfusion Catheter duration Clot retention Stricture Retrograde ejaculation Reoperation Retention Mortality

Laser vaporisation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Tuhkanen 2003 Study design: RCT Location: Finland Recruitment dates: September 1994–January 1998 Length follow-up: 4 years Links with: Tuhkanen 1999;Tukhanen 2004	Inclusion criteria: LUT with confirmed BOO; minimum volume ≥ 120 ml; minimum voiding detrusor pressure > 40 cmH_2O Exclusion criteria: prostate cancer; prostate surgery or history of TUIP or TURP; prostate size > 40 ml; urethral stricture; neurogenic bladder dysfunction; residual volume > 300 ml Number of patients randomised: 52	Laser vaporisation ($n = 26$) vs TURP ($n = 26$)	Median age (range) (years): 68 (56–82) Median Dan IPSS (range): 18 (5–54) Median Q_{max} (range) (ml/s): 8.6 (5.0–15.9) Median residual volume (range) (ml): 87(0–331) Median prostate size (range) (ml): 30 (15–37) Median $Pdet_{max}$ (range) (cmH_2O): 57 (40–137) Number of patients sexually active: 16 Intervention performed by experienced urologist Power: 40 W Catheter protocol: 20Fr urethral catheter inserted for 1 day Other: Nd:YAG/contact with SLT MTRL 10 contact probe, 25Fr Storz port for 90 seconds, 15Fr suprapubic catheter introduced at beginning of operation with free saline irrigant; ciproflavin (250 mg) evening and morning of operation	Median age (range) (years): 67 (55–77) Median Dan IPSS (range): 18 (4–46) Median Q_{max} (range) (ml/s): 8.6 (5.0–15.9) Median residual volume (range) (ml): 83 (8–350) Median prostate size (range) (ml): 28 (15–38) Median $Pdet_{max}$ (range) (cmH_2O): 57 (40–137) Number of patients sexually active: 16 Intervention performed by experienced urologist Other: standard TURP through 28Fr Storz resectoscope; ciproflavin (250 mg) evening and morning of operation	Duration of operation Symptom score (Dan IPSS) Length of hospital stay Q_{max} Residual volume Prostate size Detrusor pressure Mortality UTI Catheter duration Clot retention Intraoperative complications Stricture Retrograde ejaculation Reoperation

Laser vaporisation vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
van Melick 2003 Study design: RCT Location: Netherlands Recruitment dates: 1996–2001 Mean length follow-up: up to 7 years Links with: van Melick 2002; van Melick 2003	Inclusion criteria: patients with lower UT symptoms suggestive of BPH; met ISC criteria for BPH; Schafer obstruction score ≥2; prostate size 20–65 ml Exclusion criteria: age ≤45 years Number of patients randomised: 95	Laser vaporisation ($n = 45$) vs TURP ($n = 50$)	Mean age±SD (years): 67±9 Mean IPSS±SD: 18.9±6.8 Mean Q_{max}±SD ml/s: 12±4 Mean residual volume±SD: 300±135 Mean prostate size±SD (ml): 37±11 Quality of life score (IPSS)±SD: 3.7±1.6 Detrusor pressure±SD (cmH_2O): 69±24 Intervention performed by mostly experienced urologist and trainees Catheter protocol: 20Fr transurethral catheter postoperatively Preprocedural antibiotics: yes, intravenously Other: Nd:YAG with SLT MTRL 10 probe	Mean age±SD (years): 66±8 Mean IPSS±SD: 11±4 Mean Q_{max}±SD ml/s: 10.8±4.76 Mean residual volume±SD: 350±140 Mean prostate size±SD (ml): 37±11 Quality of life score (IPSS)±SD: 3.8±1.5 Detrusor pressure±SD (cmH_2O): 76±27 Intervention performed by alternate experienced urologist and trainees Catheter protocol: suprapubic if required perioperatively Preprocedural antibiotics: yes, intravenously Other: standard 24Fr resectoscope	Duration of operation Intraoperative complications Blood transfusion UTI Catheter duration Clot retention Cardiovascular events Mortality Incontinence Stricture Reoperation Retention Symptom score (AUA) Quality of life Q_{max} Residual volume

Laser vaporisation vs TURP					
Study details	**Participant characteristics**	**Intervention/ comparator**	**Intervention population characteristics**	**Comparator population characteristics**	**Outcomes**
Zorn 1999 Study design: RCT Location: US (multicentre) Recruitment dates: June 1995–June 1996 Length follow-up: 12 months	Inclusion criteria: symptomatic BPH; Q_{max} < 15 ml/s; age > 50; AUA score ≥ 13; PVR > 125 ml Exclusion criteria: previous surgical therapy for BPH; known prostate, bladder, urethral or neurological conditions that could affect the bladder Number of patients randomised: 33	Laser vaporisation ($n = 21$) vs TURP ($n = 12$)	Mean age (years): (a) 70.6; (b) 69.6 Mean AUA score: (a) 24.0; (b) 24.2 Mean Q_{max} (ml/s): (a) 8.7; (b) 6.2 Mean prostate size (ml): (a) 29.9; (b) 67.4 Power: CLVP 50–60 W Performed under general or regional anaesthesia	Mean age (years): 69.0 Mean AUA score: 24.7 ($n = 11$) Mean Q_{max} (ml/s): 9.0 ($n = 11$) Mean prostate size (ml): 33.9 Performed under general or regional anaesthesia	Duration of operation Symptom score (AUA) Residual volume Q_{max} Blood transfusion Catheter duration Recatheterisation Stricture Reoperation Length of hospital stay

TUVRP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Helke 2001 Study design: RCT Location: Germany Length follow-up: 1 year	Inclusion criteria: residual volume > 60 ml; IPSS > 10; BPH; moderate/severe LUT symptoms Exclusion criteria: prostate cancer or other untreated malignancies; previous prostatic surgery; neurogenic bladder; urethral strictures; severe neurological disease or psychiatric abnormalities Number of patients randomised: 185	TUVRP ($n = 93$) vs TURP ($n = 92$)	Mean age±SD (range) (years): 67.3±7.73 (47–85) Mean IPSS±SD (range): 17.29±6.06 (10–35) Mean Q_{max}±SD (range) (ml/s): 10.8±4.76 (4.2–28.4) Mean residual volume±SD (range) (ml): 76.0±60.50 (0–330) Mean prostate size±SD (range) (ml): 48.8±21.21 (13–110) by suprapubic US Power: 250 W (cutting) Catheter protocol: catheter removed on second or third day after surgery; discharged day after removal Other: preoperative indwelling catheter, *n/N* (%): 28/93 (30.1); preoperative UTI, *n/N* (%): 27/92 (29.3); anaesthesia: general or epidural; antibiotics: ciprofloxamin (200 mg twice a day) or co-trimoxazole 160/80 twice a day for 2 days	Mean age±SD (range) (years): 68.7±8.38 (53–89) Mean IPSS±SD (range): 18.29±7.49 (10–35) Mean Q_{max}±SD (range) (ml/s): 8.5±5.19 (5.2–29.0) Mean residual volume±SD (range) (ml): 101.8±84.1 (0–410) Mean prostate size±SD (range) (ml): 49.9±22.1 (20–140) Power: 150 W (cutting) Catheter protocol: catheter removed on second or third day after surgery; discharged day after removal Other: preoperative indwelling catheter, *n/N* (%): 32/92 (34.4); preoperative UTI, *n/N* (%): 29/91 (32); anaesthesia: general or epidural; antibiotics: ciprofloxamin (200 mg twice a day) or co-trimoxazole 160/800 mg twice a day for 2 days	Symptom score (IPSS) Q_{max} Residual volume Incontinence Blood transfusion Stricture Reoperation

TUVRP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Küpeli 2001 Study design: RCT Location: Turkey Recruitment dates: November 1997–not reported Length follow-up: 6 months	Inclusion criteria: peak urine flow rate < 15 ml/s; IPSS score ≥85 Exclusion criteria: prostate cancer; history of prostate surgery; neurogenic bladder Number of patients randomised: 100	TUVRP ($n = 50$) vs TUVP ($n = 50$)	Mean age±SD (years): 61.4±3.2 Mean IPSS: 19.4 Mean Q_{max}±SD (ml/s): 7.9±2.1 Prostate size±SD (range) (ml): 57.8±4.1 (34–95) (TRUS) Sexually active: 36 Power: cutting current: 250–300 W Other: anaesthesia: general in 14 patients and spinal or epidural in 36; Wing (Wolf) gold-plated one-system electrode with pure cutting diathermy	Mean age±SD (years): 58.9±3.6 Mean IPSS: 21.6 Mean Q_{max}±SD (ml/s): 9.2±2.6 Prostate size±SD (range) (ml): 56.7±6.3 (34–110) (TRUS) Sexually active: 25 Power: cutting current: 80–120 W Other: anaesthesia: general in 16 patients and spinal or epidural in 34; Karl Storz 24Fr cutting loop with the Valleylab Force 40 electrical current generator	Duration of operation Blood transfusion Retention Catheter duration Recatheterisation TUR syndrome Incontinence Stricture Retrograde ejaculation Erectile dysfunction Symptom score (IPSS) Length of hospital stay Q_{max} Prostate size

TUVRP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Gupta 2006 Study design: RCT Location: India Recruitment dates: July 2002–December 2003 Length follow-up: 1 year	Inclusion criteria: BPH candidates for TURP Exclusion criteria: prostate cancer; prostate size < 40 g; prostatic or urethral surgery; neurovesical dysfunction Number of patients randomised: 150	TUVRP ($n = 50$) vs TURP ($n = 50$)	Mean age ± SD (range) (years): 67.98 ± 9.8 (48–92) Mean IPSS score ± SD (range): 24.9 ± 3.9 (17–32) Mean Q_{max} ± SD (range) (ml/s): 4.65 ± 3.6 (0–12) Mean residual volume ± SD (range) (ml): 103 ± 174.1 (0–881) Mean prostate size ± SD (range) (ml): 62.6 ± 14.8 (42–133) (TRUS) Intervention performed by experienced surgeons Catheter protocol: 22Fr double-lumen Foley catheter with continuous saline irrigation until effluent clear; removed 6 hours after urine is clear then discharged 6–12 hours later Power: cutting current: 180 W Coagulation current: 80 W Other: 27Fr continuous flow resectoscope with Wing (Wolf) loop; spinal subarachnoid anaesthesia with 0.5% bupivacaine; perioperative antibiotics; number of catheterised patients (%): 19/50 (38) Co-morbidities: ischaemic heart disease (%): 7/50 (14); hypertension (%): 14/50 (28); chronic airway disease (%): 3/50 (6); diabetes mellitus (%): 5/50 (10); cerebrovascular accident (%): 1/50 (2)	Mean age ± SD (range) (years): 65.67 ± 7.5 (48–84) Mean IPSS score ± SD (range): 23.3 ± 3.9 (17–31) Mean Q_{max} ± SD (range) (ml/s): 4.5 ± 4.7 (0–13) Mean residual volume ± SD (range) (ml): 84.0 ± 129.7 (0–600) Mean prostate size ± SD (range) (ml): 59.8 ± 16.5 (40–110) (TRUS) Intervention performed by experienced surgeons Catheter protocol: 22Fr double-lumen Foley catheter with continuous saline irrigation until effluent clear; removed 6 hours after urine is clear then discharged 6–12 hours later Power: cutting current: 80 W Coagulation current: 50 W Other: 27Fr continuous flow resectoscope (Wolf) with standard tungsten wire loop; standard technique, bladder neck to surgical capsule as far as clear transverse fibres; spinal subarachnoid anaesthesia with 0.5% bupivacaine; perioperative antibiotics; number of catheterised patients (%): 16/50 (32) Co-morbidities: ischaemic heart disease (%): 5/50 (10); hypertension (%): 14/50 (28); chronic airway disease (%): 1/50 (2); diabetes mellitus (%): 7/50 (14); cerebrovascular accident (%): 0/50 (0)	Duration of operation Symptom score (IPSS) Q_{max} Residual volume Intraoperative complications Blood transfusion Catheter duration Recatheterisation Mortality Incontinence Stricture

TUVRP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Liu 2006 Study design: RCT Location: Taiwan Recruitment dates: July 1999–June 2002 Length follow-up: 2 years	Inclusion criteria: bladder outlet obstruction due to BPH and on waiting list for elective surgery at their institution; prostate size >50 ml; QoL score ≥3; peak urine flow rate ≤12 ml/s; IPSS score ≥15 Exclusion criteria: prostate cancer; PSA 4 ng/ml or higher; signs of a neurogenic bladder; bladder stones; previous urethral or prostatic surgery; undergoing any anticoagulant therapy Number of patients randomised: 76	TUVRP ($n = 44$) vs TURP ($n = 32$)	Mean age±SD (range) (years): 66±6.6 (54–90) Mean IPSS±SD: 26.8±4.7 Mean Q_{max}± SD (ml/s): 6.9±2.1 Mean residual volume±SD (ml): 142±48 Prostate size±SD (range) (ml): 60.5±10.9 (51–116) QoL score±SD: 4.1±0.6 Sexually active: 17 Power: cutting current: 200 W; coagulating current: 60 W Intervention performed by three staff urologists having equivalent experience and after each had undergone a surgical experience 'learning curve' training program for the TUVRP procedure, which encompassed performing surgery in at least 10 patients with an enlarged prostate Catheter protocol: 22Fr three-way Foley catheter Other: wedge resection loop	Mean age±SD (range) (years): 64.7±6.3 (55–88) Mean IPSS±SD: 25.6±3.5 Mean Q_{max}±SD (ml/s): 6.9±1.9 Mean residual volume±SD (ml): 131±41 Prostate size±SD (range) (ml): 58.4±4 (52–109) QoL score±SD: 4.0±0.7 Sexually active: 13 Power: cutting current: 110 W; coagulating current: 60 W Intervention performed by three staff urologists having equivalent experience and after each had undergone a surgical experience 'learning curve' training program for the TUVRP procedure, which encompassed performing surgery in at least 10 patients with an enlarged prostate Catheter protocol: 22Fr three-way Foley catheter Other: standard wire loop	Duration of operation Intraoperative complications Blood transfusion Catheter duration Recatheterisation Clot retention TUR syndrome Stricture Incontinence Retrograde ejaculation Erectile dysfunction Reoperation Symptom score (IPSS) Quality of life score Length of hospital stay Rehospitalisation Q_{max} Residual volume

TUVRP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Talic 2000 Study design: RCT Location: Saudi Arabia Mean length follow-up (range): 9 (1–15) months	Inclusion criteria: peak urine flow rate < 15 ml/s, IPSS score > 15; some patients with retention Exclusion criteria: previous prostate surgery; neurogenic bladder Number of patients randomised: 68	TUVRP ($n = 34$) vs TURP ($n = 34$)	Mean age±SD (range) (years): 70.9±9.3 (55–94) Mean IPSS±SD (range): 24.9±6 (15–31) Mean Q_{max}±SD (range) (ml/s): 7.5±3.5 (2–14.6) Mean prostate size (ml) (range): 52.4±18.7 (20–100) (TRUS) Power: cutting current: 250 W; coagulation current: 80 W Intervention performed by consultant Catheter protocol: yes, unless haematuric; urinary catheters removed the morning after operation Other: Wing (thick-loop) electrode (Wolf); urinary retention preoperatively: 15/34 (44%); symptomatic BPH: 19/34 (56%)	Mean age±SD (range) (years): 70.4±8.8 (53–86) Mean IPSS±SD (range): 20.1±6.8 (11–30) Mean Q_{max}±SD (range) (ml/s): 9.1±6.3 (1–15) Mean prostate size (ml) (range): 57.2±22.5 (20–105) (TRUS) Power: cutting current: 250 W; coagulation current: 80 W Intervention performed by consultant. Catheter protocol: yes, unless haematuric; urinary catheters removed the morning after operation Other: Wing (thick-loop) electrode (Wolf); urinary retention preoperatively: 18/34 (53%); symptomatic BPH: 16/34 (47%)	Duration of operation Catheter duration Clot retention TUR syndrome Stricture Retrograde ejaculation Erectile dysfunction Symptom score (IPSS) Q_{max}

B-TURP vs TURP					
Study details	**Participant characteristics**	**Intervention/ comparator**	**Intervention population characteristics**	**Comparator population characteristics**	**Outcomes**
de Sio 2006 Study design: RCT Location: Italy Follow-up (range): 9 (6–18) months	Inclusion criteria: Q_{max} < 15 ml/s; IPSS > 18; good performance status; acute urinary retention if the removal of catheter failed after therapy with alpha-blockers or chronic urinary retention unresponsive to medical therapy Exclusion criteria: age ≤ 50 years; documented or suspected prostate cancer; previous prostatic surgery; prostate size < 30 ml; neurogenic bladder, bladder stone or diverticula; urethral stricture; maximal bladder capacity > 500 ml; warfarin therapy Number of patients randomised: 70	B-TURP ($n = 35$) vs TURP ($n = 35$)	Mean age ± SD (years): 59 ± 5.9 Mean IPSS score ± SD: 24.18 ± 4 Mean Q_{max} ± SD (ml/s): 7.1 ± 2 Mean residual volume ± SD (ml): 80 ± 22.5 Mean prostate size ± SD (ml): 51.6 ± 3.9 Mean QoL score ± SD: 4.2 ± 1 Catheter protocol: yes, 22Fr three-way Fufour catheter until the effluent was completely clear Other: Storz 26Fr continuous flow resectoscope; spinal anaesthesia	Mean age ± SD (years): 61 ± 5.9 Mean IPSS score ± SD: 24.3 ± 5 Mean Q_{max} ± SD (ml/s): 6.3 ± 3 Mean residual volume ± SD (ml): 75 ± 35.5 Mean prostate size ± SD (ml): 47.5 ± 5.1 Mean QoL score ± SD: 3.9 ± 1 Catheter protocol: yes, 22Fr three-way Fufour catheter until the effluent was completely clear Other: Storz 26Fr continuous flow resectoscope; spinal anaesthesia	Duration of operation Blood transfusion Catheter duration Clot retention TUR syndrome Stricture Reoperation Symptom score (IPSS) Quality of life Q_{max} Residual volume

B-TURP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Kim 2006b Study design: RCT Location: Korea Recruitment dates: August 2003–October 2004 Length follow-up: 6 months	Inclusion criteria: patients suffering from BPE Number of eligible patients: 50 Number of patients randomised: 50	B-TURP ($n = 25$) vs TURP ($n = 25$)	Mean age±SD (years): 68.1±8.9 Mean IPSS score±SD: 19.0±6 Mean Q_{max}±SD (ml/s): 6.5±2.2 Mean prostate size±SD (ml): 53.2±14.9	Mean age ±SD (years): 70.6±7.5 Mean IPSS score±SD: 18.6±3.3 Mean Q_{max}±SD (ml/s): 6.1±1.7 Mean prostate size±SD (ml): 51.7±19.1	Duration of operation Intraoperative complications UTI Catheter duration TUR syndrome Incontinence Stricture Symptom score (IPSS) Length of hospital stay Q_{max}

B-TURP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Nuhoğlu 2006 Study design: RCT Location: Turkey Recruitment dates: 2001–2003	Inclusion criteria: patients with symptoms of the lower urinary system; Q_{max} < 10 ml/s; IPSS > 15 Exclusion criteria: suspicion of prostate cancer by DRE and PSA examination; previous surgery of the prostate and urethra; neurogenic bladder Number of patients randomised: 57	B-TURP ($n = 27$) vs TURP ($n = 30$)	Mean age±SD (years): 64.6±8.8 Mean IPSS score±SD: 17.6±6.1 Mean Q_{max}±SD (ml/s): 6.9±2.8 Mean urine flow±SD (ml/s): 2.6±1.3 Mean residual volume±SD (ml): 96±27 Mean prostate size±SD (ml): 47±7.7 Catheter protocol: yes, 22Fr three-way removed after macroscopic haematuria disappeared Preprocedural antibiotics: yes Other: general or local anaesthesia; 27Fr Sheet (Gyrus Medical, Bourne End, UK) and plasma electrode	Mean age±SD (years): 65.2±9.3 Mean IPSS score±SD: 17.3±5.8 Mean Q_{max}±SD (ml/s): 7.3±2.1 Mean urine flow±SD (ml/s): 2.8±1.2 Mean residual volume±SD (ml): 88±20 Mean prostate size±SD (ml): 49±8.1 Catheter protocol: yes, 22Fr three-way removed after their macroscopic haematuria disappeared Preprocedural antibiotics: yes Other: general or local anaesthesia; 25Fr Sheet Storz resectoscope and glycine solution	Duration of operation Blood transfusion Urinary retention Catheter duration Recatheterisation TUR syndrome Reoperation rate Symptom score (IPSS) Q_{max} Mean urine flow rate Residual volume Prostate size

B-TURP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Seckiner 2006 Study design: RCT Location: Turkey Recruitment dates: January 2003–October 2003 Mean follow-up±SD: 13.9±4.1 months	Inclusion criteria: Q_{max} < 15 ml/s; IPSS ≥ 8; prostate volume 50–70 g on TRUS Exclusion criteria: age < 50 years; prostate or bladder cancer; history of prostate surgery; known neurogenic bladder; currently on medication known to affect voiding function Number of patients randomised: 48	B-TURP (n = 24) vs TURP (n = 24)	Mean age±SD (years): 61.2±9.3 Mean IPSS score±SD: 24.1±5.2 Mean Q_{max}±SD (ml/s): 8.5±2.9 Mean residual volume±SD (ml): 88±74 Prostate size±SD (ml): 49.4±18.9 Quality of life score±SD: 4.4±0.6 Power: 160 W (cutting); 80 W (desiccate mode) Intervention performed by the same surgeon Other: plasmakinetic tissue management system (Gyrus Medical); 27Fr continuous flow resectoscope is used for PL resections; spinal or general anaesthesia	Mean age±SD (years): 63.9±10.9 Mean IPSS score±SD: 23.2±4.9 Mean Q_{max}±SD (ml/s): 8.3±3.1 Mean residual volume±SD (ml): 138±115 Prostate size±SD (ml): 41.4±14.5 Quality of life score± SD: 4.7±0.9 Power: 120 W (cutting); 80 W (coagulation) Intervention performed by the same surgeon Other: 26Fr continuous flow resectoscope and Karl Storz 27040 electrodes under spinal or general anaesthesia	Duration of operation Intraoperative complications Catheter duration Stricture Symptom score (IPSS) Quality of life Q_{max} Prostate size

B-TURP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Singh 2005 Study design: RCT Location: India Recruitment dates: September 2003–May 2004 Follow-up: 3 months	Inclusion criteria: men with BPE requiring surgical intervention; $Q_{max} \leq 12$ ml/s; IPSS ≥ 7; Schäfer obstruction grade 2 Exclusion criteria: age ≤ 50 years; PCAR of < 0.75 on TRUS; neurological illness; renal insufficiency; bladder stone, urethral stricture or taking finasteride Number of patients randomised: 60	B-TURP ($n = 30$) vs TURP ($n = 30$)	Mean age±SD (years): 68.9±9.8 Mean IPSS score±SD: 20.5±4.8 Mean Q_{max}±SD (ml/s): 5.8±3.0 Mean residual volume±SD (ml): 124±58 Quality of life score±SD (ml): 4.4±1.0 Intervention performed by single experienced surgeon Preprocedural antibiotics: yes Other: 25.6Fr ACMI Elite system continuous flow resectoscope with Vista CTR™ dual-loop electrode and generator (ACMI Corporation, Southborough, MA, USA)	Mean age±SD (years): 67.9±9.8 Mean IPSS score±SD: 21.6±6.3 Mean Q_{max}±SD (ml/s): 5.1±2.0 Mean residual volume±SD (ml): 136±52 Quality of life score±SD (ml): 4.4±1.0 Intervention performed by single experienced surgeon Catheter protocol: yes, 20Fr three-way removed once urine completely clear for 24 hours and the patient had passed stool; in patients with large prostates (> 40 g of resected tissue) the catheter was removed at 72 hours per protocol Preprocedural antibiotics: yes Other: Wolf 25.5F resectoscope and Force FX™ electrosurgical generator (Valleylab, Boulder, CO, USA)	Duration of operation Intraoperative complications Catheter duration TUR syndrome Incontinence Stricture Symptom score (IPSS) Length of hospital stay Q_{max}

B-TURP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Tefekli 2005 Study design: RCT Location: Turkey Recruitment dates: 2001–2002 Mean follow-up±SD: 18.3±6.7 months	Inclusion criteria: BPH-related lower UT symptoms Exclusion criteria: history of prostate surgery; abnormal DRE; increased serum PSA; evidence of neurogenic bladder (i.e. history of diabetes, cerebrovascular accident, etc.); urethral stricture disease or bladder stone or tumour Number of patients randomised: 101	B-TURP ($n = 51$) vs TURP ($n = 50$)	Mean age±SD (years): 68.7±6.3 Mean IPSS score±SD: 21.3±3.2 Mean Q_{max}±SD (ml/s): 7.8±3.7 Prostate size±SD (g): 50.1±17.3 Frequency: 320–450 kHz Power: 200 W (maximum) Intervention performed by consultant urologists with equivalent experience Catheter protocol: yes, 22Fr three-way Foley catheter 12–24 hours after the urine became clear Other: especially designed Plasmakinetic® 27Fr continuous flow resectoscope (Gyrus ACMI, Southborough, MA, USA); spinal anaesthesia or general anaesthesia depending on patient cardiovascular status	Mean age±SD (years): 69.4±5.9 Mean IPSS score±SD: 20.4±3.5 Mean Q_{max}±SD (ml/s): 8.3±3.6 Prostate size±SD (g): 54.0±15.2 Power: 80–100 W (cutting); 50–70 W (coagulation) Intervention performed by consultant urologists with equivalent experience Catheter protocol: yes, 22Fr three-way Foley catheter 12–24 hours after the urine became clear Other: 26Fr continuous flow resectoscope and standard loop electrode Martine ME 401 electrosurgical generator Gebruder Martin, Germany); spinal anaesthesia or general anaesthesia depending on patient cardiovascular status	Duration of operation Blood transfusion Retention Catheter duration Recatheterisation Stricture Incontinence Retrograde ejaculation Reoperation Symptom score (IPSS) Q_{max}

B-TUVRP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Fung 2005 Study design: RCT Location: China (Hong Kong) Recruitment dates: August 2001–January 2002 Follow-up: 3 months	Inclusion criteria: men admitted from the waiting list for surgery for BPH; Q_{max} < 10 ml/s; IPSS > 20; acute retention of urine and failure to remove catheter; chronic retention of urine due to obstruction causing renal impairment and severe lower UT symptoms Exclusion criteria: known/suspected prostate cancer; previous prostatic surgery; known neurogenic bladder, urethral stricture, bladder stone or warfarin therapy Number of patients eligible: 60 Number of patients randomised: 51	B-TUVRP ($n = 21$) TURP ($n = 30$)	Mean age (range) (years): 72.5 (59–91) Mean IPSS score: 15.82 Mean QoL: 3.55 Power: 60 W (coagulation); 240 W (vaporisation) Intervention performed by a consultant, senior medical officer or senior registrar experienced in performing TURP Catheter protocol: yes, 22Fr three-way Foley catheter was inserted and removed in the morning Other: Gyrus plasmakinetic 27Fr resectoscope with a plasmakinetic loop electrode; spinal anaesthesia and the surgical technique was similar	Mean age (range) (years): 73 (59–88) Mean IPSS score: 19.36 Mean QoL score: 3.64 Power: 60 W (coagulation); 120 W (cutting) Intervention performed by a consultant, senior medical officer or senior registrar experienced in performing TURP Catheter protocol: yes, 22Fr three-way Foley catheter was inserted and removed in the morning Other: Wolf 27Fr continuous flow resectoscope with loop electrode; spinal anaesthesia and the surgical technique was similar	UTI Retention Catheter duration Clot retention TUR syndrome Symptom score (IPSS) Quality of life Q_{max}

TUVP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Çetinkaya 1996 Study design: RCT Location: Turkey Recruitment dates: September–December 1995 Length follow-up: 3 months	Inclusion criteria: peak urine flow rate < 15 ml/s; AUA moderate to severe Exclusion criteria: patients who had previously undergone a prostate operation or who had any abnormality of kidney and liver function, urethral strictures, neurogenic deficits or bladder stones or those with confirmed or suspected prostate cancer Number of patients randomised: 46	TUVP ($n = 23$) vs TURP ($n = 23$)	Mean age±SD (years): 68.4±8.3 Mean prostate size±SD (ml): 48.4±9.7 (TRUS) Catheter protocol: yes Power: cutting mode: 240–300 W; coagulation mode: 40–70 W	Mean age±SD (years): 62.5±10.1 Mean prostate size±SD (ml): 48.8±15.4 (TRUS) Catheter protocol: yes Other: conducted by conventional electroresection	Duration of operation Blood transfusion Catheter duration Symptom score (AUA) Q_{max} Residual volume
Ekengren 2000 Study design: RCT Location: Sweden Length follow-up: 12 months	Inclusion criteria: peak urine flow rate < 15 ml/s; AUA moderate to severe Exclusion criteria: patients who had previously undergone a prostate operation or who had any abnormality of kidney and liver function, urethral strictures, neurogenic deficits or bladder stones or those with confirmed or suspected prostate cancer Number of patients randomised: 54	TUVP ($n = 26$) vs TURP ($n = 28$)	Mean age (range) (years): 71 (49–82) Median IPSS (range): 22 (1–100) Median urine flow rate (range) (ml/s): 2 (0–10) (or peak) Median QoL (range): 4.5 (2–6) Intervention performed by consultant	Mean age (range) (years): 70 (48–83) Median IPSS (range): 25 (13–100) Median urine flow rate (range) (ml/s): 4 (0–8) (or peak) Median QoL (range): 5.5 (3–6) Intervention performed by consultant	Duration of operation Symptom score (IPSS) Change in urine flow Quality of life Mortality Reoperation Stricture

TUVP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Erdağı 1999 Study design: RCT Location: Turkey Length follow-up: up to 6 months	Inclusion criteria: symptomatic BPH Exclusion criteria: patients who had previously undergone a prostate operation; urethral strictures; neurogenic bladder; those with confirmed or suspected prostate cancer Number of patients randomised: 40	TUVP ($n = 20$) vs TURP ($n = 20$)	Mean age (range) (years): 64.2 (56–82) Mean prostate size (range) (ml): 32.5 (20–48) (TRUS) Mean IPSS (range): 20.6 (12–27) Mean Q_{max} (range): 5.1 (0–11.27) Mean urine flow (range) (ml/s): 2.5 (0–5.3) Mean residual volume (range) (ml): 68 (20–150) Power: cutting 240 W; coagulation 40 W Other: anaesthesia: general anaesthesia, 6/20; spinal or epidural, 14/20; VaporTrode® rollerball Storz electrode. Middle lobe vaporised from bladder neck to verumontanum; lateral lobe vaporised to prostatic capsule	Mean age (range) (years): 66.1 (58–75) Mean prostate size (range): 37 (15–60) (TRUS) Mean IPSS (IPSS): 21.5 (11–30) Mean Q_{max} (range): 4.6 (0–9.6) Mean urine flow rate (range) (ml/s): 2.3 (0–5.5) Mean residual volume (range) (ml): 122.8 (0–600) Other: anaesthesia: general anaesthesia, 10/20; spinal or epidural, 10/20; 26Fr continuous flow resectoscope with mannitol irrigation	Duration of operation Blood transfusion Intraoperative complications Catheter duration Symptom score (IPSS) Q_{max} Residual volume Stricture Retrograde ejaculation

TUVP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Fowler 2005 Study design: RCT Location: UK Recruitment dates: March 1997–March 1999 Length follow-up: 2 years Links with: McAllister 2003	Inclusion criteria: candidate for surgical treatment for BOO; must have completed pretreatment evaluation with current criteria for prostate surgery; able to give written informed consent to randomisation and treatment Exclusion criteria: previous bladder outlet surgery; clinical evidence of prostate cancer; physical status > ASA class 3; medications that (in investigators opinion) would preclude entry into trial; clinically significant acute illness; known disease of central or peripheral nervous system; prostate cancer Number of eligible patients: 445 Number of patients randomised: 235	TUVP ($n = 115$) TURP ($n = 120$) Additional information: irrigation fluid varied with different centres Conventional Circon-ACMI 24.5 Fr continuous–flow resectoscope with new wire loop for each patient Catheter protocol: three-way catheter with irrigation or forced diuresis with frusemide Antibiotics: at surgeon's request	Mean age (years): 70.2 Mean prostate size (ml): 54.3 ($n = 103$) (TRUS) Mean IPSS±SD: 20.7±7.3 Q_{max}±SD: 10.10±4.35 Residual volume (ml): 181 ($n = 94$) Mean QoL score±SD (95% CI): 4.9±0.98 (4.7–5) Normal sexual function: 75/109 Power: cutting current: 180 W; coagulation: 55 W Other: Valleylab Force FX electrosurgical generator; erectile dysfunction: 70/103	Mean age (years): 69.7 Mean prostate size (ml): 51.1 ($n = 100$) (TRUS) Mean IPSS±SD: 20.7±6.9 Mean Q_{max}±SD: 10.52±5.04 Residual volume (ml): 171 ($n = 91$) Mean QoL score±SD (95% CI): 4.6±1.17 (4.4–4.8) Normal sexual function: 62/110 Power: cutting current: 120–140 W; coagulation: 55 W Other: conventional TURP manner; erectile dysfunction: 65/101	Symptom score (IPSS) Quality of life Q_{max} Sexual function Catheter duration Intraoperative complications Cardiovascular events Length of hospital stay

TUVP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Galluci 1998[1] Study design: RCT Location: Italy Length follow-up: 1 year Links with: Puppo 1996 (abstract)	Inclusion criteria: diagnosis of symptomatic BPE with urodynamically assessed obstruction Exclusion criteria: prostate cancer or suspected prostate cancer; prostate size > 70 g; complete urinary retention; bladder calculi; neurogenic bladder; bladder cancer; mental or psychological illness Number of patients randomised: 150	TUVP ($n = 70$) vs TURP ($n = 80$) Additional information: the operations were carried out by video endoscopy; Before the actual operation a urethrocystoscopy was carried out	Mean prostate size±SE: 36.59±1.37 (TRUS) Mean IPSS±SE: 18.19±0.66 Mean Q_{max}±SE: 8.78±1.16 Mean residual volume±SE: 64.61±8.65 Catheter protocol: 22Fr three-way Foley catheter Other: standard 22.5Fr resectoscope with a standard diathermic loop	Mean prostate size±SE: 36.61±1.52 (TRUS) Mean IPSS±SE: 18.84±0.68 Mean Q_{max}±SE: 7.26±0.37 Mean residual volume±SE: 84.7±11.39 Power: 200–250 W Catheter protocol: 22Fr three-way Foley catheter Other: standard 22.5Fr resectoscope with a VaporTrode electrode (Circon ACMI)	Intraoperative complications Blood transfusion UTI Urinary retention Catheter duration Urinary incontinence Length of hospital stay Symptom score (IPSS) Q_{max} Residual volume

TUVP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Gotoh 1999 Study design: RCT Location: Japan Length follow-up: 3 months	Inclusion criteria: $Q_{max} \leq 15$ ml/s; IPSS ≥ 10; normal specific antigen Exclusion criteria: prostate size < 30 ml Number of eligible patients: 53 Number of patients randomised: 51	TUVP ($n = 23$) vs TURP ($n = 28$)	Mean age±SD (years): 69.7±6.3 Mean IPSS score±SD (range): 19.6±7.5 Mean Q_{max}±SD (ml/s): 7.3±2.8 Mean residual volume±SD (ml): 56.7±51.4 Mean prostate size±SD (ml): 47.8±16.4 Power: cutting current: 230–250 W Intervention performed by one urologist with ≥ 10 years experience at each of the seven hospitals Other: epidural anaesthesia	Mean age±SD (years): 66.5±15.7 Mean IPSS score±SD: 18.9±7.3 Mean Q_{max}±SD (ml/s): 9.4±2.8 Mean residual volume±SD (ml): 41.9±25.5 Mean prostate size±SD (ml): 41.9±25.5 Power: cutting current: 120 W Intervention performed by one urologist with ≥ 10 years experience at each of the seven hospitals Other: number of catheterised patients (%): 16/50 (32)	Duration of operation Blood transfusion Catheter duration Recatheterisation TUR syndrome Stricture IPSS Q_{max} Residual volume

TUVP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Hammadeh 2003 Study design: RCT Location: UK Recruitment dates: June 1995–January 1996 Length follow-up: 5 years Links with: Hammadeh 1998b; Hammadeh 1998a; Hammadeh 2000; and Hammadeh 1998c,1999,2003 (abstracts)	Inclusion criteria: men with bladder outflow obstruction due to BPH and on the waiting list expecting TURP; peak urine flow rate < 15 ml/s; IPSS ≥ 13; QoL index ≥ 3 Exclusion criteria: prostate cancer; previous prostatic or urethral surgery; neurogenic bladder; patients who were appropriate for bladder neck incision Number of eligible patients: 109 Number of patients randomised: 104	TUVP ($n = 52$) vs TURP ($n = 52$) Additional information: none of the patients included was on retention	Mean age ± SD (range) (years): 67.5 ± 6.7 (52–82) Mean prostate size ± SD (range): 32 ± 9.1 (15–60) (by TRUS) Mean IPSS ± SD: 26.5 ± 4.5 Prostate > 50 g: 4 Mean Q_{max} ± SD: 8.9 ± 3.2 Mean residual volume ± SD (ml): 131 ± 78.5 Power: cutting current: 240 W; coagulation: 60 W Intervention performed by consultants (44%); registrars (56%) Catheter protocol: 22Fr three-way Foley catheter, until urine became clear Other: used VaporTrode resectoscope	Mean age ± SD (range) (years): 70.2 ± 7.2 (52–87) Mean prostate size ± SD (range): 27 ± 12.2 (10–60) (by TRUS) Prostate > 50 g: 4 Mean IPSS ± SD: 26.6 ± 4.8 Mean Q_{max} ± SD: 8.6 ± 3.2 Mean residual volume ± SD (ml): 101 ± 87.9 Power: cutting current: 145 W; coagulation: 60 W Intervention performed by consultants (46%); registrars (54%) Catheter protocol: 22Fr three-way Foley catheter, until urine became clear Other: standard 27Fr resectoscope with a Force 2 electrical current generator	Duration of operation Blood transfusion UTI Urinary retention Catheter duration Clot retention TUR syndrome Cardiovascular events Mortality Stricture Incontinence Retrograde ejaculation Reoperation Symptom score (IPSS) Quality of life Length of hospital stay Q_{max} Residual volume

TUVP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Kaplan 1998 Study design: RCT Location: USA Mean length of follow-up 10.4 months	Inclusion criteria: peak urine flow rate ≤15 ml/s; AUA score ≥10; prostate volume 15–60 g on TRUS Exclusion criteria: age < 50 years; known neurogenic bladder, cancer of the prostate or bladder or history of prostate surgery; currently on medications known to affect voiding function Number of patients randomised: 64	TUVP ($n = 32$) vs TURP ($n = 32$)	Mean age±SD (years): 68.9±8.7 Mean IPSS±SD: 19.4±3.5 Mean Q_{max}±SD (ml/s): 7.2±2.8 Mean residual volume±SD (ml): 77.8±20.3 Mean prostate size±SD (ml): 47.8±22.3 Power: cutting current: 240–270 W Other: fluted roller electrode. General anaesthesia: 2/32 (6%); spinal/epidural anaesthesia: 28/32 (88%); intravenous sedation: 2/32 (6%)	Mean age±SD (years): 72.8±6.9 Mean IPSS±SD: 18.3±4.7 Mean Q_{max}±SD (ml/s): 8.3±3.6 Mean residual volume±SD (ml): 66.9±15.7 Mean prostate size±SD (ml): 41.5±19.7 Power: cutting current: 25–45% lower than TUVP Other: loop electrode. General anaesthesia: 6/32 (18%); spinal epidural anaesthesia: 26/32 (82%)	Duration of operation Blood transfusion UTI Catheter duration Recatheterisation Clot retention TUR syndrome Incontinence Irritative urinary symptoms Stricture Retrograde ejaculation Erectile dysfunction Symptom score (AUA) Length of hospital stay Q_{max} Total voided volume

TUVP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Küpeli 1998a Study design: RCT Location: Turkey Recruitment dates: July–October 1995 Mean length follow-up: 4.2 months	Inclusion criteria: patients with symptomatic BPH; peak urine flow rate < 15 ml/s; IPPS > 8 Exclusion criteria: prostate cancer; previous treatment for prostate; neurogenic bladder Number of patients randomised: 60	TUVP ($n = 30$) vs TURP ($n = 30$)	Mean age±SD (years): 62.4±3.2 Mean IPSS: 19.4 Mean Q_{max}±SD (ml/s): 7.9±2.1 Prostate size±SD (g): 48.9±8.7 (TRUS) Power: cutting current: 250–300 W Catheter protocol: unclear Other: 24Fr resectoscope, Storz Spike 24Fr; anaesthesia: epidural, 14	Mean age±SD (years): 59.8±2.6 Mean IPSS: 21.6 Mean Q_{max}±SD (ml/s): 9.2±2.6 Prostate size±SD (g): 51.7±9.1(TRUS) Power: cutting current: 180–120 W Catheter protocol: unclear Other: anaesthesia: general, 8; spinal, 18; epidural, 4	Duration of operation Blood transfusion Recatheterisation Clot retention Urinary retention Symptom score (IPSS) Q_{max} Prostate size Erectile dysfunction Retrograde ejaculation

TUVP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Küpeli 1998b Study design: RCT Location: Turkey Recruitment dates: July–October 1995 Length follow-up: 12 months	Inclusion criteria: patients with symptomatic BPH; peak urine flow rate < 15 ml/s; AUA score ≥ 7 Exclusion criteria: prostate cancer; prostate size > 60 g from TRUS Number of patients randomised: 66	TUVP ($n = 30$) vs TURP ($n = 36$)	Mean age (range) (years): 65.7 (52–72) Mean AUA (range): 13.7 (7–29) Mean Q_{max} (range) (ml/s): 8.3 (2.7–11.8) Prostate size ± SD (g): 41.46 ± 10.7 (TRUS) Power: cutting current: 180–250 W (average: 220 W) Visible sites of bleeding coagulation: 60 W (range: 40–70 W) Other: 24Fr resectoscope	Mean age (range) (years): 62.4 (56–70) Mean AUA (range): 14.6 (8–32) Mean Q_{max} (range) (ml/s): 8.8 (3–12.4) Prostate size ± SD (g): 43.57 ± 12.01 (TRUS) Other: 24Fr resectoscope	Duration of operation Intraoperative complications Blood transfusion UTI Urinary retention Catheter duration Irritative urinary symptoms Stricture Incontinence Reoperation Symptom score (AUA) Length of hospital stay Q_{max} Recatheterisation

TUVP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Nathan 1996 Study design: RCT Location: UK Length of follow-up: 12 weeks	Inclusion criteria: men requiring TURP Exclusion criteria: previous prostate operation; indwelling catheter; on anticoagulant therapy Number of patients randomised: 40	TUVP ($n = 20$) vs TURP ($n = 20$)	Mean age (range) (years): 65.4 (57–77) Mean IPSS±SD: 21.9±4.2 (13–27) Mean Q_{max}±SD: 10.2±4.4 (3.1–21.8) Mean urine flow±SD (ml): 5.5±2.5 (1.2–10) Mean residual volume (ml): 132 (0–300) Mean prostate size±SD (g): 53.5±28 (30–130) (TRUS) Mean QoL±SD (IPSS): 4.0±0.7 (3–6) Power: cutting: 200W; coagulation: 40W Duration of procedure: 39.2 minutes Catheter protocol: three-way 20Fr Porges catheter at the end of the procedure Other: 25Ch ACMI resectoscope and the VaporTrode™ (Gyrus ACMI, Southborough, MA, USA)	Mean age (range) (years): 69.2 (57–81) Mean IPSS±SD: 17±4.3 (9–24) Mean Q_{max}±SD: 7.2±3.5 (2.5–15) Mean urine flow±SD (ml): 3.5±1.2 (1.5–7.1) Mean residual volume (ml): 120 (0–380) Mean prostate size±SD (g): 53.4±21 (17–91) (TRUS) Mean QoL±SD (IPSS): 4.9±0.7 (4–6) Power: cutting: 120W; coagulation: 60W Duration of procedure: 37.4 minutes Catheter protocol: three-way 20Fr Porges catheter at the end of the procedure Other: JEAW using a 24Ch continuous resectoscope and its loop	Duration of operation Blood transfusion UTI Urinary retention Catheter duration Clot retention TUR syndrome Reoperation Symptom score (IPSS) Quality of life score Length of hospital stay Q_{max} Mean urine flow Residual volume

TUVP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Netto 1999 Study design: RCT Location: Brazil Mean length follow-up (range): 17 (11–23) months	Inclusion criteria: patients with more than 1 year symptomatic and uncomplicated BPH; peak urine flow rate < 15 ml/s; residual urine volume < 250 ml; voided volume ≥ 250 ml; IPSS score > 12; prostate volume between 25 and 90 ml Exclusion criteria: history or evidence of prostate cancer; patients who have been exposed to drugs such as alpha-antagonists, anticholinergics, cholinergics, diuretics, estrogens, androgens, antihypertensive medications or other agents within the previous 2 weeks; pelvic irradiation, urethral stricture or surgery for BPH or evidence of UT stone disease; neurogenic bladder dysfunction; hydronephrosis or a UTI within 3 months before the study Number of patients randomised: 78	TUVP ($n = 40$) vs TURP ($n = 38$)	Mean age (range) (years): 66.8 (52–80) Mean IPSS ± SD: 19.65 ± 6.14 Mean Q_{max} ± SD (ml/s): 7.88 ± 2.51 Mean residual volume ± SD (ml): 73.0 ± 5.81 Mean prostate size ± SD (ml): 46.88 ± 17.1 Power: cutting current: 250–300 W Catheter protocol: 22Fr Foley catheter Other: spinal anaesthesia; the cautery mode was not used for haemostasis in this group; all received antibiotics for a week after the procedure; resection loop was used for one to three patients (mean 2.3)	Mean age (range) (years): 65 (51–82) Mean IPSS ± SD: 24.29 ± 6.48 Mean Q_{max} ± SD (ml/s): 6.77 ± 3.08 Mean residual volume ± SD (ml): 88.64 ± 8.43 Mean prostate size ± SD (ml): 44.68 ± 8.50 (by TRUS) Power: cutting current: 50–80 W Haemostasis: 50 W Catheter protocol: 22Fr Foley catheter Other: spinal anaesthesia; all received antibiotics for a week after the procedure; resection loop was used for one to five patients (mean 3.2)	Catheter duration TUR syndrome Irritative urinary symptoms Retention Stricture Retrograde ejaculation Erectile dysfunction Symptom score (IPSS) Length of hospital stay Q_{max} Residual volume

TUVP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Nuhoğlu 2005 Study design: RCT Location: US Recruitment dates: 1996–2003 Length follow-up: 5.6 years	Inclusion criteria: BPH with LUT symptoms; Q_{max} < 10 ml/s; IPSS > 15 Exclusion criteria: prostate cancer or suspected; history of prostate or urethral surgery; neurogenic bladder Number of patients randomised: 77	TUVP ($n = 37$) vs TURP ($n = 40$) Additional information: balloon inflated with 35 ml normal saline. No difference between groups	Mean age±SD (years): 64.5±8.7 Mean IPSS±SD: 17.6±7.2 Mean Q_{max}±SD (ml): 56.3±2.1 Mean urine flow±SD (ml): 2.6±1.2 Mean residual volume±SD (ml): 88±20 Mean prostate size±SD (ml): 39±8.1 (TRUS) Power: cutting current: 250 W; coagulation current: 100W Catheter protocol: three-way catheter without traction inserted at end of procedure Other: Spike loop (Storz) electrode; antibiotics according to surgeon's normal practice; all patients discharged after urethral catheter removed and first micturition observed	Mean age±SD (years): 65.1±9.4 Mean IPSS±SD: 17.3±6.8 Mean Q_{max}±SD (ml): 5.9±2.6 Mean urine flow±SD (ml): 2.4±1.3 Mean residual volume±SD (ml): 95±26 Mean prostate size±SD (ml): 39± 7.7 (TRUS) Catheter protocol: three-way catheter without traction inserted at end of procedure Other: standard 24Fr Storz resectoscope, antibiotics according to surgeon's normal practice; all patients discharged after urethral catheter removed and first micturition observed	Symptom score (IPSS) Q_{max} Mean urine flow Residual volume Prostate size Blood transfusion Catheter duration Retention Retrograde ejaculation Erectile dysfunction Reoperation UTI

TUVP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Patel 1997 Study design: RCT Location: USA Mean length follow-up: 6 months:	Inclusion criteria: acute urinary retention; moderate to severe symptoms of bladder outlet obstruction Exclusion criteria: UTI; co-existent neurological cause of voiding dysfunction Number of patients randomised: 12	TUVP (6) vs TURP (6)	Mean age (range) (years): 67 (60–85) Mean IPSS (range): 29.6 (28–31) Mean Q_{max} (range) (ml/s): 10 (7.3–13.1) Mean prostate volume (range) (ml): 54 (25–90) Frequency: 10 MHz Power: cutting current: 150 W; coagulation current: 40 W	Mean age (range) (years): 65.8 (59–71) Mean IPSS (range): 23.3 (17–29) Mean Q_{max} (range) (ml/s): 7.5 (5.1–11) Mean prostate volume (range) (ml): 64.6 (31.5–119) Frequency: 10 MHz Power: cutting current: 150 W; coagulation current: 40 W	Duration of operation Catheter duration Erectile dysfunction Symptom score (IPSS) Q_{max}

TUVP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Shokeir 1997 Study design: RCT Location: Saudi Arabia Recruitment dates: February 1996–February 1998 Length follow-up: 24 months	Inclusion criteria: peak urine flow rate < 12 ml/s; AUA score > 15; prostate size < 60 g measured by TRUS Exclusion criteria: previous prostate surgery Number of patients randomised: 70	TUVP (35) vs TURP (35) Additional information: TUVP: mean follow-up±SD (range): 14.5±1.8 (12–17) months; TURP: mean follow-up±SD (range): 14.3±2.1 (12–17) months	Mean age±SD (range) (years): 68.4±9.5 (54–85) Mean AUA±SD (range): 26.3±5.2 (16–29) Mean Q_{max}±SD (ml/s): 7.8±2.1 (4.1–11.4) Mean residual volume±SD (range) (ml): 75.2±21.2 (40–120) Mean prostate size±SD (range) (g): 44.6±10.1 (30–60) Power: cutting current: 240 W (200–300); coagulation current: 70 W (50–80) Other: spinal/epidural anaesthesia, 28; general anaesthesia, 7	Mean age±SD (range) (years): 68.4±9.6 (51–86) Mean AUA±SD (range): 25.1±5.5 (18–30) Mean Q_{max}±SD (ml/s): 6.9±1.7 (3.4–10) Mean residual volume±SD (range) (ml): 77.1±20.3 (46–110) Mean prostate size±SD (range) (g): 48.8±10.6 (28–60) Catheter protocol: 22Fr three-way catheter Other: spinal/epidural anaesthesia, 30; general anaesthesia, 5	Duration of operation Catheter duration Recatheterisation Irritative urinary symptoms Symptom score (AUA) Length of hospital stay Q_{max} Residual volume

TUVP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
van Melick 2003 Study design: RCT Location: Netherlands Recruitment dates: 1996–2001 Mean length follow-up: up to 7 years Links with: van Melick 2002; van Melick 2003	Inclusion criteria: patients with lower UT symptoms suggestive of BPH; met ISC criteria for BPH; Schafer obstruction score ≥2; prostate size between 20 and 65 ml Exclusion criteria: age ≤45 years Number of patients randomised: 96	TURP ($n = 50$) vs TUVP ($n = 46$)	Mean age±SD (years): 64±10 Mean IPSS±SD: 20.2±6.6 Mean Q_{max}±SD (ml/s): 11±4 Mean residual volume±SD: 290±145 Mean prostate size±SD (ml): 35±11 Quality of life score (IPSS)±SD: 4.1±1.4 Detrusor pressure±SD (cmH_2O): 75±26 Intervention performed by alternate experienced urologist and trainees Catheter protocol: 20Fr transurethral catheter Preprocedural antibiotics: type IV perioperatively Other: VaporTrode element (Circon ACMI)	Mean age±SD (years): 66±8 Mean IPSS±SD: 11±4 Mean Q_{max}±SD (ml/s): 10.8±4.76 Mean residual volume±SD: 350±140 Mean prostate size±SD (ml): 37±11 Quality of life score (IPSS)±SD: 3.8±1.5 Detrusor pressure±SD (cmH_2O): 76±27 Intervention performed by alternate experienced urologist and trainees Catheter protocol: suprapubic if required Preprocedural antibiotics: type IV perioperatively Other: standard 24Fr resectoscope	Duration of operation Intraoperative complications Blood transfusion UTI Catheter duration Clot retention Cardiovascular events Mortality Incontinence Stricture Reoperation Retention Symptom score (AUA) Quality of life score Q_{max} Residual volume

TUVP vs TURP					
Study details	**Participant characteristics**	**Intervention/ comparator**	**Intervention population characteristics**	**Comparator population characteristics**	**Outcomes**
Wang 2002 Study design: RCT Location: China Length follow-up: 24 months	Exclusion criteria: prostate cancer: suspicious, confirmed or investigated with biopsy; neurogenic bladder; urethral stricture Number of patients randomised: 206	TUVP ($n = 97$) vs TURP ($n = 109$)	Mean age (range) (years): 72 (62–85) Mean IPSS (range): 20 (8–30) Mean Q_{max} (range) (ml/s): 7 (2–13) Mean residual volume (range) (ml): 120 (60–400) Power: 240–260 W Other: epidural anaesthesia/ general anaesthesia	Mean age (range) (years): 71 (61–84) Mean IPSS (range): 20 (9–31) Mean Q_{max} (range) (ml/s): 7 (3–12) Mean residual volume (range) (ml): 1231(60–380) Power: 100–140 W Other: spinal/epidural anaesthesia	Duration of operation Stricture Symptom score (IPSS) Q_{max} Residual volume TUR syndrome Mortality

B-TUVP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Dunsmuir 2003 Study design: RCT Location: Australia Follow-up range: 1 year Links with: Love 2003 (abstract)	Inclusion criteria: patients presenting to the outpatient clinic with lower UT symptoms, secondary to BPH and considered to be appropriate for TURP Exclusion criteria: age > 80 years; suspicion of prostate cancer (men with PSA > 4 ng/ml unless biopsies were negative); previous prostate surgery; acute urinary retention; prostate > 80 ml; on anticoagulant therapy Number of patients randomised: 40	B-TUVP ($n = 20$) vs TURP ($n = 20$)	Mean age ± SD (range) (years): 63 ± 7.1 (59–79) Mean IPSS score ± SD (range): 24 ± 6.9 (9–30) Mean Q_{max} ± SD (range) (ml/s): 9.6 ± 3 (8–14) Mean residual volume ± SD (range) (ml): 112 ± 13.3 (42–188) Mean prostate size ± SD (range) (ml): 39 ± 19 (16–56) Mean QoL (AUA) score ± SD (range): 12 ± 3.4 (9–18) Catheter protocol: yes, 22Fr three-way removed after macroscopic haematuria disappeared	Mean age ± SD (range) (years): 60 ± 6.5 (60–78) Mean IPSS score ± SD (range): 17 ± 6.2 (10–29) Mean Q_{max} ± SD (range) (ml/s): 10.4 ± 3.1 (7–14) Mean residual volume ± SD (range) (ml): 96 ± 11.4 (40–167) Mean prostate size ± SD (range) (ml): 42 ± 21 (22–60) Mean QoL (AUA) score ± SD (range): 11 ± 3.2 (7–17) Catheter protocol: yes, 22Fr three-way removed after macroscopic haematuria disappeared	

B-TUVP vs TURP

Study details	Participant characteristics	Intervention/ comparator	Intervention population characteristics	Comparator population characteristics	Outcomes
Hon 2006 Study design: RCT Location: UK Follow-up range: 9 months	Inclusion criteria: men with BOO undergoing elective transurethral prostatectomy Exclusion criteria: prostate size > 80 ml by TRUS; confirmed or suspected prostate cancer; previous myocardial infarction within the 6 months preceding surgery; previous TURP; serum creatine > 200 mmol/l Number of patients randomised: 160	B-TUVP ($n = 81$) vs TURP ($n = 79$)	Mean age ± SD (years): 66.1 ± 8.5 Mean IPSS score ± SD: 21.3 ± 6.2 Mean Q_{max} ± SD (ml/s): 12.0 ± 6.4 Mean urine flow rate ± SD (ml/s): 5.9 ± 3.3 Mean residual volume ± SD (ml): 147 ± 156 Mean prostate size ± SD (ml): 38 ± 17.5 Mean QoL score ± SD: 4.2 ± 1.1 Power: 160 W cutting; 80 W coagulation Intervention performed by consultant in 69% of cases	Mean age ± SD (years): 68.1 ± 7.5 Mean IPSS score ± SD: 20.6 ± 7.0 Mean Q_{max} ± SD (ml/s): 11.9 ± 6.0 Mean urine flow rate ± SD (ml/s): 6.1 ± 2.9 Mean residual volume ± SD (ml): 182 ± 180 Mean prostate size ± SD (ml): 40 ± 17.1 Mean QoL score ± SD: 4.3 ± 1.3 Intervention performed by consultant in 57% of cases	Duration of operation Intraoperative complications Blood transfusion Stricture Reoperation Symptom score (IPSS) Quality of life Length of hospital stay Rehospitalisation Q_{max} Mean urine flow rate Residual volume

Appendix 8
Data tables

Abbreviations used throughout this appendix are as follows: B-TURP, bipolar transurethral resection of the prostate; B-TUVP, bipolar transurethral vaporisation of the prostate; B-TUVRP, bipolar transurethral vaporection of the prostate; TEAP, transurethral ethanol ablation of the prostate; TUIP, transurethral incision of the prostate; TUMT, transurethral microwave thermotherapy; TUNA, transurethral needle ablation; TUR, transurethral resection; TURP, transurethral resection of the prostate; TUVP, transurethral electrovaporisation of the prostate; TUVRP, transurethral vaporesection of the prostate.

Appendix 8.1: TUMT versus TURP

TABLE 42 *Mean symptom scores, SD (range)*

	Baseline		3 months			6 months		
Study	**TURP**	**TUMT**	**TURP**	**TUMT**	***p*-value**	**TURP**	**TUMT**	***p*- value**
Ahmed 1997 (AUA)	*n* = 30 18.4 (16.7–20.1)[a]	*n* = 30 18.5 (17.1–20.1)[a]				*n* = 30 5.2 (3.9–6.5)[a] *p* < 0.001	*n* = 30 5.3 (3.9–6.4)[a] *p* = 0.001	
Dahlstrand 1993 (Madsen)	*n* = 39 13.3, SD 4.2 (8–22)	*n* = 39 11.2, SD 3.1 (8–18)	*n* = 39 1.6, SD 2.5 (0–11)	*n* = 37 2.3, SD 2.7 (0–13)	NS	*n* = 23 0.9, SD 1.6 (0–6)	*n* = 28 3.1, SD 3.0 (0–11)	
Dahlstrand 1995 (Madsen)	*n* = 32 13.6, SD 3.9 (12.1–15)[a]	*n* = 37 12.1, SD 3.0 (11.1–13.1)[a]	*n* = 32 1.7, SD 2.6 (0.7–2.6)[a] *p* < 0.01	*n* = 36 2.9, SD 3.0 (1.9–3.9)[a] *p* < 0.01		*n* = 32 1.1, SD 1.8 (0.4–1.7)[a] *p* < 0.01	*n* = 37 2.6, SD 2.6 (1.8–3.5)[a] *p* < 0.01	
d'Ancona 1998 (Madsen)	*n* = 21 13.8, SD 4.2	*n* = 31 13.3, SD 4.2	*n* = 21 3.6, SD 3.2	*n* = 31 5.2, SD 4.1		*n* = 20 2.5, SD 2.3	*n* = 28 4.4, SD 4.4	
d'Ancona 1998 (IPSS)	*n* = 21 16.7, SD 5.6	*n* = 31 18.3, SD 6.3	*n* = 21 5.1, SD 3.1	*n* = 31 15.1, SD 8.2		*n* = 20 4.0, SD 2.1	*n* = 38 6.7, SD 5.5	
de la Rosette 2003; in Francisca 2000 (Madsen)	*n* = 70 15.1, SD 4.1 (8–24)	*n* = 69 14.9, SD 4.0(8–22)	*n* = 48 3.5, SD 3.7	*n* = 54 6.4, SD 5.7	< 0.01			
de la Rosette 2003 (IPSS)	*n* = 68 20.8, SD 6.2 (13–29)	*n* = 68 20.1, SD 6.5 (10–27)	*n* = 55 5.3, SD 5.2	*n* = 57 10.5, SD 7.9				
Wagrell 2002 (IPSS)	*n* = 46 20.4, SD 5.9	*n* = 99 21.0, SD 5.4	*n* = 41 6.7, SD 4.3	*n* = 85 8.4, SD 5.5		*n* = 43 5.9, SD 5.0	*n* = 95 7.4, SD 6.2	

NS, not significant.

a 95% confidence interval.

b At 30 months.

12 months			24 months			3 years		
TURP	**TUMT**	***p*- value**	**TURP**	**TUMT**	***p*- value**	**TURP**	**TUMT**	***p*-value**
n = 22 0.9, SD 2.2 (0–9)	*n* = 25 2.7, SD 2.9 (0–10)	< 0.05						
n = 31 0.6, SD 1.4 (0.1–1.1)[a] *p* < 0.01	*n* = 33 2.2, SD 2.4 (1.3–3.0)[a] *p* < 0.01		*n* = 30 1.2, SD 1.9 (0.4–1.9)[a] *p* < 0.01	*n* = 31 2.3, SD 3.0 (1.2–3.4)[a] *p* < 0.01				
n = 17 2.7, SD 4.0	*n* = 27 4.2, SD 4.6		*n* = 12[b] 3.6, SD 3.1	*n* = 17[b] 5.8, SD 3.8	> 0.05			
n = 17 3.4, SD 2.2	*n* = 27 5.0, SD 2.7		*n* = 12[b] 6.3, SD 4.8	*n* = 17[b] 7.9, SD 6.3	> 0 0.05			
n = 35 2.1, SD 2.1	*n* = 38 5.5, SD 4.6	< 0.01						
n = 48 3.2, SD 3.0	*n* = 58 8.1, SD 6.0		*n* = 38 3.7, SD 4.9	*n* = 46 9.3 SD 7.3		*n* = 33 2.6 SD 2.2	*n* = 35 11.5 SD 6.4	
n = 43 7.1, SD 6.6	*n* = 93 7.2, SD 6.2	0.0603	*n* = ? 5.0	*n* = ? 7.0				

TABLE 43 *Complications*

		TURP			TUMT			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Periprocedural (intraoperative or immediate postoperative)								
Blood loss (ml)	Dahlstrand 1995	32	282, SD 102		37			
Blood transfusion	Ahmed 1997	30	4	13.3	30	0	0	
	Dahlstrand 1995	32	0	0	37			
	d'Ancona 1998	21	0	0	31	0	0	
Clot retention	Wagrell 2002	51	1	1.9	100			Serious
Incontinence	Dahlstrand 1993	40	4	10	39	7	18	
Mortality	Dahlstrand 1993	40	1	2.5	39			
	Dahlstrand 1995	32	1	3.1	37			Brain tumour at 6 months
	d'Ancona 1998	21	–	–	31	1	3.2	Death, unrelated disease
	de la Rosette 2003	66	2	3	66	2	3	At 36 months
	Wagrell 2002	51	1	1.9	100			27 days after treatment
TUR syndrome	Wagrell 2002	51	1	1.9	100			Serious
Urinary tract infection	Ahmed 1997	30	3	13.3	30	1	3.3	TURP: urinary tract infection leading to septicaemia in 1 and 2 were *Escherichia coli* infection TUMT: epididymo-orchitis and haematuria. This patient had urethral catheter for 6 weeks
	Dahlstrand 1993	40	4	10	39	5	12.8	
	Dahlstrand 1995	32	4	12.5	37	5	13.5	At > 1 week
	Wagrell 2002	51	1	1.9	100			Serious
Urinary retention	de la Rosette 2003	66			66	2	3	
	Wagrell 2002	51			100	1	1	Serious retention

		TURP			TUMT			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Postoperative (3–12 months)								
Erectile dysfunction	Ahmed 1997	19	4	21	18	0	0	
	Dahlstrand 1995	32	0	0	37	0	0	Unclear as to whether all patients were sexually active
	de la Rosette 2003; in Francisca 1999	53	9	70	35	7	20	Problem with erection, premature loss of erection
		48	10	21	50	14	28	
	Wagrell 2002	51?		6	100?		13	Impotence (up to 12 months)
Incontinence	Dahlstrand 1993	40	1	2.5	39			Urinary leakage
	Wagrell 2002	51	7	13	100	3	3	Transient non-serious up to 12 months
Irritative urinary symptoms	d'Ancona 1998	21	4	19	31	9	29	
Retention	Wagrell 2002	51	7	13	100	19	19	Non-serious
Retrograde ejaculation	Ahmed 1997	19	12	63.2	18	4	22.2	
	Dahlstrand 1993	16	4	25		0	0	
	Dahlstrand 1995	32			37			TURP: half with prograde ejaculation became retrograde after TURP
	de la Rosette 2003	42	32	76	46	14	30	
Stricture	Ahmed 1997	30	1	3.3	30			Bladder neck stenosis; two urethral and one was bladder neck
	Dahlstrand 1993	40	3	7.5	39	–		Urethral stricture requiring internal urethomy
	Dahlstrand 1995	32	2	6.2	37			
	de la Rosette 1998	66	2	3	66	1	1.5	Urethral; total for 36 months
Urinary tract infection	d'Ancona 1998	21	1	4.7	31	5	16	At 12 months
Postoperative (> 12 months)								
Erectile dysfunction	Wagrell 2002	51?		15	100?		11	Impotence at 24 months
Incontinence	de la Rosette 2003; in Floratos 2001	66	1	1.5	–	–	–	At 36 months
Stricture	de la Rosette 1998	66	2	3	66	1	1.5	Urethral; total for 36 months

TABLE 44 *Quality of life (mean, SD)*

	Baseline		3 months			12 months		
Study	**TURP**	**TUMT**	**TURP**	**TUMT**	***p*-value**	**TURP**	**TUMT**	***p*-value**
de la Rosette 2003	*n* = 66 4, SD 1.1	*n* = 78 4, SD 0.9	*n* = 48 1.3 (0–5); change from baseline 69%	*n* = 54 2.1 (0–6); change from baseline 50%		*n* = 48 0.6, SD 0.7 (0–2); change from baseline 86%	*n* = 58 1.9, SD 1.3 (0–5); change from baseline 55%	
Wagrell 2003	*n* = 46 4.2, SD 1.1	*n* = 99 4.3, SD 1.0	*n* = 41 1.1, SD 1.6	*n* = 84 1.5, SD 1.4		*n* = 43 1.4, SD 1.3	*n* = 93 1.5, SD 1.7	0.972

24 months			3 years			
TURP	**TUMT**	***p*-value**	**TURP**	**TUMT**	***p*-value**	**Comments**
n = 38 0.9, SD 1.1	*n* = 46 1.9, SD 1.0		*n* = 33 0.6, SD 0.8	*n* = 35 2.3, SD 1.2		IPSS QoL (0–6); quality of life data obtained from Francisca 1999 and de la Rosette 2003
						IPSS QoL (0–6)

TABLE 45 *Urodynamic measures [mean, SD, (range)]*

Urodynamic outcome	Study	Baseline		3 months			6 months		
		TURP	**TUMT**	**TURP**	**TUMT**	***p*-value**	**TURP**	**TUMT**	***p*-value**
Peak urine flow rate (ml/s)	Ahmed 1997	*n* = 30 9.5 (16.7–20.1)[a]	*n* = 30 10.1 (9.2–10.9)[a]				*n* = 30 14.6 (13.4–15.8)[a]	*n* = 30 9.1 (8–10.2)[a]	
	Dahlstrand 1994	*n* = 32 8.3, SD 3.2	*n* = 38 8.4, SD 2.6	*n* = 32 18.1, SD 7.1 *p* < 0.001	*n* = 37 11.5, SD 4.2 *p* < 0.001	< 0.001	*n* = 31 18.6, SD 5.2 *p* < 0.01	*n* = 38 11.7, SD 3.9 *p* < 0.001	< 0.001
	Dahlstrand 1995	*n* = 32 8.6, SD 3.0 (12.1–15.0)[a]	*n* = 37 8.6, SD 2.5 (7.7–9.4)[a]	*n* = 32 18.1, SD 7.1 *p* < 0.001	*n* = 36 11.6, SD 4.2 *p* < 0.001	< 0.001	*n* = 31 18.6, SD 5.2 *p* < 0.001	*n* = 37 11.8, SD 3.9 *p* < 0.001	
	d'Ancona 1998	*n* = 21 9.3, SD 3.4	*n* = 31 9.3, SD 3.9	*n* = 21 19.6, SD 11.2	*n* = 31 15.5, SD 8.0	>0.05	*n* = 20 15.3, SD 5.9	*n* = 28 17.0, SD 7.5	> 0.05
	de la Rosette 2003	*n* = 66 7.8, SD 2.8	*n* = 78 9.2, SD 3.1	*n* = 47 25.0, SD 7.5	*n* = 54 15.5, SD 12.1	<0.01			
	Wagrell 2002	*n* = 35 7.9, SD 2.7	*n* = 79 7.6, SD 2.7	*n* = 41 14.6, SD 9.0	*n* = 81 12.8, SD 6.1		*n* = 43 13.8, SD 6.8	*n* = 91 13.5, SD 6.1	
Total voided volume (ml)	de la Rosette 2003; in Francisca 2000	*n* = 68 223, SD 117	*n* = 68 222, SD 85	*n* = 47 263, SD 141	*n* = 52 249, SD 116	0.77			
	d'Ancona 1998	*n* = 21 178, SD 84.1	*n* = 31 193.5, SD 85.7	*n* = 21 234.1, SD 95.5	*n* = 31 244.4, SD 161		*n* = 20 219.3, SD 107.7	*n* = 28 258.9, SD 130	
Residual volume (ml)	Ahmed 1997	*n* = 30 109.1 (88.2–130)[a]	*n* = 30 94.4 (70.0–112.8)[a]				*n* = 30 32.5 (22.5–40.5)[a] *p* = NS	*n* = 30 104.9 (78.9–130.9)[a] *p* < 0.001	
	d'Ancona 1998	*n* = 21 91.1, SD 104.7	*n* = 31 49.5, SD 69.9	*n* = 21 10.5, SD 24.5	*n* = 31 25.5, SD 58.1		*n* = 20 52.7, SD 70.7	*n* = 28 30.6, SD 41.0	
	Wagrell 2002	*n* = 45 94, SD 82	*n* = 99 106, SD 77						
	Dahlstrand 1995	*n* = 32 1104, SD 95 (70-139)[a]	*n* = 37 194, SD (68-120)[a]	*n* = 32 134, SD 32 (22-45)[a] *p* < 0.001	*n* = 36 147, SD 45 (32-62)[a] *p* < 0.001		*n* = 32 134, SD 30 (23-44)[a] *p* < 0.001	*n* = 37 166, SD 64 (44-87)[a] *p* < 0.001	
	de la Rosette 2003	*n* = 66 97, SD 99	*n* = 78 68, SD 85	*n* = 53 14, SD 21	*n* = 57 64, SD 76	< 0.01; data in Francisca 2000			

12 months			24 months			3 years			
TURP	**TUMT**	***p*-value**	**TURP**	**TUMT**	***p*-value**	**TURP**	**TUMT**	***p*-value**	**Comments**
n = 31 18.9, SD 6.0 *p* < 0.001	*n* = 33 12.3, SD 4.1 *p* < 0.001	< 0.001	*n* = 14 19.7, SD 5.5 *p* < 0.001	*n* = 13 12.8, SD 4.8 *p* < 0.01	< 0.01				It is suspected that these two studies are the same. Uncertainty exists because, in terms of symptoms scores, patients appear to be different. Attempts to contact authors were made with no success
n = 31 18.9, SD 6.0 *p* < 0.01	*n* = 33 12.6, SD 3.9 *p* < 0.01		*n* = 29 17.6, SD 5.9 *p* < 0.001	*n* = 30 12.3, SD 4.4 *p* < 0.001					
n = 17 19.3, SD 10.7	*n* = 27 17.1, SD 7.8	>0.05	*n* = 12 19.1, SD 8.2[b]	*n* = 17 15.1, SD 9.6[b]	> 0.05				
n = 48 23.8, SD 10.4	*n* = 58 14.9, SD 7.2	<0.01	*n* = 38 22.5, SD 11.4	*n* = 46 13.7, SD 6.4		*n*=33 22.8, SD 11.6	*n*=35 11.7, SD 5.8		
n = 31 15.2, SD 7.8	*n* = 73 13.3, SD 6.0	0.944	*n* = ? 15.6	*n* = ? 12.4	From Wagrell 2002 abstract				
n = 17 272.4, SD 151.3	*n* = 27 274.9, SD 145.2		*n* = 12 272.7, SD 133.4[b]	*n* = 17 249.7, SD 182[b]					
n = 17 23.6, SD 29.8	*n* = 27 70.4, SD 81.3		*n* = 12 9.3, SD 14.6[b]	*n* = 17 27.4, SD 49.1[b]					
n = 38 54, SD 77	*n* = 86 49, SD 70	0.680	*n* = ? 40	*n* = ? 55	From the abstract Wagrell 2002				
n = 31 123, SD 18 (16-29)[a] *p* < 0.001	*n* = 33 152, SD 64 (30-75)[a] *p* < 0.01		*n* = 30 127, SD 2 (14–39)[a] *p* < 0.001	*n* = 31 148, SD 44 (32–64)[a] *p* < 0.001					
n = 48 20, SD 49	*n* = 54 55, SD 69		*n* = 38 29, SD 39	*n* = 46 91, SD 116		*n* = 33 35, SD 56	*n* = 35 94, SD 114		

continued

TABLE 45 *Urodynamic measures [mean, SD, (range)] (continued)*

Urodynamic outcome	Study	Baseline		3 months			6 months		
		TURP	**TUMT**	**TURP**	**TUMT**	***p*-value**	**TURP**	**TUMT**	***p*-value**
Detrusor pressure (cmH_2O)	Ahmed 1997	*n* = 30 96.7 (85.5–103.9)[a]	*n* = 30 98.5 (70.1–116.9)[a]				*n* = 30 48.8 (44.3–52.7)[a] *p* < 0.001	*n* = 30 105.6 (73.7–117.5)[a] *p* = NS	
	Dahlstrand 1995	*n* = 32 75, SD 31	*n* = 37 70, SD 29				*n* = 32 36, SD 8 *p* < 0.001	*n* = 37 67, SD 29 *p* = NS	
	d'Ancona 1998	*n* = 21 65.4, SD 24.9	*n* = 31 77.7, SD 40.0				*n* = 20 38.5, SD 24.5	*n* = 28 54.0, SD 15.9	
	Wagrell 2002	*n* = 45 79.4, SD 35.3	*n* = 99 73.7, SD 29.7						
Prostate size (ml)	Ahmed 1997	*n* = 30 46.1 (38.1-54.1)[a]	*n* = 30 36.6 (31.8-54.1)[a]				*n* = 30 25.4 (19.4-31.4)[a] *p* = 0.001	*n* = 30 34.5 (29.7-39.3)[a] *p* = NS	
	Dahlstrand 1995	*n* = 32 36.8, SD 16	*n* = 37 33.9, SD 11.9						
	d'Ancona 1998	*n* = 21 44.9, SD 15.3	*n* = 31 43.4, SD 11.8	*n* = 21 23.0, SD 8.8	*n* = 31 36.6, SD 10.0				
	de la Rosette 2003	*n* = 66 52, SD 19.2	*n* = 78 51, SD 20	*n* = 48 23, SD 7.4	*n* = 54 41, SD 16.1	*p* < 0.01; data in Francisca 2000	*n* = 35 25, SD 10.7	*n* = 38 48, SD 18.4	*p* < 0.01; data in Francisca 2000
	Wagrell 2002	*n* = 46 52.7, SD 17.3	*n* = 99 48.9, SD 15.8						

NS, not significant.
a 95% confidence interval.
b At 30 months.

12 months			24 months			3 years			
TURP	**TUMT**	***p*-value**	**TURP**	**TUMT**	***p*-value**	**TURP**	**TUMT**	***p*-value**	**Comments**
n = 39 41.8, SD 16.6	*n* = 82 48.5, SD 25.0								
			n = 30? 22.5, SD 10.9 *p* = NS	*n* = 31? 30.3, SD 9.6 *p* < 0.001					
n = 41 26, SD 13	*n* = 90 34, SD 16		*n* = ? 25	*n* = ? 37					

TABLE 46 *Descriptors of care [mean, SD, (range)]*

Outcome	Study	TURP			TUMT			Comments
Length of hospital stay (days)	d'Ancona 1998	*N* = 21 4.1 (4–5)			*N* = 31 Outpatient			Mean (range)
	de la Rosette 2003	*N* = 66 5.3, SD 3.4			*N* = 78 0, SD 0.16			Mean, SD; TUMT: 2/78 patients for 1 day
		N	***n***	**%**	***N***	***n***	**%**	
Reoperation	Ahmed 1997	30	–	–	30	1	3.3	Reoperation with TURP
	Dahlstrand 1993	40	1	2.5	39	4	10.2	TURP: one repeat TURP because of bladder neck sclerosis. TUMT: two had TURP at 6 months and two had repeat TUMT. One of those did not improve after TURP
	Dahlstrand 1995	32	4	12.5	37	4	10.8	TURP: three had repeat TURP because of bleeding or clots at 1 week after treatment; one had repeat TURP because of bladder neck stenosis at 1 year. TUMT: two had TURP at 6 months; two had repeat TUMT at 6 months but had to receive TURP at 1 year
	d'Ancona 1998	21	1	4.8	31	2	6.4	TURP: at 12 months. TUMT: TURP at 6 months

Appendix 8.2: TUMT versus sham

TABLE 47 *Mean symptom scores, SD (range)*

	Baseline		3 months		
Study	**TUMT**	**Sham**	**TUMT**	**Sham**	***p*-value**
Albala 2002 (AUA)	*n* = 125 22.2, SD 5.0	*n* = 65 22.7, SD 5.7	*n* = 124 12.4	*n* = 63 17	< 0.05
Bdesha 1994 (AUA)	*n* = 22 19.2 (16.3–22.1)[a]	*n* = 20 18.8 (16.0–21.7)[a]	*n* = 22 7.1 (5.0–9.2)[a]	*n* = 18 16.2 (12.8–19.6)[a]	< 0.001
Blute 1996 (Madsen)	*n* = 78 13.9, SD 3.4	*n* = 37 14.9, SD 3.1	*n* = 75 6.3, SD 5.0	*n* = 35 10.8, SD 4.4	< 0.00001
Blute 1996 (AUA)	*n* = 37 19.9, SD 7.2	*n* = 37 20.8, SD 6.7	*n* = 64 11.3, SD 6.3	*n* = 31 16.3, SD 7.6	
Brehmer 1999 (ICS)	*n* = 13 A: 49; B: 36	*n* = 13 A: 46; B: 36			
de la Rosette 1994; Francisca 1997 (Madsen)	*n* = 25 13.2, SD 3.4	*n* = 25 12.1, SD 2.9	*n* = 24 5.9, SE 0.8 *p* = 0.0001	*n* = 23 7.9, SE 0.9 *p* = 0.001	< 0.025
de Wildt 1996 (Madsen)	*n* = 47 13.7, SD 3.4 (12.7–14.7)[a]	*n* = 46 12.9, SD 3.1 (11.9–13.9)[a]	*n* = 45 4.7 (3.6–5.9)[a] *p* < 0.003	*n* = 43 10.4 (8.9–11.8)[a] *p* = 0.001	
Larson 1998 (AUA)	*n* = 124 20.8 (19.8–21.9)[a]	*n* = 42 21.3 (19.3–23.3)[a]	*n* = 123 9.6 (8.6–10.7) [a]	*n* = 40 14.5 (12.4–16.6)[a]	< 0.01
Nawrocki 1997 (AUA)	*n* = 38 19[b] (7–31)	*n* = 40 17.5[b] (7–28)			
Ogden 1993 (Madsen)	*n* = 21 14.5 (12.9–16.1)[a]	*n* = 19 14.2 (12.5–15.7)[a]	*n* = 21 4.3 (2.4–6.2)[a]	*n* = 19 12.8 (10.5–15)[a]	0.001
Roehrborn 1998 (AUA)	*n* = 147 23.6, SD 5.6	*n* = 73 23.9, SD 5.6	*n* = 147? 11.7	*n* = 73? 16.2	< 0.05
Trachtenberg 1998 (AUA)	*n* = 147 23.6 (12–35)	*n* = 73 23.9 (13–35)	*n* = 142 11.6	*n* = 70 16.4	< 0.05

a 95% confidence interval.
b Mean or median.

6 months			12 months			
TUMT	**Sham**	***p*-value**	**TUMT**	**Sham**	***p*-value**	**Comments**
n = *115* 12.1			*n* = 119 11.9 *p* < 0.05			
n = 68 5.74			*n* = 63 5.75			
						32 questions about the symptom (A) and bother related to symptom (B). Max A and B: 124 and 92 respectively. High score indicates worse symptoms
n = 24 5.3, SE 0.9	*n* = 23 9.1, SE 0.9	0.001	*n* = 12 3.3	*n* = 7 9.1		
			n = 33 4.2 (3.0–5.3)[a] *p* < 0.001	*n* = 13 8.2 (5.5–11.0)[a] *p* < 0.001		
n = 120 10.5 (9.2–11.8)[a]	*n* = 352 14.3 (12.2–16.4)[a]	< 0.05				
n = 38? 9.5[b] (1–27)	*n* = 40? 9.5[b] (0–30)	0.81				
n = 19 3.6	*n* = 5 7.7					
n = 124? 12.7	*n* = 65? 18.0	< 0.05				Same study as Trachtenberg 1998
n = 142 12.6	*n* = 70 17.9	< 0.05				Same study as Roehrborn 1998

TABLE 48 *Complications*

		TUMT			Sham			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Periprocedural (intraoperative or immediate postoperative)								
Blood loss (> 50 ml)	Larson 1998	125	1	0.8	44	0	0	
Blood transfusion	Larson 1998	125	0	0	44	0	0	
Urinary retention	Albala 2002	121	20	16.8	62	0	0	Number who were recatheterised
	Abbou 1995	66	0	0	37	0	0	Acute retention
	Blute 1996	78	20	25.6	37	0	0	Up to 3 months, requiring catheterisation
	de Wildt 1996	47	10	21.3	46	1	2.17	
	Larson 1998	125	10	8	44	1	2	1 week after procedure
	Nawrocki 1997	38	4	10.5	40	0	0	Acute retention in the first 24 hours after treatment requiring catheterisation for up to 1 week
	Ogden 1993	22	5	22.8	21	0	0	Immediate post treatment
Urinary tract infection	Abbou 1995	66	12	18	31	6	19	Cystitis
		66	1	1.5	31	1	3	Prostatitis
		66	0	0	31	1	3	Urinary tract infection
								Up to 4 weeks
	Larson 1998	125	8	6	44	22	5	
		125	3	2	44	0	0	Epididymitis
	Ogden 1993	22	5	22.8	21	1	4.8	Up to 3 months
Recatheterisation	Albala 2002	121	20	16.8	62	0	0	
Postoperative (3–12 months)								
Incontinence	Larson 1998	125	5	4	44			Transient incontinence; overflow incontinence defined as dripping or wetting of clothing involving a urine volume greater than one table spoon; time point is unclear

		TUMT			Sham			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Irritative urinary symptoms	Trachtenberg 1998; in Roehrborn 1998	147	32	21.8	73	6	8.2	$p = 0.019$; at up to 6 months; mostly patients with dysuria and urgency
Mortality	de Wildt 1996	47	1	2.1	46	0	0	Unrelated to treatment
Stricture/bladder neck	Albala 2002	121	0	0	62	0	0	Urethral stricture
	Larson 1998	125	3	2	44	0	0	Urethral stricture; time point is unclear (total follow-up is 1 year)
Erectile dysfunction	Bdesha 1994	22	0	0	20	0	0	Of the ones that had normal sexual function before the surgery
	Blute 1996	78			37			No reports of sexual dysfunction
	Trachtenberg 1998; in Roehrborn 1998	147	44	28.9	73	1	1.4	Sexual dysfunction includes mostly patients with hematospermia and other ejaculatory abnormalities as well as one patient with impotence due to corporeal fibrosis
Retention	Trachtenberg 1998; in Roehrborn 1998	147	8	5.4	73	0	0	$p = 0.055$; developed after the catheter was removed
Retrograde ejaculation	Albala 2002	121	0	0	62	0	0	Ejaculatory dysfunction; total follow-up 1 year
	Bdesha 1994	22	0	0	20	0	0	
	Blute 1996	78			37			No reports of sexual dysfunction
	Larson 1998	125	5	4	44	0	0	Loss of ejaculation; time point is unclear (total follow-up 1 year)
	Trachtenberg 1998; in Roehrborn 1998	147	21	14.3	73	1	4.4	Ejaculatory dysfunctions including hematospermia, abnormal ejaculation, painful ejaculation
Urinary tract infection	Trachtenberg 1998; in Roehrborn 1998	147	11	7.5	73	2	2.7	$p = 0.228$

TABLE 49 *Quality of life (mean, SD)*

	Baseline		3 months			6 months		
Study	**TUMT**	**Sham**	**TUMT**	**Sham**	***p*-value**	**TUMT**	**Sham**	***p*-value**
Albala 2002	*n* = 125 11.4	*n* = 65 NR	*n* = 124 6.2	*n* = ? NR		*n* = 115 5.8	*n* = ? NR	
Larson 1998	*n* = 125 4.2 (4.0–4.4)	*n* = 44 4.0 (3.6–4.3)				*n* = 120 2.2 (1.9–2.4) *p* < 0.0005 48% lower	*n* = 35 2.9 (2.5–3.3) 28% lower	
Ogden 1993	*n* = 22 13.4 (10.7–16.1)	*n* = 21 13.3 (9.2–17.4)	*n* = 21 5.1 (2.3–7.9)	*n* = 19 10.2 (6.9–13.5)				
Trachtenberg 1998; in Roehrborn 1998	*n* = 147 4.3, SD 1.0	*n* = 73 4.3, SD 1.1	*n* = 142 2.2	*n* = 70 3.1	< 0.05	*n* = 142 2.2	*n* = 70 3.2	< 0.05

12 months			
TUMT	**Sham**	***p*-value**	**Comments**
n = 119 5.8	*n* = ? NR		Mean; quality of life index
			Mean, 95% CI; quality of life score was evaluated by patient responses to the question of how they would feel if their current urinary symptoms were to continue indefinitely (no information was provided about the scale used). The improvement in QoL score remained at a comparable level at both the 9- and 12-month follow-up evaluations in the TUMT group
			Mean, 95% CI; the quality of life questionnaire was derived from the Veterans' Administration study of TURP vs watchful waiting. It had five sections: A = perception of urinary difficulties; B = sexual performance: C = activities of daily living; D = general psychological well-being; and E = social activities (A–D, high score = deterioriation; opposite for E)
			The observations made regarding the single QoL question, with a scale from 0 to 6, were nearly identical. At baseline the patients reported unfavorable and high QoL scores, representing strong dissatisfaction with urinary symptoms on the part of the participants. At 3 and 6 months there was a statistically significant difference in the improvement of QoL in the TUMT and sham-treated patients

TABLE 50 *Urodynamic measures [mean, SD, (range)]*

		Baseline		3 months	
Urodynamic outcome	**Study**	**TUMT**	**Sham**	**TUMT**	**Sham**
Peak urine flow rate (ml/s)	Abbou 1995	*n* = 66 10.4, SD 2.7	*n* = 31 9.9, SD 2.5		
	Albala 2002	*n* = 125 8.9, SD 3.0	*n* = 65 8.4, SD 2.0		
	Bdesha 1994	*n* = 22 12.3 (10.7–13.9)[a]	*n* = 20 10.8 (9.2–12.4)[a]	*n* = 22 14.6 (12.1–17.1)[a]	*n* = 18 9.8 (8.5–11.1)[a]
	Blute 1996	*n* = 78 7.3, SD 1.6	*n* = 36 7.4, SD 1.7	*n* = 74 11.5, SD 4.0 *p* < 0.0001	*n* = 34 9.4, SD 3.7 *p* < 0.001
	Brehmer 1999	*n* = 16 7.0[b]	*n* = 14 7.9[b]	*n* = 16 9.9[b]	*n* = 13 8.3[b]
	de Wildt 1996	*n* = 47 9.2, SD 2.5	*n* = 46 9.6, SD 2.7	*n* = 45 13.4 (11.7–15.3)[a] *p* = 0.846	*n* = 43 9.6 (8.7–10.7)[a] *p* < 0.001
	Larson 1998	*n* = 106 7.8 (7.4–8.2)[a]	*n* = 39 7.8 (7.0–8.6)[a]	*n* = 102 11.7 (10.7–12.8)[a]	*n* = 37 9.2 (8–10.4)[a]
	Nawrocki 1997	*n* = 38 8.83, SD 2.32	*n* = 40 9.44, SD 2.78		
	Ogden 1993	*n* = 22 8.5 (7.5–9.5)[a]	*n* = 21 7.4 (7.6–9.6)[a]	*n* = 21 13 (10.4–15.4)[a]	*n* = 19 9.2 (7.2–11.2)[a]
	Trachtenberg 1998; in Roehrborn 1998	*n* = 147 7.7, SD 2.0 (3.5–11.5)	*n* = 73 8.1, SD 2.0 (4.0–11.9)	*n* = 142 11	*n* = 70 9.7
	Zerbib 1994	*n* = 38 7.6, SD 3.8	*n* = 30 10.6, SD 5.8	*n* = 38 9.6, SD 5.8 *p* = 0.002	*n* = 30 10.8, SD 5.4 *p* = 0.4
Mean urine flow rate (ml/s)	Blute 1996	*n* = 78 4.0, SD 1.1	*n* = 36 3.9, SD 1.1		
	Trachtenberg 1998; in Roehrborn 1998	*n* = 147 4.3, SD 1.3	*n* = 73 4.5, SD 1.3	*n* = 142 6.0	*n* = 70 5.3

	6 months			12 months		
***p*-value**	**TUMT**	**Sham**	***p*-value**	**TUMT**	**Sham**	***p*-value**
				n = 119 13.9 *p* < 0.05		
NS						
< 0.01	*n* = 64 11.89			*n* = 53 12.14		
4-month data						
				n = 33 13.4 (11.6–15.1)[a] *p* < 0.001	*n* = 13 10.5 (7.9–13.1)[a] *p* = 0.657	
< 0.005	*n* = 101 11.8 (10.7–13)[a]	*n* = 31 9.8 (8.4–11.2)[a]	< 0.05	*n* = 107 11.6 (10.5–12.7)[a]		
	n = 38 9.94, SD 3.08	*n* = 40 9.49, SD 2.88				
	n = 19 13.5	*n* = 5 11.5	From abstract 1993			
< 0.05	*n* = 142 10.6	*n* = 70 9.6	< 0.05			
< 0.05	*n* = 142 6.0	*n* = 70 5.3	< 0.05			

continued

TABLE 50 *Urodynamic measures [mean, SD, (range)] (continued)*

		Baseline		3 months	
Urodynamic outcome	**Study**	**TUMT**	**Sham**	**TUMT**	**Sham**
Voided volume (ml)	Abbou 1995	*n* = 66 249, SD 82	*n* = 31 242, SD 89		
	Nawrocki 1997	*n* = 38 252.1, SD 64.79	*n* = 40 269.1, SD 72.29		
	Ogden 1993	*n* = 22 267 (235–297)[a]	*n* = 21 285 (235–334)[a]	*n* = 21 269 (224–313)[a]	*n* = 19 258 (218–297)
	Trachtenberg 1998; in Roehrborn 1998	*n* = 147 254, SD 82	*n* = 73 251, SD 92		
	Zerbib 1994	*n* = 38 151, SD 92.0	*n* = 30 145, SD 86.3	*n* = 38 154, SD 90.0 *p* = 0.7	*n* = 30 166, SD 91.3 *p* = 0.2
Residual volume (ml)	Abbou 1995	*n* = 66 66, SD 60	*n* = 31 61, SD 42		
	Albala 2002	*n* = 125 57.9, SD 53.9	*n* = 65 52.6, SD 51.9		
	Bdesha 1994	*n* = 22 104 (85–125)[a]	*n* = 20 80 (57–103)[a]	*n* = 22 52 (34–70)[a]	*n* = 18 94 (71–117)[a]
	Blute 1996	*n* = 78 140.4, SD 35.8	*n* = 36 145.2, SD 1.7	*n* = 71 145.5, SD 126.1	*n* = 33 147.2, SD 107.2
	de Wildt 1996	*n* = 47 93.9, SD 75.4	*n* = 46 84.7, SD 66.1	*n* = 45 34.2 (19.4–46.8)[a] *p* = 0.002	*n* = 43 104.1 (74.7–133.4)[a] *p* = 0.433
	Larson 1998	*n* = 105 99.1 (82.0–116.1)[a]	*n* = 39 103.6 (79.4–127.8)[a]	*n* = 103 68.4 (52.9–83.8)[a]	*n* = 37 93.0 (57.6–128.4)[a]
	Nawrocki 1997	*n* = 38 85.7, SD 56.6	*n* = 40 96.5, SD 56.3		
	Ogden 1993	*n* = 22 147 (116–117)[a]	*n* = 21 118 (84.8–151)[a]	*n* = 21 12 (–2.0–26)[a]	*n* = 19 171 (121–220)[a]
	Trachtenberg 1998; in Roehrborn 1998	*n* = 147 79.7, SD 20.1 (0–248)	*n* = 73 67.5, SD 63.4 (0–241)		
	Zerbib 1994	*n* = 38 110, SD 88.8	*n* = 30 84.2, SD 76.6	*n* = 38 67, SD 101.6 *p* = 0.006	*n* = 30 81.2, SD 66.8

NS, not significant.
a 95% confidence interval.
b Mean or median.

	6 months			12 months		
***p*-value**	**TUMT**	**Sham**	***p*-value**	**TUMT**	**Sham**	***p*-value**
	n = 38 229.6, SD 71.80	*n* = 40 239.8, SD 67.05				
	n = 19 11.8	*n* = 5 127	From abstract 1993			
<0.05						
				n = 33 49.7 (33.0–66.3)[a]	*n* = 13 56.3 (16.9–95.7)[a]	
NS	*n* = 101 84.5 (67.8–101.2)[a] *n* = 38 85.8, SD 51.2	*n* = 31 84.4 (58.3–110.6)[a] *n* = 40 106.3, SD 84.5	NS			

TABLE 51 *Descriptors of care*

		TUMT			Sham			
Outcome	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Reoperation	Bdesha 1994	22	–	–	20	16	80	Sham: had TUMT
	Brehmer 1999	16	3	18.7	14	7	50	TUMT: all had TURP. Sham: three had TURP and four had TUMT
	de Wildt 1996	47	8	17	46	27	58.7	TUMT: three had a TURP at 3 months, 6 months and 1 year; four had a TUMT at 6 months. Sham: 23 had a TUMT at 6 months and four had a TUMT at 1 year
	Larson 1998	125	2	1.6	44	27	61.4	Further treatment: either therapeutic procedure or medication. Sham: 20 had a TUMT procedure after 6 months; seven had TUMT before 6 months
	Ogden 1993	22	1	4.5	21	1	4.8	TUMT: chose to have TURP because of retention that had not resolved at 10 days. Sham: underwent TUMT. Total follow-up: 3 months

Appendix 8.3: TUNA versus TURP

TABLE 52 *Mean symptom scores, SD (range)*

	Baseline		3 months			6 months			12 months		
Study	**TURP**	**TUNA**	**TURP**	**TUNA**	***p*-value**	**TURP**	**TUNA**	***p*-value**	**TURP**	**TUNA**	***p*-value**
Cimentepe 2003 (IPSS)	*n* = 33 24.1, SD 3.8	*n* = 26 22.9, SD 3.8	*n* = 33? 8.3, SD 2.9 *p* = 0.00	*n* = 26? 9.7, SD 2.8 *p* = 0.00	0.248						
Hill 2004 (AUA)	*n* = 55 24.1, SE 0.8	*n* = 65 24.0, SE 0.8	*n* = 47 9.4, SE 0.7 *p* < 0.001	*n* = 59 10.1, SE 0.9 *p* < 0.001	0.75	*n* = 47 8.4, SE 0.8 *p* < 0.001	*n* = 59 11.0, SE 1.0 *p* < 0.001	0.4513	*n* = 44 7.8, SE 0.9 *p* < 0.001	*n* = 56 11.7, SE 1.0 *p* < 0.001	0.0047
Hindley 2001 (IPSS)	*n* = 25 22[a] (18–25)[b]	*n* = 25 20[a] (15–23)[b]				*n* = 22 3[a] (2–6)[b]	*n* = 20 9[a] (6–23)[b]		n=19 3[a] (2–6)[b]	*n* = 19 6[a] (4–10)[b]	
Kim 2006a (IPSS)	*n* = 110 24.0	*n* = 110 20.8	*n* = 110 10.6	*n* = 110 10.8		*n* = 110 8.9	*n* = 110 11.4		*n* = 110 8.8	*n* = 110 11.6	

a Median.
b IQR: interquartile range.

18 months			24 months			3 years			5 years		
TURP	**TUNA**	***p*-value**	**TURP**	**TUNA**	***p*-value**	**TURP**	**TUNA**	***p*-value**	**TURP**	**TUNA**	***p*-value**
n = 33? 8.6, SD 1.8 *p* = 0.00	*n* = 26? 8.5, SD 3.2 *p* = 0.00	0.899									
			n = 35 9.5, SE 1.1 *p* < 0.001	*n* = 43 15.0, SE 1.3 *p* < 0.001	0.0028	*n* = 31 10.1, SE 1.4 *p* < 0.001	*n* = 38 15.2, SE 1.3 *p* < 0.001	0.0079	*n* = 22 10.8, SE 1.6 *p* < 0.001	*n* = 18 10.7, SE 1.4 *p* < 0.001	0.9813
n = 19 3[a] (1–5)[b]	*n* = 19 8 (5–13)[b]										

TABLE 53 *Complications*

		TURP			TUNA			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Periprocedural (intraoperative or immediate postoperative)								
Blood transfusion	Cimentepe 2003	33	0	0	26	0	0	
	Hindley 2001	22	3	13.6	20	0	0	Patients received 2 units each
	Kim 2006a	101	19	19	100	0	0	
Clot retention	Hindley 2001	22	1	4.5	20	0	0	
Mortality	Hindley 2001	22	0	0	20	0	0	
Recatheterisation	Cimentepe 2003	33			26	1	3.8	For 73 hours
	Hindley 2001	22	0	0	20	1	5	Failed trial of voiding
	Kim 2006a	101	4	4	100	4	4	
Urinary retention	Cimentepe 2003	33			26	1	3.8	In this patient the catheter had been removed 12 hours after the procedure and required recatheterisation for 72 hours
Urinary tract infection	Cimentepe 2003	33			26	1	3.8	
	Hindley 2001	22	4	18.1	20	4	20	
	Kim 2006a	101	7	7	100	10	10	

		TURP			TUNA			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Postoperative (≥3 months)								
Irritative urinary symptoms	Cimentepe 2003	33			26			TURP: most but more prominent (solved 2–3 weeks); TUNA: most (solved after 7–10 days)
	Hindley 2001	22	0	0	20	4	20	
Retrograde ejaculation	Cimentepe 2003	33	16	48.5	26	0	0	At 18 months
	Hill 2004	56	23	41.1	65	0	0	At the end of 5 years
	Kim 2006a	101	39	39	100	5	5	Up to 12 months
Stricture	Cimentepe 2003	33	2	6	26	0	0	Urethral at 18-month follow-up (cumulative)
	Hill 2004	56	4	7.1	65	1	1.5	Stricture formation or scar tissue at the end of a 5-year follow-up (cumulative)
	Kim 2006a	101	5	5	100	0	0	Urethral stricture
		101	2	2	100	0	0	Bladder neck contracture
								Up to 12 months
Urinary incontinence	Cimentepe 2003	33	1	0.3	26	0	0	Stress
	Hill 2004	56	12	21.4	2	65	3.1	TUNA: one stress, one urge at 5 years
	Kim 2006a	101	4	4	100	4	4	Up to 12 months
Erectile dysfunction	Kim 2006a	101	13	13	100	1	1	Up to 12 months
	Cimentepe 2003	33	4	12	26	0	0	At 18 months
	Hill 2004	56	12	21.4	65	2	3.1	At the end of 5 years

TABLE 54 *Quality of life*

	Baseline		3 months			6 months			12 months	
Study	**TURP**	**TUNA**	**TURP**	**TUNA**	***p*-value**	**TURP**	**TUNA**	***p*-value**	**TURP**	**TUNA**
Cimentepe 2003	*n* = 33 5.2, SD 0.65	*n* = 26 4.8, SD 0.75	*n* = 33? 1.9, SD 0.5 *p* = 0.000	*n* = 26? 2.1, SD 0.5 *p* = 0.000	0.296					
Hill 2004	*n* = 56 12.6, SE 0.5	*n* = 64 11.8, SE 0.5							*n* = 45 3.7, SE 0.7 *p* < 0.0001	*n* = 55 4.3, SE 0.5 *p* < 0.0001
Hindley 2001	*n* = 25 5 (4-5)	*n* = 25 4 (3-5)				*n* = 22 1 (0-2)	*n* = 20 2 (1-3)		*n* = 19 1 (0-2)	*n* = 19 1 (1-3)
Kim 2006a	*n* = 110 4.7	*n* = 110 4.3	*n* = 110 2.8	*n* = 110 3.3 *p* < 0.05		*n* = 110 2.6	*n* = 110 2.5		*n* = 110 2.6	*n* = 110 2.6

	Baseline		3 years			4 years			5 years
Study	**TURP**	**TUNA**	**TURP**	**TUNA**	***p*-value**	**TURP**	**TUNA**	***p*-value**	**TURP**
Hill 2004	*n* = 56 12.6, SE 0.5	*n* = 64 11.8, SE 0.5	*n* = 32 4.7, SE 1.0 *p* < 0.0001	*n* = 40 5.4, SE 0.7 *p* < 0.0001	0.5275	*n* = 21 3.7, SE 1.0 *p* < 0.0001	*n* = 22 5.2, SE 0.9 *p* < 0.0001	0.2316	*n* = 22 3.8, SE 0.7 *p* < 0.0001

	18 months			2 years			
***p*-value**	**TURP**	**TUNA**	***p*-value**	**TURP**	**TUNA**	***p*-value**	**Comments**
	n = 33? 1.7, SD 0.5 *p* = 0.000	*n* = 26? 1.8, SD 1.3 *p* = 0.000	0.351				Quality of life score reported (mean, SD)
0.4814				*n* = 33 3.7, SE 0.7 *p* < 0.0001	*n* = 43 4.3, SE 0.7 *p* < 0.0001	0.0309	Quality of life score, but no further information has been reported. The type of scale used is unclear. (mean, SE)
				n = 19 1 (0-2)	*n* = 19 2 (1-3)		Quality of life score reported (median, IQR)
							IPSS QoL (mean or median)

TUNA	***p*-value**	**Comments**
n = 18 4.3, SE 0.8 *p* < 0.0001	0.8419	Quality of life score, but no further information has been reported. The type of scale used is unclear (mean, SE)

TABLE 55 *Urodynamic measures [mean, SD, (range)]*

		Baseline		3 months		
Urodynamic outcome	**Study**	**TURP**	**TUNA**	**TURP**	**TUNA**	***p*-value**
Detrusor pressure (cmH_2O)	Hindley 2001	*n* = 25 99, SD 10	*n* = 25 92, SD 12			
Peak urine flow rate (ml/s)	Cimentepe 2003	*n* = 33 9.2, SD 3.4	*n* = 26 9.8, SD 3.6	*n* = 33? 23.1, SD 5.3 *p* = 0.000	*n* = 26? 16.7, SD 4.5 *p* = 0.00	0.002
	Hill 2004	*n* = 56 8.8, SE 0.3	*n* = 65 8.8, SE 0.3			
	Hindley 2001	*n* = 25 9.0, SD 3.6	*n* = 25 8.5, SD 3.7			
	Kim 2006a	*n* = 110 11.9	*n* = 110 7.0	*n* = 110 22.6	*n* = 110 15.4	
Prostate size (ml)	Cimentepe 2003	*n* = 33 49.1, SD 17.7	*n* = 26 46.1, SD 11.2			
	Kim 2006a	*n* = 110 44.2	*n* = 110 40.6	*n* = 110 24.9	*n* = 110 29.6	
Residual volume (ml)	Cimentepe 2003	*n* = 33 76.1, SD 50.1	*n* = 26 67.4, SD 29.4	*n* = 33? 32.4, SD 17.4 *p* = 0.003	*n* = 26? 45.3, SD 16.7 *p* = 0.003	0.065
	Hill 2004	*n* = 56 81.9, SE 9.3	*n* = 65 91.8, SE 10.0			
	Hindley 2001	*n* = 25 74, SD 53	*n* = 25 55, SD 44			
	Kim 2006a	*n* = 110 187	*n* = 110 257	*n* = 110 23	*n* = 110 33	

		2 years			3 years
Urodynamic outcome	**Study**	**TURP**	**TUNA**	***p*-value**	**TURP**
Detrusor pressure (cmH_2O)	Hindley 2001	*n* = 9 36, SD 8	*n* = 12 71, SD 36		
Peak urine flow rate (ml/s)	Hill 2004	*n* = 33 21.3, SE 1.4 < 0.0001	*n* = 40 12.5, SE 0.7 < 0.0001	<0.001	*n* = 26 19.1, SE 2.0 < 0.001
	Hindley 2001	*n* = 19 18.1, SD 7.1	*n* = 19 8.6, SD 3.5		
Residual volume (ml)	Hill 2004	*n* = 31 34.6, SE 5.6 *p* = 0.0005	*n* = 40 74.1, SE 12.6 *p* = 0.3788	0.0114	*n* = 26 50.7, SE 10.4 *p* = 0.0095
	Hindley 2001	*n* = 19 32, SD 42	*n* = 19 89, SD 81		

6 months		12 months			18 months		
TURP	**TUNA**	**TURP**	**TUNA**	***p*-value**	**TURP**	**TUNA**	***p*-value**
n = 22 44, SD 11	*n* = 20 70, SD 12						
					n = 33? 23.3, SD 4.9 *p* = 0.00	*n* = 26? 17.7, SD 4.2 *p* = 0.00	0.004
		n = 43 21.1, SE 1.3 < 0.0001	*n* = 53 14.6, SE 1.0 < 0.0001	< 0.0001			
n = 22 18.4, SD 7.7	*n* = 20 9.8, SD 4.0	*n* = 19 22, SD 10.3	*n* = 19 9.7, SD 5.0				
n = 110 22.2	*n* = 110 18.0	*n* = 110 22.9	*n* = 110 17.8				
					n = 33? 34.3, SD 10.4	*n* = 26? 41.9, SD 10.9	0.079
n = 110 25.1	*n* = 110 28.5	*n* = 110 25.3	*n* = 110 28				
					n = 33? 30.3, SD 18.7 *p* = 0.001	*n* = 26? 46.4, SD 17.5 *p* = 0.001	0.031
		n = 43 47.1, SE 7.0 *p* = 0.0014	*n* = 52 80.3, SE 11.0 *p* = 0.1161				
n = 22 87, SD 74	*n* = 20 50, SD 44	*n* = 19 21, SD 36	*n* = 19 104, SD 109				
n = 110 12	*n* = 110 29	*n* = 110 14	*n* = 110 32.6				

		4 years			5 years		
TUNA	***p*-value**	**TURP**	**TUNA**	***p*-value**	**TURP**	**TUNA**	***p*-value**
n = 33 13.0, SE 1.3 0.025	0.01	*n* = 17 18.9, SE 2.5 *p* = 0.006	*n* = 18 11.7, SE 1.4 *p* = 0.0358	0.0142	*n* = 15 18.6, SE 2.3 *p* = 0.0005	*n* = 13 11.4, SE 1.2 *p* = 0.0162	0.0143
n = 32 78.2, SE 13.7 *p* = 0.102	0.1285	*n* = 17 39.5, SE 13.1 *p* = 0.0058	*n* = 19 138.2, SE 45.7 *p* = 0.4019	0.0564	*n* = 17 27.4, SE 7.9 *p* = 0.0031	*n* = 13 60.4, SE 21.8 *p* = 0.0872	0.1281

TABLE 56 *Descriptors of care [mean, SD, (range)]*

Outcome	Study	TURP			TUNA			Comments
Duration of operation (minutes)	Cimentepe 2003	*N* = 33 55.9, SD 12.4			*N* = 26 44.3, SD 7.8			*p* = 0.06
	Kim 2006a	*N* = 110 51 (20–85)			*N* = 110 37 (25–60)			Mean (range)
Length of hospital stay (days)	Hindley 2001	*N* = 25 First postoperative day			*N* = 25 Few days later			
	Cimentepe 2003	*N* = 33 Patients discharged on the same day			*N* = 26 Stay for at least 48 hours			
	Kim 2006a	*N* = 110 6.5 (6–8)			*N* = 110 1.3 (1–3)			Mean (range)
		N	***n***	**%**	***N***	***n***	**%**	
Reoperation	Hill 2004	56	1	1.8	65	9	13.8	TURP: reoperated with TUIP; TUNA: reoperated with TURP; at end of 5 years
	Hindley 2001	22	0	0	20	1	5	Reoperated with TURP up to 2 years
	Cimentepe 2003	33	0	0	26	2	7	Reoperation with TURP at follow-up 18 months
	Kim 2006a	101	0	0	100	0	0	Up to 12 months

Appendix 8.4: Laser coagulation versus TURP

TABLE 57 *Mean symptom scores, SD (range)*

	Baseline		3 months			6 months			12 months	
Study	**TURP**	**Laser coagulation**	**TURP**	**Laser coagulation**	***p*-value**	**TURP**	**Laser coagulation**	***p*-value**	**TURP**	**Laser coagulation**
Chacko 2001; CLasP study (IPSS)	*n* = 74 19.4, SD 7.6	*n* = 74 17.6, SD 9.3				*n* = 48[a] –13.52[b] (–15.8,–11.2)[c]	*n* = 48[a] –0.06[b] (–12.8,–7.31)[c]			
Costello 1995 (AUA)						*n* = 37 4.43	*n* = 34 9.27	0.01		
Cowles 1995 (AUA)	*n* = 59 20.8, SD 4.8 (7–30)	*n* = 56 18.7, SD 6.0 (6–29)							*n* = 57 –13.3,[b] SD 7.5 (–29–8)	*n* = 55 –9.0,[b] SD 7.5 (–27–8)
Donovan 2000; CLasP study (IPSS)	*n* = 117 19.2 SD 6.7	*n* = 117 19.1 SD 6.6				*n* = 89[a] –12.3[b] (–13.8,–10.7)[c]	*n* = 89[a] –10.8[b] (–12.5,–9.0)[c]			
Gujral 2000; CLasP study (IPSS)	*n* = 44 19.5, SD 7.2	*n* = 44 20.9, SD 6.4				*n* = 33[a] –14.2[b] (–17.2,–11.2)[c]	*n* = 29[a] –12.2[b] (–15.7,–8.7)[c]			
Kabalin 1995 (AUA)	*n* = 12 18.8, SE 1.8	*n* = 13 20.9, SE 1.9	*n* = 12 9.9, SE 2.6	*n* = 13 7.2, SE 1.7		*n* = 10 5.7, SE 1.2	*n* = 11 4.6, SE 0.7		*n* = 10 6.3, SE 1.1	*n* = 10 4.3, SE 1.3
Kim 2006a (IPSS)	*n* = 110 24.0	*n* = 89 21.1	*n* = 110 10.6	*n* = 89 7.8		*n* = 110 8.9	*n* = 89 7.1		*n* = 110 8.8	*n* = 89 7.9
Kursh 2003 (AUA)	*n* = 35 23.0[d]	*n* = 37 24.0[d]				*n* = 35? 6.0[d]	*n* = 35? 7.0[d]			
Mårtenson 1999 (IPSS)	*n* = 14 21.6, SD 7.7	*n* = 30 21.7, SD 6.1	*n* = 14? 4.7, SD 4.0	*n* = 30? 11.8, SD 6.9		*n* = 14? 3.8, SD 2.4	*n* = 30? 10.3, SD 5.4		*n* = 14? 3.5, SD 2.9	*n* = 30? 12.4, SD 7.7
Liedberg 2003 (IPSS)	*n* = 11 17,[d] IQR (17–24)	*n* = 20 19,[d] IQR (16–24)	*n* = 11 4,[d] IQR (2–7) *p* < 0.05	*n* = 20 10,[d] IQR (4–15) *p* < 0.05	<0.05				*n* = 9 6,[d] IQR (3–10) *p* < 0.05	*n* = 19 11,[d] IQR (6–14) *p* < 0.05
McAllister 2000 (AUA-6)	*n* = 75 18.2 (17.1–19.3)[c]	*n* = 76 18.1 (17.1–19.1)[c]				*n* = 75 5.9 (4.6–7.2)[c]	*n* = 76 7.9 (6.4–9.4)[c]		*n* = 75 5.1 (3.8–6.4)[c]	*n* = 75 7.7 (6.3–9.1)[c]
Rodrigo Aliaga 1998 (IPSS)	*n* = 21 24.2, SD 7.7	*n* = 18 25.5, SD 10.1	*n* = 21? 8.6, SD 4.2	*n* = 18? 4.8, SD 4.8		*n* = 21? 3.7, SD 3.8 *p* < 0.05	*n* = 18? 7.4, SD 4.2 *p* < 0.005			
Suvakovic 1996 (AUA)	*n* = 10 18.8, SD 4.5	*n* = 10 15.7, SD 5.1	*n* = 10 12.8, SD 5.9	*n* = 10 16.8, SD 15.0		*n* = 9 8.5, SD 3	*n* = 9 8, SD 5.7		*n* = 9? 7.2, SD 6.1	*n* = 9? 10, SD 4.9

ELAP, endoscopic laser ablation of the prostate; ILC, onterstitial laser coagulation; NS, not significant; VLAP, visual laser ablation of the prostate.
a At 7.5 months.
b Mean decrease (change) in symptom score.
c 95% confidence interval.
d Median.

	18 months			2 years			5 years			
p-value	TURP	Laser coagulation	*p*-value	TURP	Laser coagulation	*p*-value	TURP	Laser coagulation	*p*-value	Comments
										Acute retention patients; non-contact VLAP, side-firing fibre
										Nd:YAG laser coagulation
NS										Nd:YAG laser; non-contact VLAP
										Symptomatic patients; Nd:YAG laser; non-contact VLAP; side-firing laser
										Chronic retention patients; Nd:YAG laser; VLAP side-firing laser
	n = 10 6.4, SE 1.3	*n* = 9 6.0, SE 1.3		*n* = 9 6.8, SE 1.7	*n* = 9 4.7, SE 1.7					Nd:YAG laser; non-contact VLAP
										Mean or median; ILC
				n = 35? 7.0[d]	*n* = 35? 9.0[d]					ILC
				n = 14? 5.0, SD 4.4	*n* = 30? 12.0, SD 4.9					Contact ILC with diode laser system (indigo)
<0.05										Contact ILC with indigo 830e laser system
0.046							*n* = 39 6.5	*n* = 28 6.3		ELAP: endoscopic laser, Nd:YAG
										Sd Nd:YAG non-contact

TABLE 58 *Complications*

		TURP			Laser coagulation			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Procedural (intraoperative or immediate postoperative)								
Anaemia	Kursh 2003	35	2	5.7	35	0	0	Hematocrit < 30%
Blood loss (ml)	Liedberg 2003	11	350 (200–514)		20	0 (0–50)		Median (IQR); $p < 0.001$
Blood transfusion	Chacko 2001	74	4	5.4	74	0	0	
	Costello 1995	37	3	8.2	34	0	0	
	Cowles 1995	59	2	3.4	56	0	0	$p = 0.50$
	Donovan 2000	117	1	0.85	117	1	0.85	
	Gujral 2000	44	3	6.8	38	0	0	
	Kabalin 1995	12	1	8.3	13	0	0	
	Kim 2006a	101	19	19	89	0	0	
	Kursh 2003	35	0	0	35	0	0	
	Mårtenson 1999	14	0	0	30	0	0	
	McAllister 2000	75	12	16	76	0	0	Three of the transfusions were carried out perioperatively; the mean transfusion requirement was 2.7 units
Cardiovascular events	Chacko 2001	74	2	2.7	74	0	0	Myocardial infarction/cardiac failure during hospital stay
	Cowles 1995	59	1	3.4	56	0	0	DVT; $p = 1.00$
	McAllister 2000	75	4	5.3	76	2	2.6	TURP: two DVTs; one pulmonary embolism, one myocardial infarction. Laser: one DVT; one CVA
Clot retention	Chacko 2001	74	2	2.7	74	0	0	During hospital stay
	Cowles 1995	59	2	3.4	56	0	0	$p = 0.50$
	Cowles 1995	59	3	5.1	56	0	0	$p = 0.24$
	Kabalin 1995	12	1	8.3	13			
	Liedberg 2003	11	0	0	20	1	5	
	Mårtenson 1999	14	0	0	30	0	0	
	McAllister 2000	75	5	6.6	76	1	1.3	
Heavy bleeding	Chacko 2001	74	3	4	74	2	2.7	During operation

		TURP			Laser coagulation			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
	Gujral 2000	44	6	13.3	38	0	0	
Incontinence	Chacko 2001	74	3	4	74	0	0	During hospital stay
Mortality	Chacko 2001	74	4	5.4	74	2	2.7	Not treatment related
	Donovan 2000	117	0	0	117	5	4.3	Not treatment related
	Gujral 2000	44	1	2.3	38	0	0	Not treatment related
	Kabalin 1995	12	–	–	13	1	7.7	Cardiovascular event
	Kursh 2003	35	2	5.7	35			By 6 months; unrelated cause
Perforation	Donovan 2000	117	2	1.7	117	–	–	
	Gujral 2000	44	1	2.3	38	0	0	
Secondary haemorrhage	Costello 1995	37	1	2.7	34	0	0	
	McAllister 2000	75	3	4	76	0	0	
Septicaemia	Chacko 2001	74	4	5.4	74	3	4	During hospital stay
	Donovan 2000	117	2	1.7	117	0	0	Time point unclear (follow-up 7.5 months)
	Gujral 2000	44	3	6.8	38	1	2.63	During hospital stay
Urinary retention	Suvakovic 1996	10	0	0	10	1	10	Failure to void on removal of catheter after 24 hours
Urinary tract infection	Gujral 2000	44	2	4.5	38	1	2.63	Symptomatic urinary tract infection during hospital stay
	Kim 2006a	101	7	7	89	7	7.9	
	Kursh 2003	35	4	11	35	7	20	
	Liedberg 2003	11	1	9	20	13	65	Laser: treated with antibiotics; however, two were resistant to it; $p = 0.007$
		11	0	0	20	3	15	Bacterial prostatitis. These patients necessitated long-term antibiotic treatment
	Mårtenson 1999	14	4	28	30	10	33	No cases of epididymitis in either group
	McAllister 2000	75	1	1.3	76	2	2.6	Epididymo-orchitis

continued

TABLE 58 *Complications (continued)*

		TURP			Laser coagulation			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
		75	5	6.6	76	18	23.7	Positive urinary cultures in the first 4 weeks postoperatively
Recatheterisation	Kim 2006a	101	4	4	89	2	2.2	
Postoperative (3–12 months)								
Erectile dysfunction	Costello 1995	11	0	0	16	0	0	Impotence (follow-up 6 months)
	Cowles 1995	59	2	3.4	56	3	5.4	Impotence. Time point is unclear (12 months total follow-up). Article does not specify whether patients were all sexually active before the operation
	Kim 2006a	101	13	13	89	0	0	Up to 12 months
	Mårtenson 1999	12	3	25	28	0	0	At 12 months
Retention	Cowles 1995	59	5	8.5	56	17	30.3	Time point is unclear (total follow up was 12 months); $p < 0.01$
	van Melick 2003a	50	0	0	45	5	11.1	Up to 12 months
Retrograde ejaculation	Costello 1995	11	8	72.7	16	2	12.3	Did not retain ejaculatory function (follow-up 6 months)
	Kabalin 1995	10	9	90	12	0	0	At 3 months
		10	–	–	12	1	8.3	At 6 months
	Kim 2006a	101	39	39	89	4	4.5	Up to 12 months
	Liedberg 2003	11	3	27	20	1	5	$p = 0.084$
	McAllister 2000	24	15	63	27	9	33	At 12 months
Stricture	Costello 1995	37	2	5.4	34	2	5.8	Bladder neck stenosis – were reoperated by BNI (follow-up 6 months)

Complication	Study	TURP			Laser coagulation			Comments
		N	*n*	%	*N*	*n*	%	
	Cowles 1995	59	6	10.2	56	0	0	Urethral stricture; $p = 0.0$
		59	3	5.1	56	0	0	Bladder neck contracture; $p = 0.24$
								Time point is unclear (total follow-up 12 months)
	Kim 2006a	101	5	5	89	0	0	Urethral stricture
		101	2	2	89	0	0	Bladder neck
								Up to 12 months
	Kabalin 1995	12	1	8.3	13	0	0	At 6 months and was successfully treated with visual internal urethrotomy (the initial TURP had lasted 55 minutes, using a 28Fr resectoscope sheath)
	Liedberg 2003	11	0	0	20	0	0	At 1 year
Urinary tract infection	Costello 1995	37	2	5.4	34	1	2.9	Urinary tract infection
		37	2	5.4	34	0	0	Epididymitis
								Follow-up 6 months
	Donovan 2000	117	2	1.7	117	3	2.6	Time point unclear (total follow-up 7.5 months)
	McAllister 2000	75	7	9.3	76	28	36.8	Positive urinary cultures (cumulative up to 12 months)
Incontinence	Cowles 1995	59	2	3.4	56	0	0	$p = 0.50$. Time point is unclear (total follow-up was 12 months)
	Kim 2006a	101	4	4	89	0	0	Up to 12 months
	Kursh 2003	35	2	5.7	35	0	0	One urgency; one stress requiring pads. Time point is unclear (total follow-up was 24 months)
	Mårtenson 1999	14	0	0	30	0	0	Time point is unclear (total follow-up was 12 months)

BNI, bladder neck incision; CVA, cardiovascular accident; DVT, deep vein thrombosis.

TABLE 59 *Quality of life (mean, SD)*

	Baseline		3 months			6 months			12 months	
Study	**TURP**	**Laser coagulation**	**TURP**	**Laser coagulation**	***p*-value**	**TURP**	**Laser coagulation**	***p*-value**	**TURP**	**Laser coagulation**
Chacko 2001; CLasP trial	*n* = 74 5 (4–6)[a]	*n* = 74 5 (4–6)[a]				*n* = 45 –3.42 (–3.89 to –2.95)[b]	*n* = 49 –3.10 (–3.65 to –2.55)[b]			
Donovan 2000; CLasP trial	*n* = 117 4 (0–6)[c]	*n* = 117 4 (2–6)[c]				*n* = 85 –2.2 (–2.5 to –1.8)[b]	*n* = 93 –1.9 (–2.3 to –1.6)[b]			
Gujral 2000; CLasP trial	*n* = 44 4.5, SD 2.6	*n* = 38 5.0, SD 2.6				*n* = 33 –3.2 (–3.9 to –2.6)[b]	*n* = 30 –2.8 (–3.4 to –2.1)[b]			
Kim 2006a	*n* = 110 4.7	*n* = 89 4.7	*n* = 110 2.8	*n* = 89 3.5 $p < 0.05$		*n* = 110 2.6	*n* = 89 2.5		*n* = 110 2.6	*n* = 89 2.4
Kursh 2003	*n* = 35 11.0	*n* = 35 11.0				*n* = 35 2.0	*n* = 35 2.0			
Mårtenson 1999	*n* = 14 4.0, SD 1.3	*n* = 30 4.1, SD 1.4	*n* = 14? 0.9, SD 1.3	*n* = 30? 2.3, SD 1.4		*n* = 14? 0.5, SD 0.7	*n* = 30? 2.2, SD 1.4		*n* = 14? 0.6, SD 0.8	*n* = 30? 2.2, SD 1.5
van Melick 2003a	*n* = 50 3.9, SD 1.6	*n* = 45 3.6, SD 1.6				*n* = 37 0.5, SD 0.5	*n* = 33 0.8, SD 1.0		*n* = 41 0.6, SD 0.9	*n* = 37 0.6, SD 0.9

a Median (IQR)
b Mean change in QoL score (95% CI) at 7.5 months
c Median (range).
d Cumulative 2–4 years.

	2 years			3 years			
***p*-value**	**TURP**	**Laser coagulation**	***p*-value**	**TURP**	**Laser coagulation**	***p*-value**	**Comments**
							Acute urinary retention patients: IPSS QoL. All changes are statistically significant
							Symptomatic patients: IPSS QoL. All changes are statistically significant
							Chronic retention patients: IPSS QoL. All changes are statistically significant
							IPSS QoL; mean or median
	n = 35 2.0	*n* = 35 3.0					AUA QoL; median
	n = 14? 0.7, SD 0.9	*n* = 30? 2.2, SD 1.5					QoL index
	n = 15[d] 1.1, SD 1.2	*n* = 10[d] 2.0, SD 1.0		*n* = 15 1.3, SD 1.3	*n* = 17 1.4, SD 1.2		IPSS QoL

TABLE 60 *Urodynamic measures [mean, SD, (range])*

		Baseline		3 months			6 months			12 months
Urodynamic outcome	**Study**	**TURP**	**Laser coagulation**	**TURP**	**Laser coagulation**	***p*-value**	**TURP**	**Laser coagulation**	***p*-value**	**TURP**
Peak urine flow rate (ml/s)	Roberto Aliaga 1998	*n* = 21 5.7, SD 7.7	*n* = 18 7.0, SD 8.1	*n* = 21? 18.6, SD 8.5	*n* = 18? 10.5, SD 5.0		*n* = 21? 20.6, SD 10.1	*n* = 18? 10.5, SD 4.6		
	Costello 1995	*n* = 37 9.48	*n* = 34 8.76				*n* = 37? 19.1	*n* = 34? 15.7		
	Cowles 1995	*n* = 59 9.5, SD 5.2 (3.0–37.4)	*n* = 56 8.9, SD 3.6 (2.0–18.1)							*n* = 57 7.0, SD 9.5 (–16.8–27.8)
	Donovan 2000; CLasP study; symptomatic patients	*n* = 117 10.3 SD 2.7	*n* = 117 10.4 SD 2.9							
	Gujral 2000; CLasP study; chronic retention patients	*n* = 44 8.5, SD 3.6	*n* = 38 11.2, SD 5.3				*n* = 40 9.4 (6.5-12.2)[a]	*n* = 40 5.70 (2.6-8.8)[a]	At 7.5 months; change in Q_{max}	
	Kabalin 1995	*n* = 12 9.0, SE 1.1	*n* = 13 8.5, SE 1.1	*n* = 12 21.7, SE 2.9	*n* = 13 18.7, SE 2.6		*n* = 10 22.9, SE 2.8	*n* = 11 20.5, SE 1.8		*n* = 10 21.6, SE 2.2
	Kim 2006a	*n* = 110 11.9	*n* = 89 8.6	*n* = 110? 22.6	*n* = 89? 16.8		*n* = 110? 22.2	*n* = 89? 19.7		*n* = 110? 22.9
	Kursh 2003	*n* = 35 9.1[b]	*n* = 35 9.2 [b]	*n* = 35 16.6 [b]	*n* = 35 14.3 [b]					
	Liedberg 2003	*n* = 11 8,[b] IQR (6–9)	*n* = 20 8,[b] IQR (7–10)	*n* = 10 12,[b] IQR (9–18)	*n* = 19 11,[b] IQR (8–15)	< 0.05				*n* = 9 14,[b] IQR (10–19)
	Mårtenson 1999	*n* = 14 9.3, SD 3.2	*n* = 30 7.3, SD 3.8	*n* = 14? 25.8, SD 9.7	*n* = 30? 12.5, SD 5.4		*n* = 14? 18.2, SD 6.6	*n* = 30? 11.1, SD 4.5		*n* = 14? 25.7, SD 11.1
	McAllister 2000	*n* = 75 10.0 (9.1–10.9)[a]	*n* = 76 9.6 (8.8–10.4)[a]	*n* = 75 21.3 (19.0–23.6)[a]	*n* = 76 15.9 (13.6–18.2)[a]	0.0081	*n* = 75 19.9 (17.4–22.4)[a]	*n* = 76 15.6 (13.7–17.5)[a]		*n* = 75 21.8 (18.5–25.1)[a]
	Suvakovic 1996	*n* = 10 11.1, SD 6.4	*n* = 10 10.5, SD 3.7	*n* = 10 17.8, SD 3.8	*n* = 10 14.8, SD 5.4		*n* = 10 16.2, SD 4.2	*n* = 10 19.0, SD 0.8		*n* = 9? 15.2, SD 2.7
Mean urine flow rate (ml/s)	Costello 1995						*n* = 37? 10.07	*n* = 34? 7.99		
Voided volume (ml)	Mårtenson 1999	*n* = 14 230, SD 107	*n* = 30 185, SD 84	*n* = 14? 309, SD 163	*n* = 30? 206, SD 115		*n* = 14? 210, SD 151	*n* = 30? 244, SD 121		*n* = 14? 358, SD 225
	McAllister 2000	*n* = 75 234.3 (208.2–260.4)[a]	*n* = 76 234.1 (211.5–256.7)[a]	*n* = 75 266.4 (234.6–298.2)[a]	*n* = 76 236.3 (206.1–266.5)[a]		*n* = 75 261.8 (227.1–296.5)[a]	*n* = 76 274.7 (244.1–305.3)[a]		*n* = 75 294.7 (252.8–336.6)[a]
Residual volume (ml)	Aliaga 1998	*n* = 21 89, SD 92	*n* = 18 77, SD 63	*n* = 21? 76, SD 97	*n* = 18? 54, SD 47		*n* = 21? 38, SD 51	*n* = 18? 62, SD 50		
	Gujral 2000; CLasP study; chronic retention patients	*n* = 44 545, SD 275	*n* = 38 438, SD 151				*n* = 40 –464 (–553,–374)[a]	*n* = 33 –329 (–377,–281)[a]	At 7.5 months; change in residual volume	
	Donovan 2000; CLasP study; symptomatic patients	*n* = 117 104.2, SD 69.5	*n* = 117 123.7, SD 91.8				*n* = 98 –74.0 (–89.2,–58.8)[a]	*n* = 100 –73.4 (–91.3,–55.5)[a]	At 7.5 months; change in residual volume	

		18 months			24 months			5 years		
Laser coagulation	***p*-value**	**TURP**	**Laser coagulation**	***p*-value**	**TURP**	**Laser coagulation**	***p*-value**	**TURP**	**Laser coagulation**	***p*-value**
n = 55 5.3, SD 6.9 (–5.9–26.6)	Change from baseline									
n = 10 21.6, SE 1.5		*n* = 10 21.2, SE 2.9	*n* = 9 20.0, SE 1.9		*n* = 9 18.8, SE 1.7	*n* = 9 23.6, SE 2.4				
n = 89? 19.6										
					n = 35 16.5[b]	*n* = 35 13.9[b]				
n = 18 11,[b] IQR (6–12)	< 0.05									
n = 30? 11.9, SD 5.5					*n* = 14? 20.1, SD 13.7	*n* = 30? 10.3, SD 4.4				
n = 76 15.4 (13.6–17.2)[a]								n=36 20.0	n=24 17.8	
n = 10? 12.6, SD 3.7										
n = 30? 218, SD 110					*n* = 14? 266, SD 146	*n* = 30? 237, SD 158				
n = 76 247.2 (219.4–279.0)[a]										

continued

TABLE 60 *Urodynamic measures [mean, SD, (range]) (continued)*

		Baseline		3 months			6 months			12 months
Urodynamic outcome	**Study**	**TURP**	**Laser coagulation**	**TURP**	**Laser coagulation**	***p*-value**	**TURP**	**Laser coagulation**	***p*-value**	**TURP**
	Costello 1995						*n* = 37? 28.1	*n* = 34? 88.6	NS	
	Kabalin 1995	*n* = 12 291, SE 8.8	*n* = 13 236, SE 74	*n* = 12 145, SE 27	*n* = 13 185, SE 52		*n* = 10 121, SE 24	*n* = 11 112, SE 27		*n* = 10 152, SE 48
	Kim 2006a	*n* = 110 18	*n* = 89 219	*n* = 110? 23	*n* = 89? 28		*n* = 110? 12	*n* = 89? 22		*n* = 110? 14
	Suvakovic 1996	*n* = 10 161.8, SD 104	*n* = 10 47.4, SD 48.1	*n* = 10 21.5, SD 176	*n* = 10 51.9, SD 50.8					
	Cowles 1995	*n* = 59 266.7, SD 181.9 (2–800)	*n* = 56 162.7, SD 126.6 (19–700)							
	McAllister 2000	*n* = 75 120.7 (93.0–148.4)[a]	*n* = 76 113 (91.4–134.6)[a]	*n* = 75 62.1 (43.9–80.3)[a]	*n* = 76 70.3 (51.3–89.3)[a]		*n* = 75 56.8 (41.4–72.2)[a P]	*n* = 76 90.1 (61.6–118.0)[a]	0.0403	*n* = 75 45.9 (30.5–61.3)[a]
	Kursh 2003	*n* = 35 87.5[b]	*n* = 37 81.0[b]	*n* = 35 46.0[b]	*n* = 35 42.4[b]					
	Liedberg 2003	*n* = 11 117,[b] IQR (61–200)	*n* = 20 96,[b] IQR (64–190)	*n* = 10 0,[b] IQR (0–53)	*n* = 19 74,[b] IQR (38–110)	<0.05				*n* = 8 22,[b] IQR (3–62)
	Mårtenson 1999	*n* = 14 88, SD 126	*n* = 30 116, SD 146	*n* = 14? 12, SD 19	*n* = 30? 58, SD 103		*n* = 14? 14, SD 27	*n* = 30? 60, SD 56		*n* = 14? 14, SD 21
Detrusor pressure (cmH_2O)	Kabalin 1995	*n* = 12 92.3, SE 3.4	*n* = 13 91.3, SE 5.2							*n* = 10 58.7, SE 4.9
Prostate size (ml)	Costello 1995	*n* = 37 33.89 (12–70)	*n* = 34 29.96 (13.9–77)							
	Cowles 1995	*n* = 59 38.6, SD 20.2 (11.2–108.2)	*n* = 56 42.2, SD 19 (7.7–93.9)							
	Donovan 2000; CLasP study; symptomatic patients	*n* = 117 38.1, SD 19.1	*n* = 117 40.7, SD 21.4							
	Gujral 2000; CLasP study	*n* = 44 49.7, SD 21.8	*n* = 38 40.7, SD 19.9							
	Kabalin 1995	*n* = 12 34.2, SE 2.2	*n* = 13 38.9, SE 4.5							*n* = 10 13.7, SE 4.5
	Kim 2006a	*n* = 110 44.2	*n* = 89 42.7	*n* = 110? 24.9	*n* = 89? 26.6		*n* = 110? 25.1	*n* = 89? 24.6		*n* = 110? 25.3
	Kursh 2003	*n* = 35 40.0[b]	*n* = 35 41.5[b]	*n* = 35 27.0[b]	*n* = 35 35.1[b]					
	Liedberg 2003	*n* = 11 47,[b] IQR (37–61)	*n* = 20 49,[b] IQR (41–75)	*n* = 11 22,[b] IQR (15–28)	*n* = 20 37,[b] IQR (30–49)	<0.05				*n* = 9 27,[b] IQR (20–35)
	Mårtenson 1999	*n* = 14 50, SD 16	*n* = 30 46, SD 20				*n* = 14? 28, SD 11	*n* = 30? 40, SD 21		
	Suvakovic 1996	*n* = 10 22 g, SD 5	*n* = 10 23.6 g, SD 6.4							

NS, not significant.
a 95% confidence interval.
b Median.

		18 months			24 months			5 years		
Laser coagulation	***p*-value**	**TURP**	**Laser coagulation**	***p*-value**	**TURP**	**Laser coagulation**	***p*-value**	**TURP**	**Laser coagulation**	***p*-value**
n = 10 140, SE 36		*n* = 10 143, SE 43	*n* = 10 154, SE 38		*n* = 9 103, SE 22	*n* = 9 148, SE 28				
n = 89? 17										
n = 76 69.2 (48.1–90.3)[a]	0.040							*n*=35 55	*n*=24 76	
					n = 35 44.0[b]	*n* = 35 57.7[b]				
n = 19 126,[b] IQR (25–190)	<0.05									
n = 30? 59, SD 77					*n* = 14? 63, SD 100	*n* = 30? 94, SD 128				
n = 10 54.6, SE 6.9										
n = 13 28.8, SE 4.5										
n = 89? 27.7										
					n = 35 18.6[b]	*n* = 35 38.4[b]				
n = 19 35,[b] IQR (26–42)	< 0.05									

TABLE 61 *Descriptors of care [mean, SD, (range)]*

Outcome	Study	TURP	Laser coagulation	Comments
Duration of operation (minutes)	Costello 1995	*N* = 37	*N* = 34 6.42 (2.3–13.5)	Lasing time
	Cowles 1995	*N* = 59 45.2, SD 21.5	*N* = 56 23.4, SD 11.1	$p < 0.01$
	Kabalin 1995	*N* = 58.3 (45–85)	*N* = 24.2 (15–40)	*p* = NS
	Kim 2006a	*N* = 110 51 (20–85)	*N* = 89 38 (20–60)	Mean or median (range)
	Suvakovic 1996	*N* = 10 20.1, SD 6.2	*N* = 10 18.9, SD 8.8	*p* = NS
Length of hospital stay (days)	Chacko 2001	*N* = 74 5.8, 95% CI 5.2,6.5	*N* = 74 3.4, 95% CI 2.8,4.0	Geometric mean; $p < 0.0001$
	Costello 1995	*N* = 37 5.8 (3–31)	*N* = 34 6.2 (3–21)	
	Cowles 1995	*N* = 59 3.1, SD 0.9	*N* = 56 1.8, SD 1.1	$p < 0.01$
	Donovan 2000	*N* = 117 3.9, 95% CI 3.7,4.2	*N* = 117 2.2, 95% CI 1.9,2.4	Geometric mean; $p < 0.0001$
	Gujral 2000	*N* = 44 4.4, 95% CI 3.9,4.9	*N* = 36 2.2, 95% CI 1.7,2.8	Geometric mean; $p < 0.0001$
	Kim 2006a	*N* = 110 6.5 (5–8)	*N* = 89 1.2 (1–3)	Mean or median (range)
	Kursh 2003	*N* = 35 1.40 (0.42–5)	*N* = 35 Outpatient	Median
	Liedberg 2003	*N* = 11 3 (3–4)	*N* = 20 2.5 (0.25–3.8)	Median (IQR, interquartile range)
	McAllister 2000	*N* = 75 4.3, 95% CI 3.3,5.3	*N* = 76 2.7, 95% CI 2.2,3.2	*p* = NS
	Suvakovic 1996	*N* = 10 3.5	*N* = 10 1.25	$p < 0.05$

TABLE 61 *Descriptors of care [mean, SD, (range)]*

		TURP			Laser coagulation			
Outcome	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	
Reoperation	Chacko 2001	74	1	1.3	74	7	9.4	Because of unacceptable symptoms or failure to void (follow-up 7.5 months); $p = 0.008$
	Costello 1995	37	2	5.4	34	5	14.7	TURP: underwent BNI because of bladder neck stenosis. Laser: two underwent BNI because of bladder neck stenosis; three TURP. Follow-up 6 months
	Cowles 1995	59	0	0	56	2	5.74	Both received VLAP. Time point is unclear (total follow-up 12 months)
	Gujral 2000	44	0	0	38	3	7.9	Received TURP. Total follow-up 7.5 months
	Kabalin 1995	12	1	8.3	13	2	15.4	TURP: at 6 months visual internal urethrotomy because of stricture. Laser: same procedure and have improved voiding
	Kim 2006a	101	0	0	89	1	1.1	Up to 12 months
	Kursh 2003	35	0	0	35	6	17	Two had ILC/TURP before 6 months and four had TURP before 1 year. In a 2-year follow-up there was a total of six reoperations. The retreated group still remained obstructed
	Mårtenson 1999	14	1	7.1	30	6	20	Within 24 months. TURP: underwent urethrotomy at 5.5 months. Laser: underwent TURP at 8.5–24 months
	McAllister 2000	75	0	0	76	3	3.9	At 3 months (TURP)
		75	0	0	76	2	2.6	At 10 and 11 months (BNI)
		51	8	15.7	47	18	38	Total reoperation up to 5 years
								N = number of patients participating in the 5-year review; $p = 0.006$

BNI, bladder neck incision; ILC, interstitial laser coagulation; NS, not significant; VLAP, visual laser ablation of the prostate.

Appendix 8.5: TUIP versus TURP

TABLE 62 *Mean symptom scores, SD (range)*

	Baseline		3 months			6 months			12 months
Study	**TUIP**	**TURP**	**TUIP**	**TURP**	***p*-value**	**TUIP**	**TURP**	***p*-value**	**TUIP**
Christensen 1990 (score unclear)	*n* = 38 16[a] (8–23)	*n* = 38 16[a] (7–23)	*n* = 35 4[a] (0–19)	*n* = 38 4[a] (0–12)	NS				*n* = 26 4.5[a] (0–15)
Dørflinger 1992 (Madsen)	*n* = 29 15[a]	*n* = 29 16[a]	*n* = 22 2.5[a] *p* < 0.05	*n* = 29 1[a] *p* < 0.05	NS				*n* = 21 2[a]
Jahnson 1998 (Madsen)	*n* = 43 15.4 (6–27)	*n* = 42 15.8 (5–28)	*n* = 41 3.5[b] (0–21) *p* < 0.05	*n* = 39 3.8[b] (0–16) *p* < 0.05	NS	*n* = 36 4.3 (0–21) *p* < 0.05	*n* = 34 3.5 (0–18) *p* < 0.05	NS	*n* = 31 3.6 (0–15) *p* < 0.05
Riehmann 1994 (Madsen)	*n* = 61 15.5[c]	*n* = 56 15.0[c]	*n* = 51 5[c]	*n* = 52 5[c]	NS				*n* = 60 6.0[c]
Roberto Aliaga 1998 (AUA)	*n* = 20 24.4, SD 10.3	*n* = 21 24.2, SD 7.7	*n* = 20? 4.3±4.5	*n* = 21? 4.8, SD 4.8		*n* = 20? 5.7, SD 6.2 *p* < 0.05	*n* = 21? 3.7, SD 3.8 *p* < 0.05		
Saporta 1996 (Madsen)	*n* = 20 14.7, SE 0.96 (7–21)	*n* = 20 14.3, SE 0.93 (6–22)							*n* = 17 5.29, SE 0.62 (2–13) *p* < 0.05
Trocz 2002 (IPSS)	*n* = 50 17.1, SD 2.2	*n* = 50 17.1, SD 1.9							*n* = 50 4.1, SD 1.8 *p* < 0.001

NS, not significant.
a Median.
b 2–3 months.
c Values estimated from graph.

		24 months			3 years			5 years		
TURP	***p*-value**	**TURP**	**TUIP**	***p*-value**	**TUIP**	**TURP**	***p*-value**	**TUIP**	**TURP**	***p*-value**
n = 26 4[a] (0–12)	NS	*n* = 22 5[a] (0–16)	*n* = 11 3[a] (0–22)	NS	*n* = 9 8[a] (2–12)	*n* = 11 4[a] (1–13)	NS			
n = 26 2[a]	NS									
n = 32 2.8 (0–11) *p* < 0.05	NS	*n* = 33 3.0 (0–16) *p* < 0.05	*n* = 31 3.4 (0.15) *p* < 0.05	NS				*n* = 22 4.5 (0–14) *p* < 0.05	*n* = 24 4.7 (0.17) *p* < 0.05	NS
n = 46 5.5[c]	NS	*n* = 41 7[c]	*n* = 40 5[c]		*n* = 22 8[c]	*n* = 19 6.3[c]		*n* = 8 9[c]	*n* = 15 9.1[c]	
n = 20 4.95, SE 0.74 (1–14) *p* < 0.05	*p*<0.05				*n* = 17 7.0, SE 0.64 (3–14) *p* < 0.05	*n* = 19 5.79, SE 0.85 (1–18) *p* < 0.05	*p*>0.05			
n = 50 5.1, SD 1.9 *p* < 0.001										

TABLE 63 *Complications*

		TURP			TUIP			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Periprocedural (intraoperative or immediate postoperative)								
Bleeding at home	Hellström 1986	13	2	15	11	0	0	One was catheterised and the other was hospitalised for two days
Blood loss (ml)	Christensen 1990	38	150 (25–350)		38	25 (5–300)		Median (range); $p = 0.0001$
	Dørflinger 1992	31	65		29	10		Median; $p < 0.001$
	Jahnson 1998	42	211 (0–700)		43	37 (0–300)		Mean (range); $p < 0.05$
	Nielsen 1998	25	170 (75–500)		24	70 (10–300)		Median (range); $p < 0.01$
	Riehmann 1994	56	190 (25–700)		60	54 (5–300)		Mean (range); $p < 0.0001$
Blood transfusion	Rodrigo Aliaga 1998	21	1	4.8	20	0	0	
	Dørflinger 1992	31	4	13	29	0	0	$p = 0.11$, Fisher's exact test
	Hellström 1986	13	0	0	11	0	0	
	Jahnson 1998	42	1	2.4	43	0	0	
	Li 1987	30	13	43.3	29	2	6.9	$p = 0.004$
	Nielsen 1998	25	20	80	24	1	4.2	$p < 0.02$
	Soonawalla 1992	110	38	34.5	110	0	0	
Cardiovascular events	Christensen 1990	38	0	0	38	1	2.6	Pulmonary oedema due to malfunction of the transurethral catheter
	Li 1987	30	0	0	29	0	0	
Clot retention	Li 1987	30	0	0	29	0	0	
	Nielsen 1998	25	1	4	24	1	4.2	Both needed to return to the operating theatre
Haemorrhage	Li 1987	30	0	0	29	0	0	
	Soonawalla 1992	110	3	2.7	110	0	0	Haemorrhage requiring open surgery
Incontinence	Li 1987	30	2	6.7	29	1	3.4	Mild transient for 2 weeks
	Soonawalla 1992	110	4	3.6	110	2	1.8	
	Talic 2002	50	0	0	50	0	0	Follow-up unclear

		TURP			TUIP			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Mortality	Christensen 1990	38	2	5.3	38	2	5.3	TURP: one died 24 days after TURP as a result of pulmonary saddle embolism; one died from causes unrelated to genitourinary disease before 3 months. TUIP: two died before 3-month follow-up from causes unrelated to genitourinary disease
	Li 1987	30	0	0	29		0	
	Nielsen 1998	25	1	4	24	1	4.2	TURP: ischaemic heart disease. TUIP: colonic cancer
	Jahnson 1998	42	1	2.4	43			Cardiovascular lesion
	Riehmann 1994	56	8	14.3	60	14	23	Mortality within total observational period (follow-up of up to 82 months); p = NS. Causes of death TURP: laryngeal cancer, brain tumor, pulmonary embolism, five unknown. Causes of death TUIP: lung cancer, suicide, car accident, unknown in 11
	Soonawalla 1992	110	2	1.8	110	1	0.9	
Perforation	Soonawalla 1992	110	3	2.7	110	2	0.27	Perforation requiring open surgery
Recatheterisation	Hellström 1986	13	1	7.5	11			
	Li 1987	30	2	6.7	29	0	0	Second haemorrhage requiring recatheterisation and irrigation
Septicaemia	Nielsen 1998	25	2	8	24	1	4.2	p = NS
TUR syndrome	Li 1987	30	0	0	29	0	0	
	Soonawalla 1992	110	7	6.4	110	0	0	
Urinary retention	Jahnson 1998	42	1	2.4	43			At 3 weeks and a bladder neck stricture was incised 3 weeks later
	Li 1987	30	0	0	29	0	0	
	Nielsen 1998	25	0	0	24	3	12.5	These three patients were reoperated by TURP
	Soonawalla 1992	110	4	3.6	110	7	6.4	Failed to void after catheter removal
Urinary tract infection	Soonawalla 1992	110	2	1.8	110	5	4.5	Epididymo-orchitis

continued

TABLE 63 *Complications (continued)*

		TURP			TUIP			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Postoperative (3–12 months)								
Erectile dysfunction	Christensen 1990	20	1	5	24	1	4.2	Did not retain sexual activity with loss of ejaculation
	Dørflinger 1992	24	4	16.6	19	1	5.3	Worse potency at 12 months
	Saporta 1996	10	1	10	16	2	12.5	Impotence at end of first year
	Soonawalla 1992	49	0	0	60	0	0	Erectile capacity (loss of)
Irritative urinary symptoms	Rodrigo Aliaga 1998	21	1	4.8	20	1	5	More than 15 days
Retrograde ejaculation	Christensen 1990	19	7	37	23	3	13	$p > 0.1$; loss of ejaculation; it is unclear whether data are for follow-up 3–12 months or cumulative for 4 years
	Dørflinger 1992	24	12	50	19	1	5.2	At 12 months
	Hellström 1986	13	8	62	7	0	0	
	Riehmann 1994	22	15	68	23	8	35	$p < 0.02$
	Rodrigo Aliaga 1998	21	15	71.4	20	14	70	Follow-up 6 months; unclear whether all participants are sexually active
	Saporta 1996	10	9	90	16	3	18.7	At end of first year
	Soonawalla 1992	49	13	26.5	60	14	23.3	Loss of ejaculation
	Talic 2002	50	16	32	50	6	12	Unclear whether all participants are sexually active
Stricture/bladder neck	Dørflinger 1992	31	0	0	29	1	3.4	Urethral stricture within 3 months; $p = 0.2$
	Hellström 1986	13			11	1	9	
	Li 1987	30	2	6.7	29	0	0	One was at bladder neck and the other was at bulbous urethra at 3 months (both were asymptomatic); $p = 0.48$
	Nielsen 1998	25	4	16	24			At 12 months
	Riehmann 1944	56	8	14	60	0	0	Bladder neck
	Soonawalla 1992	110	3	2.7	110	5	4.5	
Urinary incontinence	Nielsen 1998	25	1	4	24			

NS, not significant.

