Surgical fixation compared with cast immobilisation for adults with a bicortical fracture of the scaphoid waist: the SWIFFT RCT

Joseph Dias,1 Stephen Brealey,2* Liz Cook,2 Caroline Fairhurst,2 Sebastian Hinde,3 Paul Leighton,4 Surabhi Choudhary,5 Matthew Costa,6,7 Catherine Hewitt,2 Stephen Hodgson,8 Laura Jefferson,2,9 Kanagaratnam Jeyapalan,1 Ada Keding,2 Matthew Northgraves,2 Jared Palmer,1 Amar Rangan,2,6 Gerry Richardson,3 Nicholas Taub,10 Garry Tew,2,11 John Thompson10 and David Torgerson2 on behalf of the SWIFFT collaborators

1University Hospitals of Leicester NHS Trust, Leicester, UK
2Alcuin Research Resource Centre Building, Department of Health Sciences, University of York, York, UK
3Centre for Health Economics, University of York, York, UK
4School of Medicine, University of Nottingham, Queen’s Medical Centre, Nottingham, UK
5Queen Elizabeth Hospital Birmingham, University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK
6Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, University of Oxford, Oxford, UK
7Kadoorie Centre, John Radcliffe Hospital, Oxford, UK
8Department of Orthopaedic Surgery, Bolton NHS Foundation Trust, Royal Bolton Hospital, Bolton, UK
9Department of Health Sciences, University of York, York, UK
10Department of Health Sciences, University of Leicester, Leicester, UK
11Department of Sport, Exercise and Rehabilitation, Northumbria University, Newcastle upon Tyne, UK

*Corresponding author stephen.brealey@york.ac.uk
Declared competing interests of authors: Matthew Costa is a member of the General Board for the Health Technology Assessment (HTA) programme (2016 to present) and the HTA Themed Surgery Board (2012–13). Matthew Costa also does consultancy work for industry, although not in relation to this study, and his institution has received money from the National Institute for Health Research (NIHR) and from industry, as well as charitable grants, for other research into musculoskeletal trauma. Catherine Hewitt is a member of the NIHR HTA Commissioning Board (2015–present). Amar Rangan received grants from NIHR during the conduct of the study and grants from DePuy International Ltd (Leeds, UK) and Orthopaedic Research UK (London, UK) outside the submitted work. David Torgerson reports that he was a member of the following committees that are part of the funding agency for this trial: HTA Commissioning Board (2006–10), HTA Medicines for Children Themed Call (2005–6) and NIHR Clinical Trials Unit Standing Advisory Committee (2010–14).

Disclaimer: This report contains transcripts of interviews conducted in the course of the research and contains language that may offend some readers.
Plain English summary

Fracture of the scaphoid bone (one of eight small bones in the wrist) is common in young active people. It is caused by a fall on the hand or the hand being suddenly forced backwards. The usual treatment is to rest the wrist in a plaster cast for 6–10 weeks and allow the broken bone to heal. In 1 in 10 cases in which the fracture is treated in a plaster cast, the bone does not heal and an operation is needed. In the operation, the broken bