

Executive summary

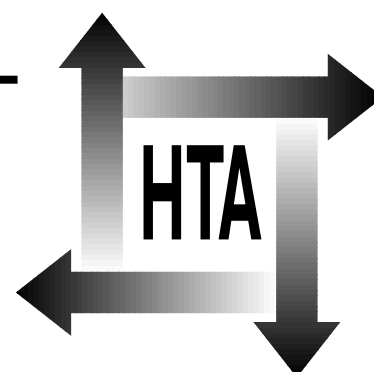
The effectiveness and cost-effectiveness of prophylactic removal of wisdom teeth

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Executive summary

Background

Removal of wisdom teeth is one of the most common surgical procedures performed in the UK. Little controversy surrounds the removal of impacted third molars when they are associated with pathological changes such as infection, non-restorable carious lesions, cysts, tumours, and destruction of adjacent teeth and bone. However, the justification for prophylactic removal of impacted third molars is less certain and has been debated for many years.

Objectives

- To provide a summary of existing evidence on prophylactic removal of impacted wisdom teeth, in terms of the incidence of surgical complications associated with prophylactic removal, and the morbidity associated with retention.

Methods

A systematic review of the research literature was undertaken.

Data sources

An existing review formed the basis of this report, and additional literature searches were undertaken, including searches of electronic databases (MEDLINE, 1984–99; EMBASE, 1984–99; Science Citation Index, Cochrane Controlled Trials Register, National Research Register; Database of Abstracts of Reviews of Effectiveness), paper sources (including *Clinical Evidence*), and web-based resources. Relevant organisations and professional bodies were contacted for further information.

Study selection

Studies were selected for inclusion if they met the following criteria:

- design – randomised controlled trials (RCTs), literature reviews, or decision analyses
- participants – people with unerupted or impacted third molars, or those undergoing

surgical removal of third molars either as prophylaxis or due to associated pathological changes

- reported outcomes – either the pathological changes associated with retention of third molars, or post-operative complications following extraction.

There were no language restrictions on study selection.

Data extraction and synthesis

Data from included studies were extracted into structured tables and individual study validity was assessed against methodological checklists. Data were summarised descriptively. Decisions relating to study selection, data extraction and validity assessment were made by two independent reviewers, and disagreements were resolved by discussion. For non-English papers, translators were recruited to assist with study selection and data extraction.

Results

Forty studies were included in the review: two RCTs, 34 literature reviews, and four decision analysis studies.

One RCT in the UK focused on the effects of retained third molars on incisor crowding (predominantly a cosmetic problem) in patients who had previously undergone orthodontic treatment. The results of this trial suggested that the removal of third molars to prevent late incisor crowding cannot be justified. Another on-going RCT in Denmark compares the effects and costs of prophylactic removal of third molars with removal according to morbidity. So far, this trial has recruited 200 participants, and preliminary results indicate that watchful waiting may be a promising strategy. However, more data and longer follow-up of patients are needed to conclude which treatment strategy is the most cost-effective. It is also known that a trial is on-going in the USA but no results are available so far.

The methodological quality of the literature reviews was generally poor, and none of the reviews was systematic. Conclusions from nine reviews on

anterior crowding suggested that there was only a weak association between retention of third molars and crowding. Six out of 21 reviews with a more general scope also concluded that the prophylactic removal of third molars was unjustified. Twelve general reviews did not conclude with a clear message about the management of third molars. Three reviews suggested that prophylactic removal of third molars is appropriate, but these reviews were of poorer methodological quality than the majority of other reviews. Three out of four papers focusing on surgical management expressed uncertain conclusions relating to the prophylactic extraction of third molars.

It is difficult to compare prophylactic removal of impacted third molars with retention in the absence of disease, partly because these two strategies are related to different types of outcomes. By using utility methods, four decision analyses made it possible to compare different outcomes directly in the coherent models. Although there were important differences in the structure and methods for estimating input values, the findings of the decision analyses (by two groups of researchers) consistently suggested that retention of third molars was cost-saving and more cost-effective compared with prophylactic removal of impacted third molars.

Conclusions

There is no reliable research evidence to support the prophylactic removal of disease-free impacted third molars. Available evidence suggests that retention may be more effective and cost-effective than prophylactic removal, at least in the short to medium term.

Recommendations for research

1. Although data from observational studies may be useful, there is a need for well-designed RCTs to compare prophylactic removal with management by deliberate retention, using long-term follow-up.
2. There is also a need for decision analysis models that could be used to compare long-term outcomes of prophylactic removal with retention of impacted third molars.

Publication

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NHS R&D HTA Programme

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The research reported in this monograph was commissioned by the HTA programme (project number 99/16/01) on behalf of the National Institute for Clinical Excellence (NICE). Rapid reviews are completed in a limited time to inform the appraisal and guideline development processes managed by NICE. The review brings together evidence on key aspects of the use of the technology concerned. However, appraisals and guidelines produced by NICE are informed by a wide range of sources. Any views expressed in this rapid review are therefore those of the authors and not necessarily those of the HTA programme, NICE or the Department of Health.

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