TABLE 64 *Quality of life (mean, SD)*

	Baseline			24 months			
Study	**TURP**	**TUIP**	***p*-value**	**TURP**	**TUIP**	***p*-value**	**Comments**
Tkocz 2002	*n* = 50 4.4, SD 0.3	*n* = 50 4.6, SD 0.5		*n* = 50 1.9, SD 0.6 $p < 0.001$	*n* = 50 2.1, SD 0.3 $p < 0.001$		IPSS QoL (0–6); no other details were given about the scale

TABLE 65 *Urodynamic measures [mean, SD (range)]*

		Baseline		3 months			6 months			12 months
Urodynamic outcome	**Study**	**TURP**	**TUIP**	**TURP**	**TUIP**	***p*-value**	**TURP**	**TUIP**	***p*-value**	**TURP**
Peak urine flow rate (ml/s)	Rodrigo Aliaga 1998	*n* = 21 8.3, SD 4.5	*n* = 20 8.7, SD 5.5	*n* = 21? 18.6, SD 8.5	*n* = 20? 22.0, SD 12.2		*n* = 21? 20.6, SD 10.1	*n* = 20? 20.6, SD 8.7		
	Christensen 1990	*n* = 34 9.7[a] (1.7–29.4)	*n* = 35 7.8[a] (2.8–28.0)	*n* = 35 16.6[a] (5.6–46.4)	*n* = 31 12.7[a] (2.6–34.5)	0.07				*n* = 22 18.5[a] (4.0–48.5)
	Dørflinger 1992	*n* = 31 8[a]	*n* = 29 10[a]	*n* = 29 18.8[a] $p < 0.05$	*n* = 22 15.2[a] $p < 0.05$	0.025				*n* = 26 20.2[a] $p < 0.05$
	Hellström 1986	*n* = 13 7.5, SD 3.8 (1–14)	*n* = 11 8.6, SD 4.5 (2–16)	*n* = 13 16.5, SD 6.0 (7–25) $p < 0.001$	*n* = 11 12.9, SD 6.04 (4–21) p=0.073	0.163				
	Jahnson 1998	*n* = 34 9 (7.5–11)[b,c]	*n* = 36 8.5 (7.5–9.5)[b,c]	*n* = 39 20 (16.9–22.5)[b,c]	*n* = 41 15 (13–17)[b,c]	< 0.05	*n* = 34 19 (16–22)[b,c]	*n* = 36 14 (12–16)[b,c]	<0.05	*n* = 32 20 (16.8–22.8)[b,c]
	Li 1987	NR	NR	*n* = 30 19, SE 2.7 (6–68)	*n* = 29 23, SE 2.9 (8–50)	0.09				
	Nielsen 1988	*n* = 25 5[a] (5–13)	*n* = 24 5[a] (5–10)	*n* = 25 17[a] (6–32)	*n* = 24 10[a] (7–18)	< 0.02; 2 months not 3 months				*n* = 23 12[a] (5–28)
	Riehmann 1994	*n* = 50 11.2[c]	*n* = 52 9.1[c]	*n* = 44 20[c]	*n* = 42 15[c]	0.015				
	Saporta 1996	*n* = 20 6.5, SE 0.43 (3.2–11.9)	*n* = 20 7.35, SE 0.56 (3.7–12)							*n* = 20 17.29, SE 1.16 (8.2–7.1)
	Soonawalla 1992	*n* = 110 8.04	*n* = 110 7.91	*n* = 110 20.69	*n* = 110 19.38					*n* = 67 20.1
	Trocz 2002	*n* = 50 6.9, SD 1.5	*n* = 50 7.6, SD 1.8							
Mean urine flow (ml/s)	Soonawalla 1992	*n* = 110 3.99	*n* = 110 3.82	*n* = 110 10.61	*n* = 110 11.32					*n* = 67 10.61
Total voided volume (ml)	Dørflinger 1992	*n* = 31 176[a]	*n* = 29 200[a]	*n* = 29 166[a]	*n* = 22 183[a]					*n* = 26 273[a]
	Riehmann 1994	No significant differences were observed (range: 170–344 ml)								

		24 months			3 years			5 years		
TUIP	***p*-value**	**TURP**	**TUIP**	***p*-value**	**TURP**	**TUIP**	***p*-value**	**TURP**	**TUIP**	***p*-value**
n = 23 13.5[a] (5.3–45.3)	0.31	*n* = 15 16.6[a] (6.2–30.2)	*n* = 17 12.6[a] (7.3–20.7)	0.04	*n* = 9 14.6[a] (7.4–38.0)	*n* = 9 10.9[a] (7.8–18.5)	0.38 36 months = 3–4yrs			
n = 21 14.5[a] *p* < 0.05	0.025									
n = 31 14 (11.6–16.6)[b,c]	< 0.05	*n* = 31 20.6 (17.2–23.5)[b,c]	*n* = 33 13.7 (11–15)[b,c]	<0.05				*n* = 24 15.0 (13–17)[b,c]	*n* = 22 13 (10.5–16.)[b,c]	
n = 22 9[a] (5–25)										
								n = 8 19[e]	*n* = 4 13[e]	6 years[e]
n = 17 14.58, SE 1.05 (5.3–5.7)					*n* = 19 14.36, SE 1.14 (5.5–25.5)	*n* = 17 12.65, SE 1.04 (4.1–23.3)				
n = 70 19.45		*n* = 26 19.86	*n* = 21 18.91							
		n = 50 17.6, SD 1.7 *p* < 0.01	*n* = 50 16.9, SD 1.9 *p* < 0.01							
n = 70 11.21		*n* = 21 11.04	*n* = 26 11.94							
n = 29 207[a]										

continued

TABLE 65 *Urodynamic measures [mean, SD (range)] (continued)*

		Baseline		3 months			6 months			12 months
Urodynamic outcome	**Study**	**TURP**	**TUIP**	**TURP**	**TUIP**	***p*-value**	**TURP**	**TUIP**	***p*-value**	**TURP**
Residual volume (ml)	Aliaga 1998	*n* = 21 89, SD 92	*n* = 20 146, SD 133	*n* = 21? 76, SD 97	*n* = 20? 61, SD 95		*n* = 21? 38, SD 51	*n* = 20? 60, SD 82		
	Hellström 1986	*n* = 12 43, SD 49.6 (0–145)	*n* = 9 62, SD 74.5 (5–230)	*n* = 12 28.5, SD 38.5 (0–140)	*n* = 9 94, SD 133.1 (0–380)	0.163				
	Jahnson 1998	*n* = 42 109 (0–400)	*n* = 43 139 (0–660)	*n* = 39 29[d] (0–125)	*n* = 41 75[d] (0–310)	< 0.05				
	Soonawalla 1992	*n* = 110 8.04	*n* = 110 7.91	Number of patients with high residual volume = 9 (6.2%)[f]	Number of patients with high residual volume = 8 (7.3%)[f]					Number of patients with high residual volume = 9 (6.2%)[f]
Detrusor pressure (cmH_2O)	Hellström 1986	*n* = 13 58, SD 34.1 (14–149)	*n* = 11 35, SD 18.8 (7–68)	*n* = 13 26, SD 11.4 (7–54)	*n* = 11 35, SD 10.8 (20–54)	0.04				
	Trocz 2002	*n* = 50 8.5, SD 8	*n* = 50 8.4, SD 10							

NS, not significant.
a Median.
b 95% confidence interval.
c Values estimated from graph
d 2–3 months.
e Change in symptom score
f High: > 20% of the total bladder capacity.

		24 months			3 years			5 years		
TUIP	***p*-value**	**TURP**	**TUIP**	***p*-value**	**TURP**	**TUIP**	***p*-value**	**TURP**	**TUIP**	***p*-value**
Number of patients with high residual volume = 8 (7.3%)[f]		Number of patients with high residual volume = 9 (6.2%)[f]	Number of patients with high residual volume = 8 (7.3%)[f]							
		n = 50 44, SD 6 $p < 0.001$	*n* = 50 45, SD 6 $p < 0.001$							

TABLE 66 *Descriptors of care [mean, SD (range)]*

Outcome	Study	TURP	TUIP	Comments
Duration of operation (minutes)	Dørflinger 1992	*N* = 31 30	*N* = 29 15	Median ; $p < 0.01$
	Hellström 1986	*N* = 13 36, SD 10.1 (20–55)	*N* = 11 16, SD 5.59 (15–30)	$p < 0.001$
	Jahnson 1998	*N* = 42 32 (15–60)	*N* = 43 15 (5–40)	
	Li 1987	*N* = 30 35.5, SE 3.6 (15–75)	*N* = 29 18.8, SE 2.9(10–60)	$p = 0.0002$
	Nielsen 1998	*N* = 25 45 (20–80)	*N* = 24 18 (10–35)	
	Riehmann 1994	*N* = 56 55 (5–135)	*N* = 61 23 (7–95)	$p < 0.0001$
	Soonawalla 1992	*N* = 110 59.2 (30–95)	*N* = 110 20.4 (10–40)	
Length of hospital stay (days)	Aliaga 1998	*N* = 21 4.9	*N* = 20 4.8	
	Christensen 1990	*N* = 34 4 (2–10)	*N* = 35 3 (1–8)	Median (range); $p = 0.0000$
	Dørflinger 1992	*N* = 29 3	*N* = 22 3	Median; p = NS
	Hellström 1986	*N* = 13 8.4, SD 2.69 (5–13)	*N* = 11 6.2, SD 1.94 (4–10)	$p = 0.05$
	Li 1987	*N* = 30 8.0, SE 1.3 (2–39)	*N* = 29 5.6, SE 0.6 (3–14)	$p = 0.08$
	Nielsen 1988	*N* = 25 3 (2–13)	*N* = 24 3(2–18)	Median (range); p = NS
	Riehmann 1995	*N* = 52 4.3 (2–14)	*N* = 57 3.0 (1–8)	Mean (range)
	Soonawalla 1992	*N* = 110 7.16	*N* = 110 6.03	Mean

TABLE 66 *Descriptors of care [mean, SD (range)]*

Outcome	Study	TURP			TUIP			Comments
		N	***n***	**%**	***N***	***n***	**%**	
Reoperation	Aliaga 1998	21	1	4.8	20	1	5	One TURP was reoperated because of bladder neck sclerosis. One TUIP was reoperated because of a Retzius abscess in a participant who had a prostate size of 60 g
	Dørflinger 1992	31	1	3.2	29	296	20.7	Within the first month
	Nielsen 1998	25	–	–	24	3	12.5	At 2 months, underwent TURP
	Riehmann 1994	56	9	16	60	13	21.6	TURP: eight TURBNC or TUIP and one TURP at mean follow-up of 18 months (6–30). TUIP: 12 TURP and one TUIP at mean follow-up of 31 months (1–61); $p = 0.908$
	Saporta 1996	20	0	0	20	3	15	Two underwent TURP and one underwent TUIP
	Christensen 1990	38	7	18.4	38	5	13.1	TURP patients underwent BNI for bladder neck contracture at 6, 10, 13, 20, 25, 26 and 30 months after TURP. TUIP patients underwent TURP at 25, 27, 32 and 36 months after TUIP
	Jahnson 1998	42	3	7.1	43	10	23.2	TURP: bladder neck stricture was incised 3 weeks after the operation; total reoperation at a mean follow-up of 11 months (2–25). TUIP: two TURPs at 6 weeks; total reoperation at a mean follow-up of 16 months (1–38); $p = 0.039$

BNI, bladder neck incision; NS, not significant; TURBNC, transurethral resection of bladder neck contracture.

Appendix 8.6: Laser resection versus TURP

TABLE 67 *Mean symptom scores, SD (range)*

	Baseline		3 months			6 months		
Study	**TURP**	**Laser resection**	**TURP**	**Laser resection**	***p*-value**	**TURP**	**Laser resection**	***p*-value**
Gupta 2006 (IPSS)	*n* = 50 23.3, SD 3.9 (17–31)	*n* = 50 23.4, SD 4.5 (13–34)				*n* = 50? 6.1, SD 0.42 (0–16)	*n* = 50? 5.2, SD 0.31 (0–14)	
Kuntz 2004 (AUA)	*n* = 100 21.4, SD 5.5 (9–32)	*n* = 100 21.4, SD 5.5 (9–32)				*n* = 89 3.7, SD 3.7 (3–4)	*n* = 94 2.2, SD 1.6 (0–9)	0.006
Montorsi 2004 (IPSS)	*n* = 52 21.6, SD 6.7	*n* = 48 21.9, SD 7.2				*n* = 52? 3.9, SD 2.9	*n* = 48? 2.9, SD 2.6	0.72
Westenberg 2004 (AUA)	*n* = 59 23.0, SD 5.9 (9–35)	*n* = 61 21.9, SD 6.2 (10–35)	*n* = 59 5.7, SD 5.2 (0–30)	*n* = 61 5.6, SD 5.1 (0–25)	0.88	*n* = ? 5.0, SD 4.5 (0–23)	*n* = ? 3.8, SD 3.8 (0–24)	0.17
Wilson 2006 (Tan 2003) (AUA)	*n* = 30 23.7, SE 1.2 (9–35)	*n* = 30 26.0, SE 1.1 (14–35)	*n* = 29 3.4, SE 0.9 (0–24)	*n* = 28 4.8, SE 0.8 (0–18)	NS	*n* = 29 4.8, SE 0.7 (0–18)	*n* = 26 6.0, SE 1.0 (0–17)	NS

NS, not significant.
a At 4 years.

12 months			24 months			5 years		
TURP	**Laser resection**	***p*-value**	**TURP**	**Laser resection**	***p*-value**	**TURP**	**Laser resection**	***p*-value**
n = 50? 5.6, SD 0.32 (0–9)	*n* = 50? 5.2, SD 0.17 (0–8)							
n = 86 3.9, SD 3.9 (0–19)	*n* = 89 1.7, SD 1.8 (0–9)	0.0001						
n = 52? 4.1, SD 2.3	*n* = 48? 3.9, SD 3.6	0.58						
n = ? 4.3, SD 4.1 (0–16)	*n* = ? 4.2, SD 6.0 (0–29)	0.92	*n* = 41 3.7, SD 4.9 (0–21)	*n* = 45 3.4, SD 4.9 (0–23)	0.84	*n* = 30 6.6.[a] SD 5.0 (1–20)	*n* = 43 5.2,[a] SD 5.9 (0–21)	0.32
n = 27 5.0, SE 0.9 (0–21)	*n* = 25 4.3, SE 0.7 (1–14)	NS	*n* = 26 5.2, SE 0.8	*n* = 25 6.1, SE 1.0				

TABLE 68 *Complications*

		TURP			Laser resection			
Complication	**Study**	*N*	*n*	**%**	*N*	*n*	**%**	**Comments**
Periprocedural (intraoperative or immediate postoperative)								
Blood loss	Montorsi 2004	48	1.29, SD 2.1		52	1.32, SD 1.8		g/dl (mean, SD); p = NS
	Gupta 2006	50	140.5, SD 60.7 (60–315)		50	40.6, SD 37.3 (30–240)		ml (mean, SD)
Capsular perforation	Gupta 2006	50	0	0	50	1	2	
Blood transfusion	Kuntz 2004	100	2	2	100	0	0	$p = 0.50$
	Montorsi 2004	48	1	2	52	0	0	
	Tan 2003	30	1	3.3	30	0	0	
	Westenberg 2004	59	4	6.8	61	0	0	
	Gupta 2006	50	1	2	50	0	0	
Urinary tract infection	Tan 2003	30	2	6.6	30	0	0	
Urinary retention	Montorsi 2004	48	1	2.1	52	3	5.8	Acute urinary retention at 1 month
Recatheterisation	Kuntz 2004	100	5	5	100	0	0	$p = 0.06$
	Tan 2003	30	4	13.3	30	5	16.6	
	Westenberg 2004	59	8	13.1	61	5	8.2	p = NS
	Gupta 2006	50	3	6	50	2	6	For 24–72 hours
TUR syndrome	Montorsi 2004	48	1	2.1	52	0	0	At 1 month
Cardiovascular events	Westenberg 2004	59	1	1.7	61	0	0	
	Westenberg 2004	59	1	1.7	61	1	1.6	TURP: at 3 months. Laser resection: because of myocardial infarction at 8 days postoperatively
	Gupta 2006	50	0	0	50	0	0	
Incontinence	Montorsi 2004	48	17	35.4	52	25	48	Transitory urge at 1 month

		TURP			Laser resection			
Complication	**Study**	*N*	*n*	**%**	*N*	*n*	**%**	**Comments**
Postoperative (3–12 months)								
Stricture	Kuntz 2004	88	2	2.2	95	6	6.3	TURP: one urethral at 6 months and three bladder neck at 12 months. Laser: one urethral at 6 months and three bladder neck at 12 months; $p = 0.62$
	Montorsi 2004	48	4	8.3	52	1	1.9	
Urinary incontinence	Tan 2003	28	3	10.7	29	1	3.4	TURP: one submeatal, one bulbar. Laser resection: submeatal
	Gupta 2006	50	2	4	50	1	2	Treated with internal urethrotomy. Time point is unclear (follow-up 12 months)
	Kuntz 2004	53	1	1.9	62	1	1.6	Stress incontinence at 12 months
	Montorsi 2004	48	1	2.1	52	1	1.9	Stress incontinence at 6–12 months
	Westenberg 2004	59	2	3.4	61	1	1.6	Required pads
	Gupta 2006	50	1	2	50	1	2	Transient incontinence. Time point is unclear (follow-up 12 months)
Retrograde ejaculation	Westenberg 2004	37	32	86	25	24	96	At 12 months
Mortality	Tan 2003	30	1	3.3	30	0	0	Mortality at 6 months as a result of cardiovascular disease
Postoperative (> 12 months)								
Stricture	Westenberg 2004	59	6	10.2	61	6	9.8	One required operative intervention for stricture and the rest were treated with urethral dilation; at 48 months; p = NS
Urinary incontinence	Westenberg 2004	59		17	61		20	At 48 months
Retrograde ejaculation	Wilson 2006	13	8	61.5	16	12	75	At 24 months
Erectile dysfunction	Westenberg 2004			17			8	
	Wilson 2006	26	2	7.7	22	2	9	At 24 months
Urinary tract infection	Westenberg 2004	59	3	5.1	61	5	8.1	p = NS

NS, not significant.

TABLE 69 *Urodynamic measures [mean, SD (range)]*

		Baseline		3 months			6 months		
Urodynamic outcome	**Study**	**TURP**	**Laser resection**	**TURP**	**Laser resection**	***p*-value**	**TURP**	**Laser resection**	***p*-value**
Peak urine flow rate (ml/s)	Gupta 2006	*n* = 50 4.5, SD 4.7 (0–13)	*n* = 50 5.15, SD 4.4 (0–12)				*n* = 50? 20.7, SD 1.32 (10–39)	*n* = 50? 23.1, SD 1.2 (15–40)	0.33
	Montorsi 2004	*n* = 48 7.8, SD 3.6	*n* = 52 8.2, SD 3.2				*n* = 48? 26.5, SD 15.5	*n* = 52? 23.1, SD 8.6	0.007
	Wilson 2006; in Tan 2003	*n* = 30 8.3, SE 0.4 (3–12)	*n* = 30 8.4, SE 0.5 (2–14)	*n* = 29 18.9, SE 1.9 (6–41)	*n* = 28 24.2, SE 1.7 (11–52)		*n* = 29 20.8, SE 2.3 (7–48)	*n* = 26 26.4, SE 1.8 (13–65)	NS
	Kuntz 2004	*n* = 100 5.9, SD 3.9 (0–12)	*n* = 100 4.9, SD 3.8 (0–11)				*n* = 89 25.1, SD 9.4 (8–47)	*n* = 94 25.1, SD 6.9 (10–49)	0.72
	Westenberg 2004	*n* = 59 9.1, SD 3.2 (3–14)	*n* = 61 8.9, SD 3.0 (3–14)	*n* = 59? 20.2, SD 9.5 (6–50)	*n* = 61? 22.8, SD 10.0 (6–50)	0.16	*n* = 59? 22.4, SD 9.0 (8–43)	*n* = 61? 23.9, SD 8.7 (7–50)	0.35
Mean urine flow rate (ml/s	Montorsi 2004	*n* = 48 4.3, SD 2.3	*n* = 52 4.3, SD 2.0	*n* = 48? 9.1, SD 3.6	*n* = 52? 13.3, SD 5.7	0.01			
	Wilson 2006	*n* = 30 85.8, SE 5.4 (46–156)	*n* = 30 76.2, SE 4.4 (44–137)				*n* = 29 40.7, SE 2.7 (10–97) $p < 0.01$	*n* = 26 20.8, SE 2.8 (4–41) $p < 0.01$	< 0.001
	Kuntz 2004	*n* = 100 87.3, SD 31.4 (46–150)	*n* = 100 83.5, SD 34.9 (50–197)						
	Westenberg 2004	*n* = 59 83.4, SD 27.9 (43–143)	*n* = 61 75.9, SD 26.2 (39–149)				*n* = 59? 39.2 (13–77)	*n* = 61? 35.2 (43–143)	NS
Residual volume (ml)	Gupta 2006	*n* = 50 84.0, SD 129.7 (0–600)	*n* = 50 112.0, SD 155.9 (0–780)				< 20	< 20	
	Tan 2003	*n* = 30 126, SE 21.32 (1–394)	*n* = 30 113.5, SE 15.5 (19–380)				*n* = 29 51.8, SE 14.5 (0–324)	*n* = 26 33.7, SE 5.5 (0–105)	NS

12 months			18 months			24 months			48 months		
TURP	**Laser resection**	***p*-value**	**TURP**	**Laser resection**	***p*-value**	**TURP**	**Laser resection**	***p*-value**	**TURP**	**Laser resection**	***p*-value**
n = 50? 23.7, SD 1.58 (9–41)	*n* = 50? 25.1, SD 1.06 (12–45)	0.62									
n = 48? 24.7, SD 10	*n* = 52? 25.1, SD 7.2	0.25									
n = 27 18.4, SE 2.8 (2–40)	*n* = 25 21.8, SE 2.1 (8–36)					*n* = 26 19.3, SE 2.2	*n* = 22 21.0, SE 2.0				
n = 86 27.7, SD 12.2 (8–56)	*n* = 89 27.9, SD 9.9 (5–53)	0.76									
n = 59? 20.4, SD 8.5 (6–44)	*n* = 61? 25.2, SD 11.9 (6–63)	< 0.05	*n* = 59? 19.2, SD 9.3 (7–41)	*n* = 61? 25.1, SD 9.3 (10–44)	< 0.01	*n* = 41 20.9, SD 11.1 (6–39)	*n* = 45 25.0, SD 11.0 (3–74)	0.14	*n* = 30 18.5, SD 8.2 (3–43)	*n* = 43 22.3, SD 14.2 (5–58)	0.23
n = 48? 12.1, SD 3.3	*n* = 52? 15.5, SD 4.2	0.01									
< 20	< 20										

continued

TABLE 69 *Urodynamic measures [mean, SD (range)] (continued)*

		Baseline		3 months			6 months		
Urodynamic outcome	**Study**	**TURP**	**Laser resection**	**TURP**	**Laser resection**	***p*-value**	**TURP**	**Laser resection**	***p*-value**
	Kuntz 2004	*n* = 100 216, SD 177 (50–800)	*n* = 100 238, SD 163 (50–1000)				*n* = 89 16.7, SD 16.9 (0–130)	*n* = 94 4.8, SD 12.5 (0–60)	< 0.0001
	Westenberg 2004	*n* = 59 84.7, SD 81.7 (0–373)	*n* = 61 87.8, SD 88.4 (0–346)				*n* = 59? 34.3 (0–295)	*n* = 61? 26.7 (0–245)	NS
Prostate size (ml)	Gupta 2006	*n* = 50 59.8, SD 16.5 (40–100)	*n* = 50 57.9, SD 17.6 (41–125)						
	Montorsi 2004	*n* = 48 56.2, SD 19.4	*n* = 52 70.3, SD 36.7						
	Wilson 2006	*n* = 30 70.0, SE 5.0 (46–156)	*n* = 30 77.8, SE 5.6 (42–152)				*n* = 29 46.6, SE 4.4 (26–96) < 0.001	*n* = 26 28.4, SE 1.8 (13–43) *p* < 0.001	< 0.001
	Kuntz 2004	*n* = 100 49.9, SD 21.1 (20–99)	*n* = 100 53.5, SD 20.0 (20–95)						
	Westenberg 2004	*n* = 59 44.6, SD 20.7 (11.5–93)	*n* = 61 44.3, SD 19.0 (11–92)				*n* = 59? 27.3 (10–75)	*n* = 61? 29.3 (11–61)	NS

NS, not significant.

12 months			18 months			24 months			48 months		
TURP	**Laser resection**	***p*-value**	**TURP**	**Laser resection**	***p*-value**	**TURP**	**Laser resection**	***p*-value**	**TURP**	**Laser resection**	***p*-value**
$n = 86$ 26.6, SD 60.4 (0–150)	$n = 89$ 5.3, SD 15.3 (0–70)	< 0.0001									

TABLE 70 *Descriptors of care [mean, SD (range)]*

Outcome	Study	TURP			Laser resection			Comments
Duration of operation (minutes)	Kuntz 2004	*N* = 100 73.8, SD 24.0 (30–40)			*N* = 100 94.6, SD 35.1 (39–209)			$p < 0.0001$
	Montorsi 2004	*N* = 48 57, SD 15			*N* = 52 74, SD 19.5			$p < 0.05$
	Wilson 2006	*N* = 29 33.1, SE 3.7			*N* = 28 62.1, SE 5.9 (11–76)			
	Westenberg 2004	*N* = 59 25.3, SD 14.7			*N* = 61 41.5, SD 23.1			$p < 0.001$
	Gupta 2006	*N* = 50 64, SD 13.1 (40–110)			*N* = 50 75.4, SD 22.8 (40–145)			
Length of hospital stay (days)	Kuntz 2004	*N* = 100 3.58, SD 1.63			*N* = 100 2.22, SD 0.58			$p < 0.0001$
	Montorsi 2004	*N* = 48 3.58, SD 0.79			*N* = 52 2.46, SD 0.83			$p < 0.001$
	Tan 2003	*N* = 29 2.08, SE 0.23			*N* = 28 1.15, SE 0.11			$p < 0.001$
	Westenberg 2004	*N* = 59 1.98, SD 0.73			*N* = 61 1.08, SD 0.49			$p < 0.001$
Reoperation		***N***	***n***	**%**	***N***	***n***	**%**	
	Kuntz 2004	88	3	3.4	95	1	1.05	Urethral stricture incision at 6 months
		88	1	1.1	95	3	3.1	Bladder contracture incision
	Montorsi 2004	48	1	2.1	52	1	1.9	Reintervention because of bleeding at 1 month
	Tan 2003	30	2	6.6	30	0	0	One underwent HoLEP after 1 month
	Westenberg 2004	59	8	13.5	61	5	8.2	At 48 months follow-up; p = NS

NS, not significant.

Appendix 8.7: Laser vaporisation versus TURP

TABLE 71 *Mean symptom scores, SD (range)*

	Baseline		3 months			6 months			12 months			18 months
Study	**TURP**	**Laser vaporisation**	**TURP**	**Laser vaporisation**	***p*-value**	**TURP**	**Laser vaporisation**	***p*-value**	**TURP**	**Laser vaporisation**	***p*-value**	**TURP**
Carter 1999a (IPSS)	*n* = 96 19.8	*n* = 95 20.3				*n* = 89 6.4	*n* = 90 6.7	NS	*n* = 84 5.9	*n* = 86 6.6	NS	
Keoghane 2003 (AUA)	*n* = 63 19.4, SD 6.5	*n* = 54 19.9, SD 7.7	*n* = 62 6.5, SD 5.1	*n* = 55 9.6, SD 7.5	0.029				*n* = 60 5.77, SD 5.4 *p* = 0.006	*n* = 52 8.87, SD 6.51 *p* = 0.006	< 0.01	
van Melick 2003 (IPSS)	*n* = 50 16.8, SD 6.0					*n* = 37 3.2, SD 2.7	*n* = 33 5.9, SD 5.5		*n* = 41 4.1, SD 4.8	*n* = 37 3.6, SD 3.4		
Mottet 1999 (IPSS)	*n* = 13 23.7	*n* = 17 21.7	*n* = 12 7.5	*n* = 17 8.6		*n* = 11 7.7	*n* = 15 7.3		*n* = 7 4.7	*n* = 8 6.5		
Mottet 1999 (Madsen)	*n* = 13 17	*n* = 17 15	*n* = 12 4.5	*n* = 17 5.2		*n* = 11 4.4	*n* = 15 3.4		*n* = 7 3	*n* = 8 5.1		
Sengör 1996 (AUA)	*n* = 30 22.1, SD 2.6	*n* = 30 21.8, SD 7.6	*n* = 30? 9.8, SD 3.1	*n* = 30? 8.5, SD 4.2		*n* = 30? 9.3, SD 4.2	*n* = 30? 7.8, SD 2.6					
Shingleton 2002 (AUA)	*n* = 50 21.2, SD 6.1	*n* = 50 22.5, SD 6.0	*n* = 48 4	*n* = 48 7	0.011	*n* = 48 4	*n* = 46 7	0.011	*n* = 33 3.8, SD 4.1	*n* = 40 6.0, SD 6.0		*n* = 19 4.6, SD 4.2[c]
Zorn 1999 (AUA)	*n* = 11 24.7	*n* = 21 24.0				*n* = 10 8.2	*n* = 19 9.1		*n* = 7 4.7	*n* = 18 8.4	Significant	
Suvakovic 1996 (AUA)	*n* = 10 18.8, SD 4.5	*n* = 10 18, SD 6.6	*n* = 10 12.8, SD 5.9	*n* = 10 9.7, SD 2.6		*n* = 10 8.5, SD 3	*n* = 9 8.7, SD 5.4		*n* = 10? 7.2, SD 6.1	*n* = 10? 8.7, SD 4.9		
Tuhkanen 2001 (Dan PSSI)	*n* = 25 23 (5–69)	*n* = 21 19 (5–40)	*n* = 22 5.6	*n* = 21 10.0	NS	*n* = 24 4.7	*n* = 21 5.5	NS	*n* = ? 3.7[e]	*n* = ? 5.5[e]	NS	
Tuhkanen 2003 (Dan PSS I)	*n* = 26 18[f] (4–46)	*n* = 26 18[f] (5–54)	*n* = 25 5, SD 6 *p* < 0.001	*n* = 25 6, SD 7 *p* < 0.001	NS	*n* = 26? 3,[e] SE 1 *p* < 0.01	*n* = 26? 5.5,[e] SE 2 *p* < 0.01	NS				

NS, not significant.
a 1–4 years.
b 4–7 years.
c For the interval between 18 and 24 months.
d For the interval between 3 and 6 years.
e Values estimated from graph.
f Median.

		24 months			3 years			5 years			
Laser vaporisation	***p*-value**	**TURP**	**Laser vaporisation**	***p*-value**	**TURP**	**Laser vaporisation**	***p*-value**	**TURP**	**Laser vaporisation**	***p*-value**	**Comments**
											KTP laser for vaporisation; Nd:YAG laser for coagulation
		n = 52 5.7, SD 6.0	*n* = 45 7.8, SD 6.6	0.018	*n* = 41 6.5, SD 6.5	*n* = 37 8.9, SD 6.6	0.001	*n* = 32 7.0, SD 5.7	*n* = 25 9.7, SD 7.5	NS	Nd:YAG SLT MD 60
					n = 15 5.8, SD 7.5[a]	*n* = 10 9.3, SD 5.2[a]		*n* = 15 7.3, SD 7.1[b]	*n* = 17 8.3, SD 6.4[b]		Contact Nd:YAG laser
											Holmium:YAG laser
											Holmium:YAG laser
											Non-contact VLAP Nd:YAG laser
n = 23 5.9, SD 5.7[c]					*n* = 33 7.7, SD 5.6[d]	*n* = 29 9.9, SD 6.7[d]	NS				KTP/Nd:YAG laser
											Contact Nd:YAG laser
											Contact
		n = ? 3.4 (0–21) $p < 0.001$	*n* = ? 7.2 (0–25) $p < 0.01$	NS							Hybrid laser technique; non-contact Nd:YAG laser; large prostates
								n = 20 4[f] (0–18) $p < 0.01$	*n* = 22 5[f] (0–34) $p < 0.001$		Contact Nd:YAG laser; SLT MTRL 10 probe; last is 4 years

TABLE 72 *Complications*

		TURP			Laser vaporisation			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Periprocedural (intraoperative and immediate postoperative)								
Blood loss (ml)	Keoghane 2000	76	200		72	39		Median
	Tuhkanen 2001	24	332 (50–1000)		21	68 (20–200)		Mean (range); $p < 0.001$
	Tuhkanen 2003	25	175 (30–520)		25	51 (20–75)		$p < 0.001$
Capsular perforation	van Melick 2003	50	5	10	45	3	6.6	
Urethral injury	van Melick 2003	50	1	2	45	0	0	
Haemorrhage	Keoghane 2000	76	7	9.2	72	3	4.1	Haemorrhage requiring recatheterisation
	Mottet 1999	13	0	0	23	1	4.3	Converted to TURP because of bleeding and endoscopic malfunctions
Blood transfusions	Bouchier-Hayes 2006	38	1	2.6	38	0	0	
	Keoghane 2000	76	13	17	72	0	0	$p < 0.0001$
	Shingleton 2002	50	–	–	50	0	0	
	Mottet 1999	13	0	0	23	0	0	
	Tuhkanen 2003	26	0	0	26	0	0	
	Zorn 1999	12	0	0	12	0	0	
	Tuhkanen 2001	24	2	8.3	21	1	4.8	
	Carter 1999a	96	5	5.2	95	–	–	
	Sengör 1996	30	2	6.7	30	0	0	
	van Melick 2003	50	1	2	45	0	0	

		TURP			Laser vaporisation			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Irritative urinary symptoms	Mottet 1999	13	0	0	23	0	0	At 1 month
Urinary tract infection	Keoghane 2000	76	3	3.9	72	1	1.3	Proven (0–3 months)
		76	–	–	72	1	1.3	Prostatitis (0–3 months)
	Carter 1999a	92	5	5.2	93	17	18.3	Simple
		92	0	0	93	5	5.4	Epididymitis
								These are all for up to 6 weeks
	Tuhkanen 2003	26	1	3.8	26	–	–	Epididymitis (treated)
Urinary retention	Carter 1999a	92	2	2.2	93	5	5.4	Acute retention at 6 weeks
		96	5	5.2	95	26	27.4	Failure to void
	Keoghane 2000	76	8	12	72	17	28	$p < 0.05$ (0–3 months)
	van Melick 2003	50	5	10	45	4	9	At 1 week postoperatively
		50	0	0	45	5	11.1	Up to 12 months
Recatheterisation	Bouchier-Hayes 2006	38	6	15.8	38	4	10.5	
	Keoghane 2000	76	7	9.2	72	3	4.1	Because of haemorrhage
	Tuhkanen 2001	24	1	4.1	21	1	4	
	Mottet 1999	13	0	0	23	0	0	
	Zorn 1999	12	3	25	21	3	14	Because of clot retention or inability to void

continued

TABLE 72 *Complications (continued)*

		TURP			Laser vaporisation			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Clot retention	Bouchier-Hayes 2006	38	10	26.3	38	0	0	
	Tuhkanen 2001	24	2	8.3	21	1	4	Required bladder irrigation under spinal anaesthesia
	Tuhkanen 2003	26	1	3.8	26	0	0	Removed by syringe irrigation
	van Melick 2003	50	1	2	45	2	4.4	
TUR syndrome	Bouchier-Hayes 2006	38	1	2.6	38	0	0	
	Sengör 1996	30	0	0	30	0	0	
	Carter 1999a	92	0	0	93	0	0	
Cardiovascular events	Keoghane 2000	76	1	1.3	72	1	1.4	TURP: heart disease at 2 months, died. Laser: myocardial infarction but had pre-existing heart disease at 3 months
	Tuhkanen 2001	24	–	–	21	1	4.8	Myocardial infarction on the day of treatment (patient had history of angina pectoris)
	van Melick 2003	50	1	2	45	0	0	Myocardial infarction
Mortality	Keoghane 2000	76	5	6.6	72	5	6.9	Overall mortality at 3 years
	Tuhkanen 2001	24	1	4.2	21	1	4.8	TURP: at 13 months; unknown cause. Laser: cardiac infarct at 5 months
	Tuhkanen 2003	26	1	3.8	26	3	11.5	Overall mortality at 13 months for TURP. BPH unrelated causes
	van Melick 2003	50	4	8	45	3	6.6	Cardiac failure
Stricture	Bouchier-Hayes 2006	38	8	21	38	5	13	At 6 weeks
Incontinence	Keoghane 2000	76	1	1.3	72	–	–	0–3 months
	van Melick 2003	50	4	8	45	18	40	Up to 12 months

Complication	Study	TURP			Laser vaporisation			Comments
		N	*n*	%	*N*	*n*	%	
Postoperative (>3 months)								
Irritative urinary symptoms	Zorn 1999	12	0	0	21	0	0	Time point is unclear (total follow-up is 1 year)
Stricture	Shingleton 2002	50	1	2	50	4	8	TURP: urethral stricture. Laser: three bladder neck contractures; one urethral stricture. Time point unclear (could it be cumulative for up to 72 months?)
	Tuhkanen 2001	25	1	4	21	–	–	Urethral stricture at 3 months (underwent internal urethrotomy at 5 months)
	Carter 1999a	85	9	10.6	84	2	2.4	Urethral
		85	6	7.0	84	5	5.9	Bladder neck
								At 1 year
	Keoghane 2000	76	5	6.6	72	–	–	TURP: three urethral strictures and two bladder neck contractures (0–3 months)
	Mottet 1999	13	2	15.4	23	–	–	Bladder neck contractures at 2 and 6 months; treated by cold knife incision
	Sengör 1996	30	0	0	30	0	0	Follow-up 6 months
	van Melick 2003	50	2	4	45	2	4.4	Urethral stricture; up to 12 months
	Tuhkanen 2003	25	1	4	25	0	0	Bladder neck contracture at 6-month follow-up; treated by TURP 2 months later

continued

TABLE 72 *Complications (continued)*

		TURP			Laser vaporisation			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Urinary incontinence	Shingleton 2002	50	1	2	50	1	2	Stress; time point unclear (up to 72 months)
	Tuhkanen 2001	24	1	4.2	21	–	–	Overflow incontinence at 13 months
	Carter 1999a	85	0	0	84	1	1.2	At 7 months
Retrograde ejaculation	Shingleton 2002	21	2	9.5	22	2	9.1	Time point unclear (up to 72 months)
	Mottet 1999	13	–	50	23	–	50	At 1 year; article does not report whether all patients were sexually active
	Tuhkanen 2001	14	12	85.7	16	3	18.8	Loss of ejaculate; $p < 0.001$
	Sengör 1996	27	24	89	23	1	4.3	Follow-up 6 months
	Tuhkanen 2003	16	13	81	16	1	6	At 3-month follow-up; $p < 0.0001$

Complication	Study	TURP			Laser vaporisation			Comments
		N	*n*	%	*N*	*n*	%	
Erectile dysfunction	Shingleton 2002	21	–	–	22	8	37.5	At 6 months; no erections. TURP: minimal change after 6 months
	Mottet 1999	13	–	0	23		10	At 1 year; article does not report whether all patients were sexually active
Urinary tract infection	Carter 1999a	85	6	7.0	84	2	2.4	Simple
		85	0	0	84	2	2.4	Epididymitis
		85	1	1.2	84	2	2.4	Prostatitis
								All at 1 year
Urinary retention	Tuhkanen 2001	25	–	–	21	2	9.5	At 17 months and underwent TURP
	Shingleton 2002	50	1	2	50	3	6	Time point unclear (up to 12 months)

BPH, benign prostatic hyperplasia.

TABLE 73 *Quality of life (mean, SD)*

	Baseline		3 months			6 months			12 months
Study	**TURP**	**Laser vaporisation**	**TURP**	**Laser vaporisation**	***p*-value**	**TURP**	**Laser vaporisation**	***p*-value**	**TURP**
Carter 1999b			Role physical domain score was significantly worse than the preoperative level[a]	Patients reported worse mean scores in all health domains. The differences reached statistical significance in the domains of bodily pain and social function[a]					Improvement in the vitality domain score at 1 year and mental health domain
van Melick 2003	*n* = 50 3.9, SD 1.6	*n* = 45 3.6 , SD 1.6				*n* = 37 0.5, SD 0.5	*n* = 33 0.8, SD 1.0		*n* = 41 0.6, SD 0.9
Keoghane 2000; in Jenkinson 1997	*n* = 65 0.81, SD 0.18	*n* = 62 0.81, SD 0.18	*n* = 55 0.85, SD 0.17	*n* = 58 0.85, SD 0.20					*n* = 58 0.82, SD 0.22
	n = 66 78.3, SD 13.2	*n* = 59 75.8, SD 17.1	*n* = 58 79.9, SD 16.3	*n* = 49 74.2, SD 19.5					*n* = 58 77.2, SD 16.9
	No statistically significant changes with time were detected for patients in either group. Both the mean EQ-5D health states valued by the results of the tariffs and self-assessment EuroQoL thermometer score suggested only minimal change for both groups from baseline to follow-up at 3 months and 1 year								
	n = 57 44.66, SD 12.12	*n* = 51 43.69, SD 12.58	*n* = 60 41.85, SD 12.17	*n* = 52 42.96, SD 11.24					*n* = 56 43.37, SD 13.46
	n = 57 47.75, SD 10.47	*n* = 51 47.07, SD 11.20	*n* = 60 46.21, SD 11.56	*n* = 52 46.28, SD 11.16		*n* = 56 45.71, SD 13.21	*n* = 52 45.57, SD 14.11		
	Little change as a consequence of either surgical intervention. Quality of life: SF-36 in Jenkinson 1997 is reporting eight different dimensions of the SF-36 questionnaire (physical functioning, role physical, pain, general health perception, energy/vitality, social functioning, role emotional, mental health). Scale goes from 0 to 100, in which 0 is worst possible health state and 100 is best possible health state. Also a short form health survey is reported: PCS – physical component summary score; MCS – mental component summary score								

a 6 weeks.
b 1–4 years.
c 4–7 years.

		18 months			2 years			
Laser vaporisation	***p*-value**	**TURP**	**Laser vaporisation**	***p*-value**	**TURP**	**Laser vaporisation**	***p*-value**	**Comments**
No significant differences were seen between the groups in any domain. General health domain was significantly worse than the preoperative score								SF-36 HRQL
n = 37 0.6, SD 0.9		*n* = 15 1.1, SD 1.2[b]	*n* = 10 2.0, SD 1.0[b]		*n* = 15 1.3, SD 1.3[c]	*n* = 17 1.4, SD 1.2[c]		IPSS QoL
n = 51 0.82, SD 0.21								EQ-5D health states, weighted tariffs
n = 51 46.5, SD 18.1								Thermometer score
n = 52 42.35, SD 14.12								Physical score Mental

TABLE 74 *Urodynamic measures [mean, SD, (range)]*

		Baseline		3 months			6 months		
Urodynamic outcome	**Study**	**TURP**	**Laser vaporisation**	**TURP**	**Laser vaporisation**	***p*-value**	**TURP**	**Laser vaporisation**	***p*-value**
Peak urine flow rate (ml/s)	Zorn 1999	*n* = 11 9.0	*n* = 21 8.7				*n* = 10 23.1	*n* = 18 20.0	
	Tuhkanen 2004	*n* = 51 7.6,[a] SD 3.0	*n* = 47 8.3,[a] SD 3.6						
	Tuhkanen 2003	*n* = 26 8.6[a] (5.0–15.9)	*n* = 26 8.3[a] (4.8–19.6)	*n* = 25 19, SD 9.0	*n* = 25 15.0, SD 5.2	NS	*n* = 25 21.1, SD 9.7	*n* = 25 17.9, SD 7.1	NS; from 1999 paper
	Shingleton 2002	*n* = 50 7.3, SD 3.7	*n* = 50 8.2, SD 3.2	*n* = 48? 16.0, SD 8.0	*n* = 48? 15.0, SD 5.7	0.60	*n* = 48? 16.3, SD 6.4	*n* = 48? 15.8, SD 6.9	0.77
	Keoghane 2000	*n* = 54 11.4, SD 5.0	*n* = 48 11.8, SD 4.5	*n* = 52 21.8, SD 12.2	*n* = 46 21.3, SD 11.6	NS			
				Change: *n* = 40 9.6, SD 2.4 (5.8–13.4)[b]	Change: *n* = 38 10.7, SD 1.4 (7.1–14.3)[b]	NS			
	Mottet 1999	*n* = 13 7.7	*n* = 17 8.8	*n* = 12 18.3	*n* = 17 23.5		*n* = 11 16.6	*n* = 15 18.6	
	Tuhkanen 2001	*n* = 25 7.2 (3.7–14.8)	*n* = 21 8.5 (2.3–17.2)	*n* = 22 21.0	*n* = 21 13.7	< 0.01	*n* = 21 19.6	*n* = 19 14.4	
	Carter 1999a	*n* = 96 9.5	*n* = 95 9				*n* = 89 19	*n* = 90 18	NS[c]
	Sengör 1996	*n* = 30 8.4, SD 2.8	*n* = 30 8.7, SD 2.3	*n* = 30? 20.7, SD 2.6	*n* = 30? 18.9, SD 3.1		*n* = 30? 19.8, SD 2.5	*n* = 30? 18.2, SD 2.1	
Mean urine flow rate (ml/s)	Sengör 1996	*n* = 30 4.7, SD 2.1	*n* = 30 4.6, SD 1.8	*n* = 30? 10.6, SD 1.7	*n* = 30? 10.7, SD 1.7		*n* = 30? 10.3, SD 1.3	*n* = 30? 10.9, SD 2.7	
	Tuhkanen 2001	*n* = 24 3.6 (1.4–7.0)	*n* = 21 4.2 (1–9.2)	*n* = 22 11.0	*n* = 21 6.5	< 0.01			
Residual volume (ml)	Sengör 1996	*n* = 30 155, SD 40	*n* = 30 110, SD 68	*n* = 30? 70, SD 27	*n* = 30? 50.4, SD 30		*n* = 30? 68, SD 22	*n* = 30? 47, SD 19	
	Zorn 1999								
	Tuhkanen 2004	*n* = 51 100,[a] SD 115	*n* = 47 96,[a] SD 93						

12 months			24 months			3 years		4 years		
TURP	**Laser vaporisation**	***p*-value**	**TURP**	**Laser vaporisation**	***p*-value**	**TURP**	**Laser vaporisation**	**TURP**	**Laser vaporisation**	***p*-value**
n = 6 26.9	*n* = 18 20.0									
								n = 20 16.1[a] (7.2–39.6) *p* < 0.01	*n* = 22 14.3[a] (10.1–33.6) *p* < 0.001	NS
n = 33 16.7, SD 7.6	*n* = 40 15.4, SD 5.9	0.42	*n* = 19 14.3, SD 6.3	*n* = 23 14.9, SD 5.4	18–24 months			*n* = 33? 12.8, SD 5.6	*n* = 29? 12.3, SD 5.3	Follow-up 36–72 months
n = 45 21.2, SD 12.4	*n* = 42 17.1, SD 13.2		*n* = 31 15.9, SD 8.0	*n* = 27 14.2, SD 7.4		*n* = 24 12.7, SD 6.4	*n* = 24 13.4, SD 7.3	*n* = 32 14.0, SD 5.2	*n* = 25 14.0, SD 6.4	Follow-up 5 years
Change: *n* = 45 9.4, SD 12.5 (5.2–13.6)[b]	Change: *n* = 42 6.2, SD 15 (0.8–11.6)[b]	NS	Change: *n* = 26 4.9, SD 7.5 (1.9–7.9)[b]	Change: *n* = 18 5.2, SD 7.0 (1.7–8.7)[b]		Change: *n* = 24 2.1, SD 6.9 (–0.8–5.0)[b]	Change: *n* = 24 1.8, SD 6.2 (–0.8–4.4)[b]			
n = 7 17.6	*n* = 8 19.9									
			n = ? 20.6 *p* < 0.001	*n* = ? No significant increase	< 0.001					
n = 85 20	*n* = 84 18.5	NS[c]								
39 decreased	–									

continued

TABLE 74 *Urodynamic measures [mean, SD, (range)] (continued)*

		Baseline		3 months			6 months		
Urodynamic outcome	**Study**	**TURP**	**Laser vaporisation**	**TURP**	**Laser vaporisation**	***p*-value**	**TURP**	**Laser vaporisation**	***p*-value**
	Tuhkanen 2003	*n* = 26 83[a] (8–350)	*n* = 26 87[a] (0–331)	*n* = 25 36, SD 39	*n* = 25 44, SD 39	From 1999 paper	*n* = 25 32, SD 37 *p* < 0.001	*n* = 25 50, SD 64 *p* < 0.001	NS; from 1999 paper
	Tuhkanen 2001	*n* = 24 138 (0–450)	*n* = 21 125 (0–350)						
	Carter 1999a	*n* = 96 135[c]	*n* = 95 109[c]				*n* = 89 35	*n* = 90 22	NS[c]
Detrusor pressure (cmH_2O)	Tuhkanen 2003	*n* = 26 57[a] (40–137)	*n* = 26 64[a] (32–112)	*n* = 25 31.3, SD 9.9 *p* < 0.001	*n* = 25 38.3, SD 9.7 *p* < 0.001	NS; from 1999 paper			
	Tuhkanen 2001	*n* = 24 83 (47–137)	*n* = 21 79 (47–131)				*n* = 21 36 (7–63)	*n* = 19 53 (26–109)	< 0.01
Prostate size (ml)	Zorn 1999	*n* = 12 33.9	*n* = 21 29.9						
	Tuhkanen 2004	*n* = 51 38,[a] SD 16	*n* = 47 36,[a] SD 17						
	Tuhkanen 2003	*n* = 26 28[a] (15–38	*n* = 26 30[a] (15–37)						
	Shingleton 2002	*n* = 50 29.6, SD 15.4	*n* = 50 33.9, SD 24.2				*n* = 48? 22, SD 12.1	*n* = 48? 29.1, SD 20.0	
	Keoghane 2000	*n* = 48 51.9, SD 24.1	*n* = 44 54.2, SD 26.3						
	Mottet 1999	*n* = 13 34	*n* = 17 36.7				*n* = 11 17.7	*n* = 15 28	
	Tuhkanen 2001	*n* = 25 55 (40–95)	*n* = 21 55 (42.83)				*n* = 21 29	*n* = 19 49	
	Carter 1999a	*n* = 96 41.7, SD 19.4	*n* = 95 41.6, SD 17.3						

NS, not significant.
a Median.
b 95% confidence interval.
c Estimated from graph.

12 months			24 months			3 years		4 years		
TURP	**Laser vaporisation**	***p*-value**	**TURP**	**Laser vaporisation**	***p*-value**	**TURP**	**Laser vaporisation**	**TURP**	**Laser vaporisation**	***p*-value**
								n = 20 10[a] (0–90)	*n* = 22 60[a] (0–380)	
			n = ? 58	*n* = ? 114	< 0.01					
n = 85 40	*n* = 86 30	NS[c]								
								n = 20 28[a] (9–44) *p* < 0.001	*n* = 22 38[a] (18–65) *p* < 0.001	< 0.001
								n = 20 22 *p* < 0.05	*n* = 22 30	< 0.05[c]
n = 33 21.5, SD 15.4	*n* = 40 28.4, SD 22.7		*n* = 19 20.5, SD 13.3	*n* = 23 27.5, SD 19.9	18–24 months			*n* = 33? 26.3, SD 20.2	*n* = 29? 32.9, SD 26.5	Follow-up 36–72 months
n = 7 18	*n* = 8 22.5									

TABLE 75 *Descriptors of care [mean, SD, (range)]*

Outcome	Study	TURP	Laser vaporisation	Comments
Duration of operation (minutes)	Carter 1999a	*N* = 96 35.7, SD 10.8	*N* = 95 37.4, SD 12.1	
	Tuhkanen 2001	*N* = 24 44 (24–80)	*N* = 21 75 (45–108)	Mean (range)
	van Melick 2003	*N* = 50 58, SD 26 (25–150)	*N* = 45 58, SD 11 (30–80)	
	Sengör 1996	*N* = 30 56 (45–90)	*N* = 30 43 (15–70)	
	Keoghane 2000	*N* = 69 39 SD 20	*N* = 69 36 SD 15	NS
	Mottet 1999	*N* = 13 56	*N* = 17 75	0.041
	Suvakovic 1996	*N* = 10 20.1, SD 6.2	*N* = 10 18.9, SD 8.8	NS
	Tuhkanen 2003	*N* = 25 34 (15–71)	*N* = 25 51 (20–75)	< 0.001
	Zorn 1999	*N* = 11 68	*N* = 19 70	
Length of hospital stay (days)	Tuhkanen 2001	*N* = 25 3.5 (1–8)	*N* = 21 4.0 (2–9)	Mean (range)
	Carter 1999a	*N* = 92 3.7	*N* = 93 2.7	Median
	van Melick 2003	*N* = 50 3.9, SD 0.9; *4.0 (3.0–5.9)*	*N* = 45 3.8, SD 1.3; *3.5 (2.0–6.0)*	Median (percentiles)
	Sengör 1996	*N* = 30 5.9 (4–7)	*N* = 30 1.6 (1–3)	
	Keoghane 2000	*N* = 76 4	*N* = 72 3	Median; $p < 0.005$
	Tuhkanen 2003	*N* = 25 2.9 (2–5)	*N* = 25 3.4 (2–7)	Median; p = NS
	Mottet 1999	*N* = 13 3.1	*N* = 17 1.7	
	Zorn 1999	*N* = 10 2.5	*N* = 19 1.9	

TABLE 75 *Descriptors of care [mean, SD, (range)]*

		TURP			Laser vaporisation			
Outcome	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Reoperation	Bouchier-Hayes 2006	38	0	0	38	2	5.3	At 6-week follow-up
	Shingleton 2002	50	0	0	50	3	6	Time point unclear (up to 72 months)
	Keoghane 2000	76	7	9.2	72	13	18	Up to 3 years. TURP: six reoperated with TURP and one reoperated with contact laser vaporisation. Laser: 12 reoperated with TURP and one reoperated with contact laser vaporisation
	Mottet 1999	13	–	–	23	1	4.3	Repeat laser procedure after 7 days. This patient is included in further analysis (maybe not to include as no reference is given of which group within the lasers this is for)
	Tuhkanen 2002	25	1	4	25	0	0	TURP: reoperated by TURP at 8 months because of bladder neck contracture. Laser: follow-up 6 months
	Zorn 1999	12	0	0	21	0	0	Time point is unclear (up to 1 year)
	van Melick 2003	50	2	4	45	1	2.2	Up to 12 months. All underwent TURP
	Tuhkanen 2001	25	1	4	21	3	14.3	TURP: repeat TURP at 13 months because of overflow incontinence. Laser: received TURP; one at 7 months because of gross haematuria, residual adenoma and bladder stones; two at 17 months postoperatively because of urinary retention
	Carter 1999a	85	1	1.2	84	2	2.4	TURP: at 7 months. Laser: one was at 12 weeks. Reoperations as a result of poor symptom resolution

NS, not significant.

Appendix 8.8: TUVRP versus TURP

TABLE 76 *Mean symptom scores, SD (range)*

	Baseline		3 months			6 months			12 months			24 months		
Study	**TURP**	**TUVRP**	**TURP**	**TUVRP**	***p*-value**	**TURP**	**TUVRP**	***p*-value**	**TURP**	**TUVRP**	***p*-value**	**TURP**	**TUVRP**	***p*-value**
Helke 2001 (IPSS)	*n* = 92 18.29, SD 7.49 (10–35)	*n* = 93 17.29, SD 6.06 (10–35)	*n* = 69 6.8[a]	*n* = 80 7.4[a]	NS	*n* = 74 5.8[a]	*n* = 80 5.3[a]	NS	*n* = 73 5.21, SD 5.1 (0–31)	*n* = 79 4.66, SD 4.3 (0–19)	NS			
Liu 2006 (IPSS)	*n* = 32 25.6, SD 3.5	*n* = 44 26.8, SD 4.7	*n* = 30 7.9, SD 1.8	*n* = 42 8.2, SD 2.2	0.53							*n* = 21 8.4, SD 2.6	*n* = 23 9.0, SD 3.1	0.45
Kupeli 2001 (IPSS)	*n* = 50 21.6	*n* = 50 19.4	*n* = 50? 5.0	*n* = 50? 4.0		*n* = 50? 5.0	*n* = 50? 4.0							
Talic 2000 (IPSS)	*n* = 34 20.1, SD 6.8 (11–30)	*n* = 34 24.9, SD 6 (15–31)				*n* = 34? 5.6, SD 3.1	*n* = 34? 4, SD 3.4	0.03						
Gupta 2006 (IPSS)	*n* = 50 23.3, SD 3.9 (17–31)	*n* = 50 24.9, SD 3.9 (17–32)				*n* = 50? 6.1, SD 0.42 (0–16)	*n* = 50? 5.9, SD 0.25 (0–10)		*n* = 50? 5.6, SD 0.32 (0–9)	*n* = 50? 5.4, SD 0.28 (0–9)				

NS, not significant.
a Values estimated from graph

TABLE 77 *Complications*

		TURP			TUVRP			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Periprocedural (intraoperative or immediate postoperative)								
Haemorrhage	Helke 2001	92	3	3.3	93	1	1.1	Hemorrhage requiring surgical intervention
	Liu 2006	32	0	0	44	1	2.3	Serious haemorrhage
	Talic 2000	34	1	3	34	1	3	Delayed haemorrhage
Blood transfusion	Gupta 2006	50	1	2	50	0	0	
	Helke 2001	92	9	9.8	93	6	6.4	$p = NS$
	Liu 2006	32	2	6.2	44	1	2.3	$p = 0.38$
	Kupeli 2001	50	0	0	50	0	0	
	Talic 2000	34	0	0	34	0	0	
Urinary retention	Kupeli 2001	50	0	0	50	0	0	
Recatheterisation	Kupeli 2001	50	0	0	50	0	0	
	Liu 2006	32	4	12.5	44	3	6.8	$p = 0.33$
	Gupta 2006	50	3	6	50	3	6	For 24–72 hours
Clot retention	Liu 2006	32	2	6.2	44	2	4.5	Causing readmission
	Talic 2000	34	1	3	34	1	3	
TUR syndrome	Kupeli 2001	50	0	0	50	0	0	
	Liu 2006	32	2	6.2	44	0	0	$p = 0.17$
	Talic 2000	34	0	0	34	0	0	
Incontinence	Kupeli 2001	50	0	0	50	0	0	Sphincteric
Mortality	Gupta 2006	50	0	0	50	1	2	Death due to pneumonia after the surgery; died 2 weeks later (87-year-old patient)
Postoperative (3–12 months)								
Stricture	Helke 2001	92	7	7.6	93	5	5.4	Urethral
	Kupeli 2001	50	0	0	50	0	0	Up to 6 months
	Liu 2006	26	2	7.7	36	2	5.6	Urethral or bladder neck; up to 6 months; $p = 0.56$
	Gupta 2006	50	2	4	50	1	2	Urethral stricture. Time point is unclear (follow-up up to 12 months). All were treated with internal urethrotomies

continued

TABLE 77 *Complications*

		TURP			TUVRP			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Urinary incontinence	Gupta 2006	50	1	2	50	0	0	Transient incontinence. Time point is unclear (follow-up 12 months)
	Helke 2001	93	6	6.4	92	5	5.4	Transient urge incontinence at 12 months
		93	8	8.6	92	9	1.08	Grade 1 stress incontinence at 12 months
	Liu 2006	26	1	3.8	36	1	2.8	Up to 6 months; $p = 0.67$
Retrograde ejaculation	Küpeli 2001	50	26	52	44	27	61	Up to 6 months
	Liu 2006	13	7	53.8	17	10	58.8	Up to 6 months; $p = 0.54$
Erectile dysfunction	Liu 2006	13	3	23	17	4	23.5	Impotence; up to 6 months; $p = 0.66$
	Küpeli 2001	36	12	33	31	11	35	Up to 6 months
	Talic 2000	18	0	0	18	0	0	
Postoperative (> 12 months)								
Stricture	Liu 2006	21	0	0	26	1	4.3	At 24 months; urethral or bladder neck; $p = 0.52$
	Liu 2006	21	0	0	26	1	4.3	At 24 months; $p = 0.52$

NS, not significant.

TABLE 78 *Quality of life (mean, SD)*

	Baseline		3 months			2 years			
Study	**TURP**	**TUVRP**	**TURP**	**TUVRP**	***p*-value**	**TURP**	**TUVRP**	***p*-value**	**Comments**
Liu 2006	*n* = 32 4.0, SD 0.7	*n* = 44 4.1, SD 0.6	*n* = 30 1.5, SD 0.7	*n* = 42 1.7, SD 0.5	0.57	*n* = 21 1.4 , SD 0.7	*n* = 23 1.6, SD 0.6	0.48	IPSS QoL

TABLE 79 *Urodynamic measures [mean, SD (range)]*

Urodynamic outcome	Study	Baseline		3 months			6 months
		TURP	**TUVRP**	**TURP**	**TUVRP**	***p*-value**	**TURP**
Peak urine flow rate (ml/s)	Gupta 2006	*n* = 50 4.5, SD 4.7 (0–13)	*n* = 50 4.6 , SD 3.6 (0–12)				*n* = 50? 20.7, SD 1.32 (10–39)
	Helke 2001	*n* = 92 8.5, SD 5.19 (5.2–29)	*n* = 93 10.8, SD 4.76 (4.2–28.4)	*n* = 69 21[a]	*n* = 74 21[a]	NS	*n* = 80 23[a]
	Kupeli 2001	*n* = 50 9.2, SD 2.6	*n* = 50 7.9, SD 2.1				*n* = 50? 24.6, SD 3.4 *p* < 0.01
	Liu 2006	*n* = 32 6.9, SD 1.9	*n* = 44 6.9, SD 2.1	*n* = 30 21.6, SD 2.0	*n* = 42 20.7, SD 2.0	0.20	
	Talic 2000	*n* = 34 9.1, SD 6.3 (1–15)	*n* = 34 7.5, SD 3.5 (2–14.6)				*n* = 34? 15.2, SD 10
Residual volume (ml)	Gupta 2006	*n* = 50 84.0, SD 129.7 (0– 600)	*n* = 50 103, SD 174.1 (0– 881)				< 20
Prostate size (ml)	Küpeli 2001 (g)	*n* = 50 56.7, SD 6.3 (34–110)	*n* = 50 57.8, SD 4.1 (34–95)				*n* = 50? 20.8, SD 3.1 *p* < 0.05
	Gupta 2006	*n* = 50 59.8, SD 16.5 (40– 100)	*n* = 50 62.6, SD 14.8 (42–133)				

NS, not significant.
a Estimated from graph.

		12 months			24 months		
TUVRP	***p*-value**	**TURP**	**TUVRP**	***p*-value**	**TURP**	**TUVRP**	***p*-value**
n = 50? 22.5, SD 0.95 (13–35)	NS	*n* = 50? 23.7, SD 1.58 (9–41)	*n* = 50? 423.6, SD 0.96 (16–37)	NS			
n = 80 22.5[a]	NS	*n* = 73 22.12, SD 10.6 (5–50) *p* < 0.001	*n* = 79 22.19, SD 12.3 (5.2– 41.5) *p* < 0.01				
n = 50? 26.7, SD 3.7 *p* < 0.01							
					n = 21 21.2, SD 2.7	*n* = 23 19.6, SD 3.7	0.12
n = 34? 19, SD 6.5							
< 20		< 20	< 20				
n = 50? 20.6, SD 3.6 *p* < 0.05							

TABLE 80 *Descriptors of care (mean, SD)*

Outcome	Study	TURP			TUVRP			Comments
Duration of operation (minutes)	Liu 2006	*N* = 32 52.9, SD 6.0			*N* = 44 49.4, SD 8.0			*p* = 0.04
	Talic 2000	*N* = 34 35.9, SD 12.8			*N* = 34 42.4, SD 15			*p* = 0.02
Length of hospital stay (days)	Liu 2006	*N* = 32 2.06, SD 0.35			*N* = 44 1.65, SD 0.20			*p* < 0.0001
		N	***n***	**%**	***N***	***n***	**%**	
Reoperation	Helke 2001	92	5	5.4	93	9	9.7	Four of the TURPs and two of the TUVPs underwent radical prostatectomy
	Liu 2006	26	2	7.7	36	5	5.6	Up to 6 months; *p* = 0.56
		21	1	4.8	26	0	0	At 24 months; *p* = 0.48

Appendix 8.9: B-TURP versus TURP

TABLE 81 *Mean symptom scores, SD (range)*

	Baseline		3 months			6 months			12 months			
Study	**TURP**	**B-TURP**	**TURP**	**B-TURP**	***p*-value**	**TURP**	**B-TURP**	***p*-value**	**TURP**	**B-TURP**	***p*-value**	**Comments**
de Sio 2006 (IPSS)	*n* = 35 24.3, SD 5	*n* = 35 24.18, SD 4	*n* = 35? 8[a,b]	*n* = 35? 8[a,b]		*n* = 35? 5.2[a,b]	*n* = 35? 5[a,b]		*n* = 35? 4[a,b]	*n* = 35? 4[a,b]		
Kim 2006b (IPSS)	*n* = 25 18.6, SD 3.3	*n* = 25 19.0, SD 6.0				*n* = 25 5.6, SD 1.4	*n* = 25 6.0, SD 1.0					
Nuhoğlu 2006 (IPSS)	*n* = 30 17.3, SD 5.8	*n* = 27 17.6, SD 6.1	*n* = 30 4.7, SD 3.1[c]	*n* = 27 4.8, SD 3.4[c]					*n* = 26 5.2, SD 3.2	*n* = 24 5.4, SD 3.7		
Seckiner 2006 (IPSS)	*n* = 24 23.2, SD 4.9	*n* = 24 24.1, SD 5.2 $p < 0.01$	*n* = 24 10.6, SD 6.3 $p < 0.01$	*n* = 24 9.3, SD 3.9 $p < 0.01$		*n* = 23 6.0, SD 6.7	*n* = 24 7.4, SD 2.2		*n* = 21 8.3, SD 2.9	*n* = 23 8.7, SD 4.1		

a Mean or median.
b Estimated from graph.
c At 1 month.

TABLE 82 *Complications*

		TURP			B-TURP			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Periprocedural (intraoperative or immediate postoperative)								
Blood transfusion	Tefekli 2005	47	1	2.1	49	1	2	
	Nuhoğlu 2006	30	2	6.7	27	1	3.7	
	de Sio 2006	35	0	0	35	1	2.8	p = NS
Urinary tract infection	Kim 2006b	25	1	4	25	1	4	
Urinary retention	Tefekli 2005	47	1	2.1	49	1	2	Early
	Nuhoğlu 2006	30			27	1	3.7	On the tenth day postoperatively
Recatheterisation	Tefekli 2005	47	1	2.1	49	3	6	For 1 week
	Nuhoğlu 2006	27	1	3.7	30			For 1 week
Clot retention	Nuhoğlu 2006	30	0	0	27	0	0	
	de Sio 2006	35	4	11.4	35	2	5.7	p = NS
TUR syndrome	de Sio 2006	35	0	0	35	0	0	
	Kim 2006b	25	0	0	25	0	0	
Postoperative (3–12 months)								
Irritative urinary symptoms	Tefekli 2005	47	2	4.3	49	6	12.2	Early and severe
Stricture	Tefekli 2005	47	1	2.1	3	49	6.1	Long term (time point is unclear: mean follow-up 18 months); p = 0.002
	Kim 2006b	25	2	8	25	1	4	Urethral; up to 6 months
	de Sio 2006	35	1	2.9	35	1	2.9	Required a reoperation at 6 months
	Seckiner 2006	24	1	4.2	24	2	8.3	Urethral stricture (time point is unclear; up to 12 months) treated with visual optic urethrotomy
Urinary incontinence	Tefekli 2005	47	1	2.1	49	0	0	Long term (time point is unclear; mean follow-up 18 months)
	Kim 2006b	25	1	4	25	1	4	Up to 6 months
Retrograde ejaculation	Tefekli 2005	47	30	63.8	49	29	59.2	Long term (time point is unclear; mean follow-up 18 months); article doesn't report the number of patients who were sexually active

NS, not significant.

TABLE 83 *Quality of life (mean, SD)*

	Baseline		3 months			6 months			12 months			
Study	**TURP**	**B-TURP**	**TURP**	**B-TURP**	***p*-value**	**TURP**	**B-TURP**	***p*-value**	**TURP**	**B-TURP**	***p*-value**	**Comments**
de Sio 2006	*n* = 35 3.9, SD 1	*n* = 35 4.2, SD 1	*n* = 35 1.4	*n* = 35 2.1		*n* = 35 1.0	*n* = 35 1.1					Quality of life score
Seckiner 2006	*n* = 24 4.4, SD 0.6	*n* = 24 4.7, SD 0.9	*n* = 24 2.1, SD 1.2 $p < 0.01$	*n* = 24 1.8, SD 1.0 $p < 0.01$		*n* = 23 1.6, SD 1.3	*n* = 24 1.6, SD 0.7		*n* = 21 2.0, SD 0.8	*n* = 23 1.8, SD 0.8		IPSS QoL
Singh 2005	*n* = 30 4.4, SD 1.0	*n* = 30 4.6, SD 0.9	*n* = 30? 1.0	*n* = 30? 1.1								Quality of life score

TABLE 84 *Urodynamic measures (mean, SD)*

		Baseline		3 months		
Urodynamic outcome	**Study**	**TURP**	**B-TURP**	**TURP**	**B-TURP**	***p*-value**
Peak urine flow rate (ml/s)	Seckiner 2006	*n* = 24 8.3, SD 3.1	*n* = 24 8.5, SD 2.9	*n* = 24 18.6, SD 9.1	*n* = 24 17.7, SD 9.1	
	Singh 2005	*n* = 30 5.1, SD 2.0	*n* = 30 5.8, SD 3.0	*n* = 30? 17.8	*n* = 30? 19.0	
	de Sio 2006	*n* = 35 6.3, SD 3	*n* = 35 7.1, SD 2	*n* = 35 20.5[a]	*n* = 35 21.5[a]	
	Kim 2006b	*n* = 25 6.1, SD 1.7	*n* = 25 6.5, SD 2.2			
	Nuhoğlu 2006	*n* = 30 7.3, SD 2.1	*n* = 27 6.9, SD 2.8			
	Tefekli 2005	*n* = 50 8.3, SD 3.6	*n* = 51 7.8, SD 3.7	*n* = 49 15.8, SD 3.7	*n* = 47 16.9, SD 2.8	
Mean urine flow rate (ml/s)	Nuhoğlu 2006	*n* = 30 2.8, SD 1.2	*n* = 27 2.6, SD 1.3			
Residual volume (ml)	Seckiner 2006	*n* = 24 138, SD 115	*n* = 24 88, SD 74			
	Singh 2005	*n* = 30 136, SD 52	*n* = 30 124, SD 58			
	de Sio 2006	*n* = 35 75, SD 35.5	*n* = 35 80, SD 22.5	*n* = 35? 36	*n* = 35? 44	
	Nuhoğlu 2006	*n* = 30 88, SD 20	*n* = 27 96, SD 27			
Prostate size (ml)	Seckiner 2006	*n* = 24 41.4, SD 14.5	*n* = 24 49.4, SD 18.9	*n* = 23 28.5, SD 7.5 $p < 0.05$	*n* = 24 25.3, SD 8.1 $p < 0.001$	
	de Sio 2006	*n* = 35 47.5, SD 5.1	*n* = 35 51.6, SD 3.9			
	Kim 2006b	*n* = 25 51.7, SD 19.1	*n* = 25 53.2, SD 14.9			
	Nuhoğlu 2006	*n* = 30 49, SD 18.1	*n* = 27 47, SD 7.7			
	Tefekli 2005	*n* = 50 54.0, SD 15.2	*n* = 51 50.1, SD 17.3			

a Values estimated from graph.

6 months			12 months			24 months		
TURP	**B-TURP**	***p*-value**	**TURP**	**B-TURP**	***p*-value**	**TURP**	**B-TURP**	***p*-value**
n = 23 16.2, SD 12.0	*n* = 24 23.4, SD 10.6		*n* = 21 15.7, SD 6.3	*n* = 23 18.8, SD 6.9				
n = 35 20.0[a]	*n* = 35 20.5[a]		*n* = ? 22	*n* = ? 20.5				
n = 25 20.5, SD 4.2	*n* = 25 20.6, SD 4.5							
			n = 26 17.9, SD 3.1	*n* = 24 17.1, SD 2.7				
n = 47 17. SD 4.3	*n* = 49 18.3, SD 3.5		*n* = 47 16.9, SD 4.1	*n* = 49 17.2, SD 3.9	< 0.05			
			n = 26 9.9, SD 2.3	*n* = 24 10.4, SD 2.9				
n = 35? 40	*n* = 35? 34		*n* = ? 22	*n* = ? 20.5				
			n = 26 35, SD 15	*n* = 24 33, SD 19				
n = 26 24, SD 7.1	*n* = 24 22, SD 6.8							

TABLE 85 *Descriptors of care [mean, SD (range)]*

Outcome	Study	TURP			B-TURP			Comments
Duration of operation (minutes)	de Sio 2006	*N* = 35 53			*N* = 35 49			
	Kim 2006b	*N* = 25 57, SD 15.4			*N* = 25 54, SD 13.6			
	Nuhoğlu 2006	*N* = 30 52, SD 13.2			*N* = 27 55, SD 9.7			
	Seckiner 2006	*N* = 24 52.9, SD 16.3			*N* = 24 52.9, SD 12.8			$p = 0.835$
	Tefekli 2005	*N* = 50 57.8, SD 13.4 (30–60)			*N* = 51 40.3, SD 11.4 (30–60)			$p < 0.001$
Length of hospital stay (days)	de Sio 2006	*N* = 35 107			*N* = 35 78.2			Hours; $p < 0.05$
	Kim 2006b	*N*=25 4.0, SD 1.3			*N*=25 3.3, SD 1.1			$p < 0.05$
		N	***n***	**%**	***N***	***n***	**%**	
Reoperation	de Sio 2006	35	1	2.9	35	1	2.9	Because of bladder neck contractures
	Nuhoğlu 2006	30	0	0	27	0	0	At 1 year
	Tefekli 2005	47	1	2.1	49	2	4.1	Because of obstructive symptoms; long term (time point is unclear; mean follow-up 18 months)

Appendix 8.10: B-TUVRP versus TURP

TABLE 86 *Mean symptom scores, SD (range)*

	Baseline		3 months		
Study	**TURP**	**B-TUVRP**	**TURP**	**B-TUVRP**	***p*-value**
Fung 2005 (IPSS)	*n* = 30 15.82	*n* = 21 19.36	*n* = 30 9.63[a]	*n* = 21 8.81[a]	0.862

a Mean decrease in symptom score.

TABLE 87 *Complications*

		TURP			B-TUVRP			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Periprocedural (intraoperative or immediate postoperative)								
Urinary tract infection	Fung 2005	30	4	13.3	21	4	19	Up to 3 months follow-up; $p = 0.7$
Urinary retention	Fung 2005	30	3	10	21	4	19	On postoperative day 1
Clot retention	Fung 2005	30	5	16.7	21	1	4.8	Requiring removal in ward or recovery room; $p = 0.2$
TUR syndrome	Fung 2005	30	0	0	30	0	0	

TABLE 88 *Quality of life (mean, SD)*

	Baseline		3 months			
Study	**TURP**	**B-TURP**	**TURP**	**B-TURP**	***p*-value**	**Comments**
Fung 2005	*n* = 30 3.64	*n* = 21 3.55	*n* = 30 1.54[a]	*n* = 21 0.55[a]	0.169	Quality of life score

a Mean change from baseline.

TABLE 89 *Descriptors of care [mean (range)]*

Outcome	**Study**	**TURP**	**TUVRP**	**Comments**
Duration of operation (minutes)	Fung 2005	*n* = 30 32.9 (12–105)	*n* = 21 36.6 (12–76)	Resection time; $p = 0.48$
Length of hospital stay	Fung 2005	*n* = 30 NR	*n* = 30 NR	No significant differences reported by the authors in the text

NR, not reported.

Appendix 8.11: TUVP versus TURP

TABLE 90 *Mean symptom scores, SD (range)*

	Baseline		3 months			6 months			12 months	
Study	**TURP**	**TUVP**	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**
Çetinkaya 1996 (AUA)	*n* = 23	*n* = 23	*n* = 23? –21.31[a] *p* < 0.001	*n* = 23? –20.89[a] *p* < 0.001						
Ekengren 2000 (IPSS)	*n* = 28 25[b] (13–100)	*n* = 26 22[b] (1–100)							*n* = 28? 4.0[b] (0–100)	*n* = 26? 4.5[b] (0–24)
Erdağı 1999 (IPSS)	*n* = 20 21.5[c] (11–30)	*n* = 20 20.6[c] (12–27)	*n* = 20? 5.3[c] (1–12)	*n* = 20? 0.9[c] (0–4)	NS	*n* = 20? 3.9[c] (1–9) *p* < 0.01	*n* = 20? 0.9[c] (0–3) *p* < 0.001	NS		
Fowler 2005 (IPSS)	*n* = 114 20.7, SD 6.9 (19.4–22)[d]	*n* = 107 20.7, SD 7.3 (19.3–22.1)[d]	*n* = 110 9.8, SD 7.2 (8.4–11.1)[d,e]	*n* = 105 11.8, SD 7.7 (10.3–13.3)[d,e]		*n* = 108 6.9, SD 5.5 (5.8–7.9)[d]	*n* = 106 8.5, SD 7.4 (7.1–10)[d]			
Galluci 1998 (IPSS)	*n* = 80 18.19, SE 0.66	*n* = 70 18.84, SE 0.68	*n* = 80 5.52, SE 0.46	*n* = 70 5.50, SD 0.57	NS	*n* = 80 3.77, SE 0.37	*n* = 70 4.94, SD 0.56	NS	*n* = 80 3.52, SE 0.34	*n* = 70 4.04, SE 0.51
Gotoh 1999 (IPSS)	*n* = 28 18.9, SD 7.3	*n* = 23 19.6, SD 7.5	*n* = 28? 3.8, SD 2.3	*n* = 23? 3.7, SD 2.4						
Hammadeh 2003 (IPSS)	*n* = 52 26.6, SD 4.8	*n* = 52 26.5, SD 4.5	*n* = 52 5.9[f]	*n* = 52 7.3[f]	NS	*n* = 52 4.9[f]	*n* = 52 5.9[f]		*n* = 51 5.9, SD 5.2	*n* = 51 4.4, SD 3.8
Kaplan 1998 (AUA)	*n* = 32 18.3, SD 4.7	*n* = 32 19.4, SD 3.5	*n* = 32 8.6, SD 2.5 *p* < 0.02	*n* = 32 9.2, SD 2.7 *p* < 0.02	NS	*n* = 32 7.9, SD 3.1 *p* < 0.02	*n* = 32 7.4, SD 2.9 *p* < 0.02	NS	*n* = 31 6.1, SD 1.9 *p* < 0.02	*n* = 30 6.6, SD 2.4 *p* < 0.02
Küpeli 1998a (IPSS)	*n* = 30 21.6	*n* = 30 19.4	*n* = 30? 5.2	*n* = 30? 4.1						
Küpeli 1998b (AUA)	*n* = 36 14.6 (8–32)	*n* = 30 13.7 (7–29)				*n* = 33 7.3 (1–12)	*n* = 27 7.9 (0–12)		*n* = 30 7.0 (0–14)	*n* = 26 6.1 (0–11)
McAllister 2003 (IPSS)	*n* = 114 20.7 (19.4–22.0)[d]	*n* = 107 20.7 (19.3–22.1)[d]	*n* = 110 9.8 (8.4–11.1)[d,e]	*n* = 105 11.8 (10.3–13.3)[d,e]	>0.12	*n* = 108 6.9 (5.8–7.9)[d]	*n* = 106 8.5 (7.1–10.0)[d]	NS		
Netto 1999 (IPSS)	*n* = 38 24.29, SD 6.48	*n* = 40 19.65, SD 6.14								
Nuhoğlu 2005 (IPSS)	*n* = 40 17.6, SD 7.2	*n* = 37 17.3, SD 6.8	*n* = 38 4.8, SD 4.2	*n* = 35 4.7, SD 3.1	NS					

	18 months			24 months			3 years			5 years		
p-value	TURP	TUVP	*p*-value	TURP	TUVP	*p*-value	TURP	TUVP	*p*-value	TURP	TUVP	*p*-value
NS												
				n = 77 7.5, SD 5.8 (6.2– 8.8)[d]	*n* = 90 8.6, SD 7.2 (7.1– 10.1)[d]	NS						
NS												
0.3				*n* = 47 6.3, SD 4.6	*n* = 47 4.3, SD 3.5	0.02	*n* = 40 7.1, SD 6.2	*n* = 40 4.1, SD 3.3	0.01	*n* = 27 8.6, SD 7.1	*n* = 26 5.9, SD 6.3	0.16
NS												
	n = 38? 8.68, SD 2.3	*n* = 40? 3.83, SD 4.62	0.88									
										n = 23 6.1, SD 3.5	*n* = 21 6.5, SD 3.2	NS

continued

TABLE 90 *Mean symptom scores, SD (range)*

	Baseline		3 months			6 months			12 months	
Study	**TURP**	**TUVP**	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**
Patel 1997 (IPSS)	*n* = 6 23.3 (17–29)[g]	*n* = 6 29.6 (28–31)[g]	*n* = 6 3.2 (1–5)	*n* = 6 3.5 (2–4)						
Shokeir 1997 (AUA)	*n* = 35 25.1, SD 5.5 (18–30)	*n* = 35 26.3, SD 5.2 (16–29)	*n* = 35? 4.8, SD 2.2 (5–14) *p* < 0.01	*n* = 35? 4.5, SD 1.9 (6–15) *p* < 0.01	NS	*n* = 35? 4.5, SD 1.3 (3–8) *p* < 0.01	*n* = 35? 4.6, SD 1.2 (3–7) *p* < 0.01	NS	*n* = 35? 4.7, SD 1.5 (4–9) *p* < 0.01	*n* = 35? 5.2, SD 1.4 (4–8) *p* < 0.01
Wang 2002 (IPSS)	*n* = 109 20 (9–31)	*n* = 97 20 (8–30)							*n* = 109 3 (1–17) *p* < 0.01	*n* = 96 4 (4–20) *p* < 0.01
van Melick 2003 (IPSS)	*n* = 50 16.8, SD 6.0	*n* = 46 20.2, SD 6.6				*n* = 37 3.2, SD 2.7	*n* = 33 3.8, SD 2.7		*n* = 41 4.1, SD 4.8	*n* = 34 4.8, SD 4.9
Nathan 1996 (IPSS)	*n* = 20 17, SD 4.3 (9–24)	*n* = 20 21.9, SD 4.2 (13–27)	*n* = 20 3.1, SD 2.3 (0–8)	*n* = 20 2.86, SD 2.8 (0–10)						

NS, not significant.v
a Change in symptom score.
b Median.
c Mean or median.
d 95% confidence interval.
e 2–3 months
f Values estimated from graph.
g Only patients without retention (three in each group had retention).
h 1–4 years.
i 4–7 years.

	18 months			24 months			3 years			5 years		
***p*-value**	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**
NS												
				n = 43 4 (2–21) *p* < 0.01	*n* = 38 5 (4–23) *p* < 0.01	> 0.05						
							n = 15 5.8, SD 7.5[h]	*n* = 12 8.4, SD 8.7[h]		*n* = 15 7.3, SD 7.1[i]	*n* = 12 7.0, SD 5.6[i]	

TABLE 91 *Complications*

		TURP			TUVP			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Periprocedural (intraoperative or immediate postoperative)								
Blood loss (ml)	Ekengren 2000	28	150 (8–400)		26	75 (8– 400)		Median (range); $p < 0.04$
	Küpeli 1998b	36	340 (210–830)		30	60 (32–235)		Mean (range) $p < 0.001$
	Erdağı 1999	20	491 (35–950)		20	117.6 (10–358)		Mean or median (range); $p < 0.001$
Haemorrhage	Ekengren 2000	28	0	0	26	2	7.7	
	Fowler 2005	120	7	5.8	115	1	0.8	Heavy bleeding; $p = 0.06$
	Hammadeh 2003				52	3	5.8	5-6 hours postoperatively; bleeding
	Netto 1999	38	1	2.6	40	2	5	At 3 weeks; bleeding
Perforation	Küpeli 1998 b	36	0	0	30	1	3.3	Bladder perforation
	Galluci 1998	80	0	0	70	1	1.4	Requiring surgical drainage; perforation (capsular)
	van Melick 2003	50	5	10	46	2	4	Capsule perforation
Urethral injury	van Melick 2003	50	1	2	46	0	0	
Blood transfusion	Küpeli 1998a	30	0	0	30	0	0	
	Küpeli 1998b	36	2	5.6	30	0	0	
	Fowler 2005	120	9	7.5	115	2	1.74	One TUVP patient underwent TURP instead through operator error; $p = 0.04$
	Galluci 1998	80	0	0	70	0	0	
	Hammadeh 2003	52	1	1.9	52	0	0	$p = 0.3$
	Kaplan 1998	32	1	3	32			
	van Melick 2003	50	1	2	46	0	0	
	Nuhoğlu 2005	40	2	5	37			On day 1
	Patel 1997	6	0	0	6	0	0	
	Çetinkaya 1996	23	2	8.7	23	0	0	

		TURP			TUVP			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
	Erdağı 1999	20	9	45	20			
	Gotoh 1999	28	0	0	23	0	0	
	Nathan 1996	20	2	10	20	0	0	
Urinary tract infection	Küpeli 1998b	36	3	8.3	30	4	13	
	Galluci 1998	80	4	5	1	70	1.4	Epididymitis
	Hammadeh 2005	52	2	4	52	3	6	$p = 0.7$
	Kaplan 1998	32	4	13	32	5	16	
	Erdağı 1999	20	5	25	20	1	5	
	van Melick 2003	50	5	10	46	2	4.3	At 1 week postoperatively
	Gotoh 1999	28	0	0	23	0	0	Up to 3 months
	Nathan 1996	20	10	50	20	5	25	Up to 3 months
Urinary retention	Küpeli 1998a	30	0	0	30	0	0	
	Küpeli 1998b	36			30	1	3.3	On day 7 after catheter removal
	Galluci 1998	80	3	3.75	70	12	17.1	Transient
	Hammadeh 2003	52	4	7.7	52	12	23	$p = 0.04$
	Nuhoğlu 2005	40			37	1	2.7	On day 10 for 1 week
	Nathan 1996	20	5	25	20	0	0	Up to 3 months
Recatheterisation	Küpeli 1998a	30	0	0	30	0	0	
	Kaplan 1998	32	2	6	32	3	9	
	Çetinkaya 1996	23			23	4	17.4	
	Gotoh 1999	28	0	0	23	0	0	
	Liu 2006	32	4	12.5	44	3	6.8	$p = 0.33$
Clot retention	Hammadeh 2003	52	4	7.7	52	0	0	$p = 0.05$
	Kaplan 1998	32	2	6	32	3	9	
	McAllister 2003	120	2	1.7	107	1	0.9	Causing readmission

continued

TABLE 91 *Complications (continued)*

		TURP			TUVP			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
	Erdağı 1999	20	5	25	20	–	–	
	van Melick 2003	50	1	2	46	0	0	
	Nathan 1996	20	1	5	20	0	0	Up to 3 months
TUR syndrome	Küpeli 1998a	30	0	0	30	0	0	
	Netto 1999	38	0	0	40	0	0	
	Hammadeh 2003	52	0	0	52	0	0	
	Kaplan 1998	32	1	3	32	–	–	
	Wang 2002	109	5	4.6	97	3	3.1	
	Erdağı 1999	20	0	0	20	0	0	
	Gotoh 1999	28	0	0	23	0	0	
	Nathan 1996	20	0	0	20	0	0	Up to 3 months
Cardiovascular events	Fowler 2005	120	1	0.83	115	1	0.86	Cardiovascular problem
	van Melick 2003	50	1	2	46	0	0	Myocardial infarction
Mortality	Ekengren 2000	28	0	0	26	1	0	Myocardial infarction
	Hammadeh 2003	52	6	11.5	52	3	5.76	Cardiopulmonary disease
	Wang 2002	109	–	–	97	1	1.03	Myocardial infarction
	van Melick 2003	50	1	2	46	0	0	Cardiac failure
		50	4	8	46	2	4	Total mortality at 4.3 years
Incontinence	Küpeli 1998b	36	1	2.8	30	1	3.3	
	Küpeli 1998a	30	0	0	30	0	0	Sphincteric
	Galluci 1998	80	3	3.75	70	13	18.6	Transient stress incontinence at 1 month
			2	2.5		0	0	Urge incontinence
	Hammadeh 2003	52	0	0	52	0	0	
	Kaplan 1998	32	0	0	32	0	0	
	Wang 2002	109	2	1.8	97	4	4.1	$p = 0.05$

Complication	Study	TURP N	TURP n	TURP %	TUVP N	TUVP n	TUVP %	Comments
	van Melick 2003	50						
	Gotoh 1999	28	0	0	23	0	0	Up to 3 months
Postoperative (3–12 months)								
Irritative urinary symptoms	Ekengren 2000	28	0	0	26	1	0	Long-standing irritation; many had irritative symptoms but only one was longstanding
	Küpeli 1998b	36	3	8.3	30	10	33.3	Longer than 7 days after catheter removal; $p = 0.0123$
	Küpeli 1998a	30	–		30	+		+, greater; –, less; after catheter removal; lasted an average of 10 days
	Hammadeh 2003	52	18	35	52	13	25	$p = 0.36$
	Kaplan 1998	32	4	13	32	5	16	
	Shokeir 1997	35	2	5.7	35	3	8.6	6–12 weeks postoperatively
Stricture	Ekengren 2000	28	0	0	26	2	0	Urethral
	Küpeli 1998b	36	0	0	30	0	0	Urethral
	Küpeli 1998a	30	0	0	30	0	0	Urethral and bladder neck
	Netto 1999	38	0	0	40	0	0	Bladder neck stenosis
	Hammadeh 2003	52	2	4	52	2	4	Urethral
		51	2	4	51	0	0	Bladder neck stenosis; $p = 0.16$
								These two are the same for the 5-year follow-up
	Kaplan 1998	32	1	3	32	1	3	
	Wang 2002	109	1	0.92	96	4	4.2	

continued

TABLE 91 *Complications (continued)*

		TURP			TUVP			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
	Çetinkaya 1996	23	0	0	23	1	4.3	Urethral stenosis
	Erdağı 1999	20	1	5	20	–	–	Urethral stricture
	van Melick 2003	50	2	4	46	1	2.4	Urethral stricture; up to 12 months
	Gotoh 1999	28	0	0	23	0	0	Either bladder neck or urethral; up to 3 months
Urinary incontinence	Hammadeh 2003	52	0	0	52	0	0	Same for the 5-year follow-up
	McAllister 2003	120	1	0.8	107	1	0.9	At 6 months; neither required a surgical intervention
	van Melick 2003	50	4	8	46	7	15	Up to 12 months
Retrograde ejaculation	Küpeli 1998a	24	13	54	30	7	23	
	Fowler 2005	94		24	94	23	24	Failed ejaculation at 2 months
		98	23	23.4	98	33	33.7	Failed ejaculation at 6 months
		94	37	37	94	37	39.4	No ejaculation at 2 months
		98	40	40.8	92	36	39.1	No ejaculation at 6 months
	Hammadeh 2003	28	25	89	29	21	72	$p = 0.47$; same for the 5-year follow-up
	Kaplan 1998	17	13	76	20	17	85	$p =$ NS
	McAllister 2003	59	35	59	64	31	48	$p =$ NS with chi square test
	Nuhoğlu 2005	24	4	17	35	5	14	At 3 months
	Shokeir 1997	15	15	100	18	18	100	All potent men had retrograde ejaculation
	Erdağı 1999	17	12	70.5	16	2	12.5	$p < 0.001$

		TURP			TUVP			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Erectile dysfunction	Fowler 2005	59	4	6.8	70	11	15.7	At 2 months
		58	5	8.6	69	12	17.4	At 6 months
								p = NS
	Küpeli 1998a	30	19	63	30	16	53	
	Netto 1999	38	0	0	40	0	0	
	Hammadeh 2003	28	3	11	29	5	17	Postoperative impotence; none of the patients had any improvement in their sexual function at 1 year; p = 0.49
	Kaplan 1998	18	0	0	20	1	5	
	McAllister 2003	58	5	9	69	12	17	Impotence
	Nuhoğlu 2005	25	4	16	20	2	10	At 3 months
	Patel 1997	6	0	0	6	0	0	Potency loss
	Shokeir 1997	15	0	0	18	2	11.1	Impotence
	Erdağı 1999				16	0	0	
Retention	Ekengren 2000	28	1	3.6	26	0	0	Acute retention
	Van Melick 2003	50	0	0	46	0	0	Up to 12 months
Postoperative (> 12 months)								
Stricture	Wang 2002	43	1	2.3	38	1	2.63	At 24 months
Retrograde ejaculation	Fowler 2005	68	15	22.1	83	16	19.3	Failed ejaculation at 2 years
		68	22	32.3	83	31	37.3	No ejaculation at 2 years
								p = NS
Erectile dysfunction	Fowler 2005	43	8	18.6	64	12	18.7	At 2 years; p = NS

NS, not significant.

TABLE 92 *Quality of life [mean, SD (range)]*

	Baseline		2 months			6 months	
Study	**TURP**	**TUVP**	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**
Fowler 2005	*n* = 114 4.9, SD 0.98 (4.7–5.0)	*n* = 109 4.6, SD 1.17 (4.4–4.8)	*n* = 109 2.3, SD 1.73 (2.0–2.7)	*n* = 105 2.6, SD 1.82 (2.2–2.9)		*n* = 108 1.6, SD 1.34 (1.4–1.9)	*n* = 107 2.0, SD 1.63 (1.6–2.2)
	n = 116 0.74, SD 0.25 (0.68–0.78)	*n* = 112 0.78, SD 0.23 (0.73–0.82)	*n* = 110 0.75, SD 0.26 (0.79–0.80)	*n* = 108 0.79, SD 0.25 (0.74–0.84)		*n* = 108 0.79, SD 0.24 (0.74–0.83)	*n* = 105 0.77, SD 0.28 (0.71–0.82)
	n = 116 71.3, SD 17.6 (68.1–74.6)	*n* = 109 75.8, SD 16.0 (72.7–78.8)	*n* = 108 71.4, SD 18.9 (67.8–75.0)	*n* = 107 77.2, SD 16.1 (74.2–80.3)		*n* = 109 72.9, SD 18.3 (69.4–76.4)	*n* = 108 76.9, SD 19.4 (73.2–80.6)
	Results are not provided; however, there was little or no change in domains of the SF-36 and no significant difference between the two groups in this respect						
Ekengren 2000	*n* = 28 5.5 (3–6)	*n* = 26 4.5 (2–6)					
Hammadeh 2003	*n* = 52 5.0, SD 0.7	*n* = 52 4.9, SD 0.9	*n* = 52 1.5[a]	*n* = 52 1.7[a]		*n* = 52 1.4[a]	*n* = 52 1.5[a]
van Melick 2003	*n* = 50 3.9, SD 1.6	*n* = 46 4.3, SD 1.3				*n* = 50 0.5, SD 0.5	*n* = 46 1.0, SD 0.8

a Estimate from graph in Hammadeh 1998.

	3 years			4 years		
Study	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**
Hammadeh 2003	*n* = 40 1.6, SD 1.4	*n* = 40 1, SD 0.9	0.04			
van Melick 2003				*n* = ? 1.3, SD 1.3	*n* = ? 1.4, SD 0.8	

	12 months			2 years			
***p*-value**	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**	**Comments**
				n = 80 1.8, SD 1.34 (1.4– 1.2)	*n* = 89 1.9, SD 1.62 (1.3– 2.0)		IPSS quality of life score. The Wilcoxon signed rank–rank test showed a significant difference in the IPSS QoL assessment, which was sustained to 2 years from randomisation. The improvement at all data points was similar in both groups. We conclude that TURP and TUVP produce a significant improvement in IPSS QoL score, which is sustained to 2 years from randomisation
				n = 82 0.74, SD 0.25 (0.69– 0.80)	*n* = 90 0.78, SD 0.27 (0.72– 0.83)		Quality of life (EuroQoL health scale scores). There was no difference between baseline EuroQoL scores and scores at all points after randomisation
				n = 77 70.4, SD 19.5 (66.0– 74.9)	*n* = 87 75.6, SD 20.1 (71.3– 79.9)		Quality of life (EuroQoL health scale scores). In this part of the EuroQoL questionnaire, the man is asked to mark a level on a 1–100 analogue scale to indicate health status, where 100 indicates perfect health. There was no significant change at any data point
							Quality of life (SF-36). The authors conclude that any change in general health-related QoL resulting from either intervention is not detectable by EuroQoL or SF-36
	n = 28 1.0 (0–6)	*n* = 26 1.5 (0–6)	NS				IPSS QoL (0–6)
	n = 51 1.5, SD 1	*n* = 51 1.2, SD 1	0.3	*n* = 47 1.7, SD 1.1	*n* = 47 1.1, SD 1	0.004	Quality of life score
	n = 41 0.6, SD 0.8	*n* = 34 1.0, SD 0.9		*n* = ? 1.1, SD 1.2	*n* = ? 1.0, SD 1.2	Data is for 1–4 years	Quality of life reported (IPSS QoL)

5 years			
TURP	**TUVP**	***p*-value**	**Comments**
n = 27 1.7, SD 1.4	*n* = 26 1.1, SD 1.2	0.09	Quality of life score
			Quality of life reported (IPSS QoL); 4- to 7-year data

TABLE 93 *Urodynamic measures [mean, SD (range)]*

Urodynamic outcome	Study	Baseline		3 months			6 months		
		TURP	**TUVP**	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**
Peak urine flow rate (ml/s)	Ekengren 2000	*n* = 28 2[a] (0–10)	*n* = 26 4[a] (0–8)						
	Erdağı 1999	*n* = 20 4.6 (4–9.6)	*n* = 20 5.1 (0–11.3)	*n* = 20? 17	*n* = 20? 21		*n* = 20? 17.7 $p < 0.001$	*n* = 20? 21.4 $p < 0.001$	NS
	Fowler 2005	*n* = 97 10.5, SD 5.04 (9.5–11.5)[b]	*n* = 94 10.1, SD 4.35 (9.2–11.0)[b]	*n* = 111 21.23, SD 10.2 (19.3–23.1)[b]	*n* = 108 19.12, SD 11.76 (16.9–21.4)[b]		*n* = 109 22.29, SD 10.25 (20.3–24.2)[b]	*n* = 109 19.6, SD 11.04 (17.5–21.7)[b]	NS
	Galluci 1998	*n* = 80 8.78, SE 1.16	*n* = 70 7.26, SE 0.37	*n* = 80 19.21, SE 0.91	*n* = 70 18.18, SE 0.92	NS	*n* = 80 20.77, SE 0.95	*n* = 70 20.13, SE 1.15	
	Hammadeh 2003; 3- and 6-month data taken from Hammadeh 1998	*n* = 52 8.6, SD 3.2	*n* = 52 8.9, SD 3.2	*n* = 52 22.3[c]	*n* = 52 20[c]	NS	*n* = 52 21.1[c]	*n* = 52 19.8[c]	NS
	Kaplan 1998	*n*=32 8.3, SD 3.6	*n*=32 7.2, SD 2.8	*n*=32 16.8, SD 3.6	*n*=32 14.8, SD 3.9		*n*=32 18.1, SD 4.2	*n*=32 15.6, SD 3.2	
	Küpeli 1998a	*n*=30 7.9, SD 2.1	*n*=30 9.2, SD 2.6	*n*=30? 17.7, SD 3.6 $p < 0.01$	*n*=30? 19.7, SD 3.2 $p < 0.01$				
	Küpeli 1998b	*n*=36 8.8 (3–12.4)	*n*=30 8.3 (2.7–11.8)				*n*=33 14.3 (7.2–17.5)	*n*=27 13.8 (8.2–16.4)	
	Netto 1999	*n*=38 6.77 , SD 3.08	*n*=40 7.88 , SD 2.51						
	Nuhoğlu 2005	*n* = 40 5.9, SD 2.6	*n* = 37 6.3, SD 2.1	*n* = 38 17.5, SD 3.3	*n* = 35 17.7, SD 2.3	NS			
	Patel 1997	*n* = 6 7.5 (5.1–11)	*n* = 6 10 (7.3–13.1)	*n* = 6 22.6 (19.3–25.2)	*n* = 6 21.4 (17.2–25.3)				
	Shokeir 1997	*n* = 35 6.9, SD 1.7 (3.4–10)	*n* = 35 7.8, SD 2.1 (4.1–11.4)	*n* = 35? 19.4, SD 2.1 (16–26)	*n* = 35? 19.4, SD 2.2 (15–24)		*n* = 35? 19.3, SD 2 (16–24)	*n* = 35? 19.2, SD 2 (16–23)	NS
	Wang 2002	*n* = 109 7 (3–12)	*n* = 97 7 (2–13)						

12 months			24 months			3 years			5 years		
TURP	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**
n = 28 11[a] (0–19)	*n* = 26 10[a] (4–19)	NS									
n = 80 20.3, SE 0.71	*n* = 70 20.31, SE 0.72	NS									
n = 51 20.8, SD 7.7	*n* = 51 22.5, SD 9	0.4	*n* = 47 21.2, SD 8.5	*n* = 47 22.4, SD 7.7	0.5	*n* = 40 18, SD 7.1	*n* = 40 22.2, SD 8.5	0.02	*n* = 27 17.9, SD 13.1	*n* = 26 21.0, SD 9	0.17
n=31 19.6, SD 4.9	*n*=30 16.9, SD 4.1										
n=30 19.6 (9.4–24.5)	*n*=26 17.3 (11.5–23.8)										
n=38? 16.16 SD 2.48	*n*=40? 15.43 SD 3.40	< 0.02									
									n = 23 13.8, SD 2.9	*n* = 21 12.9, SD 3.1	NS
n = 35? 18.2, SD 3 (15–25)	*n* = 35? 20.1, SD 3.2 (18–25)										
n = 109 20 (3–24) *p* < 0.01	*n* = 96 17 (4–25) *p* < 0.01		*n* = 43 15 (4–21)	*n* = 38 16 (3–24)							

continued

TABLE 93 *Urodynamic measures [mean, SD (range)] (continued)*

Urodynamic outcome	Study	Baseline		3 months			6 months		
		TURP	**TUVP**	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**
	Gotoh 1999	*n* = 28 9.4, SD 2.8	*n* = 23 7.3, SD 2.8	*n* = 28 21.2, SD 9.4	*n* = 23 23.6, SD 13.9				
	van Melick 2003; in van Melick 2002	*n* = 46 11, SD 4	*n* = 41 11, SD 4	*n* = 15 25, SD 11	*n* = 19 20, SD 10		*n* = 37 24, SD 7	*n* = 33 23, SD 10	
Mean urine flow rate (ml/s)	Nuhoğlu 2005	*n* = 40 2.4, SD 1.3	*n* = 37 2.6, SD 1.2	*n* = 38 10.5, SD 2.4	*n* = 35 9.8, SD 1.7	NS			
	Erdağı 1999	*n* = 20 2.3 (0–5.5)	*n* = 20 2.5 (0–5.3)				*n* = 20 13.1 $p < 0.001$	*n* = 20 11.3 $p < 0.001$	NS
Total voided volume (ml)	Kaplan 1998								
Residual volume (ml)	Netto 1999	*n* = 38 88.64, SD 8.43	*n* = 40 73.0, SD 5.81						
	Nuhoğlu 2005	*n* = 40 95, SD 26	*n* = 38 88, SD 20	*n* = 38 23, SD 12	*n* = 35 25, SD 13	NS			
	Shokeir 1997	*n* = 35 77.1, SD 20.3 (46–110)	*n* = 35 75.2, SD 4.2 (40–112)	*n* = 35? 30, SD 16 (18–72)	*n* = 35? 31.4, SD 17 (18–64)		*n* = 35? 22.1, SD 10.4 (10–50)	*n* = 35? 20.3, SD 9.6 (10–53)	NS
	Hammadeh 2003	*n* = 52 101, SD 87.9	*n* = 52 131, SD 78.5	*n* = 52 22PϕP	*n* = 52 18PϕP	NS	*n* = 52 20PϕP	*n* = 52 19PϕP	NS
	Fowler 2005	*n* = 94 171	*n* = 91 181				*n* = 109 71.8, SD 87.4 (54.7–87.8)[b]	*n* = 109 71.0, SD 72.0 (47.8–70.8)[b]	NS
	Galluci 1998	*n* = 80 64.6, SE 8.62	*n* = 70 84.7, SE 11.39	*n* = 80 7.27, SE 2.76	*n* = 70 8.69, SE 2.58	NS	*n* = 80 1.71, SE 0.79	*n* = 70 11.86, SE 4.40	NS
	Erdağı 1999	*n* = 20 122.8 (0–600)	*n* = 20 68 (20–150)	*n* = 20? 8.0	*n* = 20? 7.2		*n* = 20? 6 $p < 0.001$	*n* = 20? 3.6 $p < 0.001$	NS
	Ekengren 2000	*n* = 28 100[a] (0–3000)	*n* = 26 55[a] (0–3000)				*n* = 28 57[a] (0–766)	*n* = 26 17[a] (0–300)	NS
	Wang 2002	*n* = 109 131 (60–380)	*n* = 97 120 (60–400)						
	Gotoh 1999	*n* = 28 41.9, SD 25.5	*n* = 23 56.7, SD 51.4	*n* = 28? 9.3, SD 22.1	*n* = 23? 8.1, SD 12.9				

12 months			24 months			3 years			5 years		
TURP	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**
n = 11 21, SD 8	*n* = 9 23, SD 8		*n* = 15[d] 20, SD 5	*n* = 12[d] 23, SD 6					*n* = 15[e] 17, SD 8	*n* = 12[e] 16, SD 11	
									n = 23 8.3, SD 2.9	*n* = 21 7.9, SD 2.3	NS
n = 32? 34.2, SD 19.6	*n* = 32? 43.6, SD 22.4	0.11									
n = 38? 11.20, SD 1.30 $p < 0.05$	*n* = 40? 12.3, SD 1.90 $p < 0.05$	0.78									
									n = 23 38, SD 17	*n* = 21 35, SD 15	NS
n = 35? 25.3, SD 11.5 (12–55)	*n* = 35? 23.4, SD 10.1 (18–25)										
n = 51 25.8, SD 25.6	*n* = 51 24.3, SD 33.1	0.1	*n* = 47 22.8, SD 29.8	*n* = 47 18.8, SD 21.2	0.5	*n* = 40 21.9, SD 26.2	*n* = 40 30, SD 38	0.27	*n* = 27 10.7, SD 13.1	*n* = 26 27.3, SD 44.3	
n = 80 3.15, SE 1.96	*n* = 70 5.24, SE 2.44	NS									
n = 109 31 (0–240) $p < 0.01$	*n* = 67 36 (0–165) $p < 0.01$		*n* = 43 31 (0–266)	*n* = 38 42 (4–263)							

continued

TABLE 93 *Urodynamic measures [mean, SD (range)] (continued)*

Urodynamic outcome	Study	Baseline		3 months			6 months		
		TURP	**TUVP**	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**
Detrusor pressure (cmH_2O)	Galluci 1998	$n = 80$ 75.89, SE 3.49	$n = 70$ 73.41, SE 3.89	$n = 80$ 41.53, SE 1.71	$n = 70$ 38.23, SE 1.81	NS			
	van Melick 2003						Decreased	Decreased	
Prostate size (ml)	Nuhoğlu 2005	$n = 40$ 39, SD 7.7	$n = 37$ 39, SD 8.1	$n = 38$ 19, SD 6.4	$n = 35$ 21, SD 6.8	NS			
	Küpeli 1998a	$n = 30$ 51.7, SD 9.1	$n = 30$ 48.9, SD 8.7	$n = 30$ 26.2, SD 3.4 $p < 0.05$	$n = 30$ 27.8, SD 4.1 $p < 0.05$				
	Fowler 2005	$n = 103$ 51.1	$n = 100$ 54.3				$n = 98$ 24.8[f] (19.9–29.7)	$n = 97$ 21.5[f] (16.8–26.2)	NS
	Ekengren 2000	$n = 28$ 39[a] (20–80)	$n = 26$ 55[a] (25–90)						

NS, not significant.
a Median.
b 95% confidence interval.
c Estimates from graph.
d At 1–4 years.
e At 4 to 7 years.
f Reduction in prostate size.

12 months			24 months			3 years			5 years		
TURP	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**	**TURP**	**TUVP**	***p*-value**
									n = 23 23, SD 6.9	*n* = 21 24, SD 7.1	NS
n = 28 28[a] (15–57)	*n* = 26 33[a] (15–84)										

TABLE 94 *Descriptors of care [mean, SD (range)]*

Outcome	Study	TURP	TUVP	Comments
Duration of operation (minutes)	Çetinkaya 1996	*N* = 23 52.4, SD 20.0	*N* = 23 41.6, SD 22.1	*p* = 0.20
	Ekengren 2000	*N* = 28 33 (10–90)	*N* = 26 30 (15–80)	Median (range)
	Hammadeh 2003	*N* = 54 21.6, SD 8.4 (10–60)	*N* = 55 25.9, SD 8.3 (10–50)	*p* = 0.01
	Kaplan 1998	*N* = 32 34.6, SD 11.2 (25–55)	*N* = 32 47.6, SD 17.6 (23–76)	*p* < 0.01
	Küpeli 1998a	*N* = 30 41.3	*N* = 30 47.3	
	Fowler 2005; in McAllister 2003	*N* = 114 44.7	*N* = 107 49.0	
	Netto 1999	*N* = 38 56.32, SD 8.36	*N* = 40 29.78, SD 11.78	*p* = 0.001
	Nuhoğlu 2005	*N* = 40 42, SD 9.5	*N* = 37 45, SD 13.2	*p* < 0.09
	Patel 1997	*N* = 6 66 (27–95)	*N* = 6 64.3 (40–120)	*p* = 0.34; median (range)
	Shokeir 1997	*N* = 35 39.7, SD 8.8 (25–60)	*N* = 35 52, SD 12.5 (30–76)	*p* < 0.001
	Wang 2002	*N* = 109 50 (30–90)	*N* = 97 35 (25–70)	*p* < 0.05
	Gupta 2006	*N* = 50 64, SD 13.1 (40–110)	*N* = 50 55.9, SD 18.1 (35–115)	
	van Melick 2003	*N* = 50 58, SD 26 (25–150)	*N* = 46 50, SD 16 (20–90)	*p* = 0.09
	Gotoh 1999	*N* = 28 61.1, SD 29.0	*N* = 23 60.0, SD 28.0	
	Nathan 1996	*N* = 20 37.4	*N* = 20 39.2	Mean
Length of hospital stay (days)	Fowler 2005; in McAllister 2003	*N* = 120? 4.6, 95%CI 3.9–5.4	*N* = 115? 4.4, 95% CI 3.8–5.1	Data available for all but three patients; *p* < 0.0000
	Hammadeh 2003	*N* = 52 3.1, SD 0.76 (1.6–5.7)	*N* = 52 2.2, SD 0.59 (1.7–3.8)	*p* < 0.001
	Kaplan 1998	*N* = 32 2.6, SD 0.9	*N* = 32 1.3, SD 0.5	*p* = 0.03
	Küpeli 1998a	*N* = 30 4.16, SD 1.46	*N* = 30 1.92, SD 0.89	*p* < 0.0001
	Küpeli 1998b	*N* = 36 4.16, SD 1.46	*N* = 30 1.92, SD 0.89	*p* < 0.0001

TABLE 94 *Descriptors of care [mean, SD (range)]*

Outcome	Study	TURP			TUVP			Comments
	Galluci 198	*N* = 80 4.69, SE 0.22			*N* = 70 3.9, SE 0.24			
	Netto 1999	*N* = 38 2.63, SD 0.63			*N* = 40 1.55, SD 0.75			$p < 0.001$
	Patel 1997	*N* = 6 2.6 (2–4)			*N* = 6 1.8 (1–2)			
	Shokeir 1997	*N* = 35 2.5, SD 1 (1–4)			*N* = 35 1.5, SD 0.7 (1–4)			$p < 0.001$
	van Melick 2003	*N* = 50 3.9, SD 0.9 *4.0 (3.0–5.9)*			*N* = 46 3.4, SD 0.9 *3.0 (2.0–5.0)*			Median (2.5–97.5 percentiles)
	Nathan 1996	*N* = 20 3.45			*N* = 20 1.85			Mean; $p < 0.0001$
		N	***n***	%	***N***	***n***	%	
Reoperation	Ekengren 2000	28	1	3.6	26	2	7.7	Late reoperation
	Küpeli 1998b	36	–	–	30	1	3	Reoperated with TURP after 3 months
	Hammadeh 2003	51	2	4	51	2	4	At 1 year
		47	2	4.3	47	2	4.3	At 2 years
		40	2	5	40	2	5	At 3 years
		27	1	3.7	26	1	3.8	At 5 years
		52	7	13.4	52	7	13.4	Total
								Four TUVP patients underwent TURP (the surgeon had no experience in TUVP). Three TUVP patients had a repeat TUVP
	McAllister 2003	120	4	3.3	115	1	0.9	At 6 months; all underwent TURP
	van Melick 2003	50	2	4	46	2	4.3	Up to 12 months; all underwent TURP
	Nathan 1996	20	0	0	20	0	0	Up to 3 months
	Nuhoğlu 2005	40	–	–	37	1	2.7	During the fourth year postoperatively

Appendix 8.12: B-TUVP versus TURP

TABLE 95 *Mean symptom scores, SD (range)*

	Baseline		3 months			9 months			12 months			Comments
Study	**TURP**	**B-TUVP**	**TURP**	**B-TUVP**	***p*-value**	**TURP**	**B-TUVP**	***p*-value**	**TURP**	**B-TUVP**	***p*-value**	
Dunsmuir 2003 (AUA-7)	*n* = 21 17, SD 6.2 (10–29)	*n* = 30 24, SD 6.9 (9–30)	*n* = 21 8.5[a] (8–9)[b]	*n* = 30 5.2[a] (3–8.5)[b]					*n* = 20 6[a] (5.2–7.8)[b]	*n* = 20 5[a] (4–7.3)[b]		Graph readings not very accurate
Hon 2006 (IPSS)	*n* = 79 20.6, SD 7.0	*n* = 81 21.3, SD 6.2				*n* = 73 6.9, SD 5.8	*n* = 76 7.7, SD 6.8	0.44				

a Estimated from graph.
b 95% confidence interval.

TABLE 96 *Complications*

		TURP			B-TUVP			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Periprocedural (intraoperative or immediate postoperative)								
Blood transfusion	Hon 2006	79	4	5.3	81	0	0	$p = 0.02$
Recatheterisation	Dunsmuir 2003	21	1	4.7	30	10	33	$p < 0.005$
Clot retention	Dunsmuir 2003	21	4	19	30	0	0	Clot evacuation; $p < 0.001$
Postoperative (3–12 months)								
Stricture	Hon 2006	79	1	1.3	81	0	0	Urethral stricture
		79	2	2.5	81	1	1.2	Bladder neck stenosis
								Follow-up unclear (up to 9 months)

TABLE 97 *Quality of life [mean, SD (range)]*

	Baseline		3 months			9 months			12 months			
Study	**TURP**	**B-TUVP**	**TURP**	**B-TUVP**	***p* value**	**TURP**	**B-TUVP**	***p* value**	**TURP**	**B-TUVP**	***p* value**	**Comments**
Dunsmuir 2003	$n = 21$ 11, SD 3.1 (7–17)	$n = 30$ 12, SD 3.4 (8–14)	$n = 21$ 5.5[a]	$n = 30$ 5.5[a]					$n = 20$ 8.5[a]	$n = 20$ 7[a]		AUA QoL taken from section C of the AUA-7 system. It comprises five questions to give a maximum score of 19
Hon 2006	$n = 79$ 4.3, SD 1.3	$n = 81$ 4.2, SD 1.1				$n = 79$ 1.5, SD 1.5	$n = 81$ 1.7, SD 1.5	0.64				IPSS QoL score

a Values estimated from chart.

TABLE 98 *Urodynamic measure, [mean, SD (range)]*

Urodynamic outcome	Study	Baseline		3 months	
		TURP	**B-TUVP**	**TURP**	**B-TUVP**
Peak urine flow rate (ml/s)	Dunsmuir 2003	*n* = 21 10.4, SD 3.1 (7–14)	*n* = 30 9.6, SD 3.0 (8–14)	*n* = 21 21.5[a]	*n* = 30 19[a]
	Hon 2006	*n* = 79 11.9, SD 6.0	*n* = 81 12.0, SD 6.4		
Mean urine flow rate (ml/s)	Hon 2006	*n* = 79 6.1, SD 2.9	*n* = 81 5.9, SD 3.3		
Residual volume (ml)	Dunsmuir 2003	*n* = 21 96, SD 11.4 (40–167)	*n* = 30 112, SD 13.3 (42–188)	*n* = 21 62.5[a]	*n* = 30 87.5[a]
	Hon 2006	*n* = 79 182, SD 180	*n* = 81 147, SD 156		
Prostate size (ml)	Dunsmuir 2003	*n* = 21 42, SD 21 (22–60)	*n* = 21 39, SD 19 (16–56)		
	Hon 2006	*n* = 79 40, SD 17.1	*n* = 81 38, SD 17.5		

a Values estimated from chart.

	9 months			12 months		
***p*-value**	**TURP**	**B-TUVP**	***p*-value**	**TURP**	**B-TUVP**	***p*-value**
				n = 20 15.5[a]	*n* = 20 17[a]	
	n = 73 23.5, SD 15.2	*n* = 76 25.6, SD 15.6	0.41			
	n = 73 11.9, SD 7.9	*n* = 76 15.0, SD 9.4	0.03			
				n = 20 80[a]	*n* = 20 87.5[a]	
	n = 73 69, SD 67	*n* = 76 64, SD 65	0.68			

TABLE 99 *Descriptors of care (mean, SD)*

Outcome	Study	TURP			B-TUVP			Comments
Duration of operation (minutes)	Dunsmuir 2003	*N* = 21 26			*N* = 30 33			Mean or median; *p* = 0.78
	Hon 2006	*N* = 79 28.5, SD 15.2			*N* = 81 32.6, SD 13.4			Resection time; *p* = 0.08
Length of hospital stay (days)	Dunsmuir 2003	*N* = 21 1.45			*N* = 30 1.5			Mean or median; *p* = 0.88
	Hon 2006	*N* = 79 3.4, SD 1.1			*N* = 81 3.0, SD 0.9			*p* = 0.04
		N	***n***	%	***N***	***n***	%	
Reoperation	Hon 2006	79	2	2.5	81	1	1.2	BNI for stenosis. Follow-up is unclear (up to 9 months)

BNI, bladder neck incision.

Appendix 8.13: Laser coagulation versus TUVP

TABLE 100 *Mean symptom scores, SD (range)*

	Baseline		3 months			6 months			12 months
Study	**Laser coagulation**	**TUVP**	**Laser coagulation**	**TUVP**	***p*-value**	**Laser coagulation**	**TUVP**	***p*-value**	**Laser coagulation**
Abdel-Khalek 2003 (IPSS)	*n* = 90 27.9, SD 5.3	*n* = 90 26.0, SD 5.8							*n* = 89 13.3, SD 6
Shingleton 1998 (AUA)	*n* = 11 19 (13–26)	*n* = 20 22.1 (8–31)	*n* = 11 5.9 (2–24)	*n* = 20 5.2 (1–12)	NS	*n* = 11 5.0 (0–10)	*n* = 20 5.2 (1–19)	NS	
Narayan 1995 (AUA)	*n* = 32 22.1 (15–30)	*n* = 32 22.4 (14–35)	*n* = 32? 8.4	*n* = 32? 7.0		*n* = 32? 5.1	*n* = 32? 5.0		*n* = 32? 5.2

NS, not significant.

TABLE 101 *Complications*

		Laser coagulation			TUVP			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Periprocedural (intraoperative or immediate postoperative)								
Bleeding	Abdel-Khalek 2003	90	0	0	90	1	1	At surgery
Blood transfusion	Narayan 1995	32	0	0	32	0	0	$p > 0.05$
Urinary retention	Abdel-Khalek 2003	90	9	10	90	2	2	
	Narayan 1995	32	8	25	32	2	6.2	Retention > 7 days; $p = 0.039$. Follow-up uncertain (< 3 months)
	Shingleton 1998	11	3	27.3	20	1	5	
Incontinence	Narayan 1995	32	0	0	32	0	0	Follow-up uncertain (< 3 months)
Irritative urinary symptoms	Narayan 1995	32	10	32	32?	11	39	$p = 0.056$. Follow-up uncertain (< 3 months)
Stricture	Narayan 1995	32	0	0	32	0	0	Follow-up uncertain (< 3 months)
	Shingleton 1998	11	1	9	20	0	0	Time not reported (total follow-up: 6 months)

		2 years			3 years			4 years		
TUVP	***p*-value**	**Laser coagulation**	**TUVP**	***p*-value**	**Laser coagulation**	**TUVP**	***p*-value**	**Laser coagulation**	**TUVP**	***p*-value**
n = 89 5.6, SD 3.5	0.003	*n* = 86 12.2, SD 5.6	*n* = 84 5.2, SD 3.3	0.006	*n* = 73 13.1, SD 5.7	*n* = 82 4.8, SD 2.6	0.002	*n* = 62 11.9, SD 6.1	*n* = 78 3.7, SD 1.3	< 0.001
n = 32? 5.3										

TABLE 101 *Complications*

		Laser coagulation			TUVP			
Complication	**Study**	***N***	***n***	**%**	***N***	***n***	**%**	**Comments**
Erectile dysfunction	Narayan 1995	32?	0	0	32?	0	0	Follow-up uncertain (< 3 months)
	Shingleton 1998	11	1	9	20	2	10	Impotence. Timing not reported (total follow-up: 6 months)
Urinary tract infection	Narayan 1995	32 32	2 0	6.2 0	32 32	1 0	3.1 0	Epididymitis; $p > 0.05$
Cardiovascular events	Abdel-Khalek 2003	90	1	1.1	90	2	2.2	
Postoperative (3–12 months))								
Stricture	Abdel-Khalek 2003	90? 90?	2 2	2.2 2.2	90? 90?	4 2	4.4 2.2	At 1 year Bladder neck stenosis
Retrograde ejaculation	Abdel-Khalek 2003	90?	16	17.8	90?	57	63.3	At 1 year; $p < 0.001$
Erectile dysfunction	Abdel-Khalek 2003	49	0	0	53	4	7.5	Impotence; $p = 0.04$

TABLE 102 *Quality of life (mean, SD)*

	Baseline		12 months			2 years		
Study	**Laser coagulation**	**TUVP**	**Laser coagulation**	**TUVP**	***p*-value**	**Laser coagulation**	**TUVP**	***p*-value**
Abdel-Khalek 2003 (scale not defined)	*n* = 90 5, SD 0.8	*n* = 90 4.8, SD 0.9	*n* = 89 3.4, SD 0.4	*n* = 89 1.4, SD 0.5	0.008	*n* = 84 3.2, SD 0.5	*n* = 86 1.4, SD 0.4	0.009

TABLE 103 *Urodynamic measures [mean, SD (range)]*

		Baseline		3 months			6 months			12 months
Urodynamic outcome	**Study**	**Laser coagulation**	**TUVP**	**Laser coagulation**	**TUVP**	***p*-value**	**Laser coagulation**	**TUVP**	***p*-value**	**Laser coagulation**
Peak urine flow rate (ml/s)	Abdel-Khalek 2003	*n* = 90 6.9, SD 2.8	*n* = 90 6.4, SD 2.5	*n* = 89 15.1, SD 6.0	*n* = 89 20.8, SD 7.4	0.029				*n* = 89 15.1, SD 6.0
	Narayan 1995	*n* = 32 7.0 (0–14)	*n* = 32 6.4 (0–15)	*n* = 32? 16.3	*n* = 32 19.7					*n* = 32? 16.9
	Shingleton 1998	*n* = 11 9.2 (0–12)	*n* = 20 7.7 (6–13.2)	*n* = 11? 17.6 (6.2–22)	*n* = 20? 17.5 (7.8–27)	NS	*n* = 11? 16.5 (7.1–24.9)	*n* = 20? 14.3 (7.8–27.1)	NS	
Residual volume (ml)	Abdel-Khalek 2003	*n* = 90 120, SD 97.5	*n* = 90 125, SD 97.5							*n* = 89 61.3, SD 49.2
	Narayan 1995	*n* = 32 210 (0–250)	*n* = 32 276.6 (20–960)	*n* = 32? 20	*n* = 32? 31					*n* = 32? 28
Prostate size (ml)	Abdel-Khalek 2003	*n* = 78 35.9, SD 11.0	*n* = 62 27.9, SD 8.6							*n* = 89 33, SD 12.8
	Shingleton 1998	*n* = 11 34.6 (9.2–87.8)	*n* = 20 34.6 (13.7–66.4)							
	Narayan 1995	*n* = 32 41.43 (20–62)	*n* = 32 51.67 (16–120)							

NS, not significant.

3 years			4 years		
Laser coagulation	**TUVP**	***p*- value**	**Laser coagulation**	**TUVP**	***p*-value**
n = 73 3.3, SD 0.6	*n* = 82 1.4, SD 0.5	0.009	*n* = 62 3.1, SD 1.0	*n* = 78 1.3, SD 0.5	

		24 months			3 years			4 years		
TUVP	***p*-value**	**Laser coagulation**	**TUVP**	***p*-value**	**Laser coagulation**	**TUVP**	***p*-value**	**Laser coagulation**	**TUVP**	***p*-value**
n = 89 20.8, SD 7.4 *n* = 32? 19.9	0.029	*n* = 84 14.2, SD 6.3	*n* = 86 20.2, SD 4.4	0.007	*n* = 73 13.9, SD 5.3	*n* = 82 20.5, SD 6.2	0.002	*n* = 62 13.6, SD 3.6	*n* = 78 21.4, SD 4.1	< 0.001
n = 89 22.1, SD 22 *n* = 32? 26	< 0.001	*n* = 84 73.2, SD 56.2	*n* = 86 33.4, SD 29	< 0.001	*n* = 73 56.8, SD 47	*n* = 82 21.4, SD 18	< 0.001	*n* = 62 64.6, SD 29.8	*n* = 78 25.1, SD 12.8	< 0.001
n = 89 25.8, SD 8.7	0.001							*n* = 78 35.9, SD 11.0	*n* = 62 27.9, SD 8.6	< 0.001

TABLE 104 *Descriptors of care (mean, SD)*

Outcome	Study	Laser coagulation			TUVP			Comments
Duration of operation (minutes)	Shingleton 1998	*N* = 11 27.5			*N* = 20 46			$p < 0.05$
	Abdel-Khalek 2003	*N* = 90 36.6, SD 16.4			*N* = 90 37.5, SD 15			$p = 0.786$
Length of hospital stay (days)	Narayan 1995	40% discharged within 24 hours; 37% discharged within 36 hours; all within 48 hours			50% discharged within 24 hours; 40% discharged within 36 hours; all within 48 hours			
	Abdel-Khalek 2003	*N* = 90 1.1, SD 0.5			*N* = 90 2.2, SD 0.8			$p = 0.107$
		N	***n***	%	***N***	***n***	%	
Reoperation rate	Narayan 1995	32	5	16	32	0	0	$p = 0.0199$
	Abdel-Khalek 2003	90	35	39	90	11	12	

Appendix 9

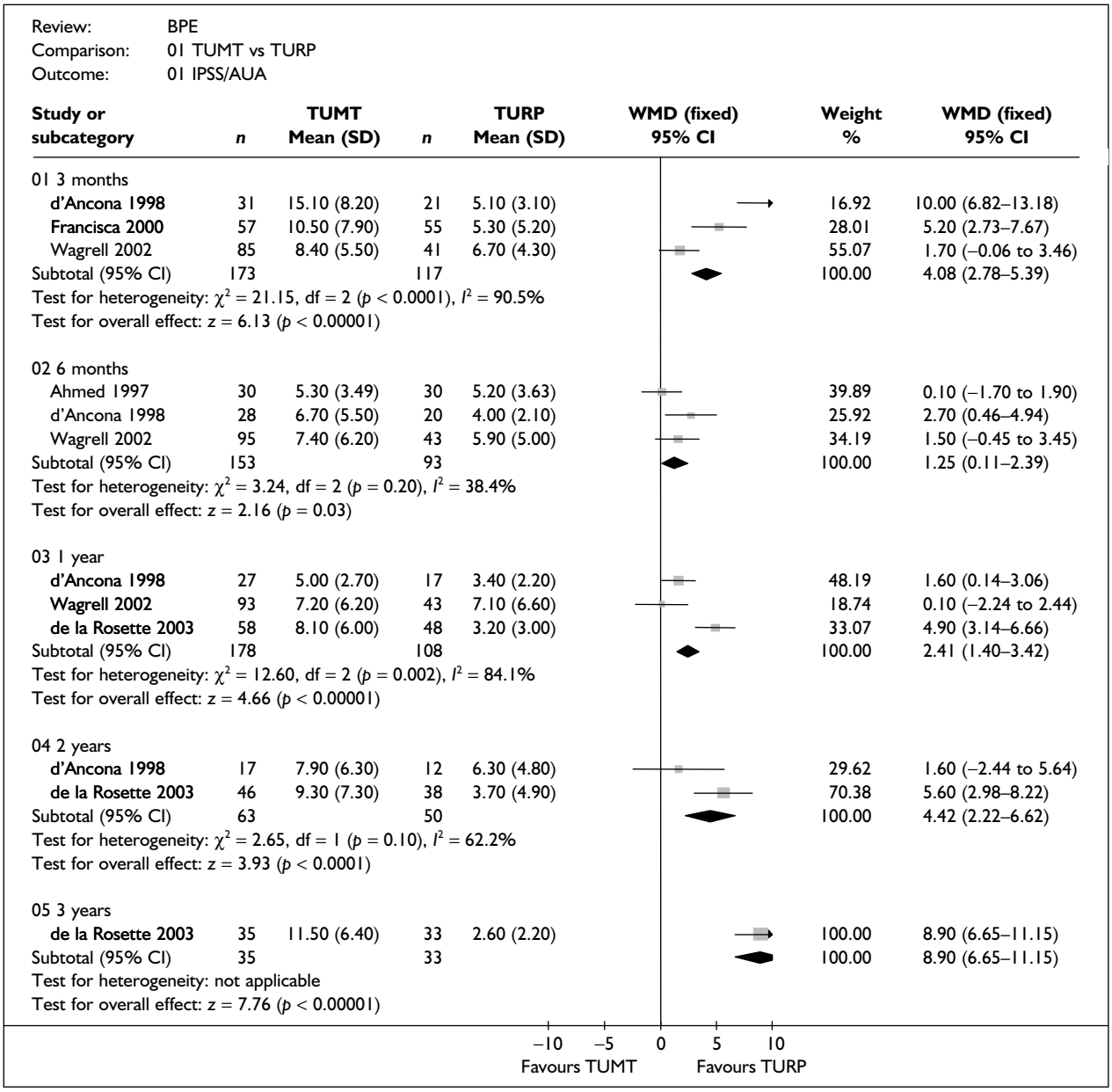
Results of meta-analyses

Appendix 9.1: TUMT versus TURP

Abbreviations used throughout this appendix are as follows: TEAP, transurethral ethanol ablation of the prostate; TUIP, transurethral incision of the prostate; TUMT, transurethral microwave thermotherapy; TUNA, transurethral needle ablation; TUR, transurethral resection; TURP, transurethral resection of the prostate; TUVP, transurethral electrovaporisation of the prostate; TUVRP, transurethral vaporesection of the prostate.

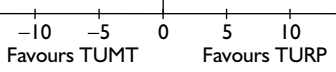
Review: BPE
Comparison: 01 TUMT vs TURP
Outcome: 01 IPSS/AUA

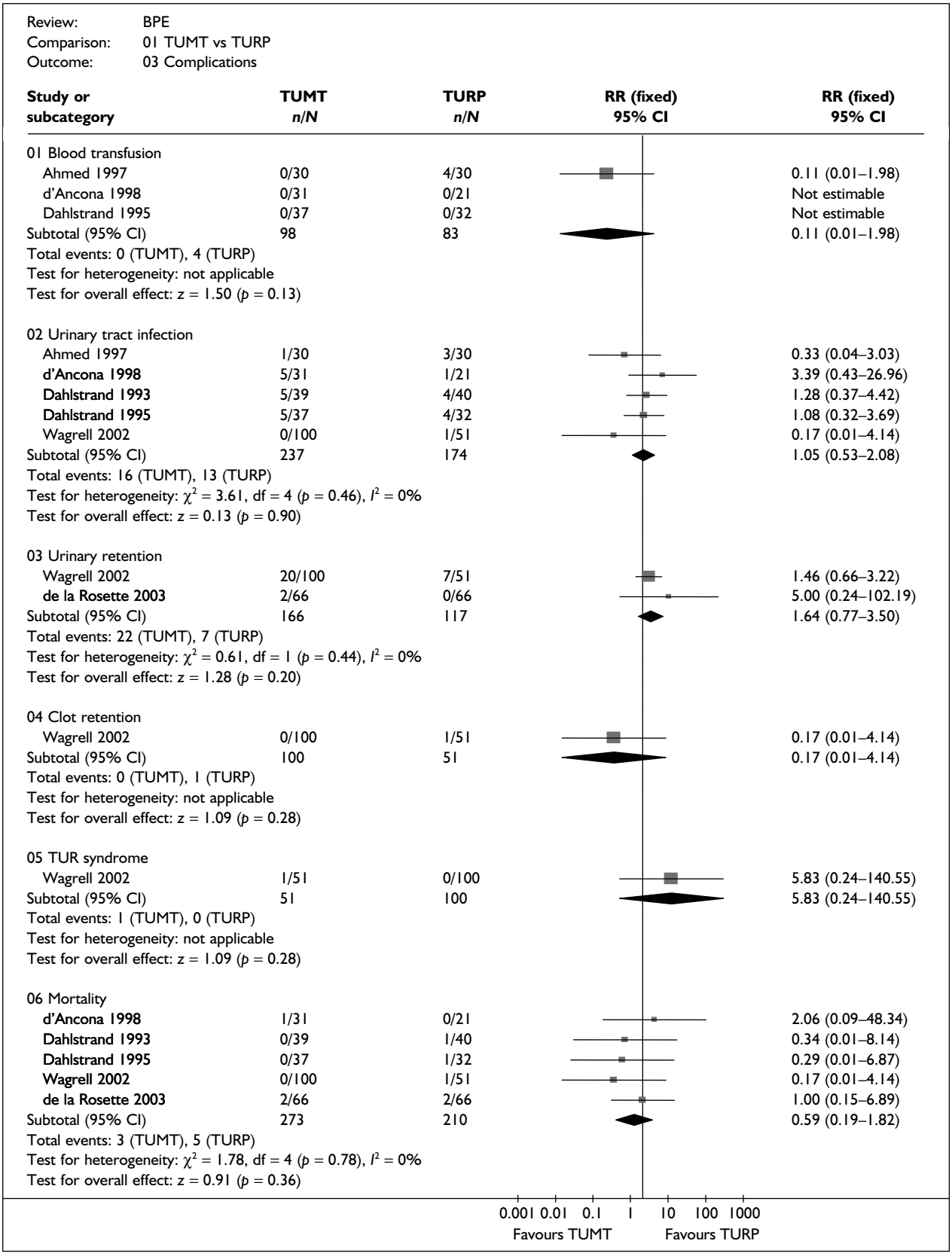
Study or subcategory	*n*	TUMT Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
d'Ancona 1998	31	15.10 (8.20)	21	5.10 (3.10)		16.92	10.00 (6.82–13.18)
Francisca 2000	57	10.50 (7.90)	55	5.30 (5.20)		28.01	5.20 (2.73–7.67)
Wagrell 2002	85	8.40 (5.50)	41	6.70 (4.30)		55.07	1.70 (–0.06 to 3.46)
Subtotal (95% CI)	173		117			100.00	4.08 (2.78–5.39)
Test for heterogeneity: $\chi^2 = 21.15$, df = 2 ($p < 0.0001$), $I^2 = 90.5\%$							
Test for overall effect: $z = 6.13$ ($p < 0.00001$)							
02 6 months							
Ahmed 1997	30	5.30 (3.49)	30	5.20 (3.63)		39.89	0.10 (–1.70 to 1.90)
d'Ancona 1998	28	6.70 (5.50)	20	4.00 (2.10)		25.92	2.70 (0.46–4.94)
Wagrell 2002	95	7.40 (6.20)	43	5.90 (5.00)		34.19	1.50 (–0.45 to 3.45)
Subtotal (95% CI)	153		93			100.00	1.25 (0.11–2.39)
Test for heterogeneity: $\chi^2 = 3.24$, df = 2 ($p = 0.20$), $I^2 = 38.4\%$							
Test for overall effect: $z = 2.16$ ($p = 0.03$)							
03 1 year							
d'Ancona 1998	27	5.00 (2.70)	17	3.40 (2.20)		48.19	1.60 (0.14–3.06)
Wagrell 2002	93	7.20 (6.20)	43	7.10 (6.60)		18.74	0.10 (–2.24 to 2.44)
de la Rosette 2003	58	8.10 (6.00)	48	3.20 (3.00)		33.07	4.90 (3.14–6.66)
Subtotal (95% CI)	178		108			100.00	2.41 (1.40–3.42)
Test for heterogeneity: $\chi^2 = 12.60$, df = 2 ($p = 0.002$), $I^2 = 84.1\%$							
Test for overall effect: $z = 4.66$ ($p < 0.00001$)							
04 2 years							
d'Ancona 1998	17	7.90 (6.30)	12	6.30 (4.80)		29.62	1.60 (–2.44 to 5.64)
de la Rosette 2003	46	9.30 (7.30)	38	3.70 (4.90)		70.38	5.60 (2.98–8.22)
Subtotal (95% CI)	63		50			100.00	4.42 (2.22–6.62)
Test for heterogeneity: $\chi^2 = 2.65$, df = 1 ($p = 0.10$), $I^2 = 62.2\%$							
Test for overall effect: $z = 3.93$ ($p < 0.0001$)							
05 3 years							
de la Rosette 2003	35	11.50 (6.40)	33	2.60 (2.20)		100.00	8.90 (6.65–11.15)
Subtotal (95% CI)	35		33			100.00	8.90 (6.65–11.15)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 7.76$ ($p < 0.00001$)							



Review: BPE
Comparison: 01 TUMT vs TURP
Outcome: 02 Madsen–Iversen

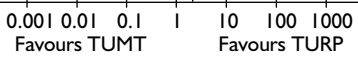
Study or subcategory	n	TUMT Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
d'Ancona 1998	31	5.20 (4.10)	21	3.60 (3.20)		12.62	1.60 (–0.39 to 3.59)
Dahlstrand 1993	37	2.30 (2.70)	39	1.60 (2.50)		36.37	0.70 (–0.47 to 1.87)
Dahlstrand 1995	39	1.60 (2.50)	37	2.30 (2.70)		36.37	–0.70 (–1.87 to 0.47)
Francisca 2000	54	6.40 (5.70)	48	3.50 (3.70)		14.65	2.90 (1.05–4.75)
Subtotal (95% CI)	161		145			100.00	0.63 (–0.08 to 1.33)
Test for heterogeneity: $\chi^2 = 11.69$, df = 3 ($p = 0.009$), $I^2 = 74.3\%$							
Test for overall effect: $z = 1.74$ ($p = 0.08$)							
02 6 months							
d'Ancona 1998	28	4.40 (4.40)	20	2.50 (2.30)		15.21	1.90 (–0.02 to 3.82)
Dahlstrand 1993	28	3.10 (3.00)	23	0.90 (1.60)		33.59	2.20 (0.91–3.49)
Dahlstrand 1995	37	2.60 (2.60)	32	1.10 (1.80)		51.20	1.50 (0.46–2.54)
Subtotal (95% CI)	93		75			100.00	1.80 (1.05–2.54)
Test for heterogeneity: $\chi^2 = 0.70$, df = 2 ($p = 0.71$), $I^2 = 0\%$							
Test for overall effect: $z = 4.71$ ($p < 0.00001$)							
03 1 year							
d'Ancona 1998	27	4.20 (4.60)	17	2.70 (4.00)		7.20	1.50 (–1.07 to 4.07)
Dahlstrand 1993	25	2.70 (2.90)	22	0.90 (2.20)		22.33	1.80 (0.34–3.26)
Dahlstrand 1995	33	2.20 (2.40)	31	0.60 (1.40)		52.26	1.60 (0.64–2.56)
Francisca 2000	38	5.50 (4.60)	35	2.10 (2.10)		18.20	3.40 (1.78–5.02)
Subtotal (95% CI)	123		105			100.00	1.97 (1.27–2.66)
Test for heterogeneity: $\chi^2 = 3.75$, df = 3 ($p = 0.29$), $I^2 = 20.0\%$							
Test for overall effect: $z = 5.57$ ($p < 0.00001$)							
04 2 years							
d'Ancona 1998	17	5.80 (3.80)	12	3.60 (3.10)		19.93	2.20 (–0.32 to 4.72)
Dahlstrand 1995	31	2.30 (3.00)	30	1.20 (1.90)		80.07	1.10 (–0.16 to 2.36)
Subtotal (95% CI)	48		42			100.00	1.32 (0.20–2.44)
Test for heterogeneity: $\chi^2 = 0.59$, df = 1 ($p = 0.44$), $I^2 = 0\%$							
Test for overall effect: $z = 2.30$ ($p = 0.02$)							





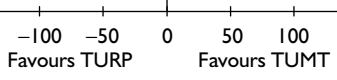
Review: BPE
Comparison: 01 TUMT vs TURP
Outcome: 03 Complications

Study or subcategory	TUMT n/N	TURP n/N	RR (fixed) 95% CI	RR (fixed) 95% CI
07 Incontinence				
Dahlstrand 1993	7/39	5/40		1.44 (0.50–4.14)
Wagrell 2002	3/100	7/51		0.22 (0.06–0.81)
de la Rosette 2003	0/66	1/66		0.33 (0.01–8.04)
Subtotal (95% CI)	205	157		0.61 (0.30–1.26)
Total events: 10 (TUMT), 13 (TURP)				
Test for heterogeneity: $\chi^2 = 5.00$, df = 2 ($p = 0.08$), $I^2 = 60.0\%$				
Test for overall effect: $z = 1.33$ ($p = 0.18$)				
08 Septicaemia				
Ahmed 1997	0/30	1/30		0.33 (0.01–7.87)
Subtotal (95% CI)	30	30		0.33 (0.01–7.87)
Total events: 0 (TUMT), 1 (TURP)				
Test for heterogeneity: not applicable				
Test for overall effect: $z = 0.68$ ($p = 0.50$)				
09 Irritative urinary symptoms				
d'Ancona 1998	9/31	4/21		1.52 (0.54–4.31)
Subtotal (95% CI)	31	21		1.52 (0.54–4.31)
Total events: 9 (TUMT), 4 (TURP)				
Test for heterogeneity: not applicable				
Test for overall effect: $z = 0.79$ ($p = 0.43$)				
10 Strictures				
Ahmed 1997	0/30	1/30		0.33 (0.01–7.87)
Dahlstrand 1993	0/39	3/40		0.15 (0.01–2.75)
Dahlstrand 1995	0/37	2/32		0.17 (0.01–3.49)
de la Rosette 2003	1/66	2/66		0.50 (0.05–5.38)
Subtotal (95% CI)	172	168		0.26 (0.06–1.01)
Total events: 1 (TUMT), 8 (TURP)				
Test for heterogeneity: $\chi^2 = 0.53$, df = 3 ($p = 0.91$), $I^2 = 0\%$				
Test for overall effect: $z = 1.94$ ($p = 0.05$)				
11 Retrograde ejaculation				
Ahmed 1997	4/18	12/19		0.35 (0.14–0.89)
de la Rosette 2003	14/46	32/42		0.40 (0.25–0.64)
Subtotal (95% CI)	64	61		0.39 (0.25–0.59)
Total events: 18 (TUMT), 44 (TURP)				
Test for heterogeneity: $\chi^2 = 0.06$, df = 1 ($p = 0.81$), $I^2 = 0\%$				
Test for overall effect: $z = 4.42$ ($p < 0.00001$)				
12 Erectile dysfunction				
Ahmed 1997	0/18	4/19		0.12 (0.01–2.03)
Dahlstrand 1995	0/37	0/32		Not estimable
de la Rosette 2003	7/35	9/53		1.18 (0.48–2.87)
Subtotal (95% CI)	90	104		0.77 (0.35–1.73)
Total events: 7 (TUMT), 13 (TURP)				
Test for heterogeneity: $\chi^2 = 2.54$, df = 1 ($p = 0.11$), $I^2 = 60.6\%$				
Test for overall effect: $z = 0.62$ ($p = 0.53$)				



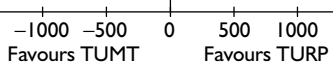
Review: BPE
Comparison: 01 TUMT vs TURP
Outcome: 04 Q_{max} (ml/s)

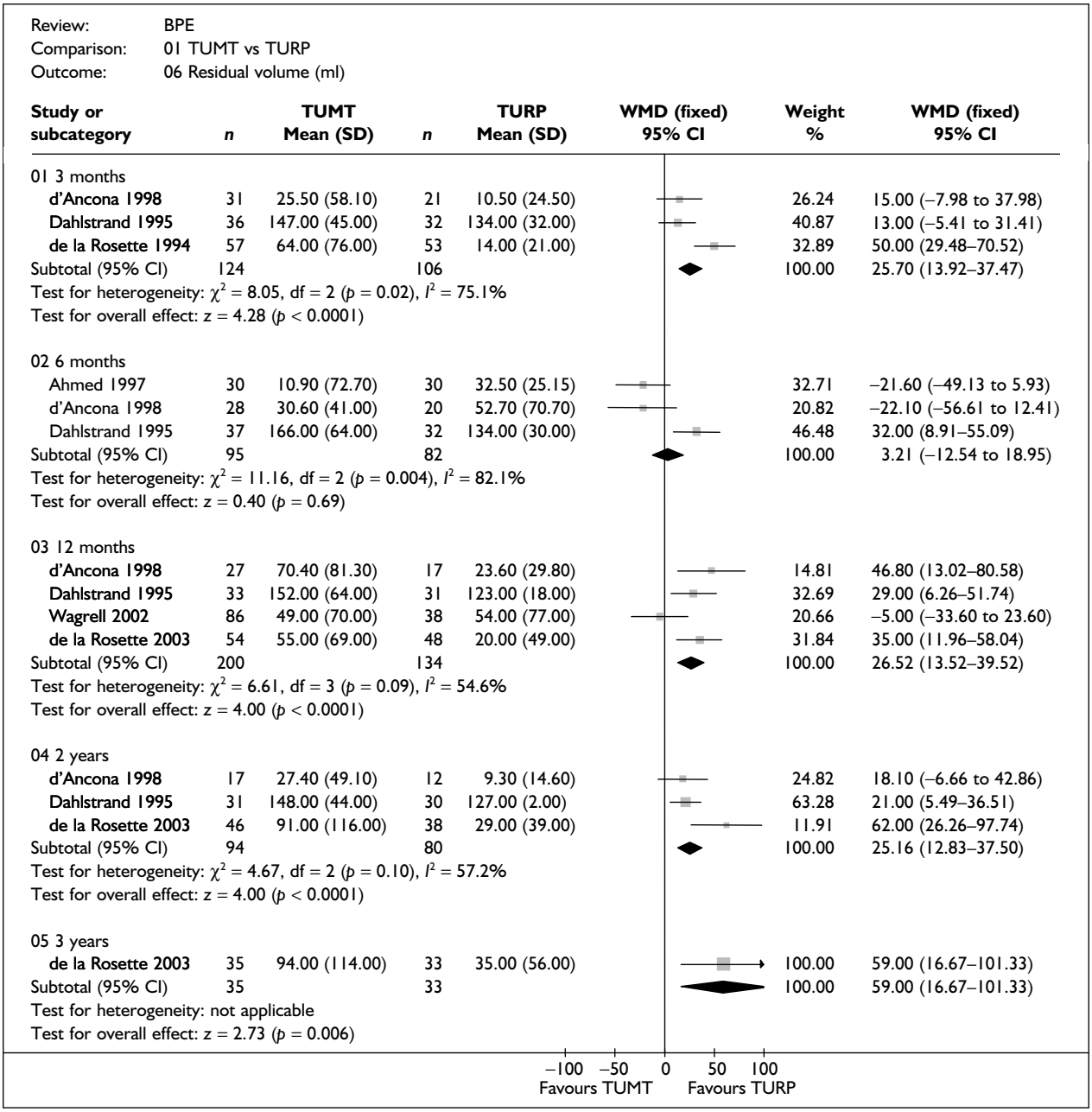
Study or subcategory	TUMT *n*	TUMT Mean (SD)	TURP *n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
d'Ancona 1998	31	15.50 (8.00)	21	19.60 (11.20)		9.76	–4.10 (–9.66 to 1.46)
Dahlstrand 1995	36	11.60 (4.20)	32	18.10 (7.10)		37.97	–6.50 (–9.32 to –3.68)
Wagrell 2002	81	12.80 (6.10)	41	14.60 (9.00)		32.21	–1.80 (–4.86 to 1.26)
de la Rosette 2003	54	15.50 (12.10)	47	25.00 (7.50)		20.07	–9.50 (–13.37 to –5.63)
Subtotal (95% CI)	202		141			100.00	–5.35 (–7.09 to –3.62)
Test for heterogeneity: $\chi^2 = 10.42$, df = 3 ($p = 0.02$), $I^2 = 71.2\%$							
Test for overall effect: $z = 6.05$ ($p < 0.00001$)							
02 6 months							
Ahmed 1997	30	9.10 (3.07)	30	14.60 (3.35)		45.80	–5.50 (–7.13 to –3.87)
d'Ancona 1998	28	17.00 (7.50)	20	15.30 (5.90)		8.41	1.70 (–2.10 to 5.50)
Dahlstrand 1995	37	11.80 (3.90)	31	18.60 (5.20)		24.56	–6.80 (–9.02 to –4.58)
Wagrell 2002	91	13.50 (6.10)	43	13.80 (6.80)		21.24	–0.30 (–2.69 to 2.09)
Subtotal (95% CI)	186		124			100.00	–4.11 (–5.21 to –3.01)
Test for heterogeneity: $\chi^2 = 27.23$, df = 3 ($p < 0.00001$), $I^2 = 89.0\%$							
Test for overall effect: $z = 7.32$ ($p < 0.00001$)							
03 12 months							
d'Ancona 1998	27	17.10 (7.80)	17	19.30 (10.70)		7.66	–2.20 (–8.08 to 3.68)
Dahlstrand 1995	33	12.60 (3.90)	31	18.90 (6.00)		42.44	–6.30 (–8.80 to –3.80)
Wagrell 2002	73	13.30 (6.00)	31	15.20 (7.80)		28.03	–1.90 (–4.97 to 1.17)
de la Rosette 2003	58	14.90 (7.20)	48	23.80 (10.40)		21.87	–8.90 (–12.38 to –5.42)
Subtotal (95% CI)	191		127			100.00	–5.32 (–6.95 to –3.70)
Test for heterogeneity: $\chi^2 = 10.51$, df = 3 ($p = 0.01$), $I^2 = 71.5\%$							
Test for overall effect: $z = 6.41$ ($p < 0.00001$)							
04 2 years							
d'Ancona 1998	17	15.10 (9.60)	12	19.10 (8.20)		10.49	–4.00 (–10.51 to 2.51)
Dahlstrand 1995	30	12.30 (4.40)	29	17.60 (5.90)		62.67	–5.30 (–7.96 to –2.64)
de la Rosette 2003	46	13.70 (6.40)	38	22.50 (11.40)		26.84	–8.80 (–12.87 to –4.73)
Subtotal (95% CI)	93		79			100.00	–6.10 (–8.21 to –3.99)
Test for heterogeneity: $\chi^2 = 2.44$, df = 2 ($p = 0.30$), $I^2 = 18.0\%$							
Test for overall effect: $z = 5.67$ ($p < 0.00001$)							
05 3 years							
de la Rosette 2003	35	11.70 (5.80)	33	22.80 (11.60)		100.00	–11.10 (–15.50 to –6.70)
Subtotal (95% CI)	35		33			100.00	–11.10 (–15.50 to –6.70)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 4.94$ ($p < 0.00001$)							



Review: BPE
Comparison: 01 TUMT vs TURP
Outcome: 05 Total voided volume (ml)

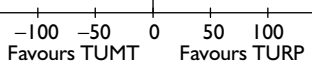
Study or subcategory	*n*	TUMT Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
d'Ancona 1998	31	244.40 (161.00)	21	234.10 (95.50)		34.92	10.30 (–59.56 to 80.16)
de la Rosette 2003	52	249.00 (116.00)	47	263.00 (141.00)		65.08	–14.00 (–65.18 to 37.18)
Subtotal (95% CI)	83		68			100.00	–5.51 (–46.80 to 35.77)
Test for heterogeneity: $\chi^2 = 0.30$, df = 1 ($p = 0.58$), $I^2 = 0\%$							
Test for overall effect: $z = 0.26$ ($p = 0.79$)							
02 6 months							
d'Ancona 1998	28	258.90 (130.00)	20	219.30 (107.70)		100.00	39.60 (–27.83 to 107.03)
Subtotal (95% CI)	28		20			100.00	39.60 (–27.83 to 107.03)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.15$ ($p = 0.25$)							
03 12 months							
d'Ancona 1998	27	274.90 (145.20)	17	272.40 (151.30)		100.00	2.50 (–87.90 to 92.90)
Subtotal (95% CI)	27		17			100.00	2.50 (–87.90 to 92.90)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.05$ ($p = 0.96$)							
04 30 months							
d'Ancona 1998	17	249.70 (182.00)	12	272.70 (133.40)		100.00	–23.00 (–137.81 to 91.81)
Subtotal (95% CI)	17		12			100.00	–23.00 (–137.81 to 91.81)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.39$ ($p = 0.69$)							





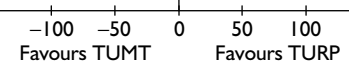
Review: BPE
Comparison: 01 TUMT vs TURP
Outcome: 07 Detrusor pressure (cmH_2O)

