

# Microdiscectomy compared with transforaminal epidural steroid injection for persistent radicular pain caused by prolapsed intervertebral disc: the NERVES RCT

Martin J Wilby,<sup>1\*</sup> Ashley Best,<sup>2</sup> Eifiona Wood,<sup>3</sup>  
Girvan Burnside,<sup>2</sup> Emma Bedson,<sup>2</sup> Hannah Short,<sup>2</sup>  
Dianne Wheatley,<sup>2</sup> Daniel Hill-McManus,<sup>3</sup>  
Manohar Sharma,<sup>4</sup> Simon Clark,<sup>1</sup> Jennifer Bostock,<sup>5</sup>  
Sally Hay,<sup>6</sup> Ganesan Baranidharan,<sup>7</sup> Cathy Price,<sup>8</sup>  
Richard Mannion,<sup>9</sup> Peter J Hutchinson,<sup>10</sup>  
Dyfrig A Hughes,<sup>3</sup> Anthony Marson<sup>11</sup>  
and Paula R Williamson<sup>2</sup>

<sup>1</sup>Department of Neurosurgery, The Walton Centre NHS Foundation Trust (member of Liverpool Health Partners), Liverpool, UK

<sup>2</sup>Liverpool Clinical Trials Centre, University of Liverpool (member of Liverpool Health Partners), Liverpool, UK

<sup>3</sup>Centre for Health Economics and Medicines Evaluation, Bangor University, Bangor, UK

<sup>4</sup>Department of Pain Medicine, The Walton Centre NHS Foundation Trust, Liverpool, Liverpool, UK

<sup>5</sup>Patient and public involvement representative, Kent, UK

<sup>6</sup>Patient and public involvement representative, Norfolk, UK

<sup>7</sup>Leeds Teaching Hospital NHS Trust, Leeds General Infirmary, Leeds, UK

<sup>8</sup>Pain Clinic, Solent NHS Trust, Southampton, UK

<sup>9</sup>Cambridge University Hospitals NHS Trust, Cambridge, UK

<sup>10</sup>Academic Division of Neurosurgery, University of Cambridge, Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK

<sup>11</sup>Department of Pharmacology and Therapeutics, University of Liverpool and The Walton Centre NHS Foundation Trust, Liverpool, UK

\*Corresponding author [martin.wilby@thewaltoncentre.nhs.uk](mailto:martin.wilby@thewaltoncentre.nhs.uk)

**Declared competing interests of authors:** Ganesan Baranidharan reports grants and personal fees from Boston Scientific Corporation (Marlborough, MA, USA), Nevro Corporation (Redwood City, CA, USA), Abbott Laboratories (Abbott Park, IL, USA) and Nalu Medical (Carlsbad, CA, USA) outside the submitted work. Paula R Williamson reports a Clinical Trials Unit Support Funding grant from the National Institute for Health Research (NIHR). Peter J Hutchinson reports grants from NIHR (Research Professorship) and the Royal College of Surgeons of England (London, UK) outside the submitted work. Anthony Marson reports grants from UCB PharmaSA (Brussels, Belgium) outside the submitted work. Simon Clark reports grants and personal fees from Medtronic plc (Dublin, Ireland) outside the submitted work.

Published April 2021

DOI: 10.3310/hta25240

## Plain English summary

### The NERVES RCT

Health Technology Assessment 2021; Vol. 25: No. 24

DOI: 10.3310/hta25240

NIHR Journals Library [www.journalslibrary.nihr.ac.uk](http://www.journalslibrary.nihr.ac.uk)

# Plain English summary

## What is the problem?

Sciatica or pain related to nerve irritation travelling down the leg is common in young working adults and most likely to be caused by a 'slipped' (prolapsed) disc. Although the majority of cases get better on their own and within 4–6 weeks, a significant group of patients struggle with disabling symptoms sometimes beyond 1 year. Consequently, patients struggle to maintain their home and working lives. Many treatments are available for sciatica, but simpler treatments (e.g. pain tablets, physiotherapy and changing one's lifestyle) are often not very effective and patients have often tried all of them by the time they are seen in hospital to have tests, such as scans, done.

Surgery to remove part of the disc is recommended in cases where the pain is accompanied by severe weakness in one or both legs, or where doctors think that nerves may be damaged because patients have bladder, bowel and sexual functioning difficulties (i.e. red flag symptoms). Surgery works well in alleviation of referred leg pain and also to relieve pressure on a physically compressed nerve that may be showing clinical sign of injury/weakness. An alternative to surgery is to inject a mixture of anaesthetic and steroid close to the site of the disc injury and nerve, but at the moment we do not know whether or not these injections work in the long term. They are cheaper and less invasive, with fewer risks than surgery, such as from anaesthetic or infection.

## What did our study investigate?

This study compared the usefulness of surgery with injections for patients who have had sciatica for < 1 year and who have tried simple remedies but are still in pain. Patients were allocated to have either surgery or the injection. Symptoms (e.g. pain) were assessed after 18 weeks.

## What did we find?

We found that there was no significant difference between surgery and injection at the primary end point. Surgery was not significantly different from injection in terms of clinical outcome and was not cost-effective compared with injection.

## Our conclusion and recommendation

Given the cost of surgery and the risks to patients, we suggest that further studies should be carried out to explore whether or not all patients with sciatica due to a slipped disc should be considered suitable for an injection, unless there is a good reason not to.



# Health Technology Assessment

ISSN 1366-5278 (Print)

ISSN 2046-4924 (Online)

Impact factor: 3.370

*Health Technology Assessment* is indexed in MEDLINE, CINAHL, EMBASE, the Cochrane Library and Clarivate Analytics Science Citation Index.

This journal is a member of and subscribes to the principles of the Committee on Publication Ethics (COPE) ([www.publicationethics.org/](http://www.publicationethics.org/)).

Editorial contact: [journals.library@nihr.ac.uk](mailto:journals.library@nihr.ac.uk)

The full HTA archive is freely available to view online at [www.journalslibrary.nihr.ac.uk/hta](http://www.journalslibrary.nihr.ac.uk/hta). Print-on-demand copies can be purchased from the report pages of the NIHR Journals Library website: [www.journalslibrary.nihr.ac.uk](http://www.journalslibrary.nihr.ac.uk)

## Criteria for inclusion in the *Health Technology Assessment* journal

Reports are published in *Health Technology Assessment* (HTA) if (1) they have resulted from work for the HTA programme, and (2) they are of a sufficiently high scientific quality as assessed by the reviewers and editors.

Reviews in *Health Technology Assessment* are termed 'systematic' when the account of the search appraisal and synthesis methods (to minimise biases and random errors) would, in theory, permit the replication of the review by others.

## HTA programme

Health Technology Assessment (HTA) research is undertaken where some evidence already exists to show that a technology can be effective and this needs to be compared to the current standard intervention to see which works best. Research can evaluate any intervention used in the treatment, prevention or diagnosis of disease, provided the study outcomes lead to findings that have the potential to be of direct benefit to NHS patients. Technologies in this context mean any method used to promote health; prevent and treat disease; and improve rehabilitation or long-term care. They are not confined to new drugs and include any intervention used in the treatment, prevention or diagnosis of disease.

The journal is indexed in NHS Evidence via its abstracts included in MEDLINE and its Technology Assessment Reports inform National Institute for Health and Care Excellence (NICE) guidance. HTA research is also an important source of evidence for National Screening Committee (NSC) policy decisions.

## This report

The research reported in this issue of the journal was funded by the HTA programme as project number 12/201/10. The contractual start date was in July 2014. The draft report began editorial review in December 2019 and was accepted for publication in June 2020. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HTA editors and publisher have tried to ensure the accuracy of the authors' report and would like to thank the reviewers for their constructive comments on the draft document. However, they do not accept liability for damages or losses arising from material published in this report.

This report presents independent research funded by the National Institute for Health Research (NIHR). The views and opinions expressed by authors in this publication are those of the authors and do not necessarily reflect those of the NHS, the NIHR, NETSCC, the HTA programme or the Department of Health and Social Care. If there are verbatim quotations included in this publication the views and opinions expressed by the interviewees are those of the interviewees and do not necessarily reflect those of the authors, those of the NHS, the NIHR, NETSCC, the HTA programme or the Department of Health and Social Care.

© Queen's Printer and Controller of HMSO 2021. This work was produced by Wilby *et al.* under the terms of a commissioning contract issued by the Secretary of State for Health and Social Care. This issue may be freely reproduced for the purposes of private research and study and extracts (or indeed, the full report) may be included in professional journals provided that suitable acknowledgement is made and the reproduction is not associated with any form of advertising. Applications for commercial reproduction should be addressed to: NIHR Journals Library, National Institute for Health Research, Evaluation, Trials and Studies Coordinating Centre, Alpha House, University of Southampton Science Park, Southampton SO16 7NS, UK.

Published by the NIHR Journals Library ([www.journalslibrary.nihr.ac.uk](http://www.journalslibrary.nihr.ac.uk)), produced by Prepress Projects Ltd, Perth, Scotland ([www.prepress-projects.co.uk](http://www.prepress-projects.co.uk)).

## NIHR Journals Library Editor-in-Chief

---

**Professor Ken Stein** Professor of Public Health, University of Exeter Medical School, UK

## NIHR Journals Library Editors

---

**Professor John Powell** Chair of HTA and EME Editorial Board and Editor-in-Chief of HTA and EME journals. Consultant Clinical Adviser, National Institute for Health and Care Excellence (NICE), UK, and Professor of Digital Health Care, Nuffield Department of Primary Care Health Sciences, University of Oxford, UK

**Professor Andrée Le May** Chair of NIHR Journals Library Editorial Group (HS&DR, PGfAR, PHR journals) and Editor-in-Chief of HS&DR, PGfAR, PHR journals

**Professor Matthias Beck** Professor of Management, Cork University Business School, Department of Management and Marketing, University College Cork, Ireland

**Dr Tessa Crilly** Director, Crystal Blue Consulting Ltd, UK

**Dr Eugenia Cronin** Senior Scientific Advisor, Wessex Institute, UK

**Dr Peter Davidson** Consultant Advisor, Wessex Institute, University of Southampton, UK

**Ms Tara Lamont** Senior Scientific Adviser (Evidence Use), Wessex Institute, University of Southampton, UK

**Dr Catriona McDaid** Senior Research Fellow, York Trials Unit, Department of Health Sciences, University of York, UK

**Professor William McGuire** Professor of Child Health, Hull York Medical School, University of York, UK

**Professor Geoffrey Meads** Emeritus Professor of Wellbeing Research, University of Winchester, UK

**Professor James Raftery** Professor of Health Technology Assessment, Wessex Institute, Faculty of Medicine, University of Southampton, UK

**Dr Rob Riemsma** Reviews Manager, Kleijnen Systematic Reviews Ltd, UK

**Professor Helen Roberts** Professor of Child Health Research, UCL Great Ormond Street Institute of Child Health, UK

**Professor Jonathan Ross** Professor of Sexual Health and HIV, University Hospital Birmingham, UK

**Professor Helen Snooks** Professor of Health Services Research, Institute of Life Science, College of Medicine, Swansea University, UK

**Professor Ken Stein** Professor of Public Health, University of Exeter Medical School, UK

**Professor Jim Thornton** Professor of Obstetrics and Gynaecology, Faculty of Medicine and Health Sciences, University of Nottingham, UK

Please visit the website for a list of editors: [www.journalslibrary.nihr.ac.uk/about/editors](http://www.journalslibrary.nihr.ac.uk/about/editors)

**Editorial contact:** [journals.library@nihr.ac.uk](mailto:journals.library@nihr.ac.uk)