Study or subcategory	n	TUMT Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 6 months							
Ahmed 1997	30	105.60 (61.20)	30	48.80 (11.70)		10.47	56.80 (34.50–79.10)
d'Ancona 1998	28	54.00 (15.90)	20	38.50 (24.50)		34.72	15.50 (3.25–27.75)
Dahlstrand 1995	37	67.00 (29.00)	32	36.00 (8.00)		54.81	31.00 (21.25–40.75)
Subtotal (95% CI)	95		82			100.00	28.32 (21.11–35.54)
Test for heterogeneity: $\chi^2 = 10.77$, df = 2 ($p = 0.005$), $I^2 = 81.4\%$							
Test for overall effect: $z = 7.69$ ($p < 0.00001$)							
02 12 months							
Wagrell 2002	82	48.50 (25.00)	39	41.80 (16.60)		100.00	6.70 (–0.81 to 14.21)
Subtotal (95% CI)	82		39			100.00	6.70 (–0.81 to 14.21)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.75$ ($p = 0.08$)							



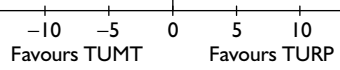
Review: BPE
Comparison: 01 TUMT vs TURP
Outcome: 08 Prostate size (ml)

Study or subcategory	n	TUMT Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
d'Ancona 1998	31	36.60 (10.00)	21	23.00 (8.80)		46.22	13.60 (8.45–18.75)
de la Rosette 2003	54	41.00 (16.10)	48	23.00 (7.40)		53.78	18.00 (13.22–22.78)
Subtotal (95% CI)	85		69			100.00	15.97 (12.46–19.47)
Test for heterogeneity: $\chi^2 = 1.51$, df = 1 ($p = 0.22$), $I^2 = 33.6\%$							
Test for overall effect: $z = 8.93$ ($p < 0.00001$)							
02 6 months							
Ahmed 1997	30	34.50 (13.40)	30	25.40 (16.80)		44.17	9.10 (1.41–16.79)
de la Rosette 2003	38	48.00 (18.40)	35	25.00 (10.70)		55.83	23.00 (16.16–29.84)
Subtotal (95% CI)	68		65			100.00	16.86 (11.75–21.97)
Test for heterogeneity: $\chi^2 = 7.01$, df = 1 ($p = 0.008$), $I^2 = 85.7\%$							
Test for overall effect: $z = 6.47$ ($p < 0.00001$)							
03 12 months							
Wagrell 2002	90	34.00 (16.00)	41	26.00 (13.00)		100.00	8.00 (2.83–13.17)
Subtotal (95% CI)	90		41			100.00	8.00 (2.83–13.17)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 3.03$ ($p = 0.002$)							
04 2 years							
Dahlstrand 1995	31	30.30 (9.60)	30	22.50 (10.90)		100.00	7.80 (2.64–12.96)
Subtotal (95% CI)	31		30			100.00	7.80 (2.64–12.96)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.96$ ($p = 0.003$)							



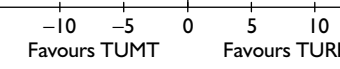
Review: BPE
Comparison: 01 TUMT vs TURP
Outcome: 09 Quality of life (IPSS QoL)

Study or subcategory	*n*	TUMT Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Wagrell 2002	84	1.50 (1.40)	41	1.10 (1.60)		100.00	0.40 (–0.17 to 0.97)
Subtotal (95% CI)	84		41			100.00	0.40 (–0.17 to 0.97)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.37$ ($p = 0.17$)							
02 12 months							
Wagrell 2002	93	1.50 (1.70)	43	1.40 (1.30)		35.86	0.10 (–0.42 to 0.62)
de la Rosette 2003	58	1.90 (1.30)	48	0.60 (0.70)		64.14	1.30 (0.91–1.69)
Subtotal (95% CI)	151		91			100.00	0.87 (0.56–1.18)
Test for heterogeneity: $\chi^2 = 13.12$, df = 1 ($p = 0.0003$), $I^2 = 92.4\%$							
Test for overall effect: $z = 5.47$ ($p < 0.00001$)							
03 2 years							
de la Rosette 2003	46	1.90 (1.00)	38	0.90 (1.10)		100.00	1.00 (0.55–1.45)
Subtotal (95% CI)	46		38			100.00	1.00 (0.55–1.45)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 4.32$ ($p < 0.0001$)							
04 3 years							
de la Rosette 2003	35	2.30 (1.20)	33	0.60 (0.80)		100.00	1.70 (1.22–2.18)
Subtotal (95% CI)	35		33			100.00	1.70 (1.22–2.18)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 6.91$ ($p < 0.00001$)							



Review: BPE
Comparison: 01 TUMT vs TURP
Outcome: 11 Length of hospital stay (days)

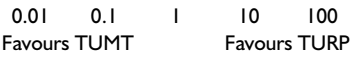
Study or subcategory	*n*	TUMT Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
de la Rosette 2003	78	0.00 (0.16)	66	5.30 (3.40)		100.00	–5.30 (–6.12 to –4.48)
Total (95% CI)	78		66			100.00	–5.30 (–6.12 to –4.48)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 12.65$ ($p < 0.00001$)							



Review: BPE
Comparison: 01 TUMT vs TURP
Outcome: 12 Reoperation

Study or subcategory	TUMT *n/N*	TURP *n/N*	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
Ahmed 1997	1/30	0/30		4.89	3.00 (0.13–70.83)
d'Ancona 1998	6/31	1/21		11.67	4.06 (0.53–31.36)
Dahlstrand 1993	4/39	1/40		9.66	4.10 (0.48–35.10)
Dahlstrand 1995	4/37	4/32		41.98	0.86 (0.24–3.18)
de la Rosette 2003	7/78	3/66		31.80	1.97 (0.53–7.33)
Total (95% CI)	215	189		100.00	2.01 (0.96–4.18)

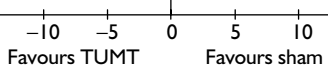
Total events: 22 (TUMT), 9 (TURP)
Test for heterogeneity: $\chi^2 = 2.55$, df = 4 ($p = 0.64$), $I^2 = 0\%$
Test for overall effect: $z = 1.86$ ($p = 0.06$)



Appendix 9.2: TUMT versus sham

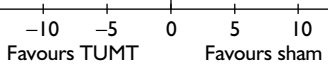
Review: BPE
Comparison: 02 TUMT vs sham
Outcome: 01 IPSS/AUA

Study or subcategory	*n*	TUMT Mean (SD)	*n*	Sham Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Bdesha 1994	22	7.10 (5.00)	18	16.20 (7.35)		18.00	−9.10 (−13.09 to −5.11)
Blute 1996	64	11.30 (6.30)	31	16.30 (7.60)		30.00	−5.00 (−8.09 to −1.91)
Larson 1998	123	9.60 (5.94)	40	14.50 (6.77)		52.00	−4.90 (−7.25 to −2.55)
Subtotal (95% CI)	209		89			100.00	−5.69 (−7.38 to −3.99)
Test for heterogeneity: $\chi^2 = 3.44$, df = 2 ($p = 0.18$), $I^2 = 41.8\%$							
Test for overall effect: $z = 6.59$ ($p < 0.00001$)							
02 6 months							
Larson 1998	120	10.50 (7.26)	35	14.30 (6.34)		100.00	−3.80 (−6.27 to −1.33)
Subtotal (95% CI)	120		35			100.00	−3.80 (−6.27 to −1.33)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 3.02$ ($p = 0.003$)							



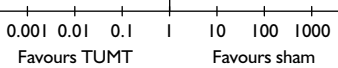
Review: BPE
Comparison: 02 TUMT vs sham
Outcome: 02 Madsen-Iversen

Study or subcategory	*n*	TUMT Mean (SD)	*n*	Sham Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Blute 1996	75	6.30 (5.00)	35	10.80 (4.40)		41.86	−4.50 (−6.35 to −2.65)
Ogden 1993	21	4.30 (4.44)	19	12.80 (5.00)		16.46	−8.50 (−11.44 to −5.56)
de Wildt 1996	45	4.70 (3.93)	43	10.40 (4.85)		41.68	−5.70 (−7.55 to −3.85)
Subtotal (95% CI)	141		97			100.00	−5.66 (−6.85 to −4.46)
Test for heterogeneity: $\chi^2 = 5.10$, df = 2 ($p = 0.08$), $I^2 = 60.8\%$							
Test for overall effect: $z = 9.29$ ($p < 0.00001$)							
02 6 months							
de la Rosette 1994	24	5.30 (4.40)	23	9.10 (4.31)		100.00	−3.80 (−6.29 to −1.31)
Subtotal (95% CI)	24		23			100.00	−3.80 (−6.29 to −1.31)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.99$ ($p = 0.003$)							
03 12 months							
de Wildt 1996	33	4.20 (3.37)	13	8.20 (2.57)		100.00	−4.00 (−5.81 to −2.19)
Subtotal (95% CI)	33		13			100.00	−4.00 (−5.81 to −2.19)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 4.33$ ($p < 0.0001$)							



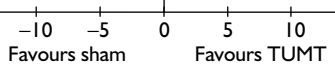
Review: BPE
Comparison: 02 TUMT vs sham
Outcome: 03 Complications

Study or subcategory	TUMT n/N	Sham n/N	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
01 Blood transfusion					
Larson 1998	0/125	0/44			Not estimable
Subtotal (95% CI)	0	0			Not estimable
Total events: 0 (TUMT), 0 (sham)					
Test for heterogeneity: not applicable					
Test for overall effect: not applicable					
02 Urinary tract infection					
Abbou 1995	13/66	8/31		62.06	0.76 (0.35–1.65)
Larson 1998	11/125	2/44		16.87	1.94 (0.45–8.39)
Ogden 1993	5/22	1/21		5.83	4.77 (0.61–37.52)
Trachtenberg 1998	11/147	2/73		15.24	2.73 (0.62–12.00)
Subtotal (95% CI)	360	169		100.00	1.49 (0.84–2.67)
Total events: 40 (TUMT), 13 (sham)					
Test for heterogeneity: $\chi^2 = 4.90$, df = 3 ($p = 0.18$), $I^2 = 38.7\%$					
Test for overall effect: $z = 1.36$ ($p = 0.17$)					
03 Urinary retention					
Abbou 1995	0/66	0/37			Not estimable
Albala 2002	20/121	0/62		12.01	21.17 (1.30–344.32)
Blute 1996	20/78	0/37		12.30	19.72 (1.23–317.45)
Larson 1998	10/125	1/44		26.95	3.52 (0.46–26.71)
Nawrocki 1997	4/38	0/40		8.88	9.46 (0.53–170.02)
Ogden 1993	5/22	0/21		9.31	10.52 (0.62–179.27)
Trachtenberg 1998	8/147	0/73		12.14	8.50 (0.50–145.26)
de Wildt 1996	10/47	1/46		18.41	9.79 (1.30–73.41)
Subtotal (95% CI)	644	360		100.00	10.57 (4.11–27.20)
Total events: 77 (TUMT), 2 (sham)					
Test for heterogeneity: $\chi^2 = 1.60$, df = 6 ($p = 0.95$), $I^2 = 0\%$					
Test for overall effect: $z = 4.89$ ($p < 0.00001$)					
04 Recatheterisation					
Albala 2002	20/121	0/62		100.00	21.17 (1.30–344.32)
Subtotal (95% CI)	121	62		100.00	21.17 (1.30–344.32)
Total events: 20 (TUMT), 0 (sham)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 2.15$ ($p = 0.03$)					
05 Mortality					
de Wildt 1996	1/47	0/46		100.00	2.94 (0.12–70.30)
Subtotal (95% CI)	47	46		100.00	2.94 (0.12–70.30)
Total events: 1 (TUMT), 0 (sham)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.67$ ($p = 0.51$)					
06 Irritative urinary symptoms					
Trachtenberg 1998	32/147	6/73		100.00	2.65 (1.16–6.05)
Subtotal (95% CI)	147	73		100.00	2.65 (1.16–6.05)
Total events: 32 (TUMT), 6 (sham)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 2.31$ ($p = 0.02$)					
07 Stricture					
Albala 2002	0/121	0/62			Not estimable
Larson 1998	3/125	0/44		100.00	2.50 (0.13–47.46)
Subtotal (95% CI)	246	106		100.00	2.50 (0.13–47.46)
Total events: 3 (TUMT), 0 (sham)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.61$ ($p = 0.54$)					
08 Urinary incontinence					
Larson 1998	5/125	0/44		100.00	3.93 (0.22–69.63)
Trachtenberg 1998	0/147	0/73			Not estimable
Subtotal (95% CI)	272	117		100.00	3.93 (0.22–69.63)
Total events: 5 (TUMT), 0 (sham)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.93$ ($p = 0.35$)					
09 Rehospitalisation					
Larson 1998	2/125	0/44		100.00	1.79 (0.09–36.49)
Subtotal (95% CI)	125	44		100.00	1.79 (0.09–36.49)
Total events: 2 (TUMT), 0 (sham)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.38$ ($p = 0.71$)					
10 Reoperation					
Bdesha 1994	0/22	16/20		18.55	0.03 (0.00–0.43)
Brehmer 1999	3/16	7/14		8.03	0.38 (0.12–1.18)
Larson 1998	2/125	27/44		42.96	0.03 (0.01–0.11)
Ogden 1993	1/22	1/21		1.10	0.95 (0.06–14.30)
de Wildt 1996	8/47	27/46		29.35	0.29 (0.15–0.57)
Subtotal (95% CI)	232	145		100.00	0.14 (0.09–0.23)
Total events: 14 (TUMT), 78 (sham)					
Test for heterogeneity: $\chi^2 = 15.97$, df = 4 ($p = 0.003$), $I^2 = 75.0\%$					
Test for overall effect: $z = 8.06$ ($p < 0.00001$)					



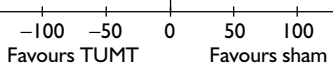
Review: BPE
Comparison: 02 TUMT vs sham
Outcome: 04 Q_{max} (ml/s)

Study or subcategory	n	TUMT Mean (SD)	n	Sham Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Bdesha 1994	22	14.60 (5.98)	18	9.80 (2.81)		8.91	4.80 (1.98–7.62)
Blute 1996	74	11.50 (4.00)	34	9.40 (3.70)		29.71	2.10 (0.56–3.64)
Larson 1998	102	11.70 (5.41)	37	9.20 (3.72)		27.82	2.50 (0.91–4.09)
Ogden 1993	21	13.00 (5.84)	19	9.20 (4.45)		6.90	3.80 (0.60–7.00)
Zerbib 1994	38	9.60 (5.80)	30	10.80 (5.40)		9.90	−1.20 (−3.87 to 1.47)
de Wildt 1996	45	13.40 (6.16)	43	9.60 (3.30)		16.77	3.80 (1.75–5.85)
Subtotal (95% CI)	302		181			100.00	2.53 (1.69–3.37)
Test for heterogeneity: $\chi^2 = 12.36$, df = 5 ($p = 0.03$), $I^2 = 59.6\%$							
Test for overall effect: $z = 5.89$ ($p < 0.00001$)							
02 6 months							
Larson 1998	101	11.80 (5.89)	31	11.80 (3.98)		34.85	0.00 (−1.81 to 1.81)
Nawrocki 1997	38	9.94 (3.08)	40	9.49 (2.88)		65.15	0.45 (−0.87 to 1.77)
Subtotal (95% CI)	139		71			100.00	0.29 (−0.78 to 1.36)
Test for heterogeneity: $\chi^2 = 0.15$, df = 1 ($p = 0.69$), $I^2 = 0\%$							
Test for overall effect: $z = 0.54$ ($p = 0.59$)							
03 12 months							
de Wildt 1996	33	13.40 (5.13)	13	10.50 (4.79)		100.00	2.90 (−0.24 to 6.04)
Subtotal (95% CI)	33		13			100.00	2.90 (−0.24 to 6.04)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.81$ ($p = 0.07$)							



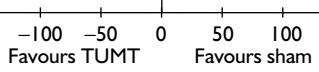
Review: BPE
Comparison: 02 TUMT vs sham
Outcome: 05 Voided volume (ml)

Study or subcategory	n	TUMT Mean (SD)	n	Sham Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Ogden 1993	21	269.00 (104.00)	19	258.00 (90.10)		34.26	11.00 (−49.17 to 71.17)
Zerbib 1994	38	154.00 (90.00)	30	166.00 (91.30)		65.74	−12.00 (−55.43 to 31.43)
Subtotal (95% CI)	59		49			100.00	−4.12 (−39.34 to 31.09)
Test for heterogeneity: $\chi^2 = 0.37$, df = 1 ($p = 0.54$), $I^2 = 0\%$							
Test for overall effect: $z = 0.23$ ($p = 0.82$)							
02 6 months							
Nawrocki 1997	38	229.60 (71.80)	40	239.80 (67.05)		100.00	−10.20 (−41.07 to 20.67)
Subtotal (95% CI)	38		40			100.00	−10.20 (−41.07 to 20.67)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.65$ ($p = 0.52$)							



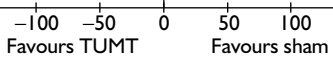
Review: BPE
Comparison: 02 TUMT vs sham
Outcome: 06 Residual volume (ml)

Study or subcategory	n	TUMT Mean (SD)	n	Sham Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Bdesha 1994	22	52.00 (43.07)	18	94.00 (49.79)		27.60	−42.00 (−71.21 to −12.79)
Blute 1996	71	145.50 (126.10)	33	147.20 (107.20)		10.71	−1.70 (−48.58 to 45.18)
Larson 1998	103	68.40 (80.00)	37	93.00 (109.86)		15.78	−24.60 (−63.22 to 14.02)
Ogden 1993	21	12.00 (32.73)	19	171.00 (110.08)		8.90	−159.00 (−210.44 to −107.56)
Zerbib 1994	38	67.00 (101.60)	30	81.20 (66.80)		14.58	−14.20 (−54.39 to 25.99)
de Wildt 1996	45	34.20 (46.88)	43	104.10 (98.19)		22.44	−69.90 (−102.29 to −37.51)
Subtotal (95% CI)	300		180			100.00	−47.56 (−62.90 to −32.21)
Test for heterogeneity: $\chi^2 = 27.68$, df = 5 ($p < 0.0001$), $I^2 = 81.9\%$							
Test for overall effect: $z = 6.08$ ($p < 0.00001$)							
02 6 months							
Larson 1998	101	84.50 (85.63)	31	84.40 (74.28)		49.69	0.10 (−30.93 to 31.13)
Nawrocki 1997	38	85.80 (51.20)	40	106.30 (84.50)		50.31	−20.50 (−51.33 to 10.33)
Subtotal (95% CI)	139		71			100.00	−10.26 (−32.13 to 11.61)
Test for heterogeneity: $\chi^2 = 0.85$, df = 1 ($p = 0.36$), $I^2 = 0\%$							
Test for overall effect: $z = 0.92$ ($p = 0.36$)							
03 12 months							
de Wildt 1996	33	49.70 (48.79)	13	56.30 (72.48)		100.00	−6.60 (−49.37 to 36.17)
Subtotal (95% CI)	33		13			100.00	−6.60 (−49.37 to 36.17)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.30$ ($p = 0.76$)							



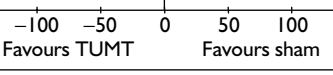
Review: BPE
Comparison: 02 TUMT vs sham
Outcome: 08 Detrusor pressure (cmH_2O)

Study or subcategory	n	TUMT Mean (SD)	n	Sham Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 6 months							
Nawrocki 1997	38	96.40 (34.66)	40	96.00 (30.16)		100.00	0.40 (−14.05 to 14.85)
Subtotal (95% CI)	38		40			100.00	0.40 (−14.05 to 14.85)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.05$ ($p = 0.96$)							



Review: BPE
Comparison: 02 TUMT vs sham
Outcome: 09 Prostate size (ml)

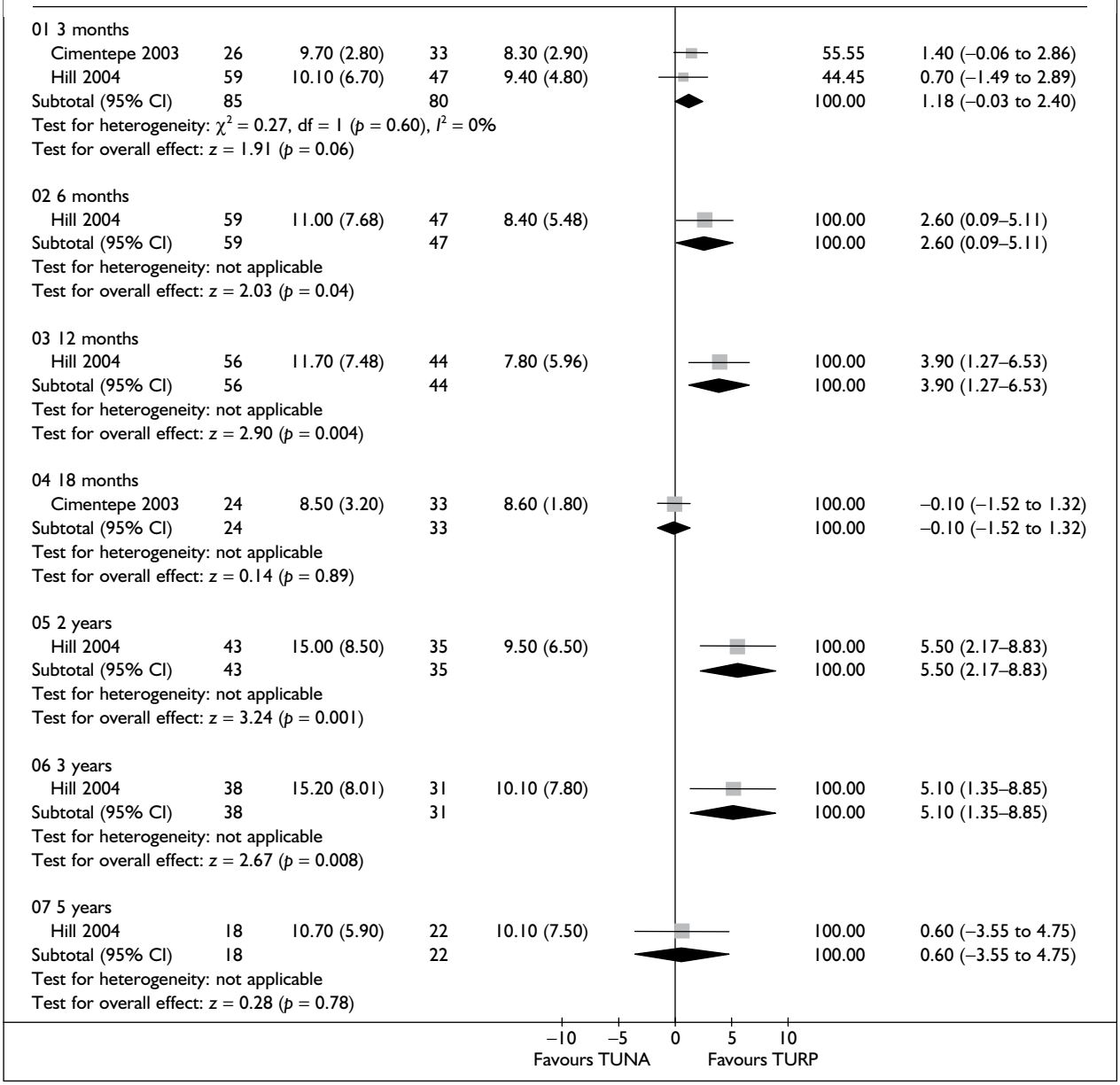
Study or subcategory	n	TUMT Mean (SD)	n	Sham Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 6 months							
Nawrocki 1997	38	45.60 (17.60)	40	48.90 (19.70)		100.00	−3.30 (−11.58 to 4.98)
Subtotal (95% CI)	38		40			100.00	−3.30 (−11.58 to 4.98)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.78$ ($p = 0.43$)							

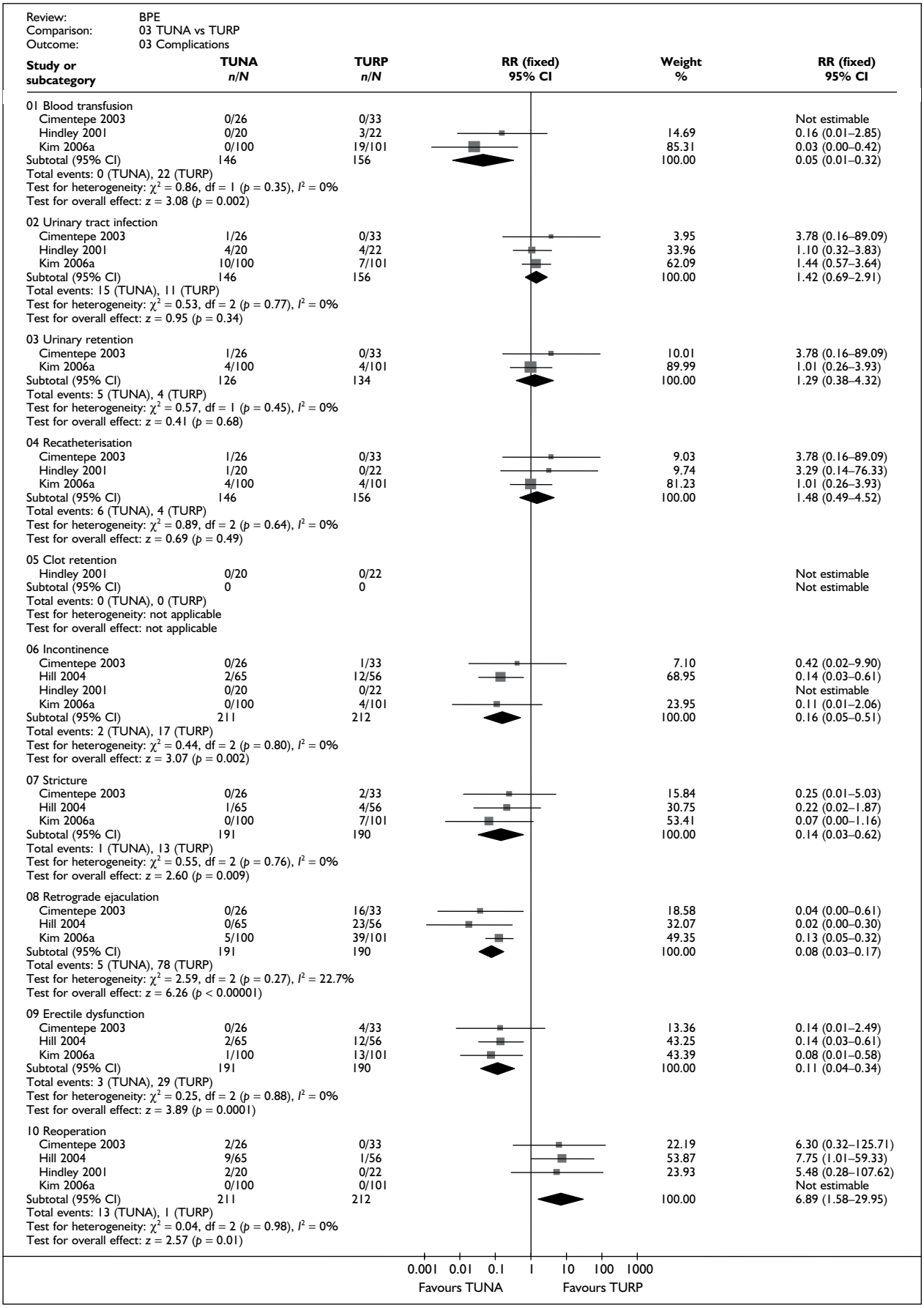


Appendix 9.3: TUNA versus TURP

Review: BPE
Comparison: 03 TUNA vs TURP
Outcome: 01 IPSS/AUA

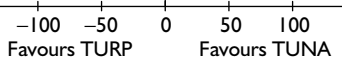
Study or subcategory	*n*	TUNA Mean (SD)	*n*	TURP Mean (SD)	WMD (random) 95% CI	Weight %	WMD (random) 95% CI
01 3 months							
Cimentepe 2003	26	9.70 (2.80)	33	8.30 (2.90)		55.55	1.40 (–0.06 to 2.86)
Hill 2004	59	10.10 (6.70)	47	9.40 (4.80)		44.45	0.70 (–1.49 to 2.89)
Subtotal (95% CI)	85		80			100.00	1.18 (–0.03 to 2.40)
Test for heterogeneity: $\chi^2 = 0.27$, df = 1 ($p = 0.60$), $I^2 = 0\%$							
Test for overall effect: $z = 1.91$ ($p = 0.06$)							
02 6 months							
Hill 2004	59	11.00 (7.68)	47	8.40 (5.48)		100.00	2.60 (0.09–5.11)
Subtotal (95% CI)	59		47			100.00	2.60 (0.09–5.11)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.03$ ($p = 0.04$)							
03 12 months							
Hill 2004	56	11.70 (7.48)	44	7.80 (5.96)		100.00	3.90 (1.27–6.53)
Subtotal (95% CI)	56		44			100.00	3.90 (1.27–6.53)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.90$ ($p = 0.004$)							
04 18 months							
Cimentepe 2003	24	8.50 (3.20)	33	8.60 (1.80)		100.00	–0.10 (–1.52 to 1.32)
Subtotal (95% CI)	24		33			100.00	–0.10 (–1.52 to 1.32)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.14$ ($p = 0.89$)							
05 2 years							
Hill 2004	43	15.00 (8.50)	35	9.50 (6.50)		100.00	5.50 (2.17–8.83)
Subtotal (95% CI)	43		35			100.00	5.50 (2.17–8.83)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 3.24$ ($p = 0.001$)							
06 3 years							
Hill 2004	38	15.20 (8.01)	31	10.10 (7.80)		100.00	5.10 (1.35–8.85)
Subtotal (95% CI)	38		31			100.00	5.10 (1.35–8.85)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.67$ ($p = 0.008$)							
07 5 years							
Hill 2004	18	10.70 (5.90)	22	10.10 (7.50)		100.00	0.60 (–3.55 to 4.75)
Subtotal (95% CI)	18		22			100.00	0.60 (–3.55 to 4.75)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.28$ ($p = 0.78$)							




Review: BPE
Comparison: 03 TUNA vs TURP
Outcome: 03 Complications
Study or subcategory
TUNA n/N
TURP n/N
RR (fixed) 95% CI
Weight %
RR (fixed) 95% CI
01 Blood transfusion
Cimentepe 2003 0/26 0/33 Not estimable
Hindley 2001 0/20 3/22 14.69 0.16 (0.01–2.85)
Kim 2006a 0/100 19/101 85.31 0.03 (0.00–0.42)
Subtotal (95% CI) 146 156 100.00 0.05 (0.01–0.32)
Total events: 0 (TUNA), 22 (TURP)
Test for heterogeneity: χ² = 0.86, df = 1 (p = 0.35), I² = 0%
Test for overall effect: z = 3.08 (p = 0.002)
02 Urinary tract infection
Cimentepe 2003 1/26 0/33 3.95 3.78 (0.16–89.09)
Hindley 2001 4/20 4/22 33.96 1.10 (0.32–3.83)
Kim 2006a 10/100 7/101 62.09 1.44 (0.57–3.64)
Subtotal (95% CI) 146 156 100.00 1.42 (0.69–2.91)
Total events: 15 (TUNA), 11 (TURP)
Test for heterogeneity: χ² = 0.53, df = 2 (p = 0.77), I² = 0%
Test for overall effect: z = 0.95 (p = 0.34)
03 Urinary retention
Cimentepe 2003 1/26 0/33 10.01 3.78 (0.16–89.09)
Kim 2006a 4/100 4/101 89.99 1.01 (0.26–3.93)
Subtotal (95% CI) 126 134 100.00 1.29 (0.38–4.32)
Total events: 5 (TUNA), 4 (TURP)
Test for heterogeneity: χ² = 0.57, df = 1 (p = 0.45), I² = 0%
Test for overall effect: z = 0.41 (p = 0.68)
04 Recatheterisation
Cimentepe 2003 1/26 0/33 9.03 3.78 (0.16–89.09)
Hindley 2001 1/20 0/22 9.74 3.29 (0.14–76.33)
Kim 2006a 4/100 4/101 81.23 1.01 (0.26–3.93)
Subtotal (95% CI) 146 156 100.00 1.48 (0.49–4.52)
Total events: 6 (TUNA), 4 (TURP)
Test for heterogeneity: χ² = 0.89, df = 2 (p = 0.64), I² = 0%
Test for overall effect: z = 0.69 (p = 0.49)
05 Clot retention
Hindley 2001 0/20 0/22 Not estimable
Subtotal (95% CI) 0 0 Not estimable
Total events: 0 (TUNA), 0 (TURP)
Test for heterogeneity: not applicable
Test for overall effect: not applicable
06 Incontinence
Cimentepe 2003 0/26 1/33 7.10 0.42 (0.02–9.90)
Hill 2004 2/65 12/56 68.95 0.14 (0.03–0.61)
Hindley 2001 0/20 0/22 Not estimable
Kim 2006a 0/100 4/101 23.95 0.11 (0.01–2.06)
Subtotal (95% CI) 211 212 100.00 0.16 (0.05–0.51)
Total events: 2 (TUNA), 17 (TURP)
Test for heterogeneity: χ² = 0.44, df = 2 (p = 0.80), I² = 0%
Test for overall effect: z = 3.07 (p = 0.002)
07 Stricture
Cimentepe 2003 0/26 2/33 15.84 0.25 (0.01–5.03)
Hill 2004 1/65 4/56 30.75 0.22 (0.02–1.87)
Kim 2006a 0/100 7/101 53.41 0.07 (0.00–1.16)
Subtotal (95% CI) 191 190 100.00 0.14 (0.03–0.62)
Total events: 1 (TUNA), 13 (TURP)
Test for heterogeneity: χ² = 0.55, df = 2 (p = 0.76), I² = 0%
Test for overall effect: z = 2.60 (p = 0.009)
08 Retrograde ejaculation
Cimentepe 2003 0/26 16/33 18.58 0.04 (0.00–0.61)
Hill 2004 0/65 23/56 32.07 0.02 (0.00–0.30)
Kim 2006a 5/100 39/101 49.35 0.13 (0.05–0.32)
Subtotal (95% CI) 191 190 100.00 0.08 (0.03–0.17)
Total events: 5 (TUNA), 78 (TURP)
Test for heterogeneity: χ² = 2.59, df = 2 (p = 0.27), I² = 22.7%
Test for overall effect: z = 6.26 (p < 0.00001)
09 Erectile dysfunction
Cimentepe 2003 0/26 4/33 13.36 0.14 (0.01–2.49)
Hill 2004 2/65 12/56 43.25 0.14 (0.03–0.61)
Kim 2006a 1/100 13/101 43.39 0.08 (0.01–0.58)
Subtotal (95% CI) 191 190 100.00 0.11 (0.04–0.34)
Total events: 3 (TUNA), 29 (TURP)
Test for heterogeneity: χ² = 0.25, df = 2 (p = 0.88), I² = 0%
Test for overall effect: z = 3.89 (p = 0.0001)
10 Reoperation
Cimentepe 2003 2/26 0/33 22.19 6.30 (0.32–125.71)
Hill 2004 9/65 1/56 53.87 7.75 (1.01–59.33)
Hindley 2001 2/20 0/22 23.93 5.48 (0.28–107.62)
Kim 2006a 0/100 0/101 Not estimable
Subtotal (95% CI) 211 212 100.00 6.89 (1.58–29.95)
Total events: 13 (TUNA), 1 (TURP)
Test for heterogeneity: χ² = 0.04, df = 2 (p = 0.98), I² = 0%
Test for overall effect: z = 2.57 (p = 0.01)
0.001 0.01 0.1 1 10 100 1000
Favours TUNA
Favours TURP

Review: Surgery for men with BPE
Comparison: 03 TUNA vs TURP
Outcome: 04 Q_{max} (ml/s)

Study or subcategory	*n*	TUNA Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Cimentepe 2003	26	16.70 (4.50)	33	23.10 (5.30)		100.00	−6.40 (−8.90 to −3.90)
Subtotal (95% CI)	26		33			100.00	−6.40 (−8.90 to −3.90)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 5.01$ ($p < 0.00001$)							
02 6 months							
Hindley 2001	20	9.80 (4.00)	22	18.40 (7.70)		100.00	−8.60 (−12.26 to −4.94)
Subtotal (95% CI)	20		22			100.00	−8.60 (−12.26 to −4.94)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 4.60$ ($p < 0.00001$)							
03 12 months							
Hill 2004	53	14.60 (7.28)	43	21.10 (8.50)		72.02	−6.50 (−9.71 to −3.29)
Hindley 2001	19	9.70 (5.00)	19	22.00 (10.30)		27.98	−12.30 (−17.45 to −7.15)
Subtotal (95% CI)	72		62			100.00	−8.12 (−10.85 to −5.40)
Test for heterogeneity: $\chi^2 = 3.51$, df = 1 ($p = 0.06$), $I^2 = 71.5\%$							
Test for overall effect: $z = 5.85$ ($p < 0.00001$)							
04 18 months							
Cimentepe 2003	26	17.70 (4.20)	33	23.30 (4.90)		100.00	−5.60 (−7.92 to −3.28)
Subtotal (95% CI)	26		33			100.00	−5.60 (−7.92 to −3.28)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 4.72$ ($p < 0.00001$)							
05 2 years							
Hill 2004	33	21.30 (8.04)	40	12.50 (4.43)		57.38	8.80 (5.73–11.87)
Hindley 2001	19	8.60 (3.50)	19	18.10 (7.10)		42.62	−9.50 (−13.06 to −5.94)
Subtotal (95% CI)	52		59			100.00	1.00 (−1.32 to 3.32)
Test for heterogeneity: $\chi^2 = 58.27$, df = 1 ($p < 0.00001$), $I^2 = 98.3\%$							
Test for overall effect: $z = 0.84$ ($p = 0.40$)							
06 3 years							
Hill 2004	33	13.00 (7.47)	26	19.10 (10.20)		100.00	−6.10 (−10.78 to −1.42)
Subtotal (95% CI)	33		26			100.00	−6.10 (−10.78 to −1.42)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.56$ ($p = 0.01$)							
07 4 years							
Hill 2004	18	11.70 (5.94)	18	11.70 (5.94)		100.00	0.00 (−3.88 to 3.88)
Subtotal (95% CI)	18		18			100.00	0.00 (−3.88 to 3.88)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.00$ ($p = 1.00$)							
08 5 years							
Hill 2004	13	11.40 (4.32)	15	18.60 (8.90)		100.00	−7.20 (−12.28 to −2.12)
Subtotal (95% CI)	13		15			100.00	−7.20 (−12.28 to −2.12)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.78$ ($p = 0.005$)							



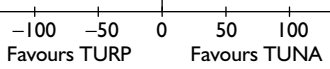
Review: BPE
Comparison: 03 TUNA vs TURP
Outcome: 05 Residual volume (ml)

Study or subcategory	n	TUNA Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Cimentepe 2003	26	45.30 (16.70)	33	32.40 (17.40)		100.00	12.90 (4.16–21.64)
Subtotal (95% CI)	26		33			100.00	12.90 (4.16–21.64)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.89$ ($p = 0.004$)							
02 6 months							
Hindley 2001	20	50.00 (44.00)	22	87.00 (74.00)		100.00	−37.00 (−73.44 to −0.56)
Subtotal (95% CI)	20		22			100.00	−37.00 (−73.44 to −0.56)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.99$ ($p = 0.05$)							
03 12 months							
Hill 2004	52	80.30 (79.30)	43	47.10 (45.90)		80.32	33.20 (7.65–58.75)
Hindley 2001	19	104.00 (109.00)	19	21.00 (36.00)		19.68	83.00 (31.38–134.62)
Subtotal (95% CI)	71		62			100.00	43.00 (20.10–65.90)
Test for heterogeneity: $\chi^2 = 2.87$, df = 1 ($p = 0.09$), $I^2 = 65.2\%$							
Test for overall effect: $z = 3.68$ ($p = 0.0002$)							
04 18 months							
Cimentepe 2003	26	46.40 (17.50)	33	30.30 (18.70)		100.00	16.10 (6.83–25.37)
Subtotal (95% CI)	26		33			100.00	16.10 (6.83–25.37)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 3.40$ ($p = 0.0007$)							
05 2 years							
Hill 2004	40	74.10 (77.80)	31	34.60 (31.20)		70.57	39.50 (13.01–65.99)
Hindley 2001	19	89.00 (81.00)	19	32.00 (42.00)		29.43	57.00 (15.97–98.03)
Subtotal (95% CI)	59		50			100.00	44.65 (22.39–66.91)
Test for heterogeneity: $\chi^2 = 0.49$, df = 1 ($p = 0.48$), $I^2 = 0\%$							
Test for overall effect: $z = 3.93$ ($p < 0.0001$)							
06 3 years							
Hill 2004	32	78.20 (77.45)	26	50.70 (53.03)		100.00	27.50 (−6.20 to 61.20)
Subtotal (95% CI)	32		26			100.00	27.50 (−6.20 to 61.20)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.60$ ($p = 0.11$)							
07 4 years							
Hill 2004	19	138.20 (199.20)	17	39.50 (54.01)		100.00	98.70 (5.52–191.88)
Subtotal (95% CI)	19		17			100.00	98.70 (5.52–191.88)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.08$ ($p = 0.04$)							
08 5 years							
Hill 2004	13	60.40 (78.60)	17	27.40 (32.57)		100.00	33.00 (−12.45 to 78.45)
Subtotal (95% CI)	13		17			100.00	33.00 (−12.45 to 78.45)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.42$ ($p = 0.15$)							

−1000 −500 0 500 1000
Favours TUNA Favours TURP

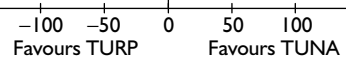
Review: Surgery for men with BPE
Comparison: 03 TUNA vs TURP
Outcome: 06 Detrusor pressure (cmH_2O)

Study or subcategory	*n*	TUNA Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 6 months							
Hindley 2001	20	70.00 (12.00)	22	44.00 (11.00)		100.00	26.00 (19.02–32.98)
Subtotal (95% CI)	20		22			100.00	26.00 (19.02–32.98)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 7.30$ ($p < 0.00001$)							
02 24 months							
Hindley 2001	12	71.00 (36.00)	9	36.00 (8.00)		100.00	35.00 (13.97–56.03)
Subtotal (95% CI)	12		9			100.00	35.00 (13.97–56.03)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 3.26$ ($p = 0.001$)							



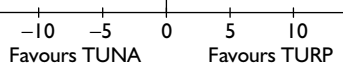
Review: BPE
Comparison: 03 TUNA vs TURP
Outcome: 07 Prostate size (ml)

Study or subcategory	*n*	TUNA Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 18 months							
Cimentepe 2003	26	41.90 (10.90)	33	34.30 (10.40)		100.00	7.60 (2.11–13.09)
Subtotal (95% CI)	26		33			100.00	7.60 (2.11–13.09)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.71$ ($p = 0.007$)							



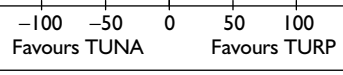
Review: BPE
Comparison: 03 TUNA vs TURP
Outcome: 08 Quality of life

Study or subcategory	n	TUNA Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Cimentepe 2003	16	2.10 (0.50)	33	1.90 (0.50)		100.00	0.20 (–0.10 to 0.50)
Subtotal (95% CI)	16		33			100.00	0.20 (–0.10 to 0.50)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.31$ ($p = 0.19$)							
02 12 months							
Hill 2004	55	4.30 (3.70)	45	3.70 (4.69)		100.00	0.60 (–1.08 to 2.28)
Subtotal (95% CI)	55		45			100.00	0.60 (–1.08 to 2.28)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.70$ ($p = 0.48$)							
03 18 months							
Hill 2004	26	1.80 (1.30)	33	1.70 (0.50)		100.00	0.10 (–0.43 to 0.63)
Subtotal (95% CI)	26		33			100.00	0.10 (–0.43 to 0.63)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.37$ ($p = 0.71$)							
04 2 years							
Hill 2004	43	4.30 (4.59)	33	3.70 (4.02)		100.00	0.60 (–1.34 to 2.54)
Subtotal (95% CI)	43		33			100.00	0.60 (–1.34 to 2.54)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.61$ ($p = 0.54$)							
05 3 years							
Hill 2004	40	5.40 (4.42)	32	4.70 (5.60)		100.00	0.70 (–1.68 to 3.08)
Subtotal (95% CI)	40		32			100.00	0.70 (–1.68 to 3.08)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.58$ ($p = 0.56$)							
06 4 years							
Hill 2004	22	5.20 (4.22)	21	3.70 (4.58)		100.00	1.50 (–1.14 to 4.14)
Subtotal (95% CI)	22		21			100.00	1.50 (–1.14 to 4.14)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.12$ ($p = 0.26$)							
07 5 years							
Hill 2004	18	4.30 (3.39)	22	3.80 (3.28)		100.00	0.50 (–1.58 to 2.58)
Subtotal (95% CI)	18		22			100.00	0.50 (–1.58 to 2.58)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.47$ ($p = 0.64$)							



Review: BPE
Comparison: 03 TUNA vs TURP
Outcome: 09 Duration of operation

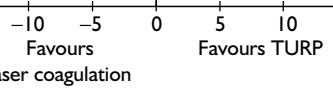
Study or subcategory	n	TUNA Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
Cimentepe 2003	33	55.90 (12.40)	26	44.30 (7.80)		100.00	11.60 (6.41–16.79)
Total (95% CI)	33		26			100.00	11.60 (6.41–16.79)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 4.38$ ($p < 0.0001$)							



Appendix 9.4: Laser coagulation versus TURP

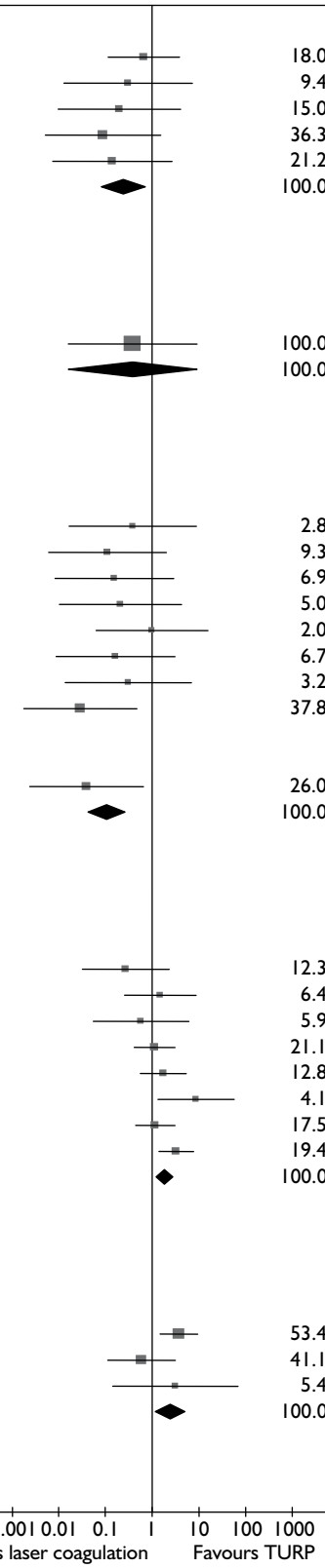
Review: BPE
Comparison: 04 Laser coagulation vs TURP
Outcome: 01 IPSS/AUA

Study or subcategory	*n*	Laser coagulation Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Aliaga 1998	18	4.80 (4.80)	21	8.60 (4.20)		48.12	−3.80 (−6.65 to −0.95)
Kabalin 1995	13	7.20 (6.13)	12	9.90 (9.00)		10.58	−2.70 (−8.79 to 3.39)
Martenson 1999	30	11.80 (6.90)	14	4.70 (4.00)		37.37	7.10 (3.86–10.34)
Suvakovic 1996	10	16.80 (15.00)	10	12.80 (5.90)		3.93	4.00 (−5.99 to 13.99)
Subtotal (95% CI)	71		57			100.00	0.70 (−1.28 to 2.68)
Test for heterogeneity: $\chi^2 = 26.17$, df = 3 ($p < 0.00001$), $I^2 = 88.5\%$							
Test for overall effect: $z = 0.69$ ($p = 0.49$)							
02 6 months							
Aliage 1998	18	7.40 (4.20)	21	3.70 (3.80)		19.77	3.70 (1.17–6.23)
Kabalin 1995	11	4.60 (2.32)	10	5.70 (3.80)		17.06	−1.10 (−3.83 to 1.63)
Martenson 1999	30	10.30 (5.40)	14	3.80 (2.40)		23.84	6.50 (4.19–8.81)
McAllister 2000	76	7.90 (6.67)	75	5.90 (5.74)		32.18	2.00 (0.02–3.98)
Suvakovic 1996	9	8.00 (5.70)	9	8.50 (3.00)		7.15	−0.50 (−4.71 to 3.71)
Subtotal (95% CI)	144		129			100.00	2.70 (1.58–3.83)
Test for heterogeneity: $\chi^2 = 21.21$, df = 4 ($p = 0.0003$), $I^2 = 81.1\%$							
Test for overall effect: $z = 4.70$ ($p < 0.00001$)							
03 12 months							
Kabalin 1995	10	4.30 (4.11)	10	6.30 (3.48)		18.96	−2.00 (−5.34 to 1.34)
Martenson 1999	21	12.40 (7.70)	10	3.50 (2.90)		15.00	8.90 (5.15–12.65)
McAllister 2000	75	7.70 (6.18)	75	5.10 (5.74)		57.96	2.60 (0.69–4.51)
Suvakovic 1996	9	10.00 (4.90)	9	7.20 (6.10)		8.08	2.80 (−2.31 to 7.91)
Subtotal (95% CI)	115		104			100.00	2.69 (1.24–4.14)
Test for heterogeneity: $\chi^2 = 18.12$, df = 3 ($p = 0.0004$), $I^2 = 83.4\%$							
Test for overall effect: $z = 3.63$ ($p = 0.0003$)							
04 18 months							
Kabalin 1995	9	6.00 (3.90)	10	6.40 (4.11)		100.00	−0.40 (−4.00 to 3.20)
Subtotal (95% CI)	9		10			100.00	−0.40 (−4.00 to 3.20)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.22$ ($p = 0.83$)							
05 2 years							
Kabalin 1995	9	4.70 (5.10)	9	6.80 (5.10)		27.42	−2.10 (−6.81 to 2.61)
Martenson 1999	30	12.00 (4.90)	14	5.00 (4.40)		72.58	7.00 (4.10–9.90)
Subtotal (95% CI)	39		23			100.00	4.51 (2.04–6.97)
Test for heterogeneity: $\chi^2 = 10.40$, df = 1 ($p = 0.001$), $I^2 = 90.4\%$							
Test for overall effect: $z = 3.58$ ($p = 0.0003$)							



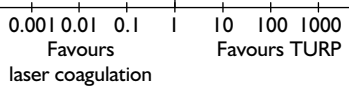
Review: BPE
Comparison: 04 Laser coagulation vs TURP
Outcome: 02 Complications

Study or subcategory	Laser coagulation n/N	TURP n/N	95% CI	%	95% CI
01 Haemorrhage					
Chacko 2001	2/74	3/74		18.05	0.67 (0.11–3.87)
Costello 1995	0/37	1/34		9.40	0.31 (0.01–7.29)
Donovan 2000	0/117	2/117		15.04	0.20 (0.01–4.12)
Gujral 2000	0/38	6/44		36.32	0.09 (0.01–1.53)
McAllister 2000	0/76	3/75		21.20	0.14 (0.01–2.68)
Subtotal (95% CI)	342	344		100.00	0.24 (0.08–0.72)
Total events: 2 (Laser coagulation), 15 (TURP)					
Test for heterogeneity: $\chi^2 = 1.92$, df = 4 ($p = 0.75$), $I^2 = 0\%$					
Test for overall effect: $z = 2.56$ ($p = 0.01$)					
02 Capsule perforation					
Gujral 2000	0/38	1/44		100.00	0.38 (0.02–9.17)
Subtotal (95% CI)	38	44		100.00	0.38 (0.02–9.17)
Total events: 0 (Laser coagulation), 1 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.59$ ($p = 0.55$)					
03 Blood transfusion					
Aliaga 1998	0/18	1/21		2.88	0.39 (0.02–8.93)
Chacko 2001	0/74	4/74		9.31	0.11 (0.01–2.03)
Costello 1995	0/34	3/37		6.94	0.16 (0.01–2.90)
Cowles 1995	0/56	2/59		5.04	0.21 (0.01–4.29)
Donovan 2000	1/117	1/117		2.07	1.00 (0.06–15.80)
Gujral 2000	0/38	3/44		6.72	0.16 (0.01–3.09)
Kabalin 1995	0/13	1/12		3.22	0.31 (0.01–6.94)
Kim 2006a	0/89	19/101		37.81	0.03 (0.00–0.47)
Kursh 2003	0/35	0/35			Not estimable
Martenson 1999	0/30	0/14			Not estimable
McAllister 2000	0/76	12/75		26.02	0.04 (0.00–0.66)
Subtotal (95% CI)	580	589		100.00	0.11 (0.04–0.26)
Total events: 1 (Laser coagulation), 46 (TURP)					
Test for heterogeneity: $\chi^2 = 5.30$, df = 8 ($p = 0.72$), $I^2 = 0\%$					
Test for overall effect: $z = 4.81$ ($p < 0.00001$)					
04 Urinary tract infection					
Costello 1995	1/34	4/37		12.35	0.27 (0.03–2.32)
Donovan 2000	3/117	2/117		6.45	1.50 (0.26–8.81)
Gujral 2000	1/38	2/44		5.97	0.58 (0.05–6.14)
Kim 2006a	7/89	7/101		21.14	1.13 (0.41–3.11)
Kursh 2003	7/35	4/35		12.89	1.75 (0.56–5.45)
Liedberg 2003	16/20	1/11		4.16	8.80 (1.34–57.76)
Martenson 1999	10/30	4/14		17.58	1.17 (0.44–3.08)
McAllister 2000	20/76	6/75		19.47	3.29 (1.40–7.73)
Subtotal (95% CI)	439	434		100.00	1.84 (1.22–2.79)
Total events: 65 (Laser coagulation), 30 (TURP)					
Test for heterogeneity: $\chi^2 = 10.21$, df = 7 ($p = 0.18$), $I^2 = 31.4\%$					
Test for overall effect: $z = 2.88$ ($p = 0.004$)					
05 Urinary retention					
Cowles 1995	17/56	5/59		53.41	3.58 (1.42–9.06)
Kim 2006a	2/89	4/101		41.10	0.57 (0.11–3.02)
Suvakovic 1996	1/10	0/10		5.48	3.00 (0.14–65.90)
Subtotal (95% CI)	155	170		100.00	2.31 (1.11–4.80)
Total events: 20 (Laser coagulation), 9 (TURP)					
Test for heterogeneity: $\chi^2 = 3.59$, df = 2 ($p = 0.17$), $I^2 = 44.3\%$					
Test for overall effect: $z = 2.25$ ($p = 0.02$)					



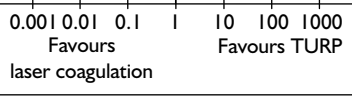
Review: BPE
Comparison: 04 Laser coagulation vs TURP
Outcome: 02 Complications

Study or subcategory	Laser coagulation *n/N*	TURP *n/N*	95% CI	%	95% CI
06 Clot retentin					
Cowles 1995	0/56	3/59		37.56	0.15 (0.01–2.85)
Liedberg 2003	1/20	0/11		7.01	1.71 (0.08–38.86)
Martenson 1999	0/30	0/14			Not estimable
McAllister 2000	1/76	5/75		55.43	0.20 (0.02–1.65)
Subtotal (95% CI)	182	159		100.00	0.29 (0.07–1.13)
Total events: 2 (Laser coagulation), 8 (TURP)					
Test for heterogeneity: $\chi^2 = 1.57$, df = 2 ($p = 0.46$), $I^2 = 0\%$					
Test for overall effect: $z = 1.79$ ($p = 0.07$)					
07 TUR syndrome					
Chacko 2001	0/74	2/74		38.51	0.20 (0.01–4.10)
Cowles 1995	0/56	2/59		37.52	0.21 (0.01–4.29)
Kabalin 1995	0/13	1/12		23.96	0.31 (0.01–6.94)
Subtotal (95% CI)	143	145		100.00	0.23 (0.04–1.34)
Total events: 0 (Laser coagulation), 5 (TURP)					
Test for heterogeneity: $\chi^2 = 0.05$, df = 2 ($p = 0.98$), $I^2 = 0\%$					
Test for overall effect: $z = 1.64$ ($p = 0.10$)					
08 Cardiovascular events					
Chacko 2001	0/56	1/59		18.30	0.35 (0.01–8.44)
Cowles 1995	0/74	2/74		31.30	0.20 (0.01–4.10)
McAllister 2000	2/76	4/75		50.41	0.49 (0.09–2.61)
Subtotal (95% CI)	206	208		100.00	0.38 (0.10–1.39)
Total events: 2 (Laser coagulation), 7 (TURP)					
Test for heterogeneity: $\chi^2 = 0.27$, df = 2 ($p = 0.87$), $I^2 = 0\%$					
Test for overall effect: $z = 1.46$ ($p = 0.14$)					
09 Mortality					
Chacko 2001	2/74	4/74		44.35	0.50 (0.09–2.65)
Donovan 2000	5/117	0/117		5.54	11.00 (0.62–196.70)
Gujral 2000	0/38	1/44		15.44	0.38 (0.02–9.17)
Kabalin 1995	1/13	0/12		5.75	2.79 (0.12–62.48)
Kursh 2003	0/35	2/32		28.92	0.18 (0.01–3.68)
Subtotal (95% CI)	277	279		100.00	1.10 (0.45–2.69)
Total events: 8 (Laser coagulation), 7 (TURP)					
Test for heterogeneity: $\chi^2 = 5.45$, df = 4 ($p = 0.24$), $I^2 = 26.6\%$					
Test for overall effect: $z = 0.22$ ($p = 0.83$)					



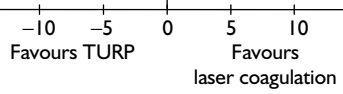
Review: BPE
Comparison: 04 Laser coagulation vs TURP
Outcome: 02 Complications

Study or subcategory	Laser coagulation n/N	TURP n/N	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
10 Urinary incontinence					
Chacko 2001	0/74	3/74		27.66	0.14 (0.01–2.72)
Cowles 1995	0/56	2/59		19.25	0.21 (0.01–4.29)
Kim 2006a	0/89	4/101		33.34	0.13 (0.01–2.31)
Kursh 2003	0/35	2/35		19.76	0.20 (0.01–4.02)
Martenson 1999	0/30	0/14			Not estimable
Subtotal (95% CI)	284	283		100.00	0.16 (0.04–0.71)
Total events: 0 (Laser coagulation), 11 (TURP)					
Test for heterogeneity: $\chi^2 = 0.08$, df = 3 ($p = 0.99$), $I^2 = 0\%$					
Test for overall effect: $z = 2.41$ ($p = 0.02$)					
11 Septicaemia					
Chacko 2001	3/74	4/74		43.10	0.75 (0.17–3.24)
Donovan 2000	0/117	2/117		26.94	0.20 (0.01–4.12)
Gujral 2000	1/38	3/44		29.96	0.39 (0.04–3.56)
Subtotal (95% CI)	229	235		100.00	0.49 (0.16–1.49)
Total events: 4 (Laser coagulation), 9 (TURP)					
Test for heterogeneity: $\chi^2 = 0.70$, df = 2 ($p = 0.70$), $I^2 = 0\%$					
Test for overall effect: $z = 1.26$ ($p = 0.21$)					
12 Stricture					
Costello 1995	2/34	2/37		9.69	1.09 (0.16–7.30)
Cowles 1995	0/56	9/59		46.85	0.06 (0.00–0.93)
Kabalin 1995	0/13	1/12		7.87	0.31 (0.01–6.94)
Kim 2006a	0/89	7/101		35.59	0.08 (0.00–1.30)
Liedberg 2003	0/20	0/11			Not estimable
Subtotal (95% CI)	212	220		100.00	0.18 (0.06–0.56)
Total events: 2 (Laser coagulation), 19 (TURP)					
Test for heterogeneity: $\chi^2 = 4.54$, df = 3 ($p = 0.21$), $I^2 = 33.9\%$					
Test for overall effect: $z = 2.97$ ($p = 0.003$)					
13 Retrograde ejaculation					
Costello 1995	2/16	8/11		12.69	0.17 (0.04–0.66)
Kabalin 1995	1/12	9/10		13.14	0.09 (0.01–0.61)
Kim 2006a	4/89	39/101		48.91	0.12 (0.04–0.31)
Liedberg 2003	1/20	3/11		5.18	0.18 (0.02–1.56)
McAllister 2000	9/24	15/24		20.08	0.60 (0.33–1.10)
Subtotal (95% CI)	161	157		100.00	0.22 (0.14–0.35)
Total events: 17 (Laser coagulation), 74 (TURP)					
Test for heterogeneity: $\chi^2 = 13.16$, df = 4 ($p = 0.01$), $I^2 = 69.6\%$					
Test for overall effect: $z = 6.29$ ($p < 0.00001$)					
14 Erectile dysfunction					
Costello 1995	0/16	0/11			Not estimable
Cowles 1995	3/56	2/59		10.02	1.58 (0.27–9.11)
Kim 2006a	0/89	13/101		65.11	0.04 (0.00–0.70)
Martenson 1999	0/28	3/12		24.87	0.06 (0.00–**1.15**)
Subtotal (95% CI)	189	183		100.00	0.20 (0.07–**0.58**)
Total events: 3 (Laser coagulation), 18 (TURP)					
Test for heterogeneity: $\chi^2 = 7.11$, df = 2 ($p = 0.03$), $I^2 = 71.9\%$					
Test for overall effect: $z = 2.99$ ($p = 0.003$)					
15 Rehospitalisation					
Liedberg 2003	1/20	0/11		100.00	1.71 (0.08–**38.86**)
Subtotal (95% CI)	20	11		100.00	1.71 (0.08–**38.86**)
Total events: 1 (Laser coagulation), 0 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.34$ ($p = 0.74$)					
16 Reoperation					
Chacko 2001	7/74	1/74		9.10	7.00 (0.88–55.49)
Costello 1995	5/34	2/37		17.44	2.72 (0.56–13.11)
Cowles 1995	2/56	0/59		4.43	5.26 (0.26–107.27)
Gujral 2000	3/38	4/44		33.75	0.87 (0.21–3.64)
Kabalin 1995	2/13	1/12		9.47	1.85 (0.19–17.84)
Kim 2006a	1/89	0/101		4.27	3.40 (0.14–82.42)
Kursh 2003	6/35	0/35		4.55	13.00 (0.76–**222.31**)
Martenson 1999	6/30	1/14		12.41	2.80 (0.37–**21.10**)
McAllister 2000	3/76	0/75		4.58	6.91 (0.36–**131.50**)
Subtotal (95% CI)	445	451		100.00	3.21 (1.65–6.24)
Total events: 35 (Laser coagulation), 9 (TURP)					
Test for heterogeneity: $\chi^2 = 5.33$, df = 8 ($p = 0.72$), $I^2 = 0\%$					
Test for overall effect: $z = 3.45$ ($p = 0.0006$)					



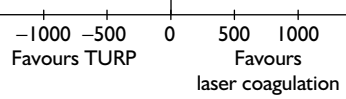
Review: BPE
Comparison: 04 Laser coagulation vs TURP
Outcome: 04 Q_{max} (ml/s)

Study or subcategory	*n*	Laser coagulation Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Aliaga 1998	18	10.50 (5.00)	21	18.60 (8.50)		19.73	−8.10 (−12.41 to −3.79)
Kabalin 1995	13	18.70 (5.97)	12	21.70 (8.85)		10.28	−3.00 (−8.97 to 2.97)
Martenson 1999	30	18.90 (3.10)	14	25.80 (9.70)		13.53	−6.90 (−12.10 to −1.70)
McAllister 2000	76	15.90 (10.23)	75	21.30 (10.16)		34.61	−5.40 (−8.65 to −2.15)
Suvakovic 1996	10	14.80 (5.40)	10	17.80 (3.80)		21.85	−3.00 (−7.09 to 1.09)
Subtotal (95% CI)	147		132			100.00	−5.36 (−7.28 to −3.45)
Test for heterogeneity: $\chi^2 = 3.77$, df = 4 ($p = 0.44$), $I^2 = 0\%$							
Test for overall effect: $z = 5.50$ ($p < 0.00001$)							
02 6 months							
Aliaga 1998	18	10.50 (4.60)	21	20.60 (10.10)		11.39	−10.10 (−14.91 to −5.29)
Kabalin 1995	18	10.50 (4.60)	10	20.60 (10.10)		6.04	−10.10 (−16.71 to −3.49)
Martenson 1999	30	11.10 (4.50)	14	18.20 (6.60)		18.15	−7.10 (−10.91 to −3.29)
McAllister 2000	76	15.60 (8.45)	75	19.90 (11.04)		26.80	−4.30 (−7.44 to −1.16)
Suvakovic 1996	10	19.00 (0.80)	10	16.20 (4.20)		37.60	2.80 (0.15–5.45)
Subtotal (95% CI)	152		130			100.00	−3.15 (−4.77 to −1.52)
Test for heterogeneity: $\chi^2 = 36.26$, df = 4 ($p < 0.00001$), $I^2 = 89.0\%$							
Test for overall effect: $z = 3.80$ ($p = 0.0001$)							
03 12 months							
Kabalin 1995	11	20.50 (4.74)	10	21.60 (6.96)		14.85	−1.10 (−6.24 to 4.04)
Martenson 1999	30	11.90 (5.50)	14	25.40 (11.10)		10.42	−13.50 (−19.64 to −7.36)
McAllister 2000	76	15.40 (8.01)	75	21.80 (14.58)		27.80	−6.40 (−10.16 to −2.64)
Suvakovic 1996	10	12.60 (3.70)	9	15.20 (2.70)		46.93	−2.60 (−5.49 to 0.29)
Subtotal (95% CI)	127		108			100.00	−4.57 (−6.55 to −2.59)
Test for heterogeneity: $\chi^2 = 12.57$, df = 3 ($p = 0.006$), $I^2 = 76.1\%$							
Test for overall effect: $z = 4.52$ ($p < 0.00001$)							
05 18 months							
Kabalin 1995	9	20.00 (5.70)	10	21.20 (9.17)		100.00	−1.20 (−7.99 to 5.59)
Subtotal (95% CI)	9		10			100.00	−1.20 (−7.99 to 5.59)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.35$ ($p = 0.73$)							
06 24 months							
Kabalin 1995	9	23.60 (7.20)	9	18.80 (5.10)		61.90	4.80 (−0.96 to 10.56)
Martenson 1999	30	10.30 (4.40)	14	20.10 (13.70)		38.10	−9.80 (−17.15 to −2.45)
Subtotal (95% CI)	39		23			100.00	−0.76 (−5.30 to 3.77)
Test for heterogeneity: $\chi^2 = 9.39$, df = 1 ($p = 0.002$), $I^2 = 89.3\%$							
Test for overall effect: $z = 0.33$ ($p = 0.74$)							



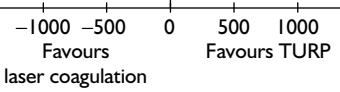
Review: BPE
Comparison: 04 Laser coagulation vs TURP
Outcome: 05 Total voided volume (ml)

Study or subcategory	n	Laser coagulation Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Martenson 1999	30	206.00 (115.00)	14	309.00 (163.00)		10.20	−103.00 (−197.78 to −8.22)
McAllister 2000	76	274.70 (13.32)	75	266.40 (140.50)		89.80	8.30 (−23.64 to 40.24)
Subtotal (95% CI)	106		89			100.00	−3.05 (−33.32 to 27.22)
Test for heterogeneity: $\chi^2 = 4.76$, df = 1 ($p = 0.03$), $I^2 = 79.0\%$							
Test for overall effect: $z = 0.20$ ($p = 0.84$)							
02 6 months							
Martenson 1999	30	244.00 (121.00)	14	210.00 (151.00)		20.84	34.00 (−56.17 to **124.17**)
McAllister 2000	76	274.70 (136.10)	75	261.80 (153.32)		79.16	12.90 (−33.36 to **59.16**)
Subtotal (95% CI)	106		89			100.00	17.30 (−23.87 to **58.46**)
Test for heterogeneity: $\chi^2 = 0.17$, df = 1 ($p = 0.68$), $I^2 = 0\%$							
Test for overall effect: $z = 0.82$ ($p = 0.41$)							
03 12 months							
Martenson 1999	30	218.00 (110.00)	14	358.00 (225.00)		14.62	−140.00 (−264.26 to −15.74)
McAllister 2000	76	247.20 (132.55)	75	294.70 (185.13)		85.38	−47.50 (−98.92 to **3.92**)
Subtotal (95% CI)	106		89			100.00	−61.02 (−108.53 to −13.51)
Test for heterogeneity: $\chi^2 = 1.82$, df = 1 ($p = 0.18$), $I^2 = 45.0\%$							
Test for overall effect: $z = 2.52$ ($p = 0.01$)							
04 24 months							
Martenson 1999	30	237.00 (158.00)	14	266.00 (146.00)		100.00	−29.00 (−124.11 to **66.11**)
Subtotal (95% CI)	30		14			100.00	−29.00 (−124.11 to **66.11**)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.60$ ($p = 0.55$)							



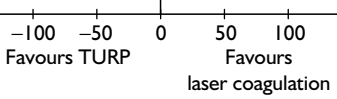
Review: BPE
Comparison: 04 Laser coagulation vs TURP
Outcome: 06 Residual volume (ml)

Study or subcategory	n	Laser coagulation Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Aliaga 1998	18	54.00 (47.00)	21	76.00 (97.00)		16.64	−22.00 (−68.83 to **24.83**)
Kabalin 1995	13	185.00 (187.49)	12	145.00 (93.50)		2.77	40.00 (−74.83 to **154.83**)
Martenson 1999	30	58.00 (103.00)	14	12.00 (19.00)		25.04	46.00 (7.82–84.18)
McAllister 2000	76	70.30 (84.50)	75	62.10 (80.42)		52.72	8.20 (−18.11 to 34.51)
Suvakovic 1996	10	51.90 (50.80)	10	21.50 (176.00)		2.83	30.40 (−83.14 to 143.94)
Subtotal (95% CI)	147		132			100.00	14.15 (−4.96 to **33.25**)
Test for heterogeneity: $\chi^2 = 5.43$, df = 4 ($p = 0.25$), $I^2 = 26.4\%$							
Test for overall effect: $z = 1.45$ ($p = 0.15$)							
02 6 months							
Kabalin 1995	11	112.00 (89.55)	10	121.00 (75.80)		7.05	−9.00 (−79.76 to 61.76)
Martenson 1999	30	60.00 (56.00)	14	14.00 (27.00)		58.72	46.00 (21.47–70.53)
McAllister 2000	76	90.11 (125.43)	75	56.80 (68.04)		34.22	33.31 (1.18–65.44)
Subtotal (95% CI)	117		99			100.00	37.78 (18.98–56.57)
Test for heterogeneity: $\chi^2 = 2.18$, df = 2 ($p = 0.34$), $I^2 = 8.4\%$							
Test for overall effect: $z = 3.94$ ($p < 0.0001$)							
03 12 months							
Kabalin 1995	10	140.00 (113.84)	10	152.00 (151.79)		2.70	−12.00 (−129.60 to 105.60)
Martenson 1999	30	59.00 (77.00)	14	14.00 (21.00)		42.48	45.00 (15.33–74.67)
McAllister 2000	76	69.20 (93.85)	75	45.90 (68.00)		54.82	23.30 (−2.82 to 49.42)
Subtotal (95% CI)	116		99			100.00	31.56 (12.23–50.90)
Test for heterogeneity: $\chi^2 = 1.70$, df = 2 ($p = 0.43$), $I^2 = 0\%$							
Test for overall effect: $z = 3.20$ ($p = 0.001$)							
04 18 months							
Kabalin 1995	10	154.00 (120.17)	10	143.00 (135.98)		100.00	11.00 (−101.47 to **123.47**)
Subtotal (95% CI)	10		10			100.00	11.00 (−101.47 to **123.47**)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.19$ ($p = 0.85$)							
05 24 months							
Kabalin 1995	9	148.00 (84.00)	9	103.00 (66.00)		49.85	45.00 (−24.79 to 114.79)
Martenson 1999	30	94.00 (128.00)	14	63.00 (100.00)		50.15	31.00 (−38.58 to 100.58)
Subtotal (95% CI)	39		23			100.00	37.98 (−11.30 to 87.26)
Test for heterogeneity: $\chi^2 = 0.08$, df = 1 ($p = 0.78$), $I^2 = 0\%$							
Test for overall effect: $z = 1.51$ ($p = 0.13$)							



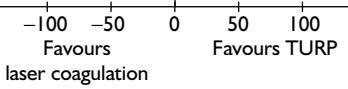
Review: BPE
Comparison: 04 Laser coagulation vs TURP
Outcome: 07 Detrusor pressure (cmH_2O)

Study or subcategory	n	Laser coagulation Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 12 months							
Kabalin 1995	10	54.60 (21.82)	10	58.70 (15.49)		100.00	−4.10 (−20.69 to 12.49)
Subtotal (95% CI)	10		10			100.00	−4.10 (−20.69 to **12.49**)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.48$ ($p = 0.63$)							



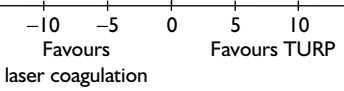
Review: BPE
Comparison: 04 Laser coagulation vs TURP
Outcome: 08 Prostate size (ml)

Study or subcategory	n	Laser coagulation Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 6 months							
Martenson 1999	30	40.00 (21.00)	17	28.00 (11.00)		100.00	12.00 (2.85–21.15)
Subtotal (95% CI)	30		17			100.00	12.00 (2.85–21.15)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.57$ ($p = 0.01$)							
02 12 months							
Kabalin 1995	13	28.80 (16.22)	10	13.70 (14.23)		100.00	15.10 (2.63–27.57)
Subtotal (95% CI)	13		10			100.00	15.10 (2.63–27.57)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.37$ ($p = 0.02$)							



Review: BPE
Comparison: 04 Laser coagulation vs TURP
Outcome: 09 Quality of Life

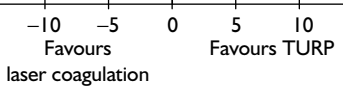
Study or subcategory	n	Laser coagulation Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Martenson 1999	30	2.30 (1.40)	14	0.90 (1.30)		100.00	1.40 (0.55–2.25)
Subtotal (95% CI)	30		14			100.00	1.40 (0.55–2.25)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 3.25$ ($p = 0.001$)							
02 6 months							
Martenson 1999	30	2.20 (1.40)	14	0.50 (0.70)		100.00	1.70 (1.08–2.32)
Subtotal (95% CI)	30		14			100.00	1.70 (1.08–2.32)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 5.37$ ($p < 0.00001$)							
03 12 months							
Martenson 1999	30	2.20 (1.50)	14	0.60 (0.80)		100.00	1.60 (0.92–2.28)
Subtotal (95% CI)	30		14			100.00	1.60 (0.92–2.28)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 4.61$ ($p < 0.00001$)							
04 2 years							
Martenson 1999	30	2.20 (1.50)	14	0.70 (0.90)		100.00	1.50 (0.79–2.21)
Subtotal (95% CI)	30		14			100.00	1.50 (0.79–2.21)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 4.12$ ($p < 0.0001$)							



Review: BPE
Comparison: 04 Laser coagulation vs TURP
Outcome: 10 Change in quality of life

Study or subcategory	n	Laser coagulation Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 7.5 months							
Chacko 2001	49	−3.10 (1.96)	45	−3.42 (1.59)		26.83	0.32 (−0.40 to 1.04)
Donovan 2000	93	−1.90 (1.72)	85	−2.20 (1.65)		56.56	0.30 (−0.20 to 0.80)
Gujral 2000	30	−2.80 (1.80)	33	−3.20 (1.90)		16.61	0.40 (−0.51 to 1.31)
Subtotal (95% CI)	172		163			100.00	0.32 (−0.05 to 0.69)

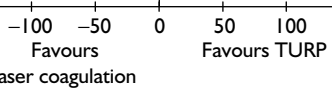
Test for heterogeneity: $\chi^2 = 0.04$, df = 2 ($p = 0.98$), $I^2 = 0\%$
Test for overall effect: $z = 1.69$ ($p = 0.09$)



Review: BPE
Comparison: 04 Laser coagulation vs TURP
Outcome: 12 Duration of operation

Study or subcategory	n	Laser coagulation Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
Cowles 1995	56	23.40 (11.10)	59	45.20 (21.50)		53.59	−21.80 (−28.01 to −15.59)
Suvakovic 1996	10	18.90 (8.80)	10	20.10 (6.20)		46.41	−1.20 (−7.87 to 5.47)
Total (95% CI)	66		69			100.00	−12.24 (−16.78 to −7.69)

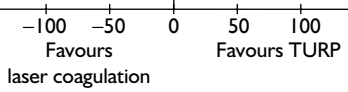
Test for heterogeneity: $\chi^2 = 19.63$, df = 1 ($p < 0.00001$), $I^2 = 94.9\%$
Test for overall effect: $z = 5.28$ ($p < 0.00001$)



Review: BPE
Comparison: 04 Laser coagulation vs TURP
Outcome: 13 Hospital stay (days)

Study or subcategory	n	Laser coagulation Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
Cowles 1995	56	1.80 (1.10)	59	3.10 (0.90)		90.20	−1.30 (−1.67 to −0.93)
McAllister 2000	76	2.70 (2.22)	75	4.30 (4.42)		9.80	−1.60 (−2.72 to −0.48)
Total (95% CI)	132		134			100.00	−1.33 (−1.68 to −0.98)

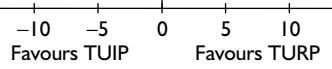
Test for heterogeneity: $\chi^2 = 0.25$, df = 1 ($p = 0.62$), $I^2 = 0\%$
Test for overall effect: $z = 7.45$ ($p < 0.00001$)



Appendix 9.5: TUIP versus TURP

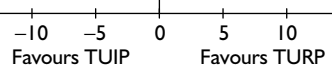
Review: BPE
Comparison: 05 TUIP vs TURP
Outcome: 01 IPSS/AUA

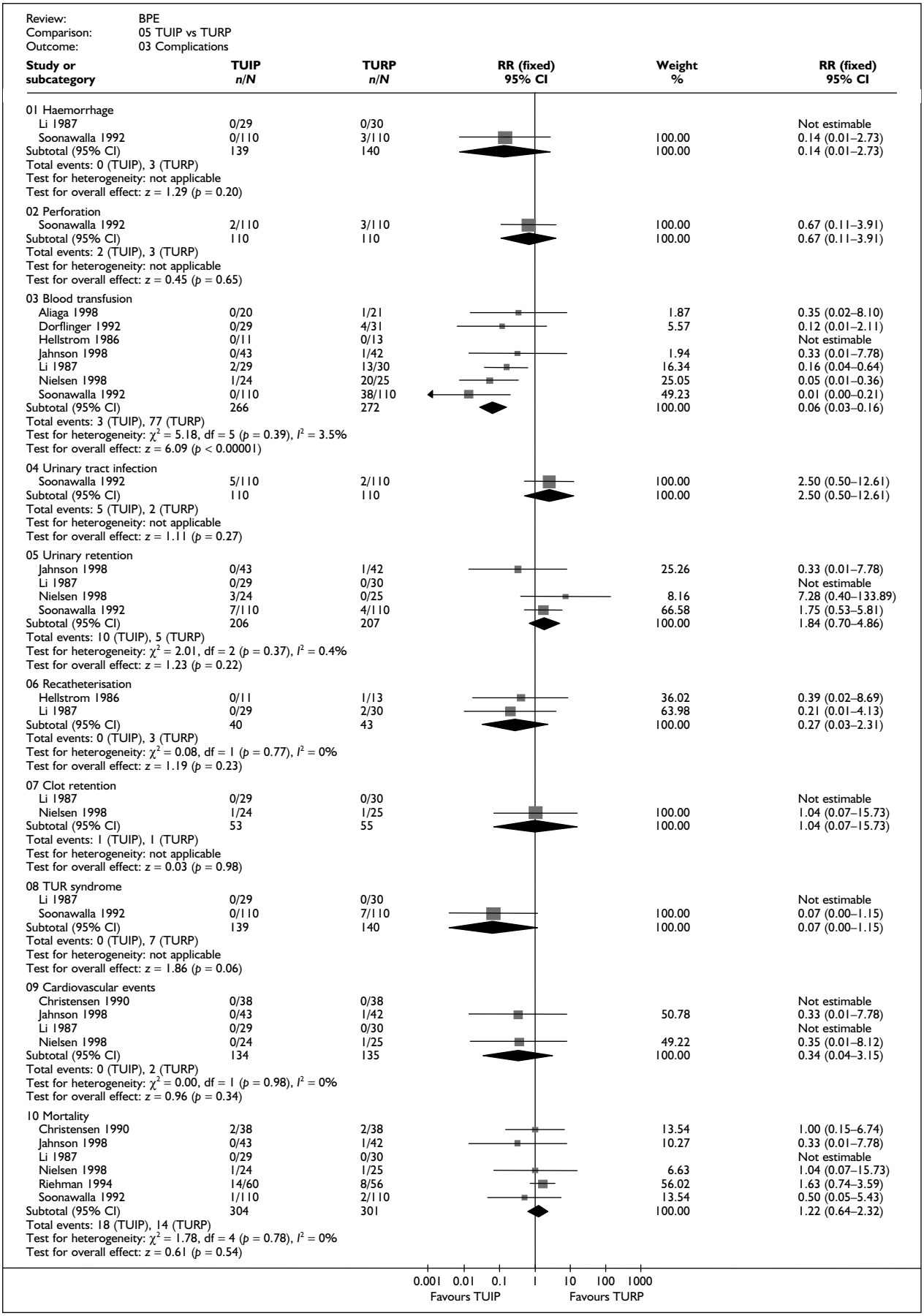
Study or subcategory	n	TUIP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Aliaga 1998	20	4.30 (4.50)	21	4.80 (4.80)		100.00	−0.50 (−3.35 to 2.35)
Subtotal (95% CI)	20		21			100.00	−0.50 (−3.35 to 2.35)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.34$ ($p = 0.73$)							
02 6 months							
Aliaga 1998	20	5.70 (6.20)	21	3.70 (3.80)		100.00	2.00 (−1.17 to 5.17)
Subtotal (95% CI)	20		21			100.00	2.00 (−1.17 to 5.17)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.24$ ($p = 0.22$)							
03 12 months							
Trocz 2002	50	4.10 (1.80)	50	5.10 (1.90)		100.00	−1.00 (−1.73 to −0.27)
Subtotal (95% CI)	50		50			100.00	−1.00 (−1.73 to −0.27)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.70$ ($p = 0.007$)							



Review: BPE
Comparison: 05 TUIP vs TURP
Outcome: 02 Madsen–Iversen

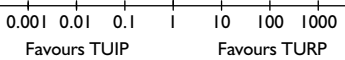
Study or subcategory	n	TUIP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 12 months							
Saporta 1996	17	5.29 (2.55)	20	4.95 (3.31)		100.00	0.34 (−1.55 to 2.23)
Subtotal (95% CI)	17		20			100.00	0.34 (−1.55 to 2.23)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.35$ ($p = 0.72$)							
02 3 years							
Saporta 1996	17	7.00 (2.64)	19	5.79 (3.70)		100.00	1.21 (−0.87 to 3.29)
Subtotal (95% CI)	17		19			100.00	1.21 (−0.87 to 3.29)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.14$ ($p = 0.26$)							





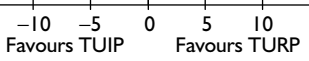
Review: BPE
Comparison: 05 TUIP vs TURP
Outcome: 04 Complications

Study or subcategory	TUIP n/N	TURP n/N	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
11 Incontinence					
Li 1987	1/29	2/30		26.44	0.52 (0.05–5.40)
Nielsen 1998	0/24	1/25		19.77	0.35 (0.01–8.12)
Soonawalla 1992	2/110	4/110		53.79	0.50 (0.09–2.67)
Subtotal (95% CI)	163	165		100.00	0.47 (0.14–1.65)
Total events: 3 (TUIP), 7 (TURP)					
Test for heterogeneity: $\chi^2 = 0.05$, df = 2 ($p = 0.98$), $I^2 = 0\%$					
Test for overall effect: $z = 1.17$ ($p = 0.24$)					
12 Septicaemia					
Nielsen 1998	1/24	2/25		100.00	0.52 (0.05–5.38)
Subtotal (95% CI)	24	25		100.00	0.52 (0.05–5.38)
Total events: 1 (TUIP), 2 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.55$ ($p = 0.58$)					
13 Irritative urinary symptoms					
Aliaga 1998	1/20	1/21		100.00	1.05 (0.07–15.68)
Subtotal (95% CI)	20	21		100.00	1.05 (0.07–15.68)
Total events: 1 (TUIP), 1 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.04$ ($p = 0.97$)					
14 Stricture					
Dorflinger 1992	1/29	0/31		2.53	3.20 (0.14–75.55)
Hellstrom 1986	1/11	0/13		2.42	3.50 (0.16–78.19)
Li 1987	0/29	2/30		12.87	0.21 (0.01–4.13)
Nielsen 1998	16/24	4/25		20.50	4.17 (1.62–10.68)
Riehman 1994	0/60	8/56		45.98	0.05 (0.00–0.93)
Soonawalla 1992	5/110	3/110		15.70	1.67 (0.41–6.80)
Subtotal (95% CI)	263	265		100.00	1.33 (0.77–2.31)
Total events: 23 (TUIP), 17 (TURP)					
Test for heterogeneity: $\chi^2 = 12.75$, df = 5 ($p = 0.03$), $I^2 = 60.8\%$					
Test for overall effect: $z = 1.03$ ($p = 0.30$)					
15 Retrograde ejaculation					
Aliaga 1998	14/20	15/21		15.27	0.98 (0.66–1.45)
Christensen 1990	3/23	7/19		8.00	0.35 (0.11–1.19)
Dorflinger 1992	1/19	12/24		11.07	0.11 (0.01–0.74)
Hellstrom 1986	0/7	8/13		6.45	0.10 (0.01–1.56)
Riehman 1994	8/23	15/22		16.00	0.51 (0.27–0.96)
Saporta 1996	3/16	9/10		11.56	0.21 (0.07–0.59)
Soonawalla 1992	14/60	13/49		14.94	0.88 (0.46–1.69)
Talic 2000	6/50	16/50		16.70	0.38 (0.16–0.88)
Subtotal (95% CI)	218	208		100.00	0.50 (0.37–0.66)
Total events: 49 (TUIP), 95 (TURP)					
Test for heterogeneity: $\chi^2 = 21.51$, df = 7 ($p = 0.003$), $I^2 = 67.5\%$					
Test for overall effect: $z = 4.90$ ($p < 0.00001$)					
16 Erectile dysfunction					
Christensen 1990	1/24	1/20		18.63	0.83 (0.06–12.49)
Dorflinger 1992	1/19	4/24		60.36	0.32 (0.04–2.60)
Saporta 1996	2/16	1/10		21.02	1.25 (0.13–12.06)
Soonawalla 1992	0/60	0/49			Not estimable
Subtotal (95% CI)	119	103		100.00	0.61 (0.17–2.20)
Total events: 4 (TUIP), 6 (TURP)					
Test for heterogeneity: $\chi^2 = 0.81$, df = 2 ($p = 0.67$), $I^2 = 0\%$					
Test for overall effect: $z = 0.76$ ($p = 0.45$)					
17 Rehospitalisation					
Hellstrom 1986	0/11	1/13		100.00	0.39 (0.02–8.69)
Subtotal (95% CI)	11	13		100.00	0.39 (0.02–8.69)
Total events: 0 (TUIP), 1 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.60$ ($p = 0.55$)					
18 Reoperation					
Aliaga 1998	1/20	1/21		4.38	1.05 (0.07–15.68)
Christensen 1990	5/38	7/38		31.42	0.71 (0.25–2.05)
Dorflinger 1992	6/29	1/31		4.34	6.41 (0.82–50.10)
Jahnson 1998	10/43	3/42		13.62	3.26 (0.96–11.01)
Nielsen 1998	3/24	0/25		2.20	7.28 (0.40–133.89)
Riehman 1994	13/60	9/56		41.79	1.35 (0.63–2.91)
Saporta 1996	3/20	0/20		2.24	7.00 (0.38–127.32)
Subtotal (95% CI)	234	233		100.00	1.87 (1.16–3.03)
Total events: 41 (TUIP), 21 (TURP)					
Test for heterogeneity: $\chi^2 = 7.88$, df = 6 ($p = 0.25$), $I^2 = 23.9\%$					
Test for overall effect: $z = 2.56$ ($p = 0.01$)					



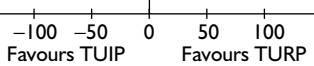
Review: BPE
Comparison: 05 TUIP vs TURP
Outcome: 05 Q_{max} (ml/s)

Study or subcategory	n	TUIP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Aliaga 1998	20	22.00 (12.20)	21	18.60 (8.50)		28.69	3.40 (–3.07 to 9.87)
Hellstrom 1986	11	12.90 (6.04)	13	16.50 (6.00)		51.30	–3.60 (–8.44 to 1.24)
Li 1987	29	23.00 (15.60)	30	19.00 (14.70)		20.02	4.00 (–3.74 to 11.74)
Subtotal (95% CI)	60		64			100.00	–0.07 (–3.53 to 3.39)
Test for heterogeneity: $\chi^2 = 4.22$, df = 2 ($p = 0.12$), $I^2 = 52.6\%$							
Test for overall effect: $z = 0.04$ ($p = 0.97$)							
02 6 months							
Aliaga 1998	20	20.60 (8.70)	21	20.60 (10.10)		100.00	0.00 (–5.76 to 5.76)
Subtotal (95% CI)	20		21			100.00	0.00 (–5.76 to 5.76)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.00$ ($p = 1.00$)							
03 12 months							
Saporta 1996	17	14.58 (4.33)	20	17.29 (5.17)		100.00	–2.71 (–5.77 to 0.35)
Subtotal (95% CI)	17		20			100.00	–2.71 (–5.77 to 0.35)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.74$ ($p = 0.08$)							
04 2 years							
Trocz 2002	50	16.90 (1.90)	50	17.60 (1.70)		100.00	–0.70 (–1.41 to 0.01)
Subtotal (95% CI)	50		50			100.00	–0.70 (–1.41 to 0.01)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.94$ ($p = 0.05$)							
05 3 years							
Saporta 1996	17	12.65 (4.29)	19	14.36 (4.97)		100.00	–1.71 (–4.74 to 1.32)
Subtotal (95% CI)	17		19			100.00	–1.71 (–4.74 to 1.32)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.11$ ($p = 0.27$)							



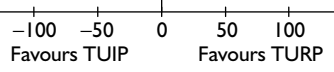
Review: BPE
Comparison: 05 TUIP vs TURP
Outcome: 06 Residual volume (ml)

Study or subcategory	n	TUIP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Aliaga 1998	20	61.00 (95.00)	21	76.00 (97.00)		69.94	–15.00 (–73.78 to 43.78)
Hellstrom 1986	9	94.00 (133.10)	12	28.50 (38.50)		30.06	65.50 (–24.14 to 155.14)
Subtotal (95% CI)	29		33			100.00	9.20 (–39.95 to 58.35)
Test for heterogeneity: $\chi^2 = 2.17$, df = 1 ($p = 0.14$), $I^2 = 53.8\%$							
Test for overall effect: $z = 0.37$ ($p = 0.71$)							
02 6 months							
Aliaga 1998	21	38.00 (51.00)	20	60.00 (82.00)		100.00	–22.00 (–64.04 to 20.04)
Subtotal (95% CI)	21		20			100.00	–22.00 (–64.04 to 20.04)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.03$ ($p = 0.31$)							



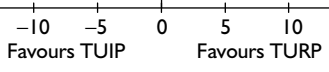
Review: BPE
Comparison: 05 TUIP vs TURP
Outcome: 07 Detrusor pressure (cmH_2O)

Study or subcategory	n	TUIP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Hellstrom 1986	11	35.00 (10.80)	13	26.00 (11.40)		100.00	9.00 (0.10–17.90)
Subtotal (95% CI)	11		13			100.00	9.00 (0.10–17.90)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.98$ ($p = 0.05$)							
02 2 years							
Trocz 2002	50	45.00 (6.00)	50	44.00 (6.00)		100.00	1.00 (−1.35 to 3.35)
Subtotal (95% CI)	50		50			100.00	1.00 (−1.35 to 3.35)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.83$ ($p = 0.40$)							



Review: BPE
Comparison: 05 TUIP vs TURP
Outcome: 08 Quality of life

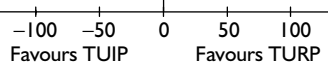
Study or subcategory	n	TUIP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 2 years							
Trocz 2002	50	2.10 (0.30)	50	1.90 (0.60)		100.00	0.20 (0.01–0.39)
Subtotal (95% CI)	50		50			100.00	0.20 (0.01–0.39)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.11$ ($p = 0.04$)							



Review: BPE
Comparison: 05 TUIP vs TURP
Outcome: 09 Duration of operation

Study or subcategory	*n*	TUIP Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
Hellstrom 1986	11	16.00 (5.59)	13	36.00 (10.10)		66.62	−20.00 (−26.41 to −13.59)
Li 1987	29	18.80 (15.60)	30	35.50 (19.70)		33.38	−16.70 (−25.75 to −7.65)
Total (95% CI)	40		43			100.00	−18.90 (−24.13 to −13.67)

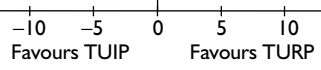
Test for heterogeneity: $\chi^2 = 0.34$, df = 1 ($p = 0.56$), $I^2 = 0\%$
Test for overall effect: $z = 7.08$ ($p < 0.00001$)



Review: BPE
Comparison: 05 TUIP vs TURP
Outcome: 10 Length of hospital stay

Study or subcategory	*n*	TUIP Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
Hellstrom 1986	11	6.20 (1.94)	13	8.40 (2.69)		69.52	−2.20 (−4.06 to −0.34)
Li 1987	29	5.60 (3.23)	30	8.00 (7.12)		30.48	−2.40 (−5.21 to 0.41)
Total (95% CI)	40		43			100.00	−2.26 (−3.81 to −0.71)

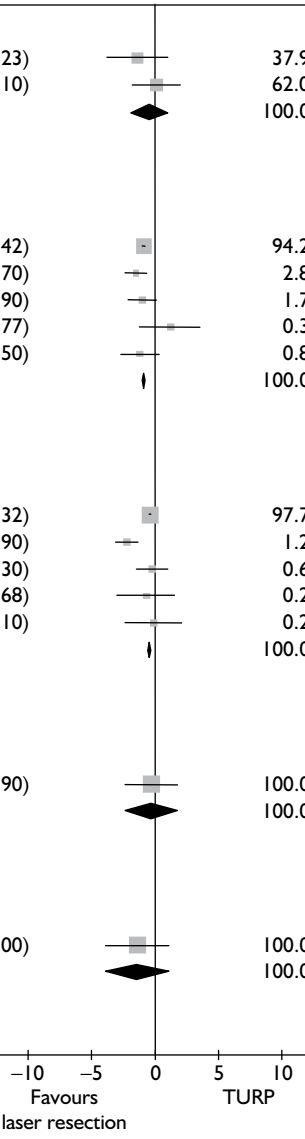
Test for heterogeneity: $\chi^2 = 0.01$, df = 1 ($p = 0.91$), $I^2 = 0\%$
Test for overall effect: $z = 2.86$ ($p = 0.004$)



Appendix 9.6: Laser resection versus TURP

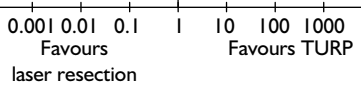
Review: BPE
Comparison: 06 Laser resection vs TURP
Outcome: 01 IPSS/AUA

Study or subcategory	n	Laser resection Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Tan 2003	29	3.40 (4.84)	28	4.80 (4.23)		37.95	−1.40 (−3.76 to 0.96)
Westenberg 2004	59	5.70 (5.20)	61	5.60 (5.10)		62.05	0.10 (−1.74 to 1.94)
Subtotal (95% CI)	88		89			100.00	−0.47 (−1.92 to 0.98)
Test for heterogeneity: $\chi^2 = 0.97$, df = 1 ($p = 0.33$), $I^2 = 0\%$							
Test for overall effect: $z = 0.63$ ($p = 0.53$)							
02 6 months							
Gupta 2006	50	5.20 (0.31)	50	6.10 (0.42)		94.23	−0.90 (−1.04 to −0.76)
Kuntz 2004	94	2.20 (1.60)	89	3.70 (3.70)		2.84	−1.50 (−2.33 to −0.67)
Montorsi 2004	48	2.90 (2.60)	52	3.90 (2.90)		1.70	−1.00 (−2.08 to 0.08)
Tan 2003	26	6.00 (5.09)	29	4.80 (3.77)		0.35	1.20 (−1.19 to 3.59)
Westenberg 2004	61	3.80 (3.80)	59	5.00 (4.50)		0.89	−1.20 (−2.69 to 0.29)
Subtotal (95% CI)	279		279			100.00	−0.91 (−1.05 to −0.77)
Test for heterogeneity: $\chi^2 = 5.10$, df = 4 ($p = 0.28$), $I^2 = 21.6\%$							
Test for overall effect: $z = 12.76$ ($p < 0.00001$)							
03 12 months							
Gupta 2006	50	5.20 (0.17)	50	5.60 (0.32)		97.70	−0.40 (−0.50 to −0.30)
Kuntz 2004	89	1.70 (1.80)	86	3.90 (3.90)		1.20	−2.20 (−3.11 to −1.29)
Montorsi 2004	48	3.90 (3.60)	52	4.10 (2.30)		0.69	−0.20 (−1.39 to 0.99)
Tan 2003	25	4.30 (3.50)	27	5.00 (4.68)		0.20	−0.70 (−2.94 to 1.54)
Westenberg 2004	43	4.20 (6.00)	41	4.30 (4.10)		0.21	−0.10 (−2.29 to 2.09)
Subtotal (95% CI)	255		256			100.00	−0.42 (−0.52 to −0.32)
Test for heterogeneity: $\chi^2 = 15.28$, df = 4 ($p = 0.004$), $I^2 = 73.8\%$							
Test for overall effect: $z = 8.30$ ($p < 0.00001$)							
04 2 years							
Westenberg 2004	45	3.40 (4.90)	41	3.70 (4.90)		100.00	−0.30 (−2.37 to 1.77)
Subtotal (95% CI)	45		41			100.00	−0.30 (−2.37 to 1.77)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.28$ ($p = 0.78$)							
05 4 years							
Westenberg 2004	43	5.20 (5.90)	30	6.60 (5.00)		100.00	−1.40 (−3.91 to 1.11)
Subtotal (95% CI)	43		30			100.00	−1.40 (−3.91 to 1.11)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.09$ ($p = 0.27$)							



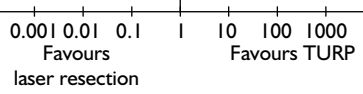
Review: BPE
Comparison: 06 Laser resection vs TURP
Outcome: 02 Complications

Study or subcategory	Laser resection n/N	TURP n/N	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
01 Blood transfusion					
Gupta 2006	0/50	1/50		13.50	0.33 (0.01–7.99)
Kuntz 2004	0/100	2/100		22.49	0.20 (0.01–4.11)
Montorsi 2004	1/52	1/48		9.36	0.92 (0.06–14.35)
Tan 2003	0/30	1/30		13.50	0.33 (0.01–7.87)
Westenberg 2004	0/61	4/59		41.15	0.11 (0.01–1.95)
Subtotal (95% CI)	293	287		100.00	0.27 (0.07–0.95)
Total events: 1 (Laser resection), 9 (TURP)					
Test for heterogeneity: $\chi^2 = 1.24$, df = 4 ($p = 0.87$), $I^2 = 0\%$					
Test for overall effect: $z = 2.05$ ($p = 0.04$)					
02 Urinary tract infection					
Tan 2003	0/30	2/30		45.05	0.20 (0.01–4.00)
Westenberg 2004	5/61	3/59		54.95	1.61 (0.40–6.45)
Subtotal (95% CI)	91	89		100.00	0.98 (0.31–3.09)
Total events: 5 (Laser resection), 5 (TURP)					
Test for heterogeneity: $\chi^2 = 1.58$, df = 1 ($p = 0.21$), $I^2 = 36.7\%$					
Test for overall effect: $z = 0.04$ ($p = 0.97$)					
03 Urinary retention					
Gupta 2006	2/50	3/50		13.84	0.67 (0.12–3.82)
Kuntz 2004	0/100	5/100		25.38	0.09 (0.01–1.62)
Montorsi 2004	3/52	1/48		4.80	2.77 (0.30–25.73)
Tan 2003	5/30	4/30		18.46	1.25 (0.37–4.21)
Westenberg 2004	5/61	8/59		37.53	0.60 (0.21–1.74)
Subtotal (95% CI)	293	287		100.00	0.71 (0.38–1.32)
Total events: 15 (Laser resection), 21 (TURP)					
Test for heterogeneity: $\chi^2 = 4.33$, df = 4 ($p = 0.36$), $I^2 = 7.5\%$					
Test for overall effect: $z = 1.09$ ($p = 0.28$)					
04 Recatheterisation					
Gupta 2006	2/50	3/50		14.54	0.67 (0.12–3.82)
Kuntz 2004	0/100	5/100		26.66	0.09 (0.01–1.62)
Tan 2003	5/30	4/30		19.39	1.25 (0.37–4.21)
Westenberg 2004	5/61	8/59		39.42	0.60 (0.21–1.74)
Subtotal (95% CI)	241	239		100.00	0.60 (0.31–1.18)
Total events: 12 (Laser resection), 20 (TURP)					
Test for heterogeneity: $\chi^2 = 3.06$, df = 3 ($p = 0.38$), $I^2 = 1.9\%$					
Test for overall effect: $z = 1.48$ ($p = 0.14$)					
05 TUR syndrome					
Montorsi 2004	0/52	1/48		100.00	0.31 (0.01–7.39)
Subtotal (95% CI)	52	48		100.00	0.31 (0.01–7.39)
Total events: 0 (Laser resection), 1 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.73$ ($p = 0.47$)					
06 Cardiovascular events					
Westenberg 2004	0/61	1/59		100.00	0.32 (0.01–7.76)
Subtotal (95% CI)	61	59		100.00	0.32 (0.01–7.76)
Total events: 0 (Laser resection), 1 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.70$ ($p = 0.49$)					



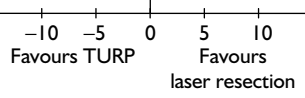
Review: BPE
Comparison: 06 Laser resection vs TURP
Outcome: 02 Complications

Study or subcategory	Laser resection n/N	TURP n/N	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
07 Mortality					
Tan 2003	0/30	1/30		59.60	0.33 (0.01–7.87)
Westenberg 2004	1/61	1/59		40.40	0.97 (0.06–15.11)
Subtotal (95% CI)	91	89		100.00	0.59 (0.08–4.39)
Total events: 1 (Laser resection), 2 (TURP)					
Test for heterogeneity: $\chi^2 = 0.25$, df = 1 ($p = 0.62$), $I^2 = 0\%$					
Test for overall effect: $z = 0.52$ ($p = 0.61$)					
08 Incontinence					
Gupta 2006	1/50	1/50		1.81	1.00 (0.06–15.55)
Kuntz 2004	27/89	33/86		60.68	0.79 (0.52–1.20)
Montorsi 2004	26/52	18/48		33.84	1.33 (0.85–2.10)
Westenberg 2004	1/61	2/59		3.68	0.48 (0.05–5.19)
Subtotal (95% CI)	252	243		100.00	0.97 (0.72–1.31)
Total events: 55 (Laser resection), 54 (TURP)					
Test for heterogeneity: $\chi^2 = 3.15$, df = 3 ($p = 0.37$), $I^2 = 4.9\%$					
Test for overall effect: $z = 0.22$ ($p = 0.83$)					
09 Stricture					
Gupta 2006	1/50	2/50		11.50	0.50 (0.05–5.34)
Kuntz 2004	6/95	2/88		11.94	2.78 (0.58–13.41)
Montorsi 2004	1/52	4/48		23.92	0.23 (0.03–1.99)
Tan 2003	1/29	3/28		17.55	0.32 (0.04–2.91)
Westenberg 2004	6/61	6/59		35.08	0.97 (0.33–2.83)
Subtotal (95% CI)	287	273		100.00	0.84 (0.43–1.65)
Total events: 15 (Laser resection), 17 (TURP)					
Test for heterogeneity: $\chi^2 = 4.58$, df = 4 ($p = 0.33$), $I^2 = 12.6\%$					
Test for overall effect: $z = 0.51$ ($p = 0.61$)					
10 Retrograde ejaculation					
Westenberg 2004	24/25	32/37		74.51	1.11 (0.95–1.29)
Wilson 2006	12/16	8/13		25.49	1.22 (0.73–2.04)
Subtotal (95% CI)	41	50		100.00	1.14 (0.95–1.36)
Total events: 36 (Laser resection), 40 (TURP)					
Test for heterogeneity: $\chi^2 = 0.17$, df = 1 ($p = 0.68$), $I^2 = 0\%$					
Test for overall effect: $z = 1.44$ ($p = 0.15$)					
11 Erectile dysfuction					
Wilson 2006	2/22	2/26		100.00	1.18 (0.18–7.71)
Subtotal (95% CI)	22	26		100.00	1.18 (0.18–7.71)
Total events: 2 (Laser resection), 2 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.17$ ($p = 0.86$)					
12 Reoperation					
Kuntz 2004	4/88	4/95		24.79	1.08 (0.28–4.19)
Montorsi 2004	1/52	1/48		6.70	0.92 (0.06–14.35)
Tan 2003	0/30	2/30		16.11	0.20 (0.01–4.00)
Westenberg 2004	5/61	8/59		52.40	0.60 (0.21–1.74)
Subtotal (95% CI)	231	232		100.00	0.68 (0.32–1.44)
Total events: 10 (Laser resection), 15 (TURP)					
Test for heterogeneity: $\chi^2 = 1.18$, df = 3 ($p = 0.76$), $I^2 = 0\%$					
Test for overall effect: $z = 1.01$ ($p = 0.31$)					



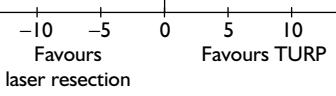
Review: BPE
Comparison: 06 Laser resection vs TURP
Outcome: 03 Q_{max} (ml/s)

Study or subcategory	n	Laser resection Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Westenberg 2004	61	22.80 (10.00)	59	20.20 (9.50)		67.21	2.60 (–0.89 to 6.09)
Wilson 2006	28	24.20 (8.99)	29	18.90 (10.23)		32.79	5.30 (0.30–10.30)
Subtotal (95% CI)	89		88			100.00	3.49 (0.63–6.35)
Test for heterogeneity: $\chi^2 = 0.75$, df = 1 ($p = 0.39$), $I^2 = 0\%$							
Test for overall effect: $z = 2.39$ ($p = 0.02$)							
02 6 months							
Gupta 2006	50	20.70 (1.32)	50	25.10 (1.06)		92.95	–4.40 (–4.87 to 3.93)
Kuntz 2004	94	25.10 (6.90)	89	25.10 (9.40)		3.55	0.00 (–2.40 to 2.40)
Montorsi 2004	52	23.10 (8.60)	48	26.50 (15.50)		0.83	–3.40 (–8.37 to 1.57)
Westenberg 2004	61	23.90 (8.70)	59	22.40 (9.00)		2.04	1.50 (–1.67 to 4.67)
Wilson 2006	26	26.40 (9.18)	29	20.80 (12.39)		0.62	5.60 (–0.13 to 11.33)
Subtotal (95% CI)	283		275			100.00	–4.05 (–4.51 to 3.60)
Test for heterogeneity: $\chi^2 = 35.84$, df = 4 ($p < 0.00001$), $I^2 = 88.8\%$							
Test for overall effect: $z = 17.56$ ($p < 0.00001$)							
03 12 months							
Gupta 2006	50	25.10 (1.06)	50	23.70 (1.58)		92.99	1.40 (0.87–1.93)
Kuntz 2004	89	27.90 (9.90)	86	27.70 (12.20)		2.38	0.20 (–3.10 to 3.50)
Montorsi 2004	52	25.10 (7.20)	48	24.70 (10.00)		2.19	0.40 (–3.04 to 3.84)
Westenberg 2004	61	25.20 (11.90)	59	20.40 (8.50)		1.90	4.80 (1.11–8.49)
Wilson 2006	25	21.80 (10.50)	27	18.40 (14.55)		0.55	3.40 (–3.46 to 10.26)
Subtotal (95% CI)	277		270			100.00	1.43 (0.92–1.93)
Test for heterogeneity: $\chi^2 = 4.41$, df = 4 ($p = 0.35$), $I^2 = 9.3\%$							
Test for overall effect: $z = 5.49$ ($p < 0.00001$)							
04 18 months							
Westenberg 2004	61	25.10 (9.30)	59	19.20 (9.30)		100.00	5.90 (2.57–9.23)
Subtotal (95% CI)	61		59			100.00	5.90 (2.57–9.23)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 3.47$ ($p = 0.0005$)							
05 2 years							
Westenberg 2004	45	25.00 (11.00)	41	20.90 (11.10)		60.83	4.10 (–0.58 to 8.78)
Wilson 2006	22	21.00 (9.38)	26	19.30 (11.22)		39.17	1.70 (–4.13 to 7.53)
Subtotal (95% CI)	67		67			100.00	3.16 (–0.49 to 6.81)
Test for heterogeneity: $\chi^2 = 0.40$, df = 1 ($p = 0.53$), $I^2 = 0\%$							
Test for overall effect: $z = 1.70$ ($p = 0.09$)							
06 4 years							
Westenberg 2004	43	22.30 (14.20)	30	18.50 (8.20)		100.00	3.80 (–1.36 to 8.96)
Subtotal (95% CI)	43		30			100.00	3.80 (–1.36 to 8.96)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.44$ ($p = 0.15$)							



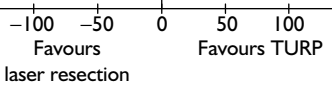
Review: BPE
Comparison: 06 Laser resection vs TURP
Outcome: 04 MUF (ml/s)

Study or subcategory	n	Laser resection Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Montorsi 2004	52	13.30 (5.70)	48	9.10 (3.60)		100.00	4.20 (2.35–6.05)
Subtotal (95% CI)	52		48			100.00	4.20 (2.35–6.05)
Test for heterogeneity: not applicable							
Test for overall effect: z = 4.44 ($p < 0.00001$)							
02 12 months							
Montorsi 2004	52	15.50 (4.20)	48	12.10 (3.30)		100.00	3.40 (1.93–4.87)
Subtotal (95% CI)	52		48			100.00	3.40 (1.93–4.87)
Test for heterogeneity: not applicable							
Test for overall effect: z = 4.52 ($p < 0.00001$)							



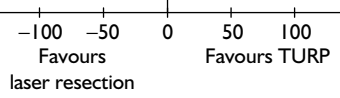
Review: BPE
Comparison: 06 Laser resection vs TURP
Outcome: 05 Detrusor pressure (cmH_2O)

Study or subcategory	n	Laser resection Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 6 months							
Tan 2003	26	20.80 (14.28)	29	40.70 (14.54)		100.00	−19.90 (−27.52 to −12.28)
Subtotal (95% CI)	26		29			100.00	−19.90 (−27.52 to −12.28)
Test for heterogeneity: not applicable							
Test for overall effect: z = 5.12 ($p < 0.00001$)							



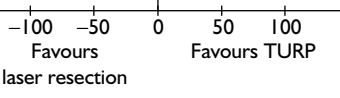
Review: BPE
Comparison: 06 Laser resection vs TURP
Outcome: 06 Residual volume (ml)

Study or subcategory	n	Laser resection Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 6 months							
Kuntz 2004	94	4.80 (12.50)	89	16.70 (16.90)		98.01	−11.90 (−16.23 to −7.57)
Tan 2003	26	33.70 (28.00)	29	51.80 (78.00)		1.99	−18.10 (−48.46 to 12.26)
Subtotal (95% CI)	120		118			100.00	−12.02 (−16.31 to −7.74)
Test for heterogeneity: $\chi^2 = 0.16$, df = 1 ($p = 0.69$), $I^2 = 0\%$							
Test for overall effect: $z = 5.50$ ($p < 0.00001$)							
02 12 months							
Kuntz 2004	89	5.30 (15.30)	86	26.60 (60.40)		100.00	−21.30 (−34.46 to −8.14)
Subtotal (95% CI)	89		86			100.00	−21.30 (−34.46 to −8.14)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 3.17$ ($p = 0.002$)							



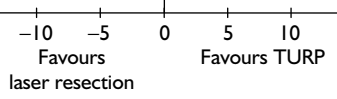
Review: BPE
Comparison: 06 Laser resection vs TURP
Outcome: 07 Prostate size

Study or subcategory	n	Laser resection Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 6 months							
Tan 2003	26	28.40 (9.18)	29	46.60 (23.69)		100.00	−18.20 [−27.52 to −8.88]
Subtotal (95% CI)	26		29			100.00	−18.20 [−27.52 to −8.88]
Test for heterogeneity: not applicable							
Test for overall effect: $z = 3.83$ ($p = 0.0001$)							



Review: BPE
Comparison: 06 Laser resection vs TURP
Outcome: 08 Quality of life

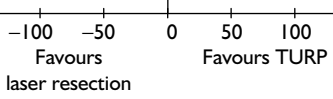
Study or subcategory	n	Laser resection Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Westenberg 2004	61	1.40 (1.50)	59	1.60 (1.40)		88.06	−0.20 (−0.72 to 0.32)
Wilson 2006	28	1.80 (2.10)	29	1.90 (3.23)		11.94	−0.10 (−1.51 to 1.31)
Subtotal (95% CI)	89		88			100.00	−0.19 (−0.68 to 0.30)
Test for heterogeneity: $\chi^2 = 0.02$, df = 1 ($p = 0.90$), $I^2 = 0\%$							
Test for overall effect: $z = 0.76$ ($p = 0.45$)							
02 6 months							
Montorsi 2004	52	1.00 (0.80)	48	0.60 (0.20)		75.92	0.40 (0.18–0.62)
Westenberg 2004	61	1.10 (1.30)	59	1.50 (1.40)		16.38	−0.40 (−0.88 to 0.08)
Wilson 2006	26	1.60 (1.53)	29	1.50 (1.07)		7.70	0.10 (−0.61 to 0.81)
Subtotal (95% CI)	139		136			100.00	0.25 (0.05 to 0.44)
Test for heterogeneity: $\chi^2 = 8.82$, df = 2 ($p = 0.01$), $I^2 = 77.3\%$							
Test for overall effect: $z = 2.46$ ($p = 0.01$)							
03 12 months							
Montorsi 2004	52	1.40 (0.90)	48	0.80 (1.28)		53.95	0.60 (0.16–1.04)
Westenberg 2004	61	0.88 (1.40)	59	1.60 (1.50)		38.17	−0.72 (−1.24 to −0.20)
Wilson 2006	25	1.50 (2.50)	27	1.40 (1.56)		7.88	0.10 (−1.04 to 1.24)
Subtotal (95% CI)	138		134			100.00	0.06 (−0.26 to 0.38)
Test for heterogeneity: $\chi^2 = 14.53$, df = 2 ($p = 0.0007$), $I^2 = 86.2\%$							
Test for overall effect: $z = 0.35$ ($p = 0.73$)							
04 18 months							
Westenberg 2004	61	0.72 (1.10)	59	1.30 (1.10)		100.00	−0.58 (−0.97 to −0.19)
Subtotal (95% CI)	61		59			100.00	−0.58 (−0.97 to −0.19)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.89$ ($p = 0.004$)							
05 2 years							
Westenberg 2004	45	0.98 (1.30)	41	1.00 (1.30)		50.44	−0.02 (−0.57 to 0.53)
Wilson 2006	22	1.25 (0.94)	26	1.25 (1.02)		49.56	0.00 (−0.55 to 0.55)
Subtotal (95% CI)	67		67			100.00	−0.01 (−0.40 to 0.38)
Test for heterogeneity: $\chi^2 = 0.00$, df = 1 ($p = 0.96$), $I^2 = 0\%$							
Test for overall effect: $z = 0.05$ ($p = 0.96$)							
06 4 years							
Westenberg 2004	43	1.10 (1.10)	30	1.40 (1.40)		100.00	−0.30 (−0.90 to 0.30)
Subtotal (95% CI)	43		30			100.00	−0.30 (−0.90 to 0.30)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.98$ ($p = 0.33$)							



Review: BPE
Comparison: 06 Laser resection vs TURP
Outcome: 10 Duration of operation (min)

Study or subcategory	*n*	Laser resection Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
Gupta 2006	50	75.40 (22.80)	50	64.00 (13.10)		23.17	11.40 (4.11–18.69)
Kuntz 2004	100	94.60 (35.10)	100	73.80 (24.00)		17.72	20.80 (12.47–29.13)
Montorsi 2004	52	74.00 (19.50)	48	57.00 (15.00)		26.70	17.00 (10.21–23.79)
Tan 2003	28	62.10 (31.22)	29	33.10 (19.92)		6.61	29.00 (15.35–42.65)
Westenberg 2004	61	41.50 (23.10)	59	25.30 (14.70)		25.81	16.20 (9.30–23.10)
Total (95% CI)	291		286			100.00	16.96 (13.45–20.47)

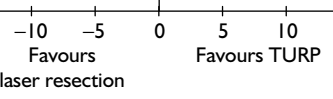
Test for heterogeneity: $\chi^2 = 6.09$, df = 4 ($p = 0.19$), $I^2 = 34.3\%$
Test for overall effect: $z = 9.48$ ($p < 0.00001$)



Review: BPE
Comparison: 06 Laser resection vs TURP
Outcome: 11 Length of hospital stay (days)

Study or subcategory	*n*	Laser resection Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
Kuntz 2004	100	2.22 (0.58)	100	3.58 (1.63)		20.37	−1.36 (−1.70 to −1.02)
Montorsi 2004	52	2.46 (0.83)	48	3.58 (0.79)		23.23	−1.12 (−1.44 to −0.80)
Tan 2003	28	1.15 (0.58)	29	2.08 (1.24)		9.38	−0.93 (−1.43 to −0.43)
Westenberg 2004	61	1.08 (0.49)	59	1.98 (0.73)		47.02	−0.90 (−1.12 to −0.68)
Total (95% CI)	241		236			100.00	−1.05 (−1.20 to −0.89)

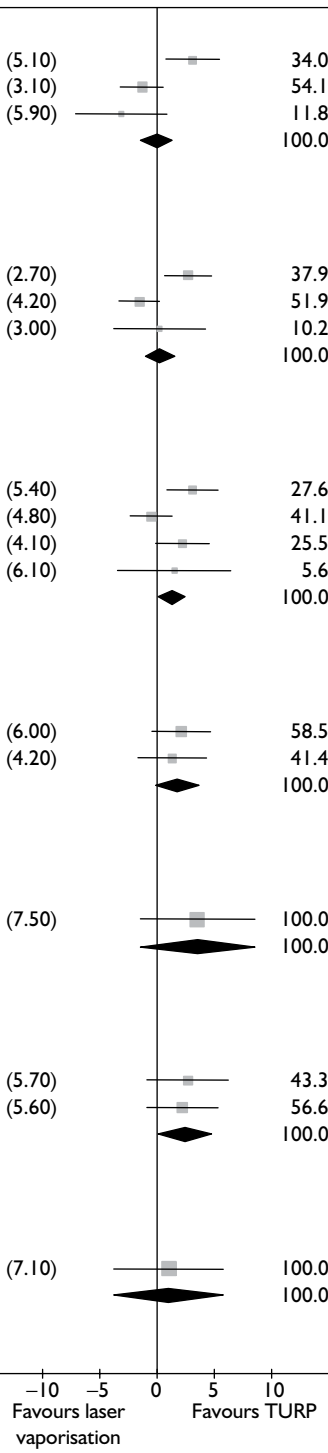
Test for heterogeneity: $\chi^2 = 5.35$, df = 3 ($p = 0.15$), $I^2 = 44.0\%$
Test for overall effect: $z = 13.42$ ($p < 0.00001$)



Appendix 9.7: Laser vaporisation versus TURP

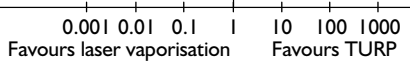
Review: BPE
Comparison: 07 Laser vaporisation vs TURP
Outcome: 01 IPSS/AUA

Study or subcategory	n	Laser vaporisation Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Keoghane 2000	55	9.60 (7.50)	62	6.50 (5.10)		34.07	3.10 (0.75–5.45)
Sengor 1996	30	8.50 (4.20)	30	9.80 (3.10)		54.10	−1.30 (−3.17 to 0.57)
Suvakovic 1996	10	9.70 (2.60)	10	12.80 (5.90)		11.82	−3.10 (−7.10 to 0.90)
Subtotal (95% CI)	95		102			100.00	−0.01 (−1.39 to 1.36)
Test for heterogeneity: χ^2 = 10.84, df = 2 (p = 0.004), I^2 = 81.5%							
Test for overall effect: z = 0.02 (p = 0.98)							
02 6 months							
Melick 2003a	33	5.90 (5.50)	37	3.20 (2.70)		37.90	2.70 (0.63–4.77)
Sengor 1996	30	7.80 (2.60)	30	9.30 (4.20)		51.90	−1.50 (−3.27 to 0.27)
Suvakovic 1996	9	8.70 (5.40)	10	8.50 (3.00)		10.20	0.20 (−3.79 to 4.19)
Subtotal (95% CI)	72		77			100.00	0.27 (−1.01 to 1.54)
Test for heterogeneity: χ^2 = 9.16, df = 2 (p = 0.01), I^2 = 78.2%							
Test for overall effect: z = 0.41 (p = 0.68)							
03 12 months							
Keoghane 2000	52	8.87 (6.51)	60	5.77 (5.40)		27.67	3.10 (0.86–5.34)
van Melick 2003a	37	3.60 (3.40)	41	4.10 (4.80)		41.16	−0.50 (−2.33 to 1.33)
Shingleton 2002	40	6.00 (6.00)	33	3.80 (4.10)		25.54	2.20 (−0.13 to 4.53)
Suvakovic 1996	9	8.70 (4.90)	10	7.20 (6.10)		5.63	1.50 (−3.45 to 6.45)
Subtotal (95% CI)	138		144			100.00	1.30 (0.12–2.47)
Test for heterogeneity: χ^2 = 6.78, df = 3 (p = 0.08), I^2 = 55.7%							
Test for overall effect: z = 2.16 (p = 0.03)							
04 2 years							
Keoghane 2000	45	7.80 (6.60)	52	5.70 (6.00)		58.51	2.10 (−0.43 to 4.63)
Shingleton 2002	23	5.90 (5.70)	19	4.60 (4.20)		41.49	1.30 (−1.70 to 4.30)
Subtotal (95% CI)	68		71			100.00	1.77 (−0.16 to 3.70)
Test for heterogeneity: χ^2 = 0.16, df = 1 (p = 0.69), I^2 = 0%							
Test for overall effect: z = 1.79 (p = 0.07)							
05 4 years							
van Melick 2003a	10	9.30 (5.20)	15	5.80 (7.50)		100.00	3.50 (−1.48 to 8.48)
Subtotal (95% CI)	10		15			100.00	3.50 (−1.48 to 8.48)
Test for heterogeneity: not applicable							
Test for overall effect: z = 1.38 (p = 0.17)							
06 5 years							
Keoghane 2000	25	9.70 (7.50)	32	7.00 (5.70)		43.35	2.70 (−0.84 to 6.24)
Shingleton 2002	29	9.90 (6.70)	33	7.70 (5.60)		56.65	2.20 (−0.90 to 5.30)
Subtotal (95% CI)	54		65			100.00	2.42 (0.08–4.75)
Test for heterogeneity: χ^2 = 0.04, df = 1 (p = 0.84), I^2 = 0%							
Test for overall effect: z = 2.03 (p = 0.04)							
07 7 years							
van Melick 2003a	17	8.30 (6.40)	15	7.30 (7.10)		100.00	1.00 (−3.71 to 5.71)
Subtotal (95% CI)	17		15			100.00	1.00 (−3.71 to 5.71)
Test for heterogeneity: not applicable							
Test for overall effect: z = 0.42 (p = 0.68)							



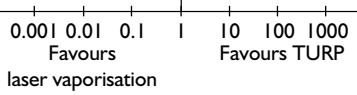
Review: BPE
Comparison: 07 Laser vaporisation vs TURP
Outcome: 02 Complications

Study or subcategory	Laser vaporisation *n/N*	TURP *n/N*	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
01 Haemorrhage					
Keoghane 2000	3/72	7/76		91.51	0.45 (0.12–1.68)
Mottet 1999	1/23	0/13		8.49	1.75 (0.08–40.11)
Subtotal (95% CI)	95	89		100.00	0.56 (0.17–1.82)
Total events: 4 (Laser vaporisation), 7 (TURP)					
Test for heterogeneity: $\chi^2 = 0.61$, df = 1 ($p = 0.43$), $I^2 = 0\%$					
Test for overall effect: $z = 0.96$ ($p = 0.34$)					
02 Blood transfusion					
Carter 1999a	0/95	5/96		22.42	0.09 (0.01–1.64)
Keoghane 2000	0/72	13/76		53.85	0.04 (0.00–0.65)
van Melick 2003a	0/45	1/50		5.83	0.37 (0.02–8.85)
Mottet 1999	0/23	0/13			Not estimable
Sengor 1996	0/30	2/30		10.25	0.20 (0.01–4.00)
Shingleton 2002	0/50	0/50			Not estimable
Tuhkanen 2001	1/21	2/24		7.65	0.57 (0.06–5.86)
Tuhkanen 2003	0/26	0/26			Not estimable
Zorn 1999	0/12	0/12			Not estimable
Subtotal (95% CI)	374	377		100.00	0.13 (0.04–0.41)
Total events: 1 (Laser vaporisation), 23 (TURP)					
Test for heterogeneity: $\chi^2 = 2.85$, df = 4 ($p = 0.58$), $I^2 = 0\%$					
Test for overall effect: $z = 3.43$ ($p = 0.0006$)					
03 Capsule perforation					
van Melick 2003a	2/45	5/50		100.00	0.44 (0.09–2.18)
Subtotal (95% CI)	45	50		100.00	0.44 (0.09–2.18)
Total events: 2 (Laser vaporisation), 5 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 1.00$ ($p = 0.32$)					
04 Urethral injury					
van Melick 2003a	0/45	1/50		100.00	0.37 (0.02–8.85)
Subtotal (95% CI)	45	50		100.00	0.37 (0.02–8.85)
Total events: 0 (Laser vaporisation), 1 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.61$ ($p = 0.54$)					
05 Urinary tract infection					
Carter 1999a	28/93	12/92		56.85	2.31 (1.25–4.26)
Keoghane 2000	2/72	3/76		13.76	0.70 (0.12–4.09)
van Melick 2003a	4/45	5/50		22.32	0.89 (0.25–3.11)
Tuhkanen 2003	0/26	1/26		7.07	0.33 (0.01–7.82)
Subtotal (95% CI)	236	244		100.00	1.63 (0.99–2.69)
Total events: 34 (Laser vaporisation), 21 (TURP)					
Test for heterogeneity: $\chi^2 = 3.99$, df = 3 ($p = 0.26$), $I^2 = 24.8\%$					
Test for overall effect: $z = 1.92$ ($p = 0.05$)					
06 Urinary retention					
Carter 1999a	5/93	2/92		17.15	2.47 (0.49–12.43)
Keoghane 2000	17/72	8/76		66.37	2.24 (1.03–4.87)
van Melick 2003a	5/45	0/50		4.04	12.20 (0.69–214.56)
Shingleton 2002	3/50	1/50		8.53	3.00 (0.32–27.87)
Tuhkanen 2001	2/21	0/25		3.91	5.91 (0.30–116.66)
Subtotal (95% CI)	281	293		100.00	2.89 (1.55–5.42)
Total events: 32 (Laser vaporisation), 11 (TURP)					
Test for heterogeneity: $\chi^2 = 1.64$, df = 4 ($p = 0.80$), $I^2 = 0\%$					
Test for overall effect: $z = 3.32$ ($p = 0.0009$)					



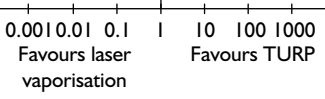
Review: BPE
Comparison: 07 Laser vaporisation vs TURP
Outcome: 02 Complications

Study or subcategory	Laser vaporisation *n/N*	TURP *n/N*	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
07 Recatheterisation					
Keoghane 2000	3/72	7/76		58.91	0.45 (0.12–1.68)
Mottet 1999	0/23	0/13			Not estimable
Tuhkanen 2001	1/21	1/24		8.07	1.14 (0.08–17.16)
Zorn 1999	3/21	3/12		33.02	0.57 (0.14–2.40)
Subtotal (95% CI)	137	125		100.00	0.55 (0.22–1.36)
Total events: 7 (Laser vaporisation), 11 (TURP)					
Test for heterogeneity: $\chi^2 = 0.37$, df = 2 ($p = 0.83$), $I^2 = 0\%$					
Test for overall effect: $z = 1.30$ ($p = 0.19$)					
08 Clot retention					
van Melick 2003a	2/45	1/50		21.96	2.22 (0.21–23.69)
Tuhkanen 2001	1/21	2/24		43.27	0.57 (0.06–5.86)
Tuhkanen 2003	0/26	1/26		34.77	0.33 (0.01–7.82)
Subtotal (95% CI)	92	100		100.00	0.85 (0.22–3.33)
Total events: 3 (Laser vaporisation), 4 (TURP)					
Test for heterogeneity: $\chi^2 = 1.08$, df = 2 ($p = 0.58$), $I^2 = 0\%$					
Test for overall effect: $z = 0.23$ ($p = 0.82$)					
09 TUR syndrome					
Carter 1999a	0/93	0/92			Not estimable
Sengor 1996	0/30	0/30			Not estimable
Subtotal (95% CI)	0	0			Not estimable
Total events: 0 (Laser vaporisation), 0 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: not applicable					
10 Cardiovascular events					
Keoghane 2000	1/72	1/76		33.98	1.06 (0.07–16.56)
van Melick 2003a	0/45	1/50		49.68	0.37 (0.02–8.85)
Tuhkanen 2001	1/21	0/24		16.35	3.41 (0.15–79.47)
Subtotal (95% CI)	138	150		100.00	1.10 (0.23–5.34)
Total events: 2 (Laser vaporisation), 2 (TURP)					
Test for heterogeneity: $\chi^2 = 0.95$, df = 2 ($p = 0.62$), $I^2 = 0\%$					
Test for overall effect: $z = 0.12$ ($p = 0.91$)					
11 Mortality					
Keoghane 2000	5/72	5/76		45.95	1.06 (0.32–3.49)
van Melick 2003a	3/45	4/50		35.79	0.83 (0.20–3.52)
Tuhkanen 2001	1/21	1/24		8.82	1.14 (0.08–17.16)
Tuhkanen 2003	3/26	1/26		9.44	3.00 (0.33–26.99)
Subtotal (95% CI)	164	176		100.00	1.17 (0.53–2.58)
Total events: 12 (Laser vaporisation), 11 (TURP)					
Test for heterogeneity: $\chi^2 = 0.95$, df = 3 ($p = 0.81$), $I^2 = 0\%$					
Test for overall effect: $z = 0.38$ ($p = 0.70$)					



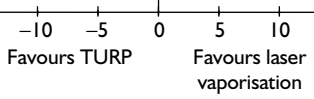
Review: BPE
Comparison: 07 Laser vaporisation vs TURP
Outcome: 02 Complications

Study or subcategory	Laser vaporisation *n/N*	TURP *n/N*	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
11 Incontinence					
Carter 1999a	1/84	0/85		6.10	3.04 (0.13–73.47)
Keoghane 2000	0/72	1/76		17.91	0.35 (0.01–8.49)
van Melick 2003a	14/45	4/50		46.49	3.89 (1.38–10.95)
Shingleton 2002	1/50	1/50		12.27	1.00 (0.06–15.55)
Tuhkanen 2001	0/21	1/24		17.23	0.38 (0.02–8.83)
Subtotal (95% CI)	272	285		100.00	2.24 (1.03–4.88)
Total events: 16 (Laser vaporisation), 7 (TURP)					
Test for heterogeneity: $\chi^2 = 3.98$, df = 4 ($p = 0.41$), $I^2 = 0\%$					
Test for overall effect: $z = 2.04$ ($p = 0.04$)					
12 Irritative urinary symptoms					
Mottet 1999	0/23	0/13			Not estimable
Zorn 1999	0/21	0/12			Not estimable
Subtotal (95% CI)	0	0			Not estimable
Total events: 0 (Laser vaporisation), 0 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: not applicable					
13 Strictures					
Carter 1999a	7/84	15/85		51.03	0.47 (0.20–1.10)
Keoghane 2000	0/72	5/76		18.32	0.10 (0.01–1.70)
van Melick 2003a	2/45	2/50		6.48	1.11 (0.16–7.56)
Mottet 1999	0/23	2/13		10.81	0.12 (0.01–2.26)
Sengor 1996	0/30	0/30			Not estimable
Shingleton 2002	4/50	1/50		3.42	4.00 (0.46–34.54)
Tuhkanen 2001	0/21	1/24		4.81	0.38 (0.02–8.83)
Tuhkanen 2003	0/25	1/25		5.13	0.33 (0.01–7.81)
Subtotal (95% CI)	350	353		100.00	0.52 (0.28–0.93)
Total events: 13 (Laser vaporisation), 27 (TURP)					
Test for heterogeneity: $\chi^2 = 6.51$, df = 6 ($p = 0.37$), $I^2 = 7.9\%$					
Test for overall effect: $z = 2.18$ ($p = 0.03$)					
14 Retrograde ejaculation					
Mottet 1999	11/23	6/13		13.31	1.04 (0.50–2.14)
Sengor 1996	1/23	24/27		38.34	0.05 (0.01–0.33)
Shingleton 2002	2/22	2/21		3.55	0.95 (0.15–6.17)
Tuhkanen 2001	1/16	12/14		22.22	0.07 (0.01–0.49)
Tuhkanen 2003	1/16	13/16		22.57	0.08 (0.01–0.52)
Subtotal (95% CI)	100	91		100.00	0.22 (0.13–0.39)
Total events: 16 (Laser vaporisation), 57 (TURP)					
Test for heterogeneity: $\chi^2 = 24.34$, df = 4 ($p < 0.0001$), $I^2 = 83.6\%$					
Test for overall effect: $z = 5.33$ ($p < 0.00001$)					
15 Erectile dysfunction					
Mottet 1999	2/23	0/13		55.27	2.92 (0.15–56.51)
Shingleton 2002	8/22	0/21		44.73	16.26 (1.00–265.18)
Subtotal (95% CI)	45	34		100.00	8.89 (1.29–61.37)
Total events: 10 (Laser vaporisation), 0 (TURP)					
Test for heterogeneity: $\chi^2 = 0.72$, df = 1 ($p = 0.40$), $I^2 = 0\%$					
Test for overall effect: $z = 2.22$ ($p = 0.03$)					
16 Rehospitalisation					
Carter 1999a	26/93	5/92		84.34	5.14 (2.07–12.81)
Tuhkanen 2001	1/21	1/24		15.66	1.14 (0.08–17.16)
Subtotal (95% CI)	114	116		100.00	4.52 (1.93–10.56)
Total events: 27 (Laser vaporisation), 6 (TURP)					
Test for heterogeneity: $\chi^2 = 1.07$, df = 1 ($p = 0.30$), $I^2 = 6.2\%$					
Test for overall effect: $z = 3.48$ ($p = 0.0005$)					
17 Reoperations					
Carter 1999a	2/84	1/85		4.69	2.02 (0.19–21.90)
Keoghane 2000	23/72	12/76		55.14	2.02 (1.09–3.76)
van Melick 2003a	2/50	1/45		4.97	1.80 (0.17–19.19)
Mottet 1999	0/13	1/23		5.22	0.57 (0.02–13.10)
Shingleton 2002	0/50	3/50		16.53	0.14 (0.01–2.70)
Tuhkanen 2001	3/21	2/25		8.62	1.79 (0.33–9.70)
Tuhkanen 2003	2/26	1/25		4.82	1.92 (0.19–19.90)
Zorn 1999	0/12	0/21			Not estimable
Subtotal (95% CI)	328	350		100.00	1.60 (0.97–2.63)
Total events: 32 (Laser vaporisation), 21 (TURP)					
Test for heterogeneity: $\chi^2 = 3.65$, df = 6 ($p = 0.72$), $I^2 = 0\%$					
Test for overall effect: $z = 1.85$ ($p = 0.06$)					



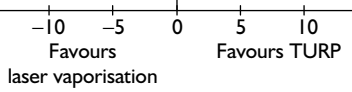
Review: BPE
Comparison: 07 Laser vaporisation vs TURP
Outcome: 04 Q_{max} (ml/s)

Study or subcategory	Laser vaporisation n	Laser vaporisation Mean (SD)	TURP n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Keoghane 2000	46	21.30 (11.60)	52	21.80 (12.20)		6.32	−0.50 (−5.22 to 4.22)
Sengor 1996	30	18.90 (3.10)	30	20.70 (2.60)		67.02	−1.80 (−3.25 to −0.35)
Shingleton 2002	48	15.00 (5.70)	48	16.00 (8.00)		18.19	−1.00 (−3.78 to 1.78)
Tuhkanen 2003	25	15.00 (5.20)	25	19.00 (9.00)		8.46	−4.00 (−8.07 to 0.07)
Subtotal (95% CI)	149		155			100.00	−1.76 (−2.94 to −0.57)
Test for heterogeneity: $\chi^2 = 1.73$, df = 3 ($p = 0.63$), $I^2 = 0\%$							
Test for overall effect: $z = 2.91$ ($p = 0.004$)							
02 6 months							
Sengor 1996	30	18.20 (2.10)	30	19.80 (2.50)		79.74	−1.60 (−2.77 to −0.43)
Shingleton 2002	48	15.80 (6.90)	48	16.30 (6.40)		15.36	−0.50 (−3.16 to 2.16)
Tuhkanen 2003	25	17.90 (7.10)	25	21.10 (9.70)		4.90	−3.20 (−7.91 to 1.51)
Subtotal (95% CI)	103		103			100.00	−1.51 (−2.55 to −0.47)
Test for heterogeneity: $\chi^2 = 1.07$, df = 2 ($p = 0.59$), $I^2 = 0\%$							
Test for overall effect: $z = 2.84$ ($p = 0.005$)							
03 12 months							
Keoghane 2000	42	17.10 (13.20)	45	21.20 (12.40)		25.73	−4.10 (−9.49 to 1.29)
Shingleton 2002	40	15.40 (5.90)	33	16.70 (7.60)		74.27	−1.30 (−4.47 to 1.87)
Subtotal (95% CI)	82		78			100.00	−2.02 (−4.75 to 0.71)
Test for heterogeneity: $\chi^2 = 0.77$, df = 1 ($p = 0.38$), $I^2 = 0\%$							
Test for overall effect: $z = 1.45$ ($p = 0.15$)							
04 2 years							
Keoghane 2000	27	14.20 (7.40)	31	15.90 (8.00)		45.06	−1.70 (−5.67 to 2.27)
Shingleton 2002	23	14.90 (5.40)	19	14.30 (6.30)		54.94	0.60 (−2.99 to 4.19)
Subtotal (95% CI)	50		50			100.00	−0.44 (−3.10 to 2.23)
Test for heterogeneity: $\chi^2 = 0.71$, df = 1 ($p = 0.40$), $I^2 = 0\%$							
Test for overall effect: $z = 0.32$ ($p = 0.75$)							
05 3 years							
Keoghane 2000	24	13.40 (7.30)	24	12.70 (6.40)		100.00	0.70 (−3.18 to 4.58)
Subtotal (95% CI)	24		24			100.00	0.70 (−3.18 to 4.58)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.35$ ($p = 0.72$)							
06 5 years							
Keoghane 2000	25	14.00 (6.40)	32	14.00 (5.20)		43.59	0.00 (−3.09 to 3.09)
Shingleton 2002	29	12.30 (5.30)	33	12.80 (5.60)		56.41	−0.50 (−3.22 to 2.22)
Subtotal (95% CI)	54		65			100.00	−0.28 (−2.32 to 1.76)
Test for heterogeneity: $\chi^2 = 0.06$, df = 1 ($p = 0.81$), $I^2 = 0\%$							
Test for overall effect: $z = 0.27$ ($p = 0.79$)							



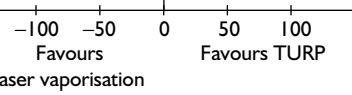
Review: BPE
Comparison: 07 Laser vaporisation vs TURP
Outcome: 05 MUF (ml/s)

Study or subcategory	*n*	Laser vaporisation Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Sengor 1996	30	10.70 (1.70)	30	10.60 (1.70)		100.00	0.10 (–0.76 to 0.96)
Subtotal (95% CI)	30		30			100.00	0.10 (–0.76 to 0.96)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.23$ ($p = 0.82$)							
02 6 months							
Sengor 1996	30	10.90 (2.70)	30	10.30 (1.30)		100.00	0.60 (–0.47 to 1.67)
Subtotal (95% CI)	30		30			100.00	0.60 (–0.47 to 1.67)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.10$ ($p = 0.27$)							



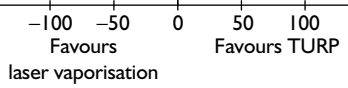
Review: BPE
Comparison: 07 Laser vaporisation vs TURP
Outcome: 06 Residual volume (ml)

Study or subcategory	*n*	Laser vaporisation Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Sengor 1996	30	50.40 (30.00)	30	70.00 (27.00)		69.14	–19.60 (–34.04 to –5.16)
Tuhkanen 2003	25	44.00 (39.00)	25	36.00 (39.00)		30.86	8.00 (–13.62 to 29.62)
Subtotal (95% CI)	55		55			100.00	–11.08 (–23.09 to 0.93)
Test for heterogeneity: $\chi^2 = 4.33$, df = 1 ($p = 0.04$), $I^2 = 76.9\%$							
Test for overall effect: $z = 1.81$ ($p = 0.07$)							
02 6 months							
Sengor 1996	30	68.00 (22.00)	30	47.00 (19.00)		88.59	21.00 (10.60–31.40)
Tuhkanen 2003	25	50.00 (64.00)	25	32.00 (37.00)		11.41	18.00 (–10.98 to 46.98)
Subtotal (95% CI)	55		55			100.00	20.66 (10.87–30.45)
Test for heterogeneity: $\chi^2 = 0.04$, df = 1 ($p = 0.85$), $I^2 = 0\%$							
Test for overall effect: $z = 4.14$ ($p < 0.0001$)							



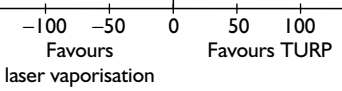
Review: BPE
Comparison: 07 Laser vaporisation vs TURP
Outcome: 07 Detrusor pressure (cmH_2O)

Study or subcategory	n	Laser vaporisation Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 6 months							
Tuhkanen 2003	25	38.30 (9.70)	25	31.30 (9.90)		100.00	7.00 (1.57–12.43)
Subtotal (95% CI)	25		25			100.00	7.00 (1.57–12.43)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.53$ ($p = 0.01$)							



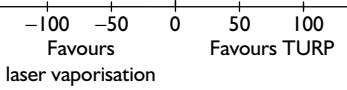
Review: BPE
Comparison: 07 Laser vaporisation vs TURP
Outcome: 08 Prostate size (ml)

Study or subcategory	n	Laser vaporisation Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 6 months							
Shingleton 2002	48	29.10 (20.00)	48	22.00 (12.10)		100.00	7.10 (0.49–13.71)
Subtotal (95% CI)	48		48			100.00	7.10 (0.49–13.71)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.10$ ($p = 0.04$)							
02 12 months							
Shingleton 2002	40	28.40 (22.70)	33	21.50 (15.40)		100.00	6.90 (−1.88 to 15.68)
Subtotal (95% CI)	40		33			100.00	6.90 (−1.88 to 15.68)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.54$ ($p = 0.12$)							
03 18–24 months							
Shingleton 2002	23	27.50 (19.90)	19	20.50 (13.30)		100.00	7.00 (−3.09 to 17.09)
Subtotal (95% CI)	23		19			100.00	7.00 (−3.09 to 17.09)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.36$ ($p = 0.17$)							
04 36–72 months							
Shingleton 2002	29	32.90 (26.50)	33	26.30 (20.20)		100.00	6.60 (−5.25 to 18.45)
Subtotal (95% CI)	29		33			100.00	6.60 (−5.25 to 18.45)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.09$ ($p = 0.28$)							



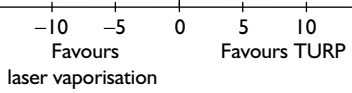
Review: BPE
Comparison: 07 Laser vaporisation vs TURP
Outcome: 10 Quality of life

Study or subcategory	*n*	Laser vaporisation Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 6 months							
van Melick 2003	33	0.80 (1.00)	37	0.50 (0.50)		100.00	0.30 (–0.08 to 0.68)
Subtotal (95% CI)	33		37			100.00	0.30 (–0.08 to 0.68)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.56$ ($p = 0.12$)							
02 12 months							
van Melick 2003	37	0.60 (0.90)	41	0.60 (0.90)		100.00	0.00 (–0.40 to 0.40)
Subtotal (95% CI)	37		41			100.00	0.00 (–0.40 to 0.40)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.00$ ($p = 1.00$)							
03 1–4 years							
van Melick 2003	10	2.00 (1.00)	15	1.10 (1.20)		100.00	0.90 (0.03–1.77)
Subtotal (95% CI)	10		15			100.00	0.90 (0.03–1.77)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.03$ ($p = 0.04$)							
04 4–7 years							
van Melick 2003	17	1.40 (1.20)	15	1.30 (1.30)		100.00	0.10 (–0.77 to 0.97)
Subtotal (95% CI)	17		15			100.00	0.10 (–0.77 to 0.97)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.23$ ($p = 0.82$)							



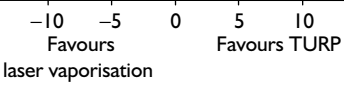
Review: BPE
Comparison: 07 Laser vaporisation vs TURP
Outcome: 11 Duration of operation (min)

Study or subcategory	*n*	Laser vaporisation Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
Carter 1999a	95	37.40 (12.10)	96	35.70 (10.80)		58.41	1.70 (–1.55 to 4.95)
Keoghane 2000	69	36.00 (15.00)	69	39.00 (20.00)		17.77	–3.00 (–8.90 to 2.90)
van Melick 2003a	45	58.00 (11.00)	50	58.00 (26.00)		9.93	0.00 (–7.89 to 7.89)
Suvakovic 1996	10	18.90 (8.80)	10	20.10 (6.20)		13.89	–1.20 (–7.87 to 5.47)
Total (95% CI)	219		225			100.00	0.29 (–2.19 to 2.78)
Test for heterogeneity: $\chi^2 = 2.11$, df = 3 ($p = 0.55$), $I^2 = 0\%$							
Test for overall effect: $z = 0.23$ ($p = 0.82$)							



Review: BPE
Comparison: 07 Laser vaporisation vs TURP
Outcome: 12 Length of hospital stay (days)

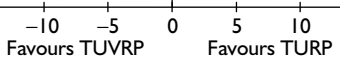
Study or subcategory	*n*	Laser vaporisation Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
van Melick 2003a	45	3.80 (1.30)	50	3.90 (0.90)		100.00	–0.10 (–0.55 to 0.35)
Total (95% CI)	45		50			100.00	–0.10 (–0.55 to 0.35)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.43$ ($p = 0.67$)							



Appendix 9.8: TUVRP versus TURP

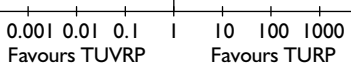
Review: BPE
Comparison: 08 TUVRP vs TURP
Outcome: 01 IPSS

Study or subcategory	n	TUVRP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Liu 2006	42	8.20 (2.20)	30	7.90 (1.80)		100.00	0.30 (–0.63 to 1.23)
Subtotal (95% CI)	42		30			100.00	0.30 (–0.63 to 1.23)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.63$ ($p = 0.53$)							
02 6 months							
Gupta 2006	50	5.90 (1.78)	50	6.10 (2.97)		72.20	–0.20 (–1.16 to 0.76)
Talic 2000	34	4.00 (3.40)	34	5.60 (3.10)		27.80	–1.60 (–3.15 to –0.05)
Subtotal (95% CI)	84		84			100.00	–0.59 (–1.40 to 0.23)
Test for heterogeneity: $\chi^2 = 2.27$, df = 1 ($p = 0.13$), $I^2 = 56.0\%$							
Test for overall effect: $z = 1.42$ ($p = 0.16$)							
03 12 months							
Gupta 2006	50	5.40 (1.97)	50	5.60 (2.26)		76.66	–0.20 (–1.03 to 0.63)
Helke 2001	79	4.66 (4.30)	73	5.21 (5.10)		23.34	–0.55 (–2.06 to 0.96)
Subtotal (95% CI)	129		123			100.00	–0.28 (–1.01 to 0.45)
Test for heterogeneity: $\chi^2 = 0.16$, df = 1 ($p = 0.69$), $I^2 = 0\%$							
Test for overall effect: $z = 0.76$ ($p = 0.45$)							
04 24 months							
Liu 2006	23	9.00 (3.10)	21	8.40 (2.60)		100.00	0.60 (–1.09 to 2.29)
Subtotal (95% CI)	23		21			100.00	0.60 (–1.09 to 2.29)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.70$ ($p = 0.49$)							



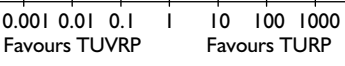
Review: BPE
Comparison: 08 TUVRP vs TURP
Outcome: 02 Complications

Study or subcategory	TUVRP n/N	TURP n/N	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
01 Haemorrhage					
Helke 2001	1/93	3/92		57.07	0.33 (0.03–3.11)
Liu 2006	0/32	1/44		24.01	0.45 (0.02–10.81)
Talic 2000	1/34	1/34		18.92	1.00 (0.07–15.34)
Subtotal (95% CI)	159	170		100.00	0.49 (0.11–2.15)
Total events: 2 (TUVRP), 5 (TURP)					
Test for heterogeneity: $\chi^2 = 0.38$, df = 2 ($p = 0.83$), $I^2 = 0\%$					
Test for overall effect: $z = 0.95$ ($p = 0.34$)					
02 Blood transfusion					
Gupta 2006	0/50	1/50		11.66	0.33 (0.01–7.99)
Helke 2001	6/93	9/92		70.34	0.66 (0.24–1.78)
Kupeli 2001	0/50	0/50			Not estimable
Liu 2006	1/44	2/32		18.00	0.36 (0.03–3.84)
Talic 2000	0/34	0/34			Not estimable
Subtotal (95% CI)	271	258		100.00	0.57 (0.24–1.36)
Total events: 7 (TUVRP), 12 (TURP)					
Test for heterogeneity: $\chi^2 = 0.33$, df = 2 ($p = 0.85$), $I^2 = 0\%$					
Test for overall effect: $z = 1.27$ ($p = 0.20$)					
03 Urinary retention					
Gupta 2006	3/50	3/50		100.00	1.00 (0.21–4.72)
Kupeli 2001	0/50	0/50			Not estimable
Subtotal (95% CI)	100	100		100.00	1.00 (0.21–4.72)
Total events: 3 (TUVRP), 3 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.00$ ($p = 1.00$)					
04 Recatheterisation					
Gupta 2006	3/50	3/50		39.31	1.00 (0.21–4.72)
Kupeli 2001	0/50	0/50			Not estimable
Liu 2006	3/44	4/32		60.69	0.55 (0.13–2.27)
Subtotal (95% CI)	144	132		100.00	0.72 (0.26–2.05)
Total events: 6 (TUVRP), 7 (TURP)					
Test for heterogeneity: $\chi^2 = 0.32$, df = 1 ($p = 0.57$), $I^2 = 0\%$					
Test for overall effect: $z = 0.61$ ($p = 0.54$)					
05 Clot retention					
Liu 2006	2/44	2/32		69.84	0.73 (0.11–4.89)
Talic 2000	1/34	1/34		30.16	1.00 (0.07–15.34)
Subtotal (95% CI)	78	66		100.00	0.81 (0.17–3.85)
Total events: 3 (TUVRP), 3 (TURP)					
Test for heterogeneity: $\chi^2 = 0.04$, df = 1 ($p = 0.85$), $I^2 = 0\%$					
Test for overall effect: $z = 0.27$ ($p = 0.79$)					
06 TUR syndrome					
Kupeli 2001	0/50	0/50			Not estimable
Liu 2006	0/44	2/32		100.00	0.15 (0.01–2.95)
Talic 2000	0/34	0/34			Not estimable
Subtotal (95% CI)	128	116		100.00	0.15 (0.01–2.95)
Total events: 0 (TUVRP), 2 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 1.25$ ($p = 0.21$)					



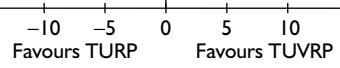
Review: BPE
Comparison: 08 TUVRP vs TURP
Outcome: 02 Complications

Study or subcategory	TUVRP n/N	TURP n/N	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
07 Mortality					
Gupta 2006	1/50	0/50		100.00	3.00 (0.13–71.92)
Subtotal (95% CI)	50	50		100.00	3.00 (0.13–71.92)
Total events: 1 (TUVRP), 0 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: z = 0.68 (p = 0.50)					
08 Incontinence					
Gupta 2006	0/50	1/50		8.38	0.33 (0.01–7.99)
Helke 2001	14/93	14/92		78.64	0.99 (0.50–1.96)
Kupeli 2001	0/50	0/50			Not estimable
Liu 2006	1/36	2/26		12.98	0.36 (0.03–3.77)
Subtotal (95% CI)	229	218		100.00	0.85 (0.45–1.61)
Total events: 15 (TUVRP), 17 (TURP)					
Test for heterogeneity: χ^2 = 1.03, df = 2 (p = 0.60), I^2 = 0%					
Test for overall effect: z = 0.49 (p = 0.62)					
09 Stricture					
Gupta 2006	1/50	2/50		17.60	0.50 (0.05–5.34)
Helke 2001	5/93	7/92		61.95	0.71 (0.23–2.15)
Kupeli 2001	0/50	0/50			Not estimable
Liu 2006	3/36	2/26		20.44	1.08 (0.19–6.03)
Subtotal (95% CI)	229	218		100.00	0.75 (0.32–1.77)
Total events: 9 (TUVRP), 11 (TURP)					
Test for heterogeneity: χ^2 = 0.30, df = 2 (p = 0.86), I^2 = 0%					
Test for overall effect: z = 0.66 (p = 0.51)					
10 Retrograde ejaculation					
Kupeli 2001	27/44	26/50		75.42	1.18 (0.83–1.68)
Liu 2006	10/17	7/13		24.58	1.09 (0.58–2.07)
Subtotal (95% CI)	61	63		100.00	1.16 (0.85–1.58)
Total events: 37 (TUVRP), 33 (TURP)					
Test for heterogeneity: χ^2 = 0.04, df = 1 (p = 0.84), I^2 = 0%					
Test for overall effect: z = 0.93 (p = 0.35)					
11 Erectile dysfunction					
Kupeli 2001	11/31	12/36		76.56	1.06 (0.55–2.06)
Liu 2006	4/17	3/13		23.44	1.02 (0.27–3.78)
Talic 2000	0/18	0/18			Not estimable
Subtotal (95% CI)	66	67		100.00	1.05 (0.58–1.91)
Total events: 15 (TUVRP), 15 (TURP)					
Test for heterogeneity: χ^2 = 0.00, df = 1 (p = 0.95), I^2 = 0%					
Test for overall effect: z = 0.17 (p = 0.86)					
12 Rehospitalisaiton					
Liu 2006	2/44	2/32		100.00	0.73 (0.11–4.89)
Subtotal (95% CI)	44	32		100.00	0.73 (0.11–4.89)
Total events: 2 (TUVRP), 2 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: z = 0.33 (p = 0.74)					
13 Reoperation					
Helke 2001	9/93	5/92		68.40	1.78 (0.62–5.11)
Liu 2006	6/36	2/26		31.60	2.17 (0.47–9.89)
Subtotal (95% CI)	129	118		100.00	1.90 (0.80–4.52)
Total events: 15 (TUVRP), 7 (TURP)					
Test for heterogeneity: χ^2 = 0.04, df = 1 (p = 0.84), I^2 = 0%					
Test for overall effect: z = 1.46 (p = 0.15)					



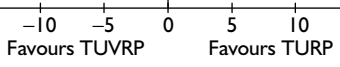
Review: BPE
Comparison: 08 TUVRP vs TURP
Outcome: 03 Q_{max} (ml/s)

Study or subcategory	n	TUVRP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Liu 2006	42	20.70 (2.00)	30	21.60 (2.00)		100.00	−0.90 (−1.84 to 0.04)
Subtotal (95% CI)	42		30			100.00	−0.90 (−1.84 to 0.04)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.88$ ($p = 0.06$)							
02 6 months							
Gupta 2006	50	20.70 (1.32)	50	22.50 (0.95)		89.49	−1.80 (−2.25 to −1.35)
Kupeli 2001	50	26.70 (3.70)	50	24.60 (3.40)		9.37	2.10 (0.71–3.49)
Talic 2000	34	19.00 (6.50)	34	15.20 (10.00)		1.13	3.80 (−0.21 to 7.81)
Subtotal (95% CI)	134		134			100.00	−1.37 (−1.80 to −0.94)
Test for heterogeneity: $\chi^2 = 33.73$, df = 2 ($p < 0.00001$), $I^2 = 94.1\%$							
Test for overall effect: $z = 6.30$ ($p < 0.00001$)							
03 12 months							
Gupta 2006	50	23.70 (1.58)	50	23.60 (0.96)		98.06	0.10 (−0.41 to 0.61)
Helke 2001	79	22.19 (12.30)	73	22.12 (10.60)		1.94	0.07 (−3.57 to 3.71)
Subtotal (95% CI)	129		123			100.00	0.10 (−0.41 to 0.61)
Test for heterogeneity: $\chi^2 = 0.00$, df = 1 ($p = 0.99$), $I^2 = 0\%$							
Test for overall effect: $z = 0.38$ ($p = 0.70$)							
04 2 years							
Liu 2006	23	19.60 (3.70)	21	21.20 (2.70)		100.00	−1.60 (−3.50 to 0.30)
Subtotal (95% CI)	23		21			100.00	−1.60 (−3.50 to 0.30)
Test for heterogeneity: not applicable							
Test for overall effect: $\chi = 1.65$ ($p = 0.10$)							



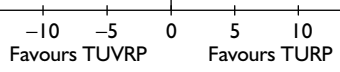
Review: BPE
Comparison: 08 TUVRP vs TURP
Outcome: 04 Prostate size

Study or subcategory	n	TUVRP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 6 months							
Kupeli 2001	50	20.60 (3.60)	50	20.80 (3.10)		100.00	−0.20 (−1.52 to 1.12)
Subtotal (95% CI)	50		50			100.00	−0.20 (−1.52 to 1.12)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.30$ ($p = 0.77$)							



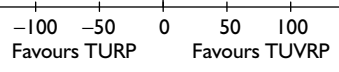
Review: BPE
Comparison: 08 TUVRP vs TURP
Outcome: 05 Quality of life

Study or subcategory	n	TUVRP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Liu 2006	42	1.70 (0.50)	30	1.50 (0.70)		100.00	0.20 (–0.09 to 0.49)
Subtotal (95% CI)	42		30			100.00	0.20 (–0.09 to 0.49)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.34$ ($p = 0.18$)							
02 2 years							
Liu 2006	23	1.60 (0.60)	21	1.40 (0.70)		100.00	0.20 (–0.19 to 0.59)
Subtotal (95% CI)	23		21			100.00	0.20 (–0.19 to 0.59)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.01$ ($p = 0.31$)							



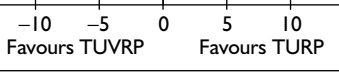
Review: BPE
Comparison: 08 TUVRP vs TURP
Outcome: 06 Duration of operation (min)

Study or subcategory	n	TUVRP Mean (SD)	n	TURP Mean (SD)	WMD (random) 95% CI	Weight %	WMD (random) 95% CI
Gupta 2006	50	55.90 (18.10)	50	64.00 (13.10)		31.32	–8.10 (–14.29 to –1.91)
Liu 2006	44	49.40 (8.00)	32	52.90 (6.00)		38.35	–3.50 (–6.65 to –0.35)
Talic 2000	34	42.40 (15.00)	35	35.90 (12.80)		30.33	6.50 (–0.09 to 13.09)
Total (95% CI)	128		117			100.00	–1.91 (–8.88 to 5.07)
Test for heterogeneity: $\chi^2 = 10.66$, df = 2 ($p = 0.005$), $I^2 = 81.2\%$							
Test for overall effect: $z = 0.54$ ($p = 0.59$)							



Review: BPE
Comparison: 08 TUVRP vs TURP
Outcome: 07 Length of hospital stay

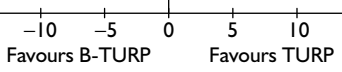
Study or subcategory	n	TUVRP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
Liu 2006	44	1.65 (0.20)	32	2.06 (0.35)		100.00	–0.41 (–0.54 to –0.28)
Total (95% CI)	44		32			100.00	–0.41 (–0.54 to –0.28)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 5.96$ ($p < 0.00001$)							

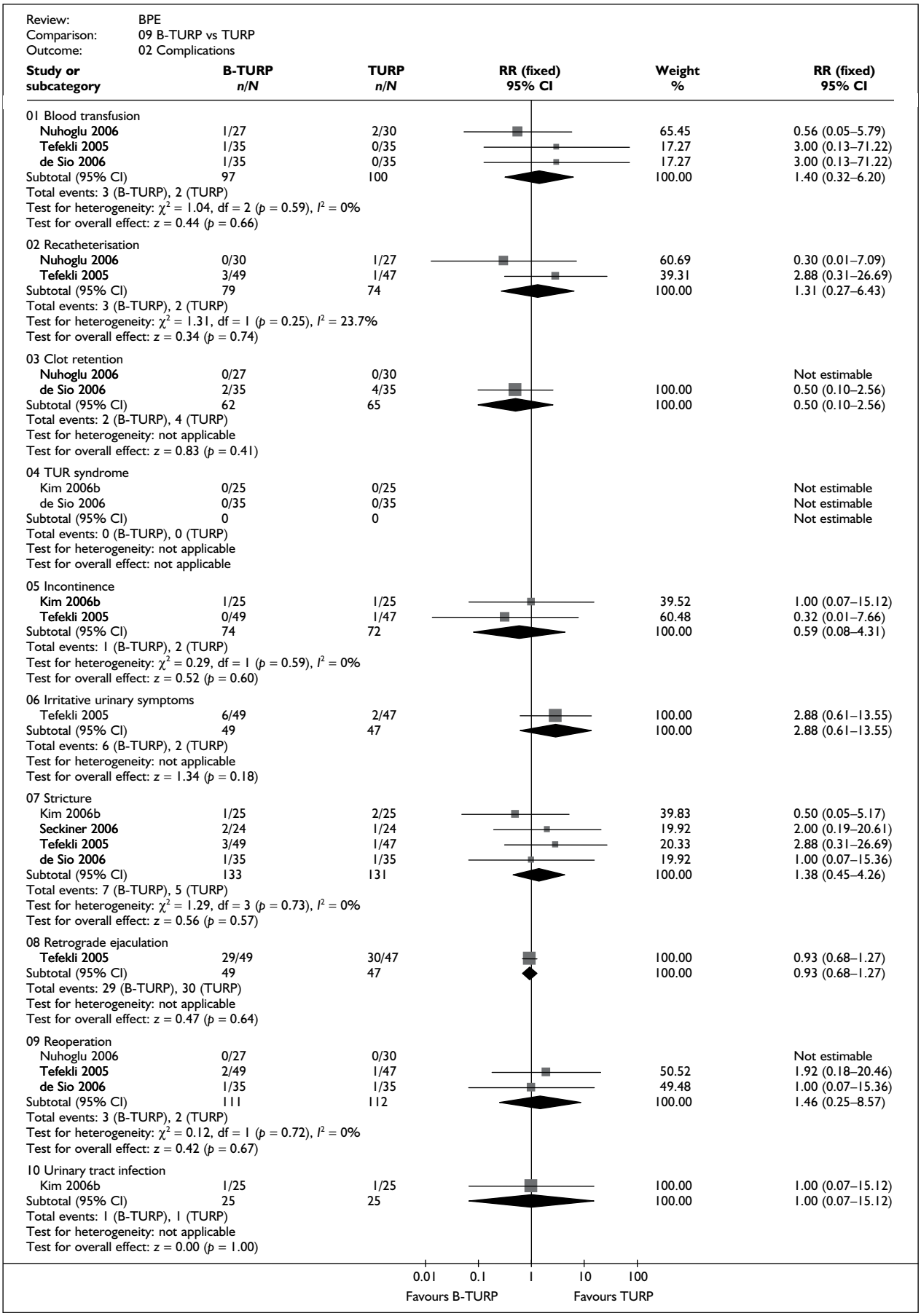


Appendix 9.9: B-TURP versus TURP

Review: BPE
Comparison: 09 B-TURP vs TURP
Outcome: 01 IPSS/AUA

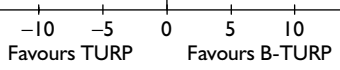
Study or subcategory	*n*	B-TURP Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Seckiner 2006	24	9.30 (3.90)	24	10.60 (6.30)		100.00	−1.30 (−4.26 to 1.66)
Subtotal (95% CI)	24		24			100.00	−1.30 (−4.26 to 1.66)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.86$ ($p = 0.39$)							
02 6 months							
Kim 2006b	25	6.00 (1.00)	25	5.60 (1.40)		90.53	0.40 (−0.27 to 1.07)
Seckiner 2006	23	8.70 (4.10)	21	8.30 (2.90)		9.47	0.40 (−1.68 to 2.48)
Subtotal (95% CI)	48		46			100.00	0.40 (−0.24 to 1.04)
Test for heterogeneity: $\chi^2 = 0.00$, df = 1 ($p = 1.00$), $I^2 = 0\%$							
Test for overall effect: $z = 1.22$ ($p = 0.22$)							
03 12 months							
Nuhoglu 2006	24	5.40 (3.70)	26	5.20 (3.20)		53.99	0.20 (−1.72 to 2.12)
Seckiner 2006	23	8.70 (4.10)	21	8.30 (2.90)		46.01	0.40 (−1.68 to 2.48)
Subtotal (95% CI)	47		47			100.00	0.29 (−1.12 to 1.71)
Test for heterogeneity: $\chi^2 = 0.02$, df = 1 ($p = 0.89$), $I^2 = 0\%$							
Test for overall effect: $z = 0.40$ ($p = 0.69$)							




Review: BPE
Comparison: 09 B-TURP vs TURP
Outcome: 02 Complications
Study or subcategory | B-TURP n/N | TURP n/N | RR (fixed) 95% CI | Weight % | RR (fixed) 95% CI
01 Blood transfusion
Nuhoglu 2006 1/27 2/30 65.45 0.56 (0.05–5.79)
Tefekli 2005 1/35 0/35 17.27 3.00 (0.13–71.22)
de Sio 2006 1/35 0/35 17.27 3.00 (0.13–71.22)
Subtotal (95% CI) 97 100 100.00 1.40 (0.32–6.20)
Total events: 3 (B-TURP), 2 (TURP)
Test for heterogeneity: χ² = 1.04, df = 2 (p = 0.59), I² = 0%
Test for overall effect: z = 0.44 (p = 0.66)
02 Recatheterisation
Nuhoglu 2006 0/30 1/27 60.69 0.30 (0.01–7.09)
Tefekli 2005 3/49 1/47 39.31 2.88 (0.31–26.69)
Subtotal (95% CI) 79 74 100.00 1.31 (0.27–6.43)
Total events: 3 (B-TURP), 2 (TURP)
Test for heterogeneity: χ² = 1.31, df = 1 (p = 0.25), I² = 23.7%
Test for overall effect: z = 0.34 (p = 0.74)
03 Clot retention
Nuhoglu 2006 0/27 0/30 Not estimable
de Sio 2006 2/35 4/35 100.00 0.50 (0.10–2.56)
Subtotal (95% CI) 62 65 100.00 0.50 (0.10–2.56)
Total events: 2 (B-TURP), 4 (TURP)
Test for heterogeneity: not applicable
Test for overall effect: z = 0.83 (p = 0.41)
04 TUR syndrome
Kim 2006b 0/25 0/25 Not estimable
de Sio 2006 0/35 0/35 Not estimable
Subtotal (95% CI) 0 0 Not estimable
Total events: 0 (B-TURP), 0 (TURP)
Test for heterogeneity: not applicable
Test for overall effect: not applicable
05 Incontinence
Kim 2006b 1/25 1/25 39.52 1.00 (0.07–15.12)
Tefekli 2005 0/49 1/47 60.48 0.32 (0.01–7.66)
Subtotal (95% CI) 74 72 100.00 0.59 (0.08–4.31)
Total events: 1 (B-TURP), 2 (TURP)
Test for heterogeneity: χ² = 0.29, df = 1 (p = 0.59), I² = 0%
Test for overall effect: z = 0.52 (p = 0.60)
06 Irritative urinary symptoms
Tefekli 2005 6/49 2/47 100.00 2.88 (0.61–13.55)
Subtotal (95% CI) 49 47 100.00 2.88 (0.61–13.55)
Total events: 6 (B-TURP), 2 (TURP)
Test for heterogeneity: not applicable
Test for overall effect: z = 1.34 (p = 0.18)
07 Stricture
Kim 2006b 1/25 2/25 39.83 0.50 (0.05–5.17)
Seckiner 2006 2/24 1/24 19.92 2.00 (0.19–20.61)
Tefekli 2005 3/49 1/47 20.33 2.88 (0.31–26.69)
de Sio 2006 1/35 1/35 19.92 1.00 (0.07–15.36)
Subtotal (95% CI) 133 131 100.00 1.38 (0.45–4.26)
Total events: 7 (B-TURP), 5 (TURP)
Test for heterogeneity: χ² = 1.29, df = 3 (p = 0.73), I² = 0%
Test for overall effect: z = 0.56 (p = 0.57)
08 Retrograde ejaculation
Tefekli 2005 29/49 30/47 100.00 0.93 (0.68–1.27)
Subtotal (95% CI) 49 47 100.00 0.93 (0.68–1.27)
Total events: 29 (B-TURP), 30 (TURP)
Test for heterogeneity: not applicable
Test for overall effect: z = 0.47 (p = 0.64)
09 Reoperation
Nuhoglu 2006 0/27 0/30 Not estimable
Tefekli 2005 2/49 1/47 50.52 1.92 (0.18–20.46)
de Sio 2006 1/35 1/35 49.48 1.00 (0.07–15.36)
Subtotal (95% CI) 111 112 100.00 1.46 (0.25–8.57)
Total events: 3 (B-TURP), 2 (TURP)
Test for heterogeneity: χ² = 0.12, df = 1 (p = 0.72), I² = 0%
Test for overall effect: z = 0.42 (p = 0.67)
10 Urinary tract infection
Kim 2006b 1/25 1/25 100.00 1.00 (0.07–15.12)
Subtotal (95% CI) 25 25 100.00 1.00 (0.07–15.12)
Total events: 1 (B-TURP), 1 (TURP)
Test for heterogeneity: not applicable
Test for overall effect: z = 0.00 (p = 1.00)
0.01 0.1 1 10 100
Favours B-TURP
Favours TURP

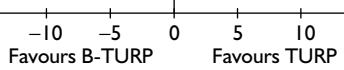
Review: BPE
Comparison: 09 B-TURP vs TURP
Outcome: 03 Q_{max} (ml/s)

Study or subcategory	n	B-TURP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Seckiner 2006	24	17.70 (9.10)	24	18.60 (9.10)		6.07	−0.90 (−6.05 to 4.25)
Tefekli 2005	47	16.90 (2.80)	49	15.80 (3.70)		93.93	1.10 (−0.21 to 2.41)
Subtotal (95% CI)	71		73			100.00	0.98 (−0.29 to 2.25)
Test for heterogeneity: $\chi^2 = 0.54$, df = 1 ($p = 0.46$), $I^2 = 0\%$							
Test for overall effect: $z = 1.51$ ($p = 0.13$)							
02 6 months							
Kim 2006b	25	20.60 (4.50)	25	20.50 (4.20)		28.62	0.10 (−2.31 to 2.51)
Seckiner 2006	24	23.40 (10.60)	23	16.20 (12.00)		3.96	7.20 (0.72–13.68)
Tefekli 2005	49	18.30 (3.50)	47	17.50 (4.30)		67.42	0.80 (−0.77 to 2.37)
Subtotal (95% CI)	98		95			100.00	0.85 (−0.44 to 2.14)
Test for heterogeneity: $\chi^2 = 4.06$, df = 2 ($p = 0.13$), $I^2 = 50.7\%$							
Test for overall effect: $z = 1.30$ ($p = 0.20$)							
03 12 months							
Nuhoglu 2006	24	17.10 (2.70)	26	17.90 (3.10)		45.91	−0.80 (−2.41 to 0.81)
Seckiner 2006	23	18.80 (6.90)	21	15.70 (6.30)		7.81	3.10 (−0.80 to 7.00)
Tefekli 2005	49	17.20 (3.90)	47	16.90 (4.10)		46.28	0.30 (−1.30 to 1.90)
Subtotal (95% CI)	96		94			100.00	0.01 (−1.08 to 1.10)
Test for heterogeneity: $\chi^2 = 3.51$, df = 2 ($p = 0.17$), $I^2 = 43.0\%$							
Test for overall effect: $z = 0.02$ ($p = 0.98$)							



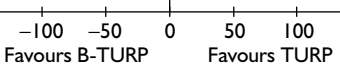
Review: BPE
Comparison: 09 B-TURP vs TURP
Outcome: 04 MUF (ml/s)

Study or subcategory	n	B-TURP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 12 months							
Nuhoglu 2006	24	10.40 (2.90)	26	9.90 (2.30)		100.00	0.50 (−0.96 to 1.96)
Subtotal (95% CI)	24		26			100.00	0.50 (−0.96 to 1.96)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.67$ ($p = 0.50$)							



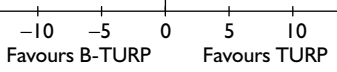
Review: BPE
Comparison: 09 B-TURP vs TURP
Outcome: 05 Residual volume (ml)

Study or subcategory	n	B-TURP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 12 months							
Nuhoglu 2006	24	33.00 (19.00)	26	35.00 (15.00)		100.00	−2.00 (−11.54 to 7.54)
Subtotal (95% CI)	24		26			100.00	−2.00 (−11.54 to 7.54)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.41$ ($p = 0.68$)							



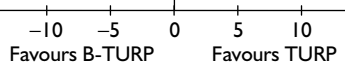
Review: BPE
Comparison: 09 B-TURP vs TURP
Outcome: 06 Prostate size (ml)

Study or subcategory	n	B-TURP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 6 months							
Seckiner 2006	24	25.30 (8.10)	23	28.50 (7.50)		100.00	−3.20 (−7.66 to 1.26)
Subtotal (95% CI)	24		23			100.00	−3.20 (−7.66 to 1.26)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.41$ ($p = 0.16$)							
02 12 months							
Nuhoglu 2006	24	22.00 (6.80)	26	24.00 (7.10)		100.00	−2.00 (−5.85 to 1.85)
Subtotal (95% CI)	24		26			100.00	−2.00 (−5.85 to 1.85)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.02$ ($p = 0.31$)							



Review: BPE
Comparison: 09 B-TURP vs TURP
Outcome: 07 Quality of life

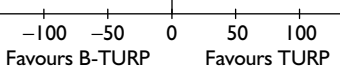
Study or subcategory	n	B-TURP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Seckiner 2006	24	1.80 (1.00)	24	2.10 (1.20)		100.00	−0.30 (−0.92 to 0.32)
Subtotal (95% CI)	24		24			100.00	−0.30 (−0.92 to 0.32)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.94$ ($p = 0.35$)							
02 6 months							
Seckiner 2006	24	1.60 (0.70)	23	1.60 (1.30)		100.00	0.00 (−0.60 to 0.60)
Subtotal (95% CI)	24		23			100.00	0.00 (−0.60 to 0.60)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.00$ ($p = 1.00$)							
03 12 months							
Seckiner 2006	23	1.80 (0.80)	21	2.00 (0.80)		100.00	−0.20 (−0.67 to 0.27)
Subtotal (95% CI)	23		21			100.00	−0.20 (−0.67 to 0.27)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.83$ ($p = 0.41$)							



Review: BPE
Comparison: 09 B-TURP vs TURP
Outcome: 09 Duration of operation

Study or subcategory	n	B-TURP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
Kim 2006b	25	54.00 (13.60)	25	57.00 (15.40)		15.36	−3.00 (−11.05 to 5.05)
Nuhoglu 2006	27	55.00 (9.70)	30	52.00 (13.20)		27.91	3.00 (−2.97 to 8.97)
Seckiner 2006	24	52.90 (16.30)	24	52.90 (12.80)		14.49	0.00 (−8.29 to 8.29)
Tefekli 2005	51	40.30 (11.40)	50	57.80 (13.40)		42.24	−17.50 (−22.36 to −12.64)
Total (95% CI)	127		129			100.00	−7.02 (−10.17 to −3.86)

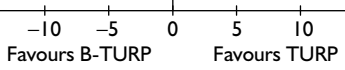
Test for heterogeneity: $\chi^2 = 32.40$, df = 3 ($p < 0.00001$), $I^2 = 90.7\%$
Test for overall effect: $z = 4.36$ ($p < 0.0001$)



Review: BPE
Comparison: 09 B-TURP vs TURP
Outcome: 10 Length of hospital stay

Study or subcategory	n	B-TURP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
Kim 2006b	25	3.30 (1.10)	25	4.00 (1.30)		100.00	−0.70 (−1.37 to −0.03)
Total (95% CI)	25		25			100.00	−0.70 (−1.37 to −0.03)

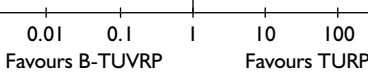
Test for heterogeneity: not applicable
Test for overall effect: $z = 2.06$ ($p = 0.04$)



Appendix 9.10: B-TUVRP versus TURP

Review: BPE
Comparison: 10 B-TUVRP vs TURP
Outcome: 01 Complications

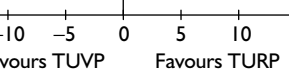
Study or subcategory	B-TUVRP n/N	TURP n/N	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
01 Urinary tract infection					
Fung 2005	4/21	4/30		100.00	1.43 (0.40–5.08)
Subtotal (95% CI)	21	30		100.00	1.43 (0.40–5.08)
Total events: 4 (B-TUVRP), 4 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.55$ ($p = 0.58$)					
02 Clot retention					
Fung 2005	1/21	5/30		100.00	0.29 (0.04–2.27)
Subtotal (95% CI)	21	30		100.00	0.29 (0.04–2.27)
Total events: 1 (B-TUVRP), 5 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 1.18$ ($p = 0.24$)					
03 TUR syndrome					
Fung 2005	0/30	0/30			Not estimable
Subtotal (95% CI)	0	0			Not estimable
Total events: 0 (B-TUVRP), 0 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: not applicable					



Appendix 9.11: TUVP versus TURP

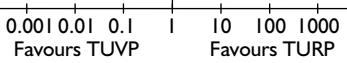
Review: BPE
Comparison: 11 TUVP vs TURP
Outcome: 01 IPSS/AUA

Study or subcategory	n	TUVP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Fowler 2005	105	11.80 (7.70)	110	9.80 (7.20)		6.66	2.00 (0.01–3.99)
Galluci 1998	70	5.50 (4.77)	80	5.52 (4.11)		12.87	–0.02 (–1.46 to 1.42)
Gotoh 1999	23	3.70 (2.40)	28	3.80 (2.30)		15.71	–0.10 (–1.40 to 1.20)
Kaplan 1998	32	9.20 (2.70)	32	8.60 (2.50)		16.31	0.60 (–0.67 to 1.87)
Nathan 1996	20	2.86 (2.80)	20	3.10 (2.30)		10.51	–0.24 (–1.83 to 1.35)
Nuhoglu 2005	35	4.70 (3.10)	38	4.80 (4.20)		9.34	–0.10 (–1.78 to 1.58)
Shokeir 1997	35	4.50 (1.90)	35	4.80 (2.20)		28.59	–0.30 (–1.26 to 0.66)
Subtotal (95% CI)	320		343			100.00	0.09 (–0.42 to 0.61)
Test for heterogeneity: $\chi^2 = 5.09$, df = 6 ($p = 0.53$), $I^2 = 0\%$							
Test for overall effect: $z = 0.35$ ($p = 0.72$)							
02 6 months							
Fowler 2005	106	8.50 (7.40)	108	6.90 (5.50)		6.66	1.60 (–0.15 to 3.35)
Galluci 1998	70	4.94 (4.68)	80	3.77 (3.30)		11.83	1.17 (–0.14 to 2.48)
Kaplan 1998	32	7.40 (2.90)	32	7.90 (3.10)		9.43	–0.50 (–1.97 to 0.97)
van Melick 2003	33	3.80 (2.70)	37	3.20 (2.70)		12.70	0.60 (–0.67 to 1.87)
Shokeir 1997	35	4.60 (1.20)	35	4.50 (1.30)		59.38	0.10 (–0.49 to 0.69)
Subtotal (95% CI)	276		292			100.00	0.33 (–0.12 to 0.79)
Test for heterogeneity: $\chi^2 = 5.59$, df = 4 ($p = 0.23$), $I^2 = 28.4\%$							
Test for overall effect: $z = 1.45$ ($p = 0.15$)							
03 12 months							
Galluci 1998	70	4.04 (4.26)	80	3.52 (3.04)		19.24	0.52 (–0.68 to 1.72)
Hammadeh 2003	51	4.40 (3.80)	51	5.90 (5.20)		8.87	–1.50 (–3.27 to 0.27)
Kaplan 1998	30	6.60 (2.40)	31	6.10 (1.90)		23.38	0.50 (–0.59 to 1.59)
van Melick 2003	34	4.80 (4.90)	41	4.10 (4.80)		5.69	0.70 (–1.51 to 2.91)
Shokeir 1997	25	5.20 (1.40)	25	4.70 (1.50)		42.82	0.50 (–0.30 to 1.30)
Subtotal (95% CI)	210		228			100.00	0.34 (–0.19 to 0.86)
Test for heterogeneity: $\chi^2 = 4.59$, df = 4 ($p = 0.33$), $I^2 = 12.8\%$							
Test for overall effect: $z = 1.26$ ($p = 0.21$)							
04 18 months							
Netto 1999	28	3.83 (4.62)	27	8.68 (2.30)		100.00	–4.85 (–6.77 to –2.93)
Subtotal (95% CI)	28		27			100.00	–4.85 (–6.77 to –2.93)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 4.95$ ($p < 0.00001$)							
05 2 years							
Fowler 2005	90	8.60 (7.20)	77	7.50 (5.80)		37.74	1.10 (–0.87 to 3.07)
Hammadeh 2003	47	4.30 (3.50)	47	6.30 (4.30)		58.45	–2.00 (–3.59 to –0.41)
van Melick 2003	12	8.40 (8.70)	15	5.80 (7.50)		3.80	2.60 (–3.62 to 8.82)
Subtotal (95% CI)	149		139			100.00	–0.66 (–1.87 to 0.56)
Test for heterogeneity: $\chi^2 = 6.86$, df = 2 ($p = 0.03$), $I^2 = 70.8\%$							
Test for overall effect: $z = 1.06$ ($p = 0.29$)							
06 3 years							
Hammadeh 2003	40	4.10 (3.30)	40	7.10 (6.20)		100.00	–3.00 (–5.18 to –0.82)
Subtotal (95% CI)	40		40			100.00	–3.00 (–5.18 to –0.82)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.70$ ($p = 0.007$)							
07 5 years							
Hammadeh 2003	27	5.90 (6.30)	27	8.60 (7.10)		20.71	–2.70 (–6.28 to 0.88)
van Melick 2003	12	7.00 (5.60)	15	7.30 (7.10)		11.57	–0.30 (–5.09 to 4.49)
Nuhoglu 2005	21	6.50 (3.20)	23	6.10 (3.50)		67.73	0.40 (–1.58 to 2.38)
Subtotal (95% CI)	60		65			100.00	–0.32 (–1.95 to 1.31)
Test for heterogeneity: $\chi^2 = 2.21$, df = 2 ($p = 0.33$), $I^2 = 9.3\%$							
Test for overall effect: $z = 0.39$ ($p = 0.70$)							



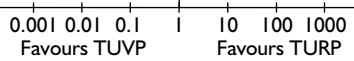
Review: BPE
Comparison: 11 TUVP vs TURP
Outcome: 02 Complications

Study or subcategory	TUVP n/N	TURP n/N	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
01 Blood transfusion					
Cetinkaya 1996	0/23	2/23		8.79	0.20 (0.01–3.95)
Erdagi 1999	0/20	9/20		33.41	0.05 (0.00–0.85)
Fowler 2005	2/115	9/120		30.98	0.23 (0.05–1.05)
Galluci 1998	0/70	0/80			Not estimable
Gotoh 1999	0/23	0/28			Not estimable
Hammadeh 2003	0/52	1/52		5.28	0.33 (0.01–8.00)
Kupeli 1998a	0/30	0/30			Not estimable
Kupeli 1998b	0/30	2/36		8.02	0.24 (0.01–4.79)
van Melick 2003	0/46	1/50		5.06	0.36 (0.02–8.66)
Nuhoglu 2005	0/37	2/40		8.46	0.22 (0.01–4.35)
Patel 1997	0/6	0/6			Not estimable
Subtotal (95% CI)	452	485		100.00	0.18 (0.07–0.46)
Total events: 2 (TUVP), 26 (TURP)					
Test for heterogeneity: $\chi^2 = 1.24$, df = 6 ($p = 0.97$), $I^2 = 0\%$					
Test for overall effect: $z = 3.61$ ($p = 0.0003$)					
02 Urinary tract infection					
Erdagi 1999	1/25	5/20		24.36	0.16 (0.02–1.26)
Galluci 1998	1/70	4/80		16.37	0.29 (0.03–2.50)
Gotoh 1999	0/23	0/28			Not estimable
Hammadeh 2003	3/52	2/52		8.77	1.50 (0.26–8.61)
Kaplan 1998	5/32	4/32		17.54	1.25 (0.37–4.23)
Kupeli 1998b	4/30	3/36		11.96	1.60 (0.39–6.60)
van Melick 2003	2/46	5/50		21.01	0.43 (0.09–2.13)
Subtotal (95% CI)	278	298		100.00	0.72 (0.39–1.32)
Total events: 16 (TUVP), 23 (TURP)					
Test for heterogeneity: $\chi^2 = 5.81$, df = 5 ($p = 0.33$), $I^2 = 13.9\%$					
Test for overall effect: $z = 1.07$ ($p = 0.29$)					
03 Urinary retention					
Ekengren 2000	0/26	1/28		15.75	0.36 (0.02–8.42)
Galluci 1998	12/70	3/80		30.49	4.57 (1.34–15.54)
Hammadeh 2003	12/52	4/52		43.56	3.00 (1.03–8.70)
Kupeli 1998a	0/30	0/30			Not estimable
Kupeli 1998b	1/30	0/36		4.96	3.58 (0.15–84.81)
van Melick 2003	0/46	0/50			Not estimable
Nuhoglu 2005	1/37	0/40		5.24	3.24 (0.14–77.06)
Subtotal (95% CI)	291	316		100.00	3.10 (1.53–6.29)
Total events: 26 (TUVP), 8 (TURP)					
Test for heterogeneity: $\chi^2 = 2.19$, df = 4 ($p = 0.70$), $I^2 = 0\%$					
Test for overall effect: $z = 3.14$ ($p = 0.002$)					
04 Clot retention					
Erdagi 1999	0/20	5/20		33.69	0.09 (0.01–1.54)
Hammadeh 2003	0/52	5/52		33.69	0.09 (0.01–1.60)
Kaplan 1998	3/32	2/32		12.25	1.50 (0.27–8.38)
McAllister 2003	1/107	2/120		11.55	0.56 (0.05–6.10)
van Melick 2003	0/46	1/50		8.81	0.36 (0.02–8.66)
Subtotal (95% CI)	257	274		100.00	0.34 (0.13–0.88)
Total events: 4 (TUVP), 15 (TURP)					
Test for heterogeneity: $\chi^2 = 4.66$, df = 4 ($p = 0.32$), $I^2 = 14.2\%$					
Test for overall effect: $z = 2.23$ ($p = 0.03$)					



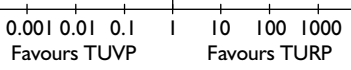
Review: BPE
Comparison: 11 TUVP vs TURP
Outcome: 02 Complications

Study or subcategory	TUVP *n/N*	TURP *n/N*	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
05 TUR syndrome					
Erdagi 1999	0/20	0/20			Not estimable
Gotoh 1999	0/23	0/28			Not estimable
Hammadeh 2003	0/52	0/52			Not estimable
Kaplan 1998	0/32	1/32		24.16	0.33 (0.01–7.89)
Kupeli 1998a	0/30	0/30			Not estimable
Netto 1999	0/40	0/38			Not estimable
Wang 2002	3/97	5/109		75.84	0.67 (0.17–2.75)
Subtotal (95% CI)	294	309		100.00	0.59 (0.17–2.12)
Total events: 3 (TUVP), 6 (TURP)					
Test for heterogeneity: $\chi^2 = 0.16$, df = 1 ($p = 0.69$), $I^2 = 0\%$					
Test for overall effect: $z = 0.81$ ($p = 0.42$)					
06 Cardiovascular events					
Ekengren 2000	1/26	0/28		5.15	3.22 (0.14–75.75)
Fowler 2005	1/115	1/120		10.44	1.04 (0.07–16.49)
Hammadeh 2003	3/52	6/52		64.03	0.50 (0.13–1.89)
van Melick 2003	0/46	1/50		15.35	0.36 (0.02–8.66)
Wang 2002	1/97	0/109		5.03	3.37 (0.14–81.71)
Subtotal (95% CI)	336	359		100.00	0.82 (0.32–2.08)
Total events: 6 (TUVP), 8 (TURP)					
Test for heterogeneity: $\chi^2 = 2.29$, df = 4 ($p = 0.68$), $I^2 = 0\%$					
Test for overall effect: $z = 0.42$ ($p = 0.68$)					
07 Cardiovascular events – mortality					
Ekengren 2000	1/26	0/28		5.75	3.22 (0.14–75.75)
Hammadeh 2003	3/52	6/52		71.50	0.50 (0.13–1.89)
van Melick 2003	0/46	1/50		17.14	0.36 (0.02–8.66)
Wang 2002	1/97	0/109		5.61	3.37 (0.14–81.71)
Subtotal (95% CI)	221	239		100.00	0.79 (0.30–2.13)
Total events: 5 (TUVP), 7 (TURP)					
Test for heterogeneity: $\chi^2 = 2.24$, df = 3 ($p = 0.52$), $I^2 = 0\%$					
Test for overall effect: $z = 0.46$ ($p = 0.65$)					
08 Mortality					
Ekengren 2000	0/28	1/26		18.89	0.31 (0.01–7.30)
Hammadeh 2003	6/52	3/52		36.48	2.00 (0.53–7.57)
van Melick 2003	4/50	2/46		25.33	1.84 (0.35–9.58)
Wang 2002	0/109	1/97		19.29	0.30 (0.01–7.21)
Subtotal (95% CI)	239	221		100.00	1.31 (0.54–3.16)
Total events: 10 (TUVP), 7 (TURP)					
Test for heterogeneity: $\chi^2 = 2.18$, df = 3 ($p = 0.54$), $I^2 = 0\%$					
Test for overall effect: $z = 0.60$ ($p = 0.55$)					



Review: BPE
Comparison: 11 TUVP vs TURP
Outcome: 03 Complications

Study or subcategory	TUVP n/N	TURP n/N	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
09 Incontinence					
Erdagi 1999	5/20	12/20		15.75	0.42 (0.18–0.96)
Galluci 1998	4/70	7/80		8.57	0.65 (0.20–2.14)
Gotoh 1999	0/23	0/28			Not estimable
Hammadeh 2003	0/52	0/52			Not estimable
Kaplan 1998	17/32	19/32		24.93	0.89 (0.58–1.38)
Kupeli 1998a	6/30	13/30		17.06	0.46 (0.20–1.05)
Kupeli 1998b	17/32	19/32		24.93	0.89 (0.58–1.38)
McAllister 2003	1/107	1/120		1.24	1.12 (0.07–17.71)
van Melick 2003	7/46	4/50		5.03	1.90 (0.60–6.08)
Nuhoglu 2005	2/37	1/40		1.26	2.16 (0.20–22.86)
Wang 2002	5/97	1/109		1.24	5.62 (0.67–47.26)
Subtotal (95% CI)	546	593		100.00	0.85 (0.66–1.11)
Total events: 64 (TUVP), 77 (TURP)					
Test for heterogeneity: $\chi^2 = 10.70$, df = 8 ($p = 0.22$), $I^2 = 25.2\%$					
Test for overall effect: $z = 1.20$ ($p = 0.23$)					
10 Irritative urinary symptoms					
Ekengren 2000	1/26	0/28		1.77	3.22 (0.14–75.75)
Hammadeh 2003	13/52	18/52		66.15	0.72 (0.40–1.32)
Kaplan 1998	5/32	4/32		14.70	1.25 (0.37–4.23)
Kupeli 1998b	10/30	3/36		10.02	4.00 (1.21–13.22)
Shokeir 1997	3/35	2/35		7.35	1.50 (0.27–8.43)
Subtotal (95% CI)	175	183		100.00	1.23 (0.79–1.92)
Total events: 32 (TUVP), 27 (TURP)					
Test for heterogeneity: $\chi^2 = 7.16$, df = 4 ($p = 0.13$), $I^2 = 44.1\%$					
Test for overall effect: $z = 0.91$ ($p = 0.36$)					
11 Strictures					
Cetinkaya 1996	1/23	0/23		3.27	3.00 (0.13–70.02)
Ekengren 2000	2/26	0/28		3.16	5.37 (0.27–106.88)
Erdagi 1999	0/20	1/20		9.82	0.33 (0.01–7.72)
Gotoh 1999	0/23	0/28			Not estimable
Hammadeh 2003	2/52	8/52		52.38	0.25 (0.06–1.12)
Kaplan 1998	1/32	1/32		6.55	1.00 (0.07–15.30)
Kupeli 1998a	0/30	0/30			Not estimable
Kupeli 1998b	0/30	0/36			Not estimable
van Melick 2003	1/46	2/50		12.55	0.54 (0.05–5.80)
Netto 1999	0/40	0/38			Not estimable
Wang 2002	5/96	2/109		12.27	2.84 (0.56–14.30)
Subtotal (95% CI)	418	446		100.00	0.91 (0.45–1.85)
Total events: 12 (TUVP), 14 (TURP)					
Test for heterogeneity: $\chi^2 = 7.23$, df = 6 ($p = 0.30$), $I^2 = 17.0\%$					
Test for overall effect: $z = 0.25$ ($p = 0.80$)					
12 Retrograde ejaculation					
Erdagi 1999	2/16	12/17		12.61	0.18 (0.05–0.67)
Fowler 2005	31/64	35/59		39.46	0.82 (0.59–1.14)
Hammadeh 2003	21/29	25/28		27.56	0.81 (0.63–1.05)
Kaplan 1998	17/20	13/17		15.23	1.11 (0.81–1.53)
Nuhoglu 2005	5/35	4/24		5.14	0.86 (0.26–2.87)
Shokeir 1997	18/18	15/15			Not estimable
Subtotal (95% CI)	182	160		100.00	0.78 (0.64–0.95)
Total events: 94 (TUVP), 104 (TURP)					
Test for heterogeneity: $\chi^2 = 9.55$, df = 4 ($p = 0.05$), $I^2 = 58.1\%$					
Test for overall effect: $z = 2.51$ ($p = 0.01$)					

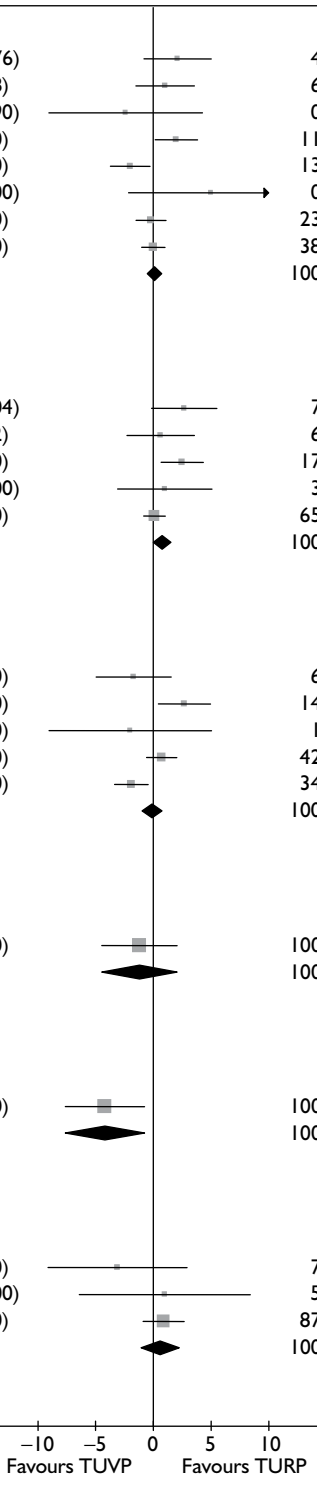


Review: BPE
Comparison: 11 TUVP vs TURP
Outcome: 03 Complications

Study or subcategory	TUVP *n/N*	TURP *n/N*	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
13 Erectile dysfunction					
Fowler 2005	12/64	8/43		26.57	1.01 (0.45–2.26)
Hammadeh 2003	5/29	3/28		8.47	1.61 (0.42–6.11)
Kaplan 1998	1/20	0/18		1.46	2.71 (0.12–62.70)
Kupeli 1998a	16/30	19/30		52.74	0.84 (0.55–1.30)
Netto 1999	0/40	0/38			Not estimable
Nuhoglu 2005	2/20	4/28		9.25	0.70 (0.14–3.46)
Shokeir 1997	2/18	0/15		1.51	4.21 (0.22–81.47)
Patel 1997	0/6	0/6			Not estimable
Subtotal (95% CI)	227	206		100.00	1.02 (0.70–1.47)
Total events: 38 (TUVP), 34 (TURP)					
Test for heterogeneity: $\chi^2 = 2.65$, df = 5 ($p = 0.75$), $I^2 = 0\%$					
Test for overall effect: $z = 0.08$ ($p = 0.93$)					
14 Rehospitalisation					
Fowler 2005	1/107	2/114		100.00	0.53 (0.05–5.79)
Subtotal (95% CI)	107	114		100.00	0.53 (0.05–5.79)
Total events: 1 (TUVP), 2 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.52$ ($p = 0.60$)					
15 Reoperation					
Ekengren 2000	2/26	1/28		6.54	2.15 (0.21–22.37)
Hammadeh 2003	7/52	7/52		47.52	1.00 (0.38–2.65)
Kupeli 1998b	1/30	0/36		3.09	3.58 (0.15–84.81)
McAllister 2003	1/115	4/120		26.58	0.26 (0.03–2.30)
van Melick 2003	2/46	2/50		13.01	1.09 (0.16–7.40)
Nathan 1996	0/20	0/20			Not estimable
Nuhoglu 2005	1/37	0/40		3.27	3.24 (0.14–77.06)
Subtotal (95% CI)	326	346		100.00	1.04 (0.53–2.07)
Total events: 14 (TUVP), 14 (TURP)					
Test for heterogeneity: $\chi^2 = 3.01$, df = 5 ($p = 0.70$), $I^2 = 0\%$					
Test for overall effect: $z = 0.12$ ($p = 0.90$)					

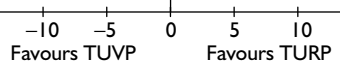
Review: BPE
Comparison: 11 TUVP vs TURP
Outcome: 04 Q_{max} (ml/s)

Study or subcategory	n	TUVP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Fowler 2005	111	21.23 (10.20)	108	19.12 (11.76)		4.64	2.11 (–0.81 to 5.03)
Galluci 1998	80	19.21 (8.14)	70	18.18 (7.68)		6.16	1.03 (–1.50 to 3.56)
Gotoh 1999	28	21.20 (9.40)	23	23.60 (13.90)		0.89	–2.40 (–9.06 to 4.26)
Kaplan 1998	32	16.80 (3.60)	32	14.80 (3.90)		11.70	2.00 (0.16–3.84)
Kupeli 1998a	30	17.70 (3.60)	30	19.70 (3.20)		13.32	–2.00 (–3.72 to –0.28)
van Melick 2003	15	25.00 (11.00)	19	20.00 (10.00)		0.77	5.00 (–2.16 to 12.16)
Nuhoglu 2005	38	17.50 (3.30)	35	17.70 (2.30)		23.53	–0.20 (–1.50 to 1.10)
Shokeir 1997	35	19.40 (2.10)	35	19.40 (2.20)		38.97	0.00 (–1.01 to 1.01)
Subtotal (95% CI)	369		352			100.00	0.10 (–0.53 to 0.73)
Test for heterogeneity: $\chi^2 = 14.73$, df = 7 ($p = 0.04$), $I^2 = 52.5\%$							
Test for overall effect: $z = 0.31$ ($p = 0.76$)							
02 6 months							
Fowler 2005	109	22.29 (10.25)	109	19.60 (11.04)		7.19	2.69 (–0.14 to 5.52)
Galluci 1998	80	20.77 (8.50)	70	20.13 (9.62)		6.73	0.64 (–2.28 to 3.56)
Kaplan 1998	32	18.10 (4.20)	32	15.60 (3.20)		17.18	2.50 (0.67–4.33)
van Melick 2003	37	24.00 (7.00)	33	23.00 (10.00)		3.44	1.00 (–3.09 to 5.09)
Shokeir 1997	35	19.30 (2.00)	35	19.20 (2.00)		65.47	0.10 (–0.84 to 1.04)
Subtotal (95% CI)	293		279			100.00	0.77 (0.01–1.52)
Test for heterogeneity: $\chi^2 = 7.19$, df = 4 ($p = 0.13$), $I^2 = 44.4\%$							
Test for overall effect: $z = 1.98$ ($p = 0.05$)							
03 12 months							
Hammadeh 2003	51	20.80 (7.70)	51	22.50 (9.00)		6.95	–1.70 (–4.95 to 1.55)
Kaplan 1998	31	19.60 (4.90)	30	16.90 (4.10)		14.33	2.70 (0.44–4.96)
van Melick 2003	11	21.00 (8.00)	9	23.00 (8.00)		1.48	–2.00 (–9.05 to 5.05)
Netto 1999	38	16.16 (2.48)	40	15.43 (3.40)		42.43	0.73 (–0.59 to 2.05)
Shokeir 1997	35	18.20 (3.00)	35	20.10 (3.20)		34.80	–1.90 (–3.35 to –0.45)
Subtotal (95% CI)	166		165			100.00	–0.11 (–0.97 to 0.74)
Test for heterogeneity: $\chi^2 = 14.50$, df = 4 ($p = 0.006$), $I^2 = 72.4\%$							
Test for overall effect: $z = 0.26$ ($p = 0.80$)							
04 2 years							
Hammadeh 2003	47	21.20 (8.50)	47	22.40 (7.70)		100.00	–1.20 (–4.48 to 2.08)
Subtotal (95% CI)	47		47			100.00	–1.20 (–4.48 to 2.08)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.72$ ($p = 0.47$)							
05 3 years							
Hammadeh 2003	40	18.00 (7.10)	40	22.20 (8.50)		100.00	–4.20 (–7.63 to –0.77)
Subtotal (95% CI)	40		40			100.00	–4.20 (–7.63 to –0.77)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.40$ ($p = 0.02$)							
06 5 years							
Hammadeh 2003	27	17.90 (13.10)	26	21.00 (9.00)		7.60	–3.10 (–9.13 to 2.93)
van Melick 2003a	15	17.00 (8.00)	12	16.00 (11.00)		5.01	1.00 (–6.42 to 8.42)
Nuhoglu 2005	23	13.80 (2.90)	21	12.90 (3.10)		87.39	0.90 (–0.88 to 2.68)
Subtotal (95% CI)	65		59			100.00	0.60 (–1.06 to 2.26)
Test for heterogeneity: $\chi^2 = 1.57$, df = 2 ($p = 0.46$), $I^2 = 0\%$							
Test for overall effect: $z = 0.71$ ($p = 0.48$)							



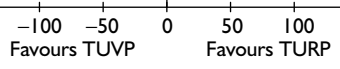
Review: BPE
Comparison: 11 TUVP vs TURP
Outcome: 05 MUF (ml/s)

Study or subcategory	*n*	TUVP Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Nuhoglu 2005	38	10.50 (2.40)	35	9.80 (1.70)		100.00	0.70 (–0.25 to 1.65)
Subtotal (95% CI)	38		35			100.00	0.70 (–0.25 to 1.65)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.45$ ($p = 0.15$)							
03 5 years							
Nuhoglu 2005	23	8.30 (2.90)	21	7.90 (2.30)		100.00	0.40 (–1.14 to 1.94)
Subtotal (95% CI)	23		21			100.00	0.40 (–1.14 to 1.94)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.51$ ($p = 0.61$)							



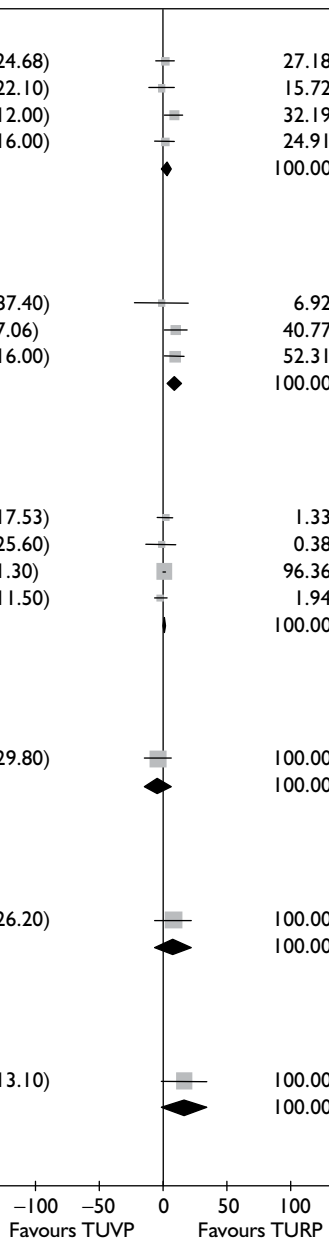
Review: BPE
Comparison: 11 TUVP vs TURP
Outcome: 06 Voided volume (ml)

Study or subcategory	*n*	TUVP Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 12 months							
Kaplan 1998	32	43.60 (22.40)	32	34.20 (19.60)		100.00	9.40 (–0.91 to 19.71)
Subtotal (95% CI)	32		32			100.00	9.40 (–0.91 to 19.71)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.79$ ($p = 0.07$)							



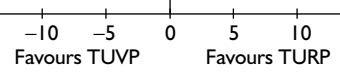
Review: BPE
Comparison: 11 TUVP vs TURP
Outcome: 07 Residual volume (ml)

Study or subcategory	n	TUVP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Galluci 1998	70	8.69 (21.58)	80	7.27 (24.68)		27.18	1.42 (–5.98 to 8.82)
Gotoh 1999	23	8.10 (12.90)	28	9.30 (22.10)		15.72	–1.20 (–10.94 to 8.54)
Nuhoglu 2005	35	31.40 (17.00)	38	23.00 (12.00)		32.19	8.40 (1.60–15.20)
Shokeir 1997	35	31.40 (17.00)	35	30.00 (16.00)		24.91	1.40 (–6.33 to 9.13)
Subtotal (95% CI)	163		181			100.00	3.25 (–0.61 to 7.11)
Test for heterogeneity: $\chi^2 = 3.46$, df = 3 ($p = 0.33$), $I^2 = 13.3\%$							
Test for overall effect: $z = 1.65$ ($p = 0.10$)							
02 6 months							
Fowler 2005	109	71.00 (72.00)	109	71.80 (87.40)		6.92	–0.80 (–22.06 to 20.46)
Galluci 1998	70	11.86 (36.81)	80	1.71 (7.06)		40.77	10.15 (1.39–18.91)
Shokeir 1997	35	31.40 (17.00)	35	22.10 (16.00)		52.31	9.30 (1.57–17.03)
Subtotal (95% CI)	214		224			100.00	8.95 (3.35–14.54)
Test for heterogeneity: $\chi^2 = 0.89$, df = 2 ($p = 0.64$), $I^2 = 0\%$							
Test for overall effect: $z = 3.13$ ($p = 0.002$)							
03 12 months							
Galluci 1998	70	5.24 (20.40)	80	3.15 (17.53)		1.33	2.09 (–4.04 to 8.22)
Hammadeh 2003	51	24.30 (33.10)	51	25.80 (25.60)		0.38	–1.50 (–12.98 to 9.98)
Netto 1999	40	12.30 (1.90)	38	11.20 (1.30)		96.36	1.10 (0.38–1.82)
Shokeir 1997	35	23.40 (10.10)	35	25.30 (11.50)		1.94	–1.90 (–6.97 to 3.17)
Subtotal (95% CI)	196		204			100.00	1.05 (0.34–1.75)
Test for heterogeneity: $\chi^2 = 1.62$, df = 3 ($p = 0.66$), $I^2 = 0\%$							
Test for overall effect: $z = 2.90$ ($p = 0.004$)							
04 2 years							
Hammadeh 2003	47	18.80 (21.20)	47	22.80 (29.80)		100.00	–4.00 (–14.46 to 6.46)
Subtotal (95% CI)	47		47			100.00	–4.00 (–14.46 to 6.46)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.75$ ($p = 0.45$)							
05 3 years							
Hammadeh 2003	40	30.00 (38.00)	40	21.90 (26.20)		100.00	8.10 (–6.20 to 22.40)
Subtotal (95% CI)	40		40			100.00	8.10 (–6.20 to 22.40)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.11$ ($p = 0.27$)							
06 5 years							
Hammadeh 2003	26	27.30 (44.30)	27	10.70 (13.10)		100.00	16.60 (–1.13 to 34.33)
Subtotal (95% CI)	26		27			100.00	16.60 (–1.13 to 34.33)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.84$ ($p = 0.07$)							



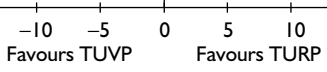
Review: BPE
Comparison: 11 TUVP vs TURP
Outcome: 08 Detrusor pressure(cmH_2O)

Study or subcategory	n	TUVP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Galluci 1998	70	38.23 (15.14)	80	41.53 (15.29)		100.00	−3.30 (−8.18 to 1.58)
Subtotal (95% CI)	70		80			100.00	−3.30 (−8.18 to 1.58)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.33$ ($p = 0.18$)							



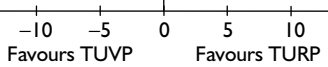
Review: BPE
Comparison: 11 TUVP vs TURP
Outcome: 09 Prostate size (ml)

Study or subcategory	n	TUVP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Kupeli 1998a	30	27.80 (4.10)	30	26.20 (3.40)		71.73	1.60 (−0.31 to 3.51)
Nuhoglu 2005	35	21.00 (6.80)	38	19.00 (6.40)		28.27	2.00 (−1.04 to 5.04)
Subtotal (95% CI)	65		68			100.00	1.71 (0.10–3.33)
Test for heterogeneity: $\chi^2 = 0.05$, df = 1 ($p = 0.83$), $I^2 = 0\%$							
Test for overall effect: $z = 2.08$ ($p = 0.04$)							
02 5 years							
Nuhoglu 2005	21	24.00 (7.10)	23	23.00 (6.90)		100.00	1.00 (−3.14 to 5.14)
Subtotal (95% CI)	21		23			100.00	1.00 (−3.14 to 5.14)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.47$ ($p = 0.64$)							



Review: BPE
Comparison: 11 TUVP vs TURP
Outcome: 10 Quality of life

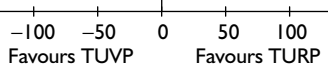
Study or subcategory	n	TUVP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 3 months							
Fowler 2005	105	2.60 (1.82)	109	2.30 (1.73)		100.00	0.30 (–0.18 to 0.78)
Subtotal (95% CI)	105		109			100.00	0.30 (–0.18 to 0.78)
Test for heterogeneity: not applicable							
Test for overall effect: z = 1.24 (p = 0.22)							
02 6 months							
Fowler 2005	107	2.00 (1.63)	108	1.60 (1.34)		31.33	0.40 (0.00–0.80)
van Melick 2003a	46	1.00 (0.80)	50	0.50 (0.50)		68.67	0.50 (0.23–0.77)
Subtotal (95% CI)	153		158			100.00	0.47 (0.25–0.69)
Test for heterogeneity: χ^2 = 0.17, df = 1 (p = 0.68), I^2 = 0%							
Test for overall effect: z = 4.11 (p < 0.0001)							
03 12 months							
Hammadeh 2003	51	1.20 (1.00)	51	1.50 (1.00)		50.14	–0.30 (–0.69 to 0.09)
van Melick 2003a	34	1.00 (0.90)	41	0.60 (0.80)		49.86	0.40 (0.01–0.79)
Subtotal (95% CI)	85		92			100.00	0.05 (–0.23 to 0.32)
Test for heterogeneity: χ^2 = 6.23, df = 1 (p = 0.01), I^2 = 83.9%							
Test for overall effect: z = 0.35 (p = 0.73)							
04 2 years							
Fowler 2005	89	1.90 (1.62)	80	1.80 (1.34)		57.15	0.10 (–0.35 to 0.55)
Hammadeh 2003	40	1.00 (0.90)	40	1.60 (1.40)		42.85	–0.60 (–1.12 to –0.08)
Subtotal (95% CI)	129		120			100.00	–0.20 (–0.54 to 0.14)
Test for heterogeneity: χ^2 = 4.04, df = 1 (p = 0.04), I^2 = 75.3%							
Test for overall effect: z = 1.16 (p = 0.25)							
05 3 years							
Hammadeh 2003	40	1.00 (0.90)	40	1.60 (1.40)		100.00	–0.60 (–1.12 to –0.08)
Subtotal (95% CI)	40		40			100.00	–0.60 (–1.12 to –0.08)
Test for heterogeneity: not applicable							
Test for overall effect: z = 2.28 (p = 0.02)							
06 5 years							
Hammadeh 2003	26	1.10 (1.20)	27	1.70 (1.40)		100.00	–0.60 (–1.30 to 0.10)
Subtotal (95% CI)	26		27			100.00	–0.60 (–1.30 to 0.10)
Test for heterogeneity: not applicable							
Test for overall effect: z = 1.68 (p = 0.09)							



Review: BPE
Comparison: 11 TUVP vs TURP
Outcome: 11 Duration of operation (min)

Study or subcategory	n	TUVP Mean (SD)	n	TURP Mean (SD)	WMD (random) 95% CI	Weight %	WMD (random) 95% CI
Cetinkaga 1996	23	41.60 (22.10)	23	52.40 (20.00)		11.49	−10.80 (−22.98 to 1.38)
Gotoh 1999	23	60.00 (28.00)	28	61.10 (29.00)		10.45	−1.10 (−16.79 to 14.59)
Hammadeh 2003	55	25.90 (8.30)	54	21.60 (8.40)		13.39	4.30 (1.16–7.44)
Kaplan 1998	32	47.60 (17.60)	32	34.60 (11.20)		12.74	13.00 (5.77–20.23)
van Melick 2003	46	50.00 (16.00)	50	58.00 (26.00)		12.45	−8.00 (−16.56 to 0.56)
Netto 1999	40	29.78 (11.78)	38	56.32 (8.36)		13.22	−26.54 (−31.06 to −22.02)
Nuhoglu 2005	37	45.00 (13.20)	40	42.00 (9.50)		13.12	3.00 (−2.17 to 8.17)
Shokeir 1997	35	52.00 (12.50)	35	39.70 (8.80)		13.14	12.30 (7.24–17.36)
Total (95% CI)	291		300			100.00	−1.62 (−12.23 to 8.99)

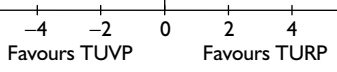
Test for heterogeneity: $\chi^2 = 182.06$, df = 7 ($p < 0.00001$), $I^2 = 96.2\%$
Test for overall effect: $z = 0.30$ ($p = 0.76$)



Review: BPE
Comparison: 11 TUVP vs TURP
Outcome: 12 Hospital length of stay

Study or subcategory	n	TUVP Mean (SD)	n	TURP Mean (SD)	WMD (random) 95% CI	Weight %	WMD (random) 95% CI
Fowler 2005	115	4.40 (3.56)	120	4.60 (4.19)		4.66	−0.20 (−1.19 to 0.79)
Galluci 1998	70	3.90 (0.24)	80	4.69 (0.22)		18.11	−0.79 (−0.86 to −0.72)
Hammadeh 2003	52	2.20 (0.59)	52	3.10 (0.76)		15.28	−0.90 (−1.16 to −0.64)
Kaplan 1998	32	1.30 (0.50)	32	2.60 (0.90)		13.33	−1.30 (−1.66 to −0.94)
Kupeli 1998b	30	1.92 (0.89)	30	4.16 (1.46)		8.68	−2.24 (−2.85 to −1.63)
van Melick 2003	46	3.40 (0.90)	50	3.90 (0.90)		13.25	−0.50 (−0.86 to −0.14)
Netto 1999	40	1.55 (0.75)	38	2.63 (0.63)		14.36	−1.08 (−1.39 to −0.77)
Shokeir 1997	35	1.50 (0.70)	35	2.50 (1.00)		12.35	−1.00 (−1.40 to −0.60)
Total (95% CI)	420		437			100.00	−1.00 (−1.25 to −0.75)

Test for heterogeneity: $\chi^2 = 36.41$, df = 7 ($p < 0.00001$), $I^2 = 80.8\%$
Test for overall effect: $z = 7.92$ ($p < 0.00001$)

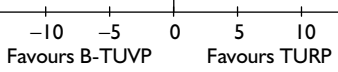


Appendix 9.12: B-TUVP versus TURP

Review: BPE
Comparison: 12 B-TUVP vs TURP
Outcome: 01 IPSS/AUA

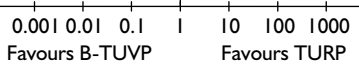
Study or subcategory	n	B-TUVP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 9 months							
Hon 2006	76	7.70 (6.80)	73	6.90 (5.80)		100.00	0.80 (−1.23 to 2.83)
Subtotal (95% CI)	76		73			100.00	0.80 (−1.23 to 2.83)

Test for heterogeneity: not applicable
Test for overall effect: $z = 0.77$ ($p = 0.44$)



Review: BPE
Comparison: 12 B-TUVP vs TURP
Outcome: 02 Complications

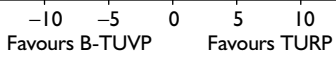
Study or subcategory	B-TUVP n/N	TURP n/N	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
01 Blood transfusion					
Hon 2006	0/81	4/79		100.00	0.11 (0.01–1.98)
Subtotal (95% CI)	81	79		100.00	0.11 (0.01–1.98)
Total events: 0 (B-TUVP), 4 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 1.50$ ($p = 0.13$)					
02 Urinary retention					
Dunsmuir 2003	10/30	1/21		100.00	7.00 (0.97–50.63)
Subtotal (95% CI)	30	21		100.00	7.00 (0.97–50.63)
Total events: 10 (B-TUVP), 1 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 1.93$ ($p = 0.05$)					
03 Stricture					
Hon 2006	1/81	3/79		100.00	0.33 (0.03–3.06)
Subtotal (95% CI)	81	79		100.00	0.33 (0.03–3.06)
Total events: 1 (B-TUVP), 3 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.98$ ($p = 0.33$)					
04 Clot retention					
Dunsmuir 2003	0/30	4/21		100.00	0.08 (0.00–1.39)
Subtotal (95% CI)	30	21		100.00	0.08 (0.00–1.39)
Total events: 0 (B-TUVP), 4 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 1.73$ ($p = 0.08$)					
05 Reoperation					
Hon 2006	1/81	2/79		100.00	0.49 (0.05–5.27)
Subtotal (95% CI)	81	79		100.00	0.49 (0.05–5.27)
Total events: 1 (B-TUVP), 2 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.59$ ($p = 0.55$)					



Review: **BPE**
Comparison: **12 B-TUVP vs TURP**
Outcome: **04 Quality of life**

Study or subcategory	*n*	B-TUVP Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 9 months							
Hon 2006	76	1.70 (1.50)	73	1.50 (1.50)		100.00	0.20 (–0.28 to 0.68)
Subtotal (95% CI)	76		73			100.00	0.20 (–0.28 to 0.68)

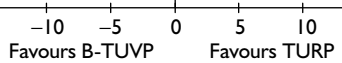
Test for heterogeneity: not applicable
Test for overall effect: $z = 0.81$ ($p = 0.42$)



Review: **BPE**
Comparison: **12 B-TUVP vs TURP**
Outcome: **05 Q_{max} (ml/s)**

Study or subcategory	*n*	B-TUVP Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 9 months							
Hon 2006	76	25.60 (15.60)	73	23.50 (15.20)		100.00	2.10 (–2.85 to 7.05)
Subtotal (95% CI)	76		73			100.00	2.10 (–2.85 to 7.05)

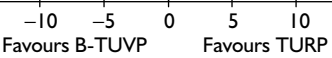
Test for heterogeneity: not applicable
Test for overall effect: $z = 0.83$ ($p = 0.41$)



Review: **BPE**
Comparison: **12 B-TUVP vs TURP**
Outcome: **06 Mean urine flow (ml/s)**

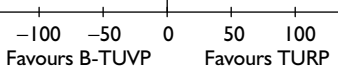
Study or subcategory	*n*	B-TUVP Mean (SD)	*n*	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 9 months							
Hon 2006	76	15.00 (9.40)	73	11.90 (7.10)		100.00	3.10 (0.43–5.77)
Subtotal (95% CI)	76		73			100.00	3.10 (0.43–5.77)

Test for heterogeneity: not applicable
Test for overall effect: $z = 2.28$ ($p = 0.02$)



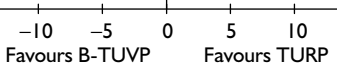
Review: **BPE**
Comparison: **12 B-TUVP vs TURP**
Outcome: **07 Residual volume (ml)**

Study or subcategory	n	B-TUVP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 9 months							
Hon 2006	76	64.00 (65.00)	73	69.00 (67.00)		100.00	–5.00 (–26.21 to 16.21)
Subtotal (95% CI)	76		73			100.00	–5.00 (–26.21 to 16.21)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.46$ ($p = 0.64$)							
Total (95% CI)	76		73			100.00	–5.00 (–26.21 to 16.21)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.46$ ($p = 0.64$)							



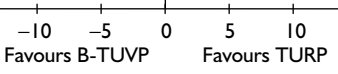
Review: BPE
Comparison: 12 B-TUVP vs TURP
Outcome: 08 Duration of operation

Study or subcategory	n	B-TUVP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
Hon 2006	81	32.60 (13.40)	79	28.50 (15.20)		100.00	4.10 (–0.34 to 8.54)
Total (95% CI)	81		79			100.00	4.10 (–0.34 to 8.54)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.81$ ($p = 0.07$)							



Review: BPE
Comparison: 12 B-TUVP vs TURP
Outcome: 09 Length of hospital stay

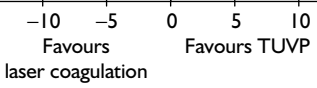
Study or subcategory	n	B-TUVP Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
Hon 2006	81	3.00 (0.90)	79	3.40 (1.10)		100.00	–0.40 (–0.71 to –0.09)
Total (95% CI)	81		79			100.00	–0.40 (–0.71 to –0.09)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 2.51$ ($p = 0.01$)							



Appendix 9.13: Laser coagulation versus TUVP

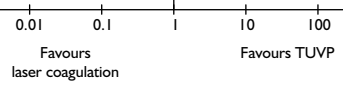
Review: BPE
Comparison: 15 Laser coagulation vs TUVP
Outcome: 01 IPSS/AUA

Study or subcategory	*n*	Laser coagulation Mean (SD)	*n*	TUVP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 12 months							
Abdel-Khalek 2003	89	13.30 (6.00)	89	5.90 (3.50)		100.00	7.40 (5.96–8.84)
Subtotal (95% CI)	89		89			100.00	7.40 (5.96–8.84)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 10.05$ ($p < 0.00001$)							
02 2 years							
Abdel-Khalek 2003	86	12.20 (5.60)	84	5.20 (3.30)		100.00	7.00 (5.62–8.38)
Subtotal (95% CI)	86		84			100.00	7.00 (5.62–8.38)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 9.96$ ($p < 0.00001$)							
03 3 years							
Abdel-Khalek 2003	73	13.10 (5.70)	82	4.80 (2.60)		100.00	8.30 (6.88–9.72)
Subtotal (95% CI)	73		82			100.00	8.30 (6.88–9.72)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 11.43$ ($p < 0.00001$)							
04 4 years							
Abdel-Khalek 2003	62	11.90 (6.10)	78	3.70 (1.30)		100.00	8.20 (6.65–9.75)
Subtotal (95% CI)	62		78			100.00	8.20 (6.65–9.75)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 10.40$ ($p < 0.00001$)							



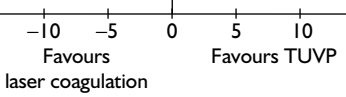
Review: BPE
Comparison: 15 Laser coagulation vs TUVP
Outcome: 03 Complications

Study or subcategory	Laser coagulation n/N	TUVP n/N	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
01 Bleeding					
Abdel-Khalek 2003	0/90	1/90		100.00	0.33 (0.01–8.08)
Subtotal (95% CI)	90	90		100.00	0.33 (0.01–8.08)
Total events: 0 (Laser coagulation), 1 (TUVP)					
Test for heterogeneity: not applicable					
Test for overall effect: z = 0.68 (p = 0.50)					
02 Blood transfusion					
Narayan 1995	0/32	0/32			Not estimable
Subtotal (95% CI)	0	0			Not estimable
Total events: 0 (Laser coagulation), 0 (TUVP)					
Test for heterogeneity: not applicable					
Test for overall effect: not applicable					
03 Urinary retention					
Abdel-Khalek 2003	9/90	2/90		42.47	4.50 (1.00–20.25)
Narayan 1995	8/32	2/32		42.47	4.00 (0.92–17.40)
Shingleton 1998a	3/11	1/20		15.07	5.45 (0.64–46.37)
Subtotal (95% CI)	133	142		100.00	4.43 (1.72–11.41)
Total events: 20 (Laser coagulation), 5 (TUVP)					
Test for heterogeneity: χ^2 = 0.06, df = 2 (p = 0.97), I^2 = 0%					
Test for overall effect: z = 3.09 (p = 0.002)					
04 Urinary tract infection					
Narayan 1995	2/32	1/32		100.00	2.00 (0.19–20.97)
Subtotal (95% CI)	32	32		100.00	2.00 (0.19–20.97)
Total events: 2 (Laser coagulation), 1 (TUVP)					
Test for heterogeneity: not applicable					
Test for overall effect: z = 0.58 (p = 0.56)					
05 Cardiovascular events					
Abdel-Khalek 2003	1/90	2/90		100.00	0.50 (0.05–5.42)
Subtotal (95% CI)	90	90		100.00	0.50 (0.05–5.42)
Total events: 1 (Laser coagulation), 2 (TUVP)					
Test for heterogeneity: not applicable					
Test for overall effect: z = 0.57 (p = 0.57)					
06 Stricture					
Abdel-Khalek 2003	4/90	6/90		80.87	0.67 (0.19–2.28)
Narayan 1995	0/32	0/32			Not estimable
Shingleton 1998a	1/11	2/20		19.13	0.91 (0.09–8.93)
Subtotal (95% CI)	133	142		100.00	0.71 (0.24–2.10)
Total events: 5 (Laser coagulation), 8 (TUVP)					
Test for heterogeneity: χ^2 = 0.05, df = 1 (p = 0.81), I^2 = 0%					
Test for overall effect: z = 0.61 (p = 0.54)					
07 Urinary incontinence					
Narayan 1995	0/32	0/32			Not estimable
Subtotal (95% CI)	0	0			Not estimable
Total events: 0 (Laser coagulation), 0 (TUVP)					
Test for heterogeneity: not applicable					
Test for overall effect: not applicable					
08 Irritative urinary symptoms					
Narayan 1995	10/32	11/32		100.00	0.91 (0.45–1.83)
Subtotal (95% CI)	32	32		100.00	0.91 (0.45–1.83)
Total events: 10 (Laser coagulation), 11 (TUVP)					
Test for heterogeneity: not applicable					
Test for overall effect: z = 0.27 (p = 0.79)					
09 Erectile dysfucntion					
Abdel-Khalek 2003	0/49	4/53		75.30	0.12 (0.01–2.17)
Narayan 1995	0/32	0/32			Not estimable
Shingleton 1998a	1/11	2/20		24.70	0.91 (0.09–8.93)
Subtotal (95% CI)	92	105		100.00	0.31 (0.06–1.64)
Total events: 1 (Laser coagulation), 6 (TUVP)					
Test for heterogeneity: χ^2 = 1.25, df = 1 (p = 0.26), I^2 = 20.2%					
Test for overall effect: z = 1.37 (p = 0.17)					
10 Retrograde ejaculation					
Abdel-Khalek 2003	16/90	57/90		100.00	0.28 (0.18–0.45)
Subtotal (95% CI)	90	90		100.00	0.28 (0.18–0.45)
Total events: 16 (Laser coagulation), 57 (TUVP)					
Test for heterogeneity: not applicable					
Test for overall effect: z = 5.28 (p < 0.00001)					



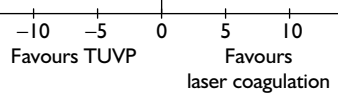
Review: BPE
Comparison: 15 Laser coagulation vs TUVP
Outcome: 04 Quality of life

Study or subcategory	*n*	Laser coagulation Mean (SD)	*n*	TUVP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 12 months							
Abdel-Khalek 2003	89	3.40 (0.40)	89	1.40 (0.50)		100.00	2.00 (1.87–2.13)
Subtotal (95% CI)	89		89			100.00	2.00 (1.87–2.13)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 29.47$ ($p < 0.00001$)							
02 2 years							
Abdel-Khalek 2003	84	3.20 (0.50)	86	1.40 (0.40)		100.00	1.80 (1.66–1.94)
Subtotal (95% CI)	84		86			100.00	1.80 (1.66–1.94)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 25.88$ ($p < 0.00001$)							
03 3 years							
Abdel-Khalek 2003	73	3.30 (0.60)	82	1.40 (0.50)		100.00	1.90 (1.72–2.08)
Subtotal (95% CI)	73		82			100.00	1.90 (1.72–2.08)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 21.27$ ($p < 0.00001$)							
04 4 years							
Abdel-Khalek 2003	62	3.10 (1.00)	78	1.30 (0.50)		100.00	1.80 (1.53–2.07)
Subtotal (95% CI)	62		78			100.00	1.80 (1.53–2.07)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 12.95$ ($p < 0.00001$)							



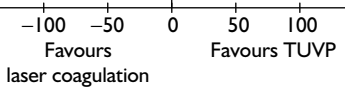
Review: BPE
Comparison: 15 Laser coagulation vs TUVP
Outcome: 05 Peak urine flow rate

Study or subcategory	n	Laser coagulation Mean (SD)	n	TUVP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
02 12 months							
Abdel-Khalek 2003	89	15.10 (6.00)	89	20.80 (7.40)		100.00	−5.70 (−7.68 to −3.72)
Subtotal (95% CI)	89		89			100.00	−5.70 (−7.68 to −3.72)
Test for heterogeneity: not applicable							
Test for overall effect: z = 5.64 (p < 0.00001)							
03 2 years							
Abdel-Khalek 2003	84	14.20 (6.30)	86	20.20 (4.40)		100.00	−6.00 (−7.64 to −4.36)
Subtotal (95% CI)	84		86			100.00	−6.00 (−7.64 to −4.36)
Test for heterogeneity: not applicable							
Test for overall effect: z = 7.18 (p < 0.00001)							
04 3 years							
Abdel-Khalek 2003	73	13.90 (5.30)	82	20.50 (6.20)		100.00	−6.60 (−8.41 to −4.79)
Subtotal (95% CI)	73		82			100.00	−6.60 (−8.41 to −4.79)
Test for heterogeneity: not applicable							
Test for overall effect: z = 7.14 (p < 0.00001)							
05 4 years							
Abdel-Khalek 2003	62	13.60 (3.60)	78	21.40 (4.10)		100.00	−7.80 (−9.08 to −6.52)
Subtotal (95% CI)	62		78			100.00	−7.80 (−9.08 to −6.52)
Test for heterogeneity: not applicable							
Test for overall effect: z = 11.97 (p < 0.00001)							



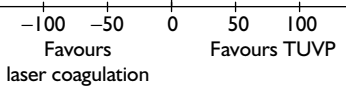
Review: BPE
Comparison: 15 Laser coagulation vs TUVP
Outcome: 06 Residual volume (ml)

Study or subcategory	*n*	Laser coagulation Mean (SD)	*n*	TUVP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 12 months							
Abdel-Khalek 2003	89	61.30 (49.20)	89	22.10 (22.00)		100.00	39.20 (28.00–50.40)
Subtotal (95% CI)	89		89			100.00	39.20 (28.00–50.40)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 6.86$ ($p < 0.00001$)							
02 2 years							
Abdel-Khalek 2003	84	73.20 (56.20)	86	33.40 (29.00)		100.00	39.80 (26.31–53.29)
Subtotal (95% CI)	84		86			100.00	39.80 (26.31–53.29)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 5.78$ ($p < 0.00001$)							
03 3 years							
Abdel-Khalek 2003	73	56.80 (47.00)	82	21.40 (18.00)		100.00	35.40 (23.94–46.86)
Subtotal (95% CI)	73		82			100.00	35.40 (23.94–46.86)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 6.05$ ($p < 0.00001$)							
04 4 years							
Abdel-Khalek 2003	62	64.60 (29.80)	78	25.10 (12.80)		100.00	39.50 (31.56–47.44)
Subtotal (95% CI)	62		78			100.00	39.50 (31.56–47.44)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 9.75$ ($p < 0.00001$)							



Review: BPE
Comparison: 15 Laser coagulation vs TUVP
Outcome: 07 Prostate size

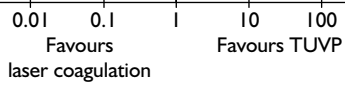
Study or subcategory	*n*	Laser coagulation Mean (SD)	*n*	TUVP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 12 months							
Abdel-Khalek 2003	89	33.00 (12.80)	89	25.80 (8.70)		100.00	7.20 (3.98–10.42)
Subtotal (95% CI)	89		89			100.00	7.20 (3.98–10.42)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 4.39$ ($p < 0.0001$)							
02 4 years							
Abdel-Khalek 2003	78	35.90 (11.00)	62	27.90 (8.60)		100.00	8.00 (4.75–11.25)
Subtotal (95% CI)	78		62			100.00	8.00 (4.75–11.25)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 4.83$ ($p < 0.00001$)							



Review: BPE
Comparison: 15 Laser coagulation vs TUVP
Outcome: 08 Reoperation

Study or subcategory	Laser coagulation n/N	TUVP n/N	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
Abdel-Khalek 2003	35/90	11/90		95.65	3.18 (1.73–5.86)
Narayan 1995	5/32	0/32		4.35	11.00 (0.63–191.04)
Total (95% CI)	122	122		100.00	3.52 (1.94–6.40)

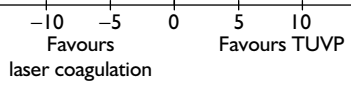
Total events: 40 (Laser coagulation), 11 (TUVP)
Test for heterogeneity: $\chi^2 = 0.72$, df = 1 ($p = 0.40$), $I^2 = 0\%$
Test for overall effect: $z = 4.13$ ($p < 0.0001$)



Review: BPE
Comparison: 15 Laser coagulation vs TUVP
Outcome: 09 Duration of operation

Study or subcategory	n	Laser coagulation Mean (SD)	n	TUVP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
Abdel-Khalek 2003	90	36.60 (16.40)	90	37.50 (15.00)		100.00	–0.90 (–5.49 to 3.69)
Total (95% CI)	90		90			100.00	–0.90 (–5.49 to 3.69)

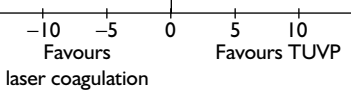
Test for heterogeneity: not applicable
Test for overall effect: $z = 0.38$ ($p = 0.70$)



Review: BPE
Comparison: 15 Laser coagulation vs TUVP
Outcome: 10 Length of hospital stay

Study or subcategory	n	Laser coagulation Mean (SD)	n	TUVP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
Abdel-Khalek 2003	90	1.10(0.50)	90	2.20(0.80)		100.00	–1.10 (–1.29 to –0.91)
Total (95% CI)	90		90			100.00	–1.10 (–1.29 to –0.91)

Test for heterogeneity: not applicable
Test for overall effect: $z = 11.06$ ($p < 0.00001$)



Appendix 9.14: All interventions

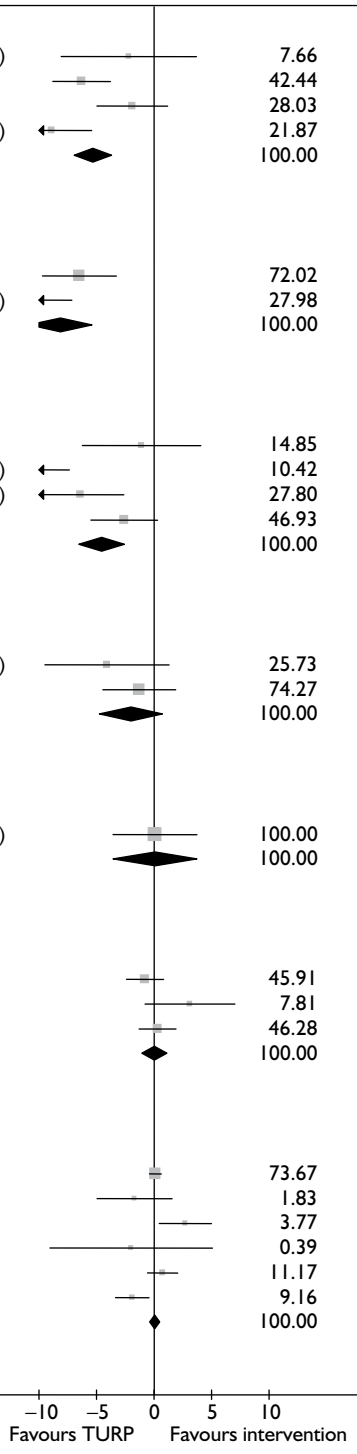
Review: BPE
Comparison: 16 Q_{max}
Outcome: 01 3 months

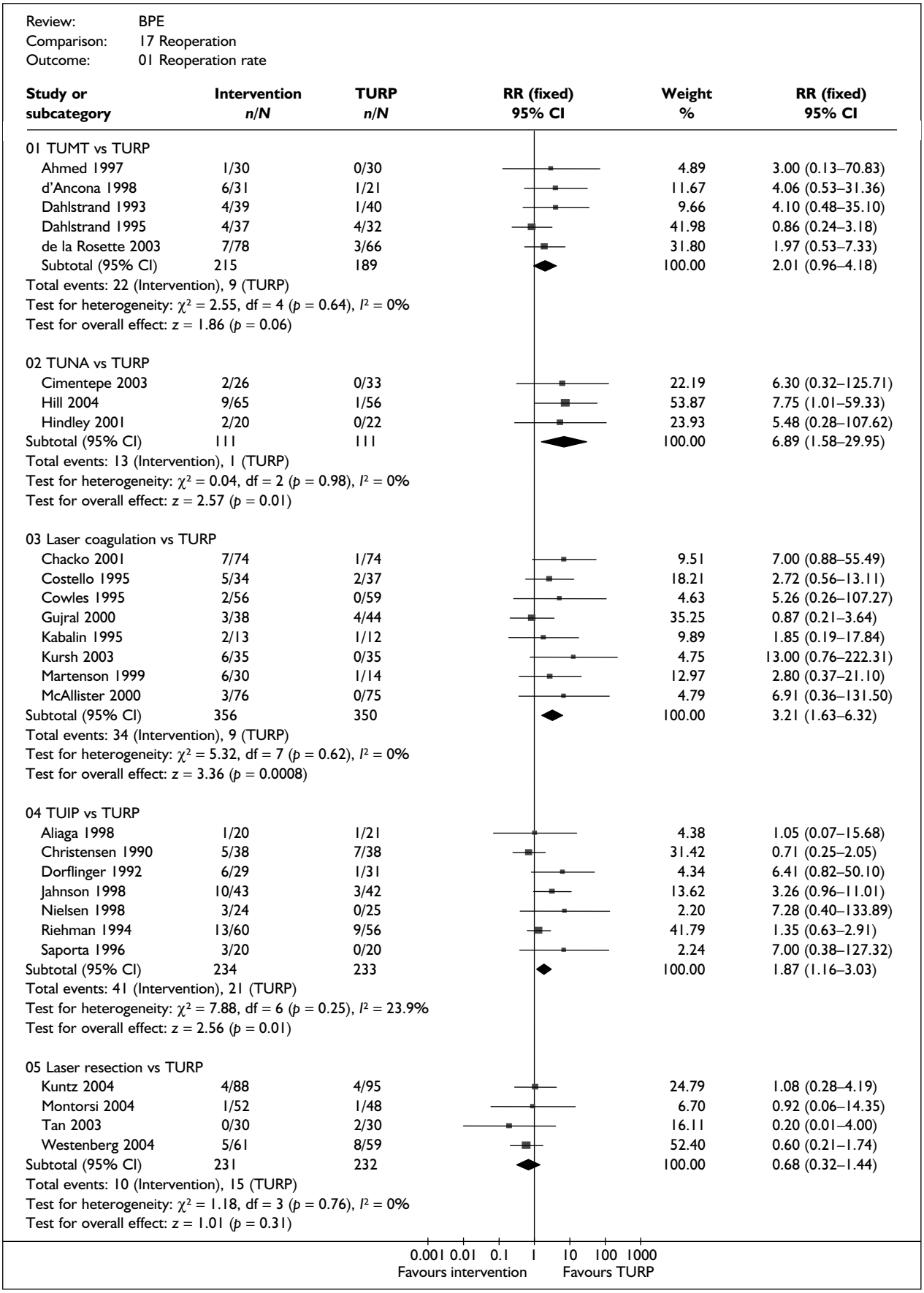
Study or subcategory	n	Intervention Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 TUMT vs TURP							
d'Ancona 1998	31	15.50 (8.00)	21	19.60 (11.20)		9.76	−4.10 (−9.66 to 1.46)
Dahlstrand 1995	36	11.60 (4.20)	32	18.10 (7.10)		37.97	−6.50 (−9.32 to −3.68)
Wagrell 2002	81	12.80 (6.10)	41	14.60 (9.00)		32.21	−1.80 (−4.86 to 1.26)
de la Rosette 2003	54	15.50 (12.10)	47	25.00 (7.50)		20.07	−9.50 (−13.37 to −5.63)
Subtotal (95% CI)	202		141			100.00	−5.35 (−7.09 to −3.62)
Test for heterogeneity: $\chi^2 = 10.42$, df = 3 ($p = 0.02$), $I^2 = 71.2\%$							
Test for overall effect: $z = 6.05$ ($p < 0.00001$)							
02 TUNA vs TURP							
Cimentepe 2003	26	16.70 (4.50)	33	23.10 (5.30)		100.00	−6.40 (−8.90 to −3.90)
Subtotal (95% CI)	26		33			100.00	−6.40 (−8.90 to −3.90)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 5.01$ ($p < 0.00001$)							
03 Laser coagulation vs TURP							
Aliaga 1998	18	10.50 (5.00)	21	18.60 (8.50)		19.73	−8.10 (−12.41 to −3.79)
Kabalin 1995	13	18.70 (5.97)	12	21.70 (8.85)		10.28	−3.00 (−8.97 to 2.97)
Martenson 1999	30	18.90 (3.10)	14	25.80 (9.70)		13.53	−6.90 (−12.10 to −1.70)
McAllister 2000	76	15.90 (10.23)	75	21.30 (10.16)		34.61	−5.40 (−8.65 to −2.15)
Suvakovic 1996	10	14.80 (5.40)	10	17.80 (3.80)		21.85	−3.00 (−7.09 to 1.09)
Subtotal (95% CI)	147		132			100.00	−5.36 (−7.28 to −3.45)
Test for heterogeneity: $\chi^2 = 3.77$, df = 4 ($p = 0.44$), $I^2 = 0\%$							
Test for overall effect: $z = 5.50$ ($p < 0.00001$)							
04 TUIP vs TURP							
Aliaga 1998	20	22.00 (12.20)	21	18.60 (8.50)		28.69	3.40 (−3.07 to 9.87)
Hellstrom 1986	11	12.90 (6.04)	13	16.50 (6.00)		51.30	−3.60 (−8.44 to 1.24)
Li 1987	29	23.00 (15.60)	30	19.00 (14.70)		20.02	4.00 (−3.74 to 11.74)
Subtotal (95% CI)	60		64			100.00	−0.07 (−3.53 to 3.39)
Test for heterogeneity: $\chi^2 = 4.22$, df = 2 ($p = 0.12$), $I^2 = 52.6\%$							
Test for overall effect: $z = 0.04$ ($p = 0.97$)							
05 Laser resection vs TURP							
Westenberg 2004	61	22.80 (10.00)	59	20.20 (9.50)		67.21	2.60 (−0.89 to 6.09)
Wilson 2006	28	24.20 (8.99)	29	18.90 (10.23)		32.79	5.30 (0.30–10.30)
Subtotal (95% CI)	89		88			100.00	3.49 (0.63–6.35)
Test for heterogeneity: $\chi^2 = 0.75$, df = 1 ($p = 0.39$), $I^2 = 0\%$							
Test for overall effect: $z = 2.39$ ($p = 0.02$)							
06 Laser vaporisation vs TURP							
Keoghane 2000	46	21.30 (11.60)	52	21.80 (12.20)		6.32	−0.50 (−5.22 to 4.22)
Sengor 1996	30	18.90 (3.10)	30	20.70 (2.60)		67.02	−1.80 (−3.25 to −0.35)
Shingleton 2002	48	15.00 (5.70)	48	16.00 (8.00)		18.19	−1.00 (−3.78 to 1.78)
Tuhkanen 2003	25	15.00 (5.20)	25	19.00 (9.00)		8.46	−4.00 (−8.07 to 0.07)
Subtotal (95% CI)	149		155			100.00	−1.76 (−2.94 to −0.57)
Test for heterogeneity: $\chi^2 = 1.73$, df = 3 ($p = 0.63$), $I^2 = 0\%$							
Test for overall effect: $z = 2.91$ ($p = 0.004$)							
07 TUVRP vs TURP							
Liu 2006	42	20.70 (2.00)	30	21.60 (2.00)		100.00	−0.90 (−1.84 to 0.04)
Subtotal (95% CI)	42		30			100.00	−0.90 (−1.84 to 0.04)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 1.88$ ($p = 0.06$)							
08 B-TURP vs TURP							
Seckiner 2006	24	17.70 (9.10)	24	18.60 (9.10)		6.07	−0.90 (−6.05 to 4.25)
Tefekli 2005	47	16.90 (2.80)	49	15.80 (3.70)		93.93	1.10 (−0.21 to 2.41)
Subtotal (95% CI)	71		73			100.00	0.98 (−0.29 to 2.25)
Test for heterogeneity: $\chi^2 = 0.54$, df = 1 ($p = 0.46$), $I^2 = 0\%$							
Test for overall effect: $z = 1.51$ ($p = 0.13$)							
09 TUVP vs TURP							
Fowler 2005	111	21.23 (10.20)	108	19.12 (11.76)		4.64	2.11 (−0.81 to 5.03)
Galluci 1998	80	19.21 (8.14)	70	18.18 (7.68)		6.16	1.03 (−1.50 to 3.56)
Gotoh 1999	28	21.20 (9.40)	23	23.60 (13.90)		0.89	−2.40 (−9.06 to 4.26)
Kaplan 1998	32	16.80 (3.60)	32	14.80 (3.90)		11.70	2.00 (0.16–3.84)
Kupeli 1998a	30	17.70 (3.60)	30	19.70 (3.20)		13.32	−2.00 (−3.72 to −0.28)
van Melick 2003	15	25.00 (11.00)	19	20.00 (10.00)		0.77	5.00 (−2.16 to 12.16)
Nuhoglu 2005	38	17.50 (3.30)	35	17.70 (2.30)		23.53	−0.20 (−1.50 to 1.10)
Shokeir 1997	35	19.40 (2.10)	35	19.40 (2.20)		38.97	0.00 (−1.01 to 1.01)
Subtotal (95% CI)	369		352			100.00	0.10 (−0.53 to 0.73)
Test for heterogeneity: $\chi^2 = 14.73$, df = 7 ($p = 0.04$), $I^2 = 52.5\%$							
Test for overall effect: $z = 0.31$ ($p = 0.76$)							

−100 −50 0 50 100
Favours TURP Favours intervention

Review: BPE
Comparison: 16 Q_{max}
Outcome: 02 12 months

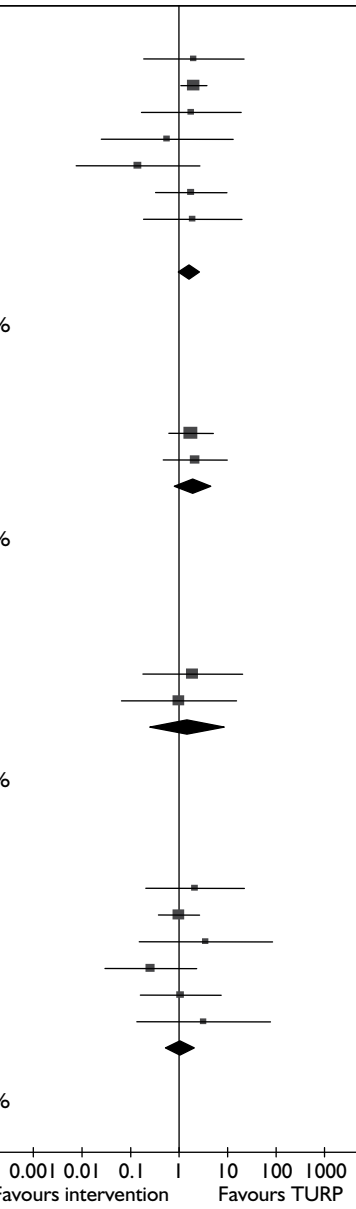
Study or subcategory	n	Intervention Mean (SD)	n	TURP Mean (SD)	WMD (fixed) 95% CI	Weight %	WMD (fixed) 95% CI
01 TUMT vs TURP							
d'Ancona 1998	27	17.10 (7.80)	17	19.30 (10.70)		7.66	−2.20 (−8.08 to 3.68)
Dahlstrand 1995	33	12.60 (3.90)	31	18.90 (6.00)		42.44	−6.30 (−8.80 to −3.80)
Wagrell 2002	73	13.30 (6.00)	31	15.20 (7.80)		28.03	−1.90 (−4.97 to 1.17)
de la Rosette 2003	58	14.90 (7.20)	48	23.80 (10.40)		21.87	−8.90 (−12.38 to −5.42)
Subtotal (95% CI)	191		127			100.00	−5.32 (−6.95 to −3.70)
Test for heterogeneity: $\chi^2 = 10.51$, df = 3 ($p = 0.01$), $I^2 = 71.5\%$							
Test for overall effect: $z = 6.41$ ($p < 0.00001$)							
02 TUNA vs TURP							
Hill 2004	53	14.60 (7.28)	43	21.10 (8.50)		72.02	−6.50 (−9.71 to −3.29)
Hindley 2001	19	9.70 (5.00)	19	22.00 (10.30)		27.98	−12.30 (−17.45 to −7.15)
Subtotal (95% CI)	72		62			100.00	−8.12 (−10.85 to −5.40)
Test for heterogeneity: $\chi^2 = 3.51$, df = 1 ($p = 0.06$), $I^2 = 71.5\%$							
Test for overall effect: $z = 5.85$ ($p < 0.00001$)							
03 Laser coagulation vs TURP							
Kabalin 1995	11	20.50 (4.74)	10	21.60 (6.96)		14.85	−1.10 (−6.24 to 4.04)
Martenson 1999	30	11.90 (5.50)	14	25.40 (11.10)		10.42	−13.50 (−19.64 to −7.36)
McAllister 2000	76	15.40 (8.01)	75	21.80 (14.58)		27.80	−6.40 (−10.16 to −2.64)
Suvakovic 1996	10	12.60 (3.70)	9	15.20 (2.70)		46.93	−2.60 (−5.49 to 0.29)
Subtotal (95% CI)	127		108			100.00	−4.57 (−6.55 to −2.59)
Test for heterogeneity: $\chi^2 = 12.57$, df = 3 ($p = 0.006$), $I^2 = 76.1\%$							
Test for overall effect: $z = 4.52$ ($p < 0.00001$)							
04 Laser vaporisation vs TURP							
Keoghane 2000	42	17.10 (13.20)	45	21.20 (12.40)		25.73	−4.10 (−9.49 to 1.29)
Shingleton 2002	40	15.40 (5.90)	33	16.70 (7.60)		74.27	−1.30 (−4.47 to 1.87)
Subtotal (95% CI)	82		78			100.00	−2.02 (−4.75 to 0.71)
Test for heterogeneity: $\chi^2 = 0.77$, df = 1 ($p = 0.38$), $I^2 = 0\%$							
Test for overall effect: $z = 1.45$ ($p = 0.15$)							
05 TUVRP vs TURP							
Helke 2001	79	22.19 (12.30)	73	22.12 (10.60)		100.00	0.07 (−3.57 to 3.71)
Subtotal (95% CI)	79		73			100.00	0.07 (−3.57 to 3.71)
Test for heterogeneity: not applicable							
Test for overall effect: $z = 0.04$ ($p = 0.97$)							
06 B-TURP vs TURP							
Nuhoglu 2006	24	17.10 (2.70)	26	17.90 (3.10)		45.91	−0.80 (−2.41 to 0.81)
Seckiner 2006	23	18.80 (6.90)	21	15.70 (6.30)		7.81	3.10 (−0.80 to 7.00)
Tefekli 2005	49	17.20 (3.90)	47	16.90 (4.10)		46.28	0.30 (−1.30 to 1.90)
Subtotal (95% CI)	96		94			100.00	0.01 (−1.08 to 1.10)
Test for heterogeneity: $\chi^2 = 3.51$, df = 2 ($p = 0.17$), $I^2 = 43.0\%$							
Test for overall effect: $z = 0.02$ ($p = 0.98$)							
07 TUVP vs TURP							
Gupta 2006	50	23.70 (1.58)	50	23.60 (0.96)		73.67	0.10 (−0.41 to 0.61)
Hammadeh 2003	51	20.80 (7.70)	51	22.50 (9.00)		1.83	−1.70 (−4.95 to 1.55)
Kaplan 1998	31	19.60 (4.90)	30	16.90 (4.10)		3.77	2.70 (0.44–4.96)
van Melick 2003	11	21.00 (8.00)	9	23.00 (8.00)		0.39	−2.00 (−9.05 to 5.05)
Netto 1999	38	16.16 (2.48)	40	15.43 (3.40)		11.17	0.73 (−0.59 to 2.05)
Shokeir 1997	35	18.20 (3.00)	35	20.10 (3.20)		9.16	−1.90 (−3.35 to −0.45)
Subtotal (95% CI)	216		215			100.00	0.04 (−0.40 to 0.48)
Test for heterogeneity: $\chi^2 = 14.68$, df = 5 ($p = 0.01$), $I^2 = 65.9\%$							
Test for overall effect: $z = 0.20$ ($p = 0.84$)							



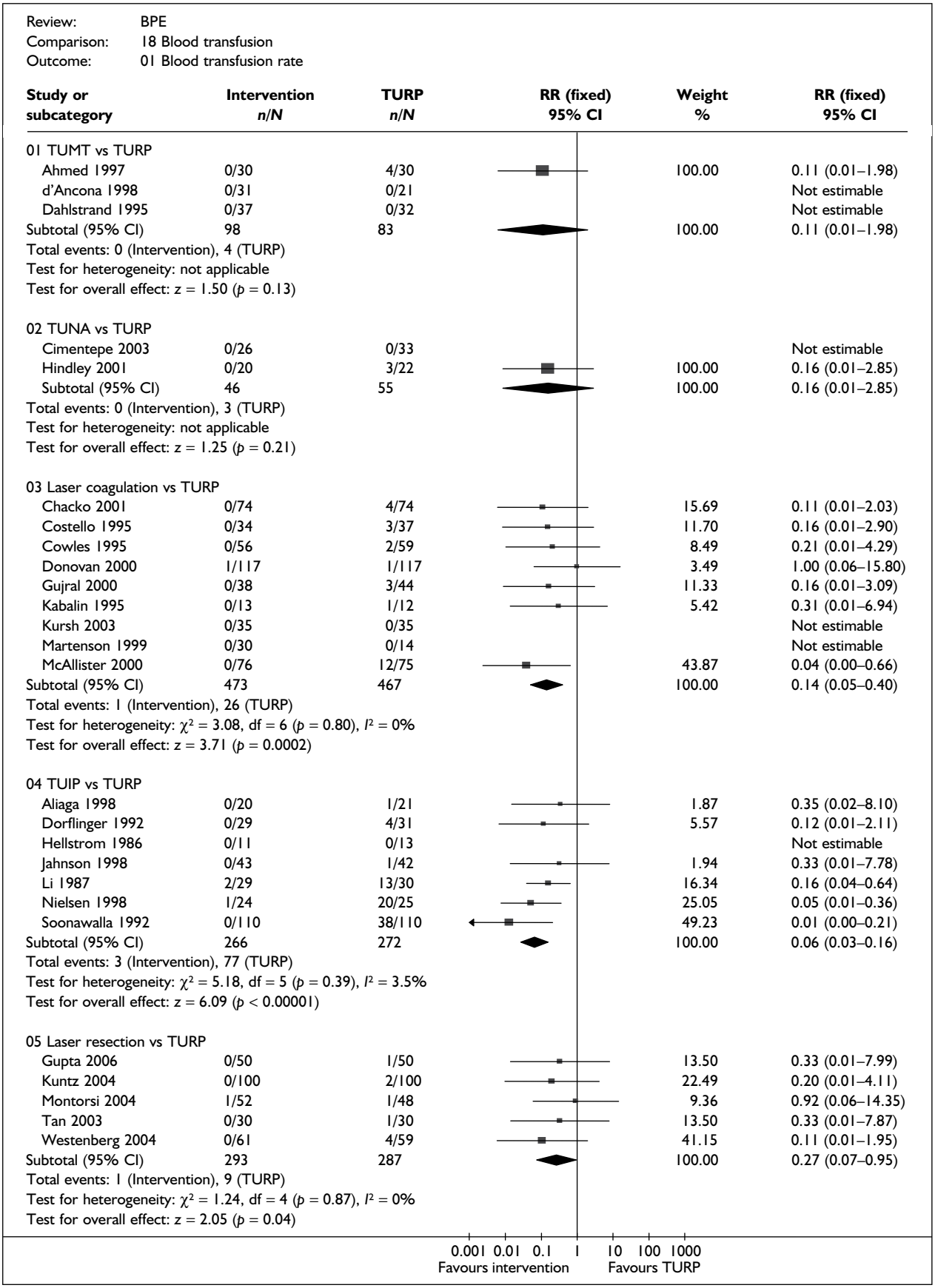


Review: BPE
Comparison: 17 Reoperation
Outcome: 01 Reoperation rate

Study or subcategory	Intervention n/N	TURP n/N	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
06 Laser vaporisation vs TURP					
Carter 1999a	2/84	1/85		4.69	2.02 (0.19–21.90)
Keoghane 2000	23/72	12/76		55.14	2.02 (1.09–3.76)
van Melick 2003a	2/50	1/45		4.97	1.80 (0.17–19.19)
Mottet 1999	0/13	1/23		5.22	0.57 (0.02–13.10)
Shingleton 2002	0/50	3/50		16.53	0.14 (0.01–2.70)
Tuhkanen 2001	3/21	2/25		8.62	1.79 (0.33–9.70)
Tuhkanen 2003	2/26	1/25		4.82	1.92 (0.19–19.90)
Zorn 1999	0/12	0/21			Not estimable
Subtotal (95% CI)	328	350		100.00	1.60 (0.97–2.63)
Total events: 32 (Intervention), 21 (TURP)					
Test for heterogeneity: $\chi^2 = 3.65$, df = 6 ($p = 0.72$), $I^2 = 0\%$					
Test for overall effect: $z = 1.85$ ($p = 0.06$)					
07 TUVRP vs TURP					
Helke 2001	9/93	5/92		68.40	1.78 (0.62–5.11)
Liu 2006	6/36	2/26		31.60	2.17 (0.47–9.89)
Subtotal (95% CI)	129	118		100.00	1.90 (0.80–4.52)
Total events: 15 (Intervention), 7 (TURP)					
Test for heterogeneity: $\chi^2 = 0.04$, df = 1 ($p = 0.84$), $I^2 = 0\%$					
Test for overall effect: $z = 1.46$ ($p = 0.15$)					
08 B-TURP vs TURP					
Nuhoglu 2006	0/27	0/30			Not estimable
Tefekli 2005	2/49	1/47		50.52	1.92 (0.18–20.46)
de Sio 2006	1/35	1/35		49.48	1.00 (0.07–15.36)
Subtotal (95% CI)	111	112		100.00	1.46 (0.25–8.57)
Total events: 3 (Intervention), 2 (TURP)					
Test for heterogeneity: $\chi^2 = 0.12$, df = 1 ($p = 0.72$), $I^2 = 0\%$					
Test for overall effect: $z = 0.42$ ($p = 0.67$)					
09 TUVP vs TURP					
Ekengren 2000	2/26	1/28		6.54	2.15 (0.21–22.37)
Hammadeh 2003	7/52	7/52		47.52	1.00 (0.38–2.65)
Kupeli 1998b	1/30	0/36		3.09	3.58 (0.15–84.81)
McAllister 2003	1/115	4/120		26.58	0.26 (0.03–2.30)
van Melick 2003	2/46	2/50		13.01	1.09 (0.16–7.40)
Nuhoglu 2005	1/37	0/40		3.27	3.24 (0.14–77.06)
Subtotal (95% CI)	306	326		100.00	1.04 (0.53–2.07)
Total events: 14 (Intervention), 14 (TURP)					
Test for heterogeneity: $\chi^2 = 3.01$, df = 5 ($p = 0.70$), $I^2 = 0\%$					
Test for overall effect: $z = 0.12$ ($p = 0.90$)					

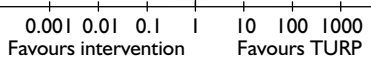


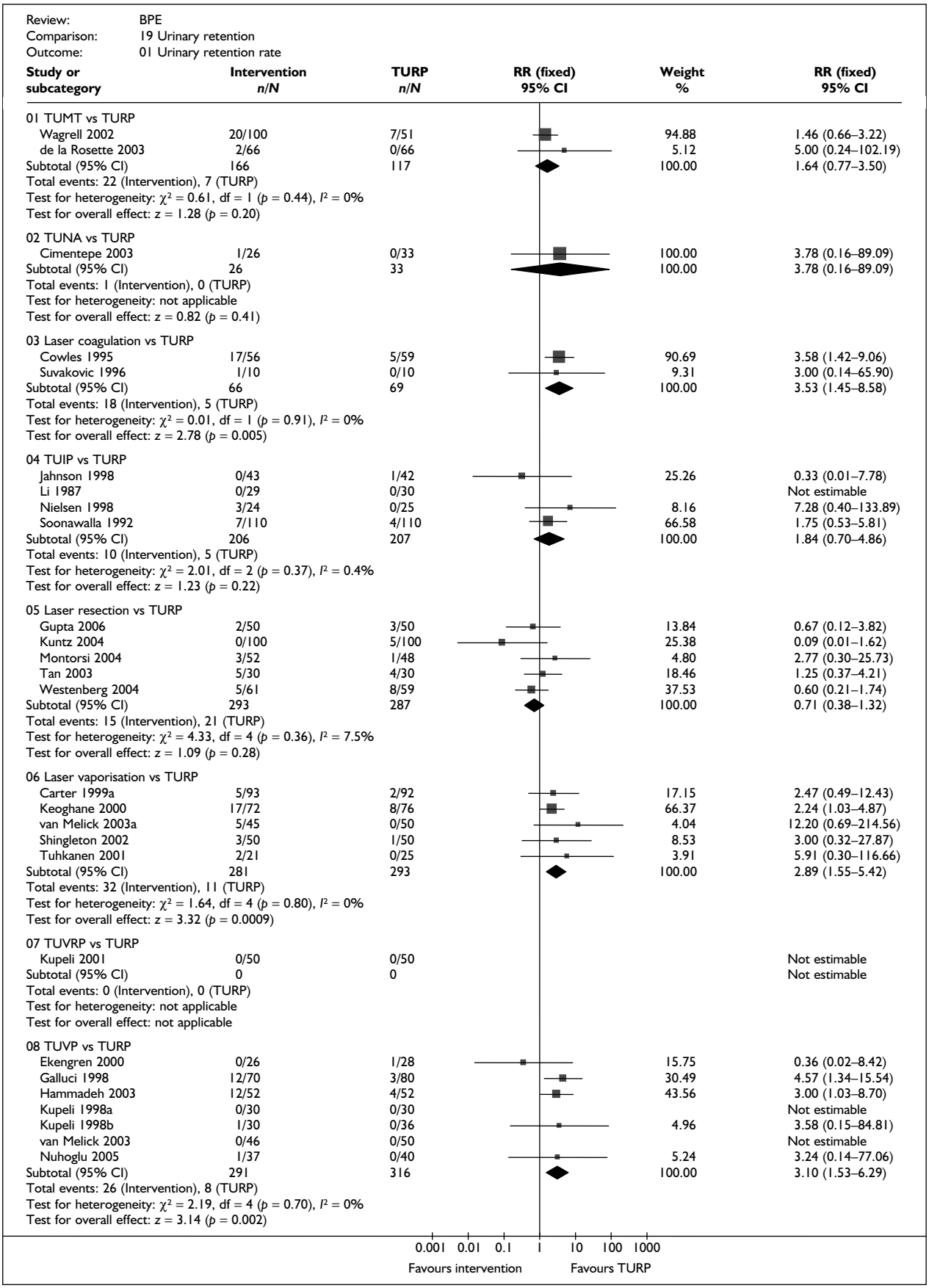
Review: BPE
Comparison: 18 Blood transfusion
Outcome: 01 Blood transfusion rate



Review: BPE
Comparison: 18 Blood transfusion
Outcome: 01 Blood transfusion rate

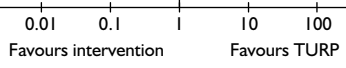
Study or subcategory	Intervention n/N	TURP n/N	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
06 Laser vaporisation vs TURP					
Carter 1999a	0/95	5/96		22.42	0.09 (0.01–1.64)
Keoghane 2000	0/72	13/76		53.85	0.04 (0.00–0.65)
van Melick 2003a	0/45	1/50		5.83	0.37 (0.02–8.85)
Mottet 1999	0/23	0/13			Not estimable
Sengor 1996	0/30	2/30		10.25	0.20 (0.01–4.00)
Shingleton 2002	0/50	0/50			Not estimable
Tuhkanen 2001	1/21	2/24		7.65	0.57 (0.06–5.86)
Tuhkanen 2003	0/26	0/26			Not estimable
Zorn 1999	0/12	0/12			Not estimable
Subtotal (95% CI)	374	377		100.00	0.13 (0.04–0.41)
Total events: 1 (Intervention), 23 (TURP)					
Test for heterogeneity: $\chi^2 = 2.85$, df = 4 ($p = 0.58$), $I^2 = 0\%$					
Test for overall effect: $z = 3.43$ ($p = 0.0006$)					
07 TUVRP vs TURP					
Helke 2001	6/93	9/92		79.62	0.66 (0.24–1.78)
Kupeli 2001	0/50	0/50			Not estimable
Liu 2006	1/44	2/32		20.38	0.36 (0.03–3.84)
Talic 2000	0/34	0/34			Not estimable
Subtotal (95% CI)	221	208		100.00	0.60 (0.24–1.49)
Total events: 7 (Intervention), 11 (TURP)					
Test for heterogeneity: $\chi^2 = 0.21$, df = 1 ($p = 0.65$), $I^2 = 0\%$					
Test for overall effect: $z = 1.10$ ($p = 0.27$)					
08 B-TURP vs TURP					
Nuhoglu 2006	1/27	2/30		65.45	0.56 (0.05–5.79)
Tefekli 2005	1/35	0/35		17.27	3.00 (0.13–71.22)
de Sio 2006	1/35	0/35		17.27	3.00 (0.13–71.22)
Subtotal (95% CI)	97	100		100.00	1.40 (0.32–6.20)
Total events: 3 (Intervention), 2 (TURP)					
Test for heterogeneity: $\chi^2 = 1.04$, df = 2 ($p = 0.59$), $I^2 = 0\%$					
Test for overall effect: $z = 0.44$ ($p = 0.66$)					
09 TUVP vs TURP					
Cetinkaga 1996	0/23	2/23		8.79	0.20 (0.01–3.95)
Erdagi 1999	0/20	9/20		33.41	0.05 (0.00–0.85)
Fowler 2005	2/115	9/120		30.98	0.23 (0.05–1.05)
Galluci 1998	0/70	0/80			Not estimable
Gotoh 1999	0/23	0/28			Not estimable
Hammadeh 2003	0/52	1/52		5.28	0.33 (0.01–8.00)
Kupeli 1998a	0/30	0/30			Not estimable
Kupeli 1998b	0/30	2/36		8.02	0.24 (0.01–4.79)
van Melick 2003	0/46	1/50		5.06	0.36 (0.02–8.66)
Nuhoglu 2005	0/37	2/40		8.46	0.22 (0.01–4.35)
Patel 1997	0/6	0/6			Not estimable
Subtotal (95% CI)	452	485		100.00	0.18 (0.07–0.46)
Total events: 2 (Intervention), 26 (TURP)					
Test for heterogeneity: $\chi^2 = 1.24$, df = 6 ($p = 0.97$), $I^2 = 0\%$					
Test for overall effect: $z = 3.61$ ($p = 0.0003$)					

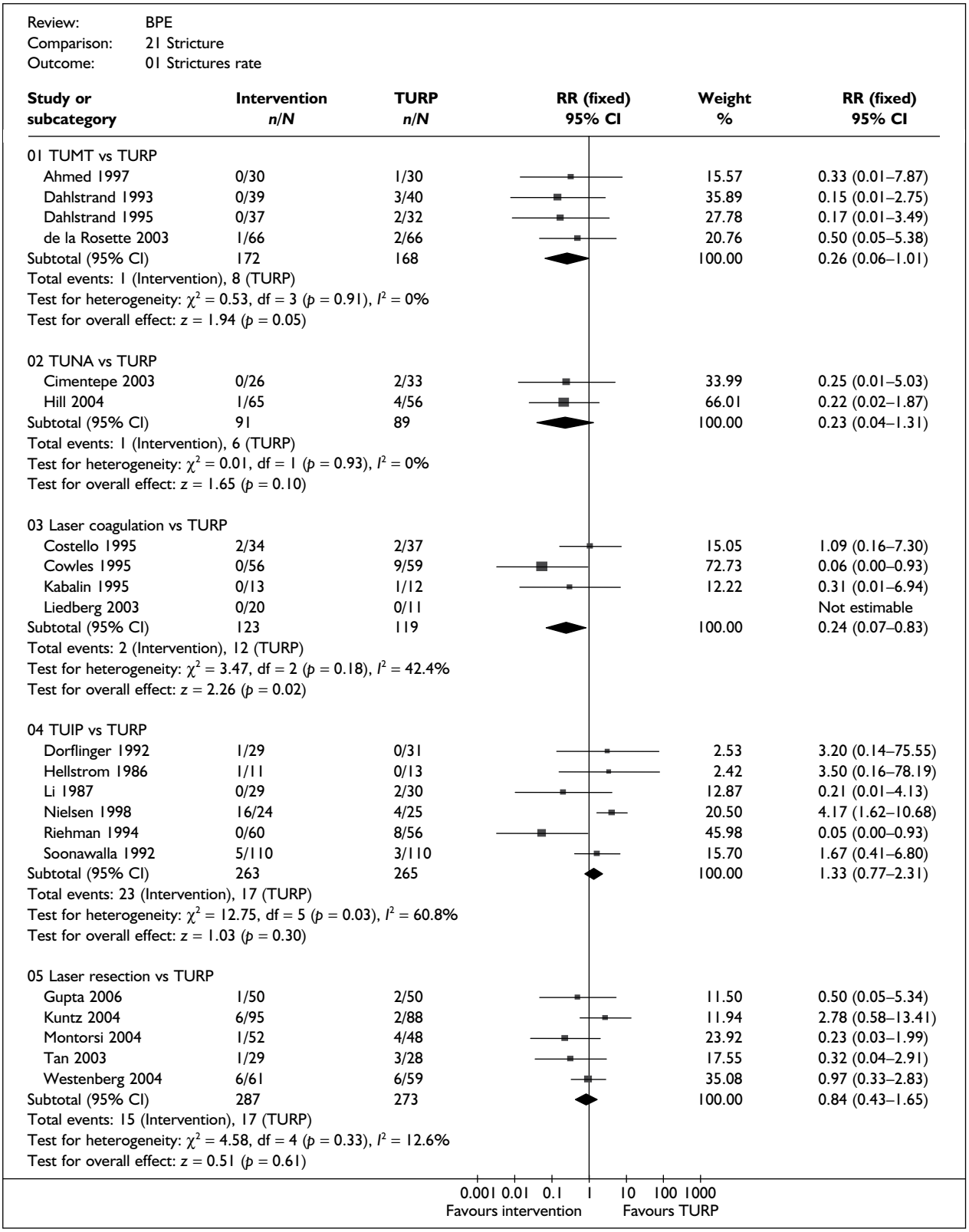




Review: BPE
Comparison: 20 Urinary tract infection
Outcome: 01 Urinary tract infection rate

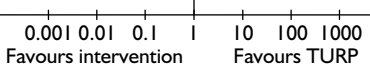
Study or subcategory	Intervention n/N	TURP n/N	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
01 TUMT vs TURP					
Ahmed 1997	1/30	3/30		20.82	0.33 (0.04–3.03)
d'Ancona 1998	5/31	1/21		8.27	3.39 (0.43–26.96)
Dahlstrand 1993	5/39	4/40		27.40	1.28 (0.37–4.42)
Dahlstrand 1995	5/37	4/32		29.77	1.08 (0.32–3.69)
Wagrell 2002	0/100	1/51		13.74	0.17 (0.01–4.14)
Subtotal (95% CI)	237	174		100.00	1.05 (0.53–2.08)
Total events: 16 (Intervention), 13 (TURP)					
Test for heterogeneity: $\chi^2 = 3.61$, df = 4 ($p = 0.46$), $I^2 = 0\%$					
Test for overall effect: $z = 0.13$ ($p = 0.90$)					
02 TUNA vs TURP					
Cimentepe 2003	1/26	0/33		10.41	3.78 (0.16–89.09)
Hindley 2001	4/20	4/22		89.59	1.10 (0.32–3.83)
Subtotal (95% CI)	46	55		100.00	1.38 (0.44–4.30)
Total events: 5 (Intervention), 4 (TURP)					
Test for heterogeneity: $\chi^2 = 0.52$, df = 1 ($p = 0.47$), $I^2 = 0\%$					
Test for overall effect: $z = 0.55$ ($p = 0.58$)					
03 Laser coagulation vs TURP					
Costello 1995	1/34	4/37		15.66	0.27 (0.03–2.32)
Donovan 2000	3/117	2/117		8.17	1.50 (0.26–8.81)
Gujral 2000	1/38	2/44		7.58	0.58 (0.05–6.14)
Kursh 2003	7/35	4/35		16.35	1.75 (0.56–5.45)
Liedberg 2003	16/20	1/11		5.27	8.80 (1.34–57.76)
Martenson 1999	10/30	4/14		22.29	1.17 (0.44–3.08)
McAllister 2000	20/76	6/75		24.68	3.29 (1.40–7.73)
Subtotal (95% CI)	350	333		100.00	2.03 (1.28–3.22)
Total events: 58 (Intervention), 23 (TURP)					
Test for heterogeneity: $\chi^2 = 9.46$, df = 6 ($p = 0.15$), $I^2 = 36.6\%$					
Test for overall effect: $z = 3.02$ ($p = 0.002$)					
04 TUIP vs TURP					
Soonawalla 1992	5/110	2/110		100.00	2.50 (0.50–12.61)
Subtotal (95% CI)	110	110		100.00	2.50 (0.50–12.61)
Total events: 5 (Intervention), 2 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 1.11$ ($p = 0.27$)					
05 Laser resection vs TURP					
Tan 2003	0/30	2/30		45.05	0.20 (0.01–4.00)
Westenberg 2004	5/61	3/59		54.95	1.61 (0.40–6.45)
Subtotal (95% CI)	91	89		100.00	0.98 (0.31–3.09)
Total events: 5 (Intervention), 5 (TURP)					
Test for heterogeneity: $\chi^2 = 1.58$, df = 1 ($p = 0.21$), $I^2 = 36.7\%$					
Test for overall effect: $z = 0.04$ ($p = 0.97$)					
06 Laser vaporisation vs TURP					
Carter 1999a	11/93	6/92		39.72	1.81 (0.70–4.70)
Keoghane 2000	2/72	3/76		19.22	0.70 (0.12–4.09)
van Melick 2003a	4/45	5/50		31.19	0.89 (0.25–3.11)
Tuhkanen 2003	0/26	1/26		9.88	0.33 (0.01–7.82)
Subtotal (95% CI)	236	244		100.00	1.17 (0.60–2.26)
Total events: 17 (Intervention), 15 (TURP)					
Test for heterogeneity: $\chi^2 = 1.93$, df = 3 ($p = 0.59$), $I^2 = 0\%$					
Test for overall effect: $z = 0.46$ ($p = 0.65$)					
07 TUVP vs TURP					
Erdagi 1999	1/25	5/20		24.36	0.16 (0.02–1.26)
Galluci 1998	1/70	4/80		16.37	0.29 (0.03–2.50)
Gotoh 1999	0/23	0/28			Not estimable
Hammadeh 2003	3/52	2/52		8.77	1.50 (0.26–8.61)
Kaplan 1998	5/32	4/32		17.54	1.25 (0.37–4.23)
Kupeli 1998b	4/30	3/36		11.96	1.60 (0.39–6.60)
van Melick 2003	2/46	5/50		21.01	0.43 (0.09–2.13)
Subtotal (95% CI)	278	298		100.00	0.72 (0.39–1.32)
Total events: 16 (Intervention), 23 (TURP)					
Test for heterogeneity: $\chi^2 = 5.81$, df = 5 ($p = 0.33$), $I^2 = 13.9\%$					
Test for overall effect: $z = 1.07$ ($p = 0.29$)					





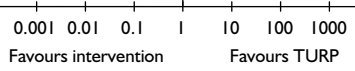
Review: BPE
Comparison: 21 Stricture
Outcome: 01 Strictures rate

Study or subcategory	Intervention n/N	TURP n/N	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
06 Laser vaporisation vs TURP					
Carter 1999a	7/84	15/85		51.03	0.47 (0.20–1.10)
Keoghane 2000	0/72	5/76		18.32	0.10 (0.01–1.70)
van Melick 2003a	2/45	2/50		6.48	1.11 (0.16–7.56)
Mottet 1999	0/23	2/13		10.81	0.12 (0.01–2.26)
Sengor 1996	0/30	0/30			Not estimable
Shingleton 2002	4/50	1/50		3.42	4.00 (0.46–34.54)
Tuhkanen 2001	0/21	1/24		4.81	0.38 (0.02–8.83)
Tuhkanen 2003	0/25	1/25		5.13	0.33 (0.01–7.81)
Subtotal (95% CI)	350	353		100.00	0.52 (0.28–0.93)
Total events: 13 (Intervention), 27 (TURP)					
Test for heterogeneity: $\chi^2 = 6.51$, df = 6 ($p = 0.37$), $I^2 = 7.9\%$					
Test for overall effect: $z = 2.18$ ($p = 0.03$)					
07 TUVRP vs TURP					
Helke 2001	5/93	7/92		75.19	0.71 (0.23–2.15)
Kupeli 2001	0/50	0/50			Not estimable
Liu 2006	3/36	2/26		24.81	1.08 (0.19–6.03)
Subtotal (95% CI)	179	168		100.00	0.80 (0.32–2.02)
Total events: 8 (Intervention), 9 (TURP)					
Test for heterogeneity: $\chi^2 = 0.17$, df = 1 ($p = 0.68$), $I^2 = 0\%$					
Test for overall effect: $z = 0.47$ ($p = 0.64$)					
08 B-TURP vs TURP					
Seckiner 2006	2/24	1/24		33.10	2.00 (0.19–20.61)
Tefekli 2005	3/49	1/47		33.79	2.88 (0.31–26.69)
de Sio 2006	1/35	1/35		33.10	1.00 (0.07–15.36)
Subtotal (95% CI)	108	106		100.00	1.97 (0.50–7.67)
Total events: 6 (Intervention), 3 (TURP)					
Test for heterogeneity: $\chi^2 = 0.35$, df = 2 ($p = 0.84$), $I^2 = 0\%$					
Test for overall effect: $z = 0.97$ ($p = 0.33$)					
09 TUVP vs TURP					
Cetinkaga 1996	1/23	0/23		2.89	3.00 (0.13–70.02)
Ekengren 2000	2/26	0/28		2.79	5.37 (0.27–106.88)
Erdagi 1999	0/20	1/20		8.68	0.33 (0.01–7.72)
Gotoh 1999	0/23	0/28			Not estimable
Gupta 2006	1/50	2/50		11.58	0.50 (0.05–5.34)
Hammadeh 2003	2/52	8/52		46.32	0.25 (0.06–1.12)
Kaplan 1998	1/32	1/32		5.79	1.00 (0.07–15.30)
Kupeli 1998a	0/30	0/30			Not estimable
Kupeli 1998b	0/30	0/36			Not estimable
van Melick 2003	1/46	2/50		11.10	0.54 (0.05–5.80)
Netto 1999	0/40	0/38			Not estimable
Wang 2002	5/96	2/109		10.85	2.84 (0.56–14.30)
Subtotal (95% CI)	468	496		100.00	0.87 (0.44–1.70)
Total events: 13 (Intervention), 16 (TURP)					
Test for heterogeneity: $\chi^2 = 7.45$, df = 7 ($p = 0.38$), $I^2 = 6.1\%$					
Test for overall effect: $z = 0.42$ ($p = 0.68$)					



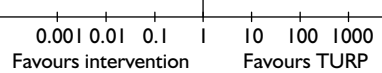
Review: BPE
Comparison: 22 TUR syndrome
Outcome: 01 TUR syndrome

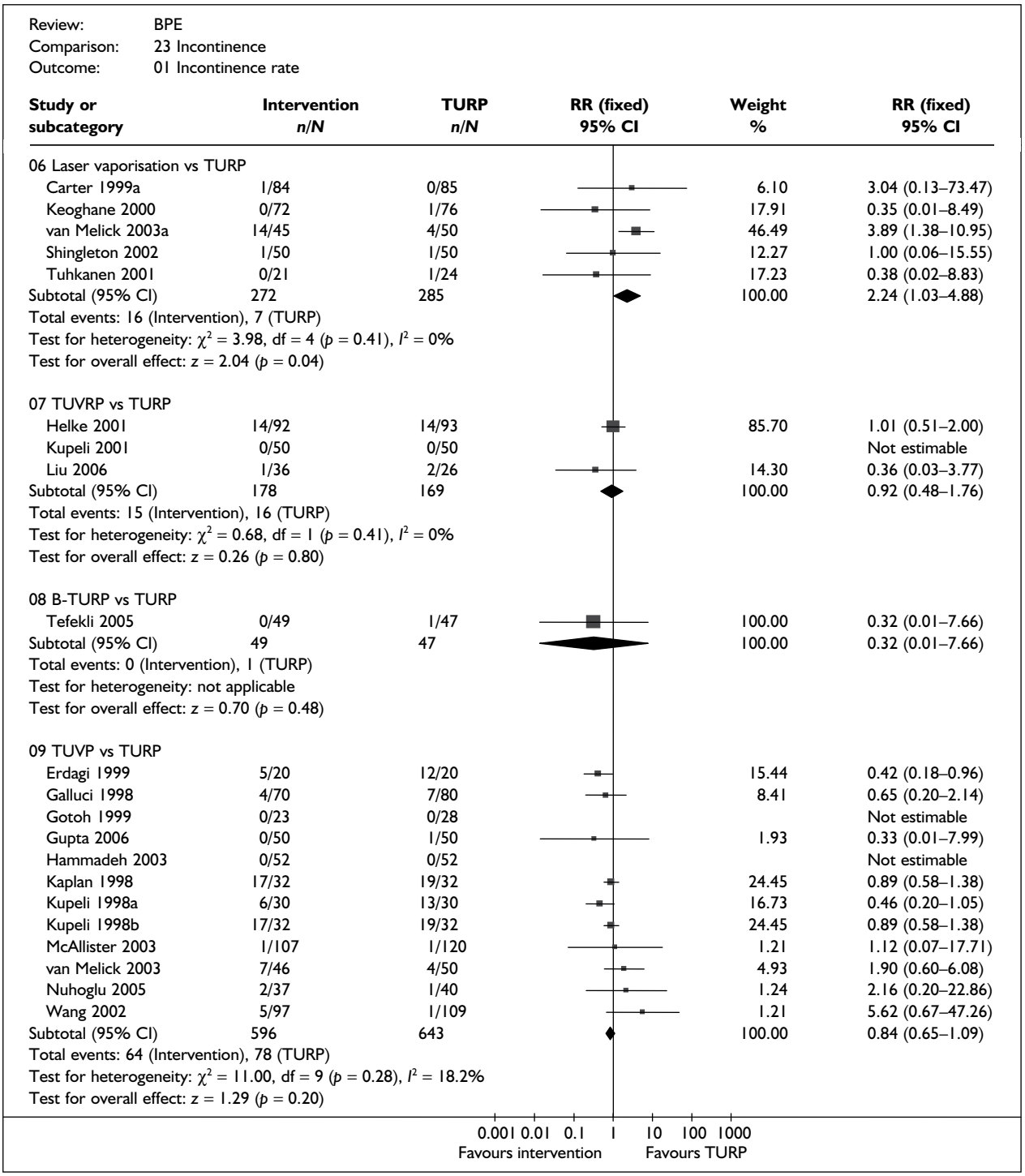
Study or subcategory	Intervention *n/N*	TURP *n/N*	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
01 TUMT vs TURP					
Wagrell 2002	1/51	0/100		100.00	5.83 (0.24–140.55)
Subtotal (95% CI)	51	100		100.00	5.83 (0.24–140.55)
Total events: 1 (Intervention), 0 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 1.09$ ($p = 0.28$)					
02 Laser coagulation vs TURP					
Chacko 2001	0/74	2/74		38.51	0.20 (0.01–4.10)
Cowles 1995	0/56	2/59		37.52	0.21 (0.01–4.29)
Kabalin 1995	0/13	1/12		23.96	0.31 (0.01–6.94)
Subtotal (95% CI)	143	145		100.00	0.23 (0.04–1.34)
Total events: 0 (Intervention), 5 (TURP)					
Test for heterogeneity: $\chi^2 = 0.05$, df = 2 ($p = 0.98$), $I^2 = 0\%$					
Test for overall effect: $z = 1.64$ ($p = 0.10$)					
03 TUIP vs TURP					
Li 1987	0/29	0/30			Not estimable
Soonawalla 1992	0/110	7/110		100.00	0.07 (0.00–1.15)
Subtotal (95% CI)	139	140		100.00	0.07 (0.00–1.15)
Total events: 0 (Intervention), 7 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 1.86$ ($p = 0.06$)					
04 Laser resection vs TURP					
Montorsi 2004	0/52	1/48		100.00	0.31 (0.01–7.39)
Subtotal (95% CI)	52	48		100.00	0.31 (0.01–7.39)
Total events: 0 (Intervention), 1 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 0.73$ ($p = 0.47$)					
05 Laser vaporisation vs TURP					
Carter 1999a	0/93	0/92			Not estimable
Sengor 1996	0/30	0/30			Not estimable
Subtotal (95% CI)	0	0			Not estimable
Total events: 0 (Intervention), 0 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: not applicable					
06 TUVRP vs TURP					
Kupeli 2001	0/50	0/50			Not estimable
Liu 2006	0/44	2/32		100.00	0.15 (0.01–2.95)
Talic 2000	0/34	0/34			Not estimable
Subtotal (95% CI)	128	116		100.00	0.15 (0.01–2.95)
Total events: 0 (Intervention), 2 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: $z = 1.25$ ($p = 0.21$)					
07 B-TUVRP vs TURP					
Fung 2005	0/30	0/30			Not estimable
Subtotal (95% CI)	0	0			Not estimable
Total events: 0 (Intervention), 0 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: not applicable					
08 B-TURP vs TURP					
de Sio 2006	0/35	0/35			Not estimable
Subtotal (95% CI)	0	0			Not estimable
Total events: 0 (Intervention), 0 (TURP)					
Test for heterogeneity: not applicable					
Test for overall effect: not applicable					
09 TUVP vs TURP					
Erdagi 1999	0/20	0/20			Not estimable
Gotoh 1999	0/23	0/28			Not estimable
Hammadeh 2003	0/52	0/52			Not estimable
Kaplan 1998	0/32	1/32		24.16	0.33 (0.01–7.89)
Kupeli 1998a	0/30	0/30			Not estimable
Netto 1999	0/40	0/38			Not estimable
Wang 2002	3/97	5/109		75.84	0.67 (0.17–2.75)
Subtotal (95% CI)	294	309		100.00	0.59 (0.17–2.12)
Total events: 3 (Intervention), 6 (TURP)					
Test for heterogeneity: $\chi^2 = 0.16$, df = 1 ($p = 0.69$), $I^2 = 0\%$					
Test for overall effect: $z = 0.81$ ($p = 0.42$)					



Review: BPE
Comparison: 23 Incontinence
Outcome: 01 Incontinence rate

Study or subcategory	Intervention n/N	TURP n/N	RR (fixed) 95% CI	Weight %	RR (fixed) 95% CI
01 TUMT vs TURP					
Dahlstrand 1993	7/39	5/40		31.43	1.44 (0.50–4.14)
Wagrell 2002	3/100	7/51		59.02	0.22 (0.06–0.81)
de la Rosette 2003	0/66	1/66		9.55	0.33 (0.01–8.04)
Subtotal (95% CI)	205	157		100.00	0.61 (0.30–1.26)
Total events: 10 (Intervention), 13 (TURP)					
Test for heterogeneity: $\chi^2 = 5.00$, df = 2 ($p = 0.08$), $I^2 = 60.0\%$					
Test for overall effect: $z = 1.33$ ($p = 0.18$)					
02 TUNA vs TURP					
Cimentepe 2003	0/26	1/33		9.34	0.42 (0.02–9.90)
Hill 2004	2/65	12/56		90.66	0.14 (0.03–0.61)
Hindley 2001	0/20	0/22			Not estimable
Subtotal (95% CI)	111	111		100.00	0.17 (0.05–0.62)
Total events: 2 (Intervention), 13 (TURP)					
Test for heterogeneity: $\chi^2 = 0.37$, df = 1 ($p = 0.55$), $I^2 = 0\%$					
Test for overall effect: $z = 2.68$ ($p = 0.007$)					
03 Laser coagulation vs TURP					
Chacko 2001	0/74	3/74		41.49	0.14 (0.01–2.72)
Cowles 1995	0/56	2/59		28.88	0.21 (0.01–4.29)
Kursh 2003	0/35	2/35		29.64	0.20 (0.01–4.02)
Martenson 1999	0/30	0/14			Not estimable
Subtotal (95% CI)	195	182		100.00	0.18 (0.03–1.00)
Total events: 0 (Intervention), 7 (TURP)					
Test for heterogeneity: $\chi^2 = 0.04$, df = 2 ($p = 0.98$), $I^2 = 0\%$					
Test for overall effect: $z = 1.96$ ($p = 0.05$)					
04 TUIP vs TURP					
Li 1987	1/29	2/30		26.44	0.52 (0.05–5.40)
Nielsen 1998	0/24	1/25		19.77	0.35 (0.01–8.12)
Soonawalla 1992	2/110	4/110		53.79	0.50 (0.09–2.67)
Talic 2000	0/50	0/50			Not estimable
Subtotal (95% CI)	213	215		100.00	0.47 (0.14–1.65)
Total events: 3 (Intervention), 7 (TURP)					
Test for heterogeneity: $\chi^2 = 0.05$, df = 2 ($p = 0.98$), $I^2 = 0\%$					
Test for overall effect: $z = 1.17$ ($p = 0.24$)					
05 Laser resection vs TURP					
Gupta 2006	1/50	1/50		4.38	1.00 (0.06–15.55)
Kuntz 2004	1/62	1/53		4.72	0.85 (0.05–13.34)
Montorsi 2004	26/52	18/48		81.99	1.33 (0.85–2.10)
Westenberg 2004	1/61	2/59		8.91	0.48 (0.05–5.19)
Subtotal (95% CI)	225	210		100.00	1.22 (0.79–1.89)
Total events: 29 (Intervention), 22 (TURP)					
Test for heterogeneity: $\chi^2 = 0.81$, df = 3 ($p = 0.85$), $I^2 = 0\%$					
Test for overall effect: $z = 0.89$ ($p = 0.37$)					





Appendix 10

Direct comparisons between minimally invasive and other ablative methods

Laser coagulation versus TUVP

Characteristics of included studies

The characteristics of the included studies are summarised in *Table 105*. Three RCTs[204–206] were eligible for this comparison, in which a total of 275 participants were randomised. There were 133 and 142 participants allocated to laser coagulation and TUVP respectively.

Two of the RCTs took place in the US[205,206] and one took place in Egypt.[204] Only one study provided details of recruitment dates,[204] with a recruitment period between March 1995 and May 2004.

All studies provided details of participants' IPSS/AUA symptom scores showing that all had severe symptoms.

Prostate size was also reported by all studies. There were 122 participants in each arm with large prostates, and 11 and 20 participants with moderate-sized prostates in the laser coagulation and TUVP arms respectively.

Assessment of effectiveness

Tables giving a detailed description for all outcomes can be found in Appendix 8.13. The results of the meta-analyses are given in Appendix 9.13. Note that in terms of long-term evaluation, only the longest follow-up is presented.

Symptom scores

At 3 months

Data were available for two trials.[205,206] There were no differences in AUA symptom scores between laser coagulation and TUVP (Appendix 8.13).

At 12 months

Of the three trials, two provided details on symptom scores at 12 months after surgery.[204,205] Only one, however, reported data that were suitable for meta-analysis.[204] IPSS/AUA scores were worse following laser coagulation than following TUVP (Appendix 9.13), comparison 15:01:01: MD 7.40, 95% CI 5.96–8.84, $p < 0.001$). This result is not consistent with that reported by Narayan and colleagues.[205] In this study there were no differences between the two arms in terms of symptom scores at 12 months.

Longer-term follow-up

Data from one study[204] reporting IPSS scores at 4 years showed better scores following TUVP than after laser coagulation (Appendix 9.13),

TABLE 105 *Summary of the baseline characteristics, laser coagulation vs TUVP*

Study	Comparators	Number of participants	Age (years)	Symptom score[a]	Q_{max} (ml/s)	Residual volume (ml)	Prostate size (ml)
Abdel-Khalek 2003	Laser coagulation	90	50	27.9	6.9	120	44
	TUVP	90	55	26.0	6.4	125	47
Narayan 1995	Laser coagulation	32	64	22.1	7.0	210	41
	TUVP	32	66	22.4	6.4	277	52
Shingleton 1998	Laser coagulation	11	67	19.0	9.2	NR	35
	TUVP	20	67	21.1	7.7	NR	35

a Data given as mean values.
b Symptom scores given as IPSS/AUA.

comparison 15:01:04: MD 8.20, 95% CI 6.65–9.75, $p < 0.001$).

Complications

Data describing complications by study are given in Appendix 8.13, *Table 101*. Eleven categories of complications were identified across the three studies. These data are hard to interpret. For seven of the complications, data were only available for one trial (*Figure 29*). Even for those complications more consistently reported, confidence intervals are wide and include both clinically important and clinically insignificant differences. Furthermore, the length of follow-up varies across the trials. Only complications such as urinary retention and strictures were reported across the three trials. There were more patients with retention in the laser coagulation arm (15%) than in the TUVP arm (3.5%) following surgeries. In terms of strictures, there were no statistically significant differences between the two arms (*Figure 31*).

Quality of life

One study reported quality of life of patients following surgery (Appendix 8.13).[204] The scale used was unclear and was later assumed to be IPSS QoL. At all time points considered, the quality of life was significantly better following TUVP than following laser coagulation.

Urodynamic outcomes

Data on peak urine flow rate, residual volume and prostate size were reported to a varying extent across the three studies. Only peak urine flow rate is presented in this section. Results for the other urodynamic outcomes are presented in Appendix 8.13, *Table 103* and Appendix 9.13, comparison 15:05–07.

Peak urine flow rate

At 3 months

Two studies[205,206] provided details on peak urine flow rates in patients measured at 3 months following surgery. There was no consistency in the results. One study[205] favoured TUVP and the other[206] showed no differences between the two arms.

At 12 months

At 12 months, two studies[204,205] showed that peak urine flow rate is worse following laser coagulation than following TUVP. The mean differences in the two studies were 5.7 and 3.0 ml/s, respectively, favouring TUVP (Appendix 8.13, *Table 103*).

Descriptors of care

Data describing descriptors of care are tabulated in Appendix 8.13, *Table 104*. Information on duration of operation, length of hospital stay and reoperation rates was identified across the three eligible studies for this comparison.

Duration of operation

Two studies reported duration of operation (Appendix 8.13, *Table 104*). The evidence is not consistent: in one study[206] the mean difference was 18.5 minutes in favour of laser coagulation; in the other study[204] duration of operation in the laser arm was equivalent to that in the TUVP arm.

Length of hospital stay

Evidence from two studies[204,205] suggests that the average length of stay following laser coagulation is similar to that following TUVP (Appendix 8.13, *Table 104*).

Reoperation

Two studies provided information on reoperation rates.[204,205] A total of 40 (33%) reoperations were recorded amongst 122 laser patients compared with 11 (9.0%) amongst 122 TUVP patients (Appendix 9.13, comparison 15:08: RR 3.52, 95% CI 1.94–6.40, $p < 0.001$). This result should be interpreted with caution as the length of follow-up varied across the two studies.

Summary and conclusions of the evidence for and against the intervention

Three RCTs of moderate quality involving 275 participants were available to compare laser coagulation with TUVP. The data indicate that, at any follow-up assessment, symptoms, quality of life and peak urine flow rate are worse after laser coagulation than after TUVP. Following laser coagulation, the incidence of urinary retention and the reoperation rate are higher than after TUVP. The occurrence of strictures, urinary incontinence and urinary tract infection was similar, but with wide confidence intervals.

Clinical effect size

A summary of the clinical effect sizes for all outcomes derived from the meta-analyses for which data were available is given in *Table 106*.

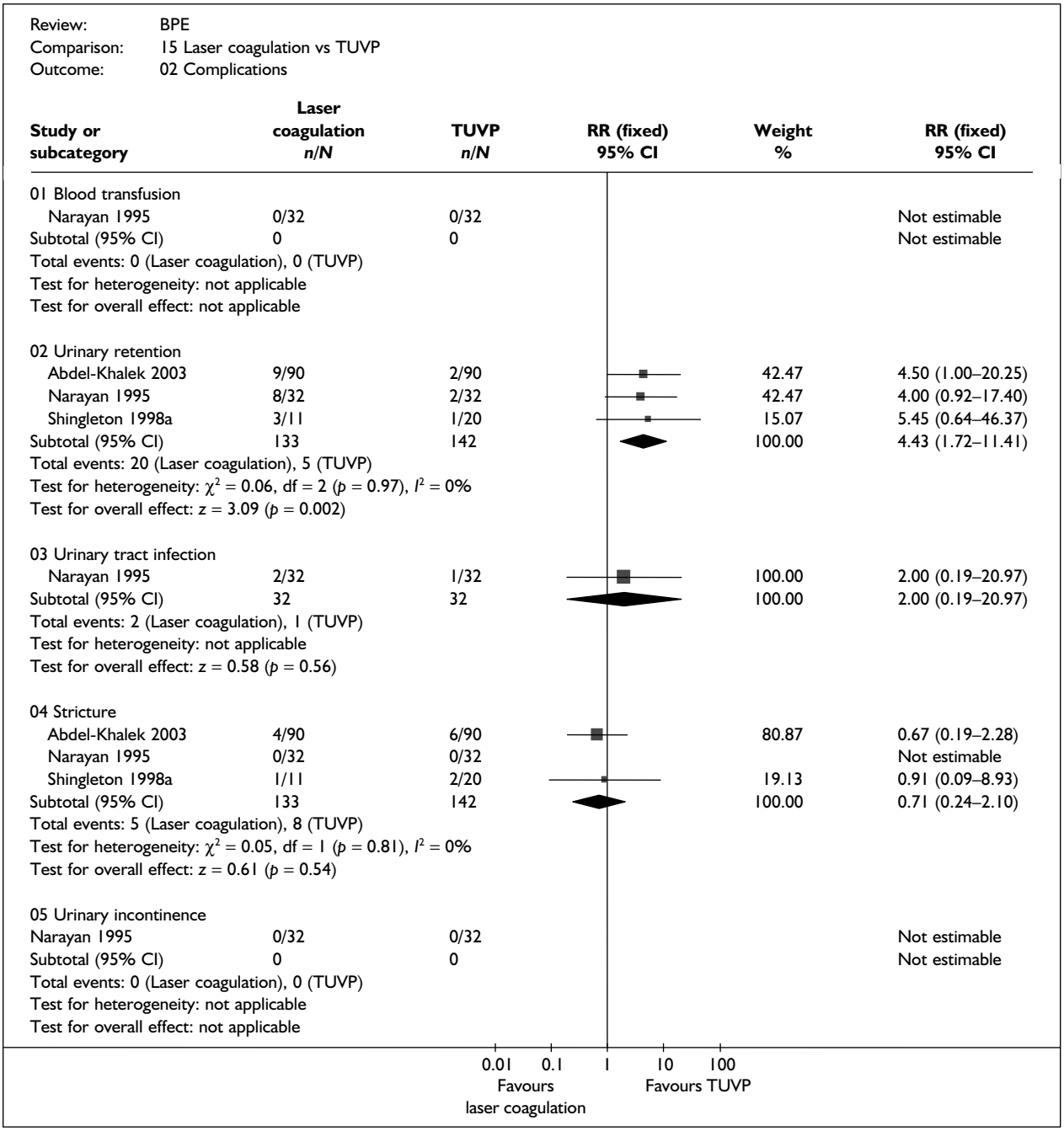


FIGURE 31 *Complications, laser coagulation vs TUVP.*

TABLE 106 *Summary of the clinical effect sizes from meta-analyses, laser coagulation vs TUVP*

Outcome	Number of trials	Effect size	95% CI	*p*-value
IPSS/AUA score				
12 months	1	7.40[a]	5.96–8.84	< 0.001
Longer term	1	8.20[a]	6.65–9.75	< 0.001
Blood transfusion	1	NE	NE	NE
Urinary retention	3	4.43[b]	1.72–11.41	0.002
Urinary tract infection	1	2.00[b]	0.19–20.97	0.56
Stricture	3	0.71[b]	0.24–2.10	0.54
Incontinence	1	NE	NE	NE
Quality of life				
12 months	1	2.00[a]	1.87–2.13	< 0.001
Longer term	1	1.80[a]	1.53–2.07	< 0.001
Q_{max}				
12 months	1	5.70[a]	3.72–7.68	< 0.001
Longer term	1	7.80[a]	6.52–9.08	< 0.001
Reoperation	2	3.52[b]	1.94–6.40	< 0.001

NE, not estimable.
a Weighted mean difference.
b Relative risk.

Appendix 11

Characteristics of patient population used for individual-level data in the economic model

Variable	Descriptive
Number of patients, *n*	179
Age (years), mean (range)	69 (47–88)
Preoperative IPSS (0–35), mean (SD)	22 (7)
Preoperative IPSS QoL (0–5), mean (SD)	4 (1)
Preoperative Q_{max} (ml/s), mean (SD)	10.8 (4.7)
Preoperative residual volume (ml), mean (SD)	130 (123)
Preoperative invasive PFS performed, *n* (%)	49 (27)
Resected weight (g), mean (SD)	16.7 (12)
Men with prostate cancer in resected prostate, *n* (%)	19 (11)
Surgical success rate, (%)	77

IPPS, International Prostate Symptom Score; PFS, pressure flow study; QoL, quality of life.

Feedback

The HTA Programme and the authors would like to know your views about this report.

The Correspondence Page on the HTA website (www.hta.ac.uk) is a convenient way to publish your comments. If you prefer, you can send your comments to the address below, telling us whether you would like us to transfer them to the website.

We look forward to hearing from you.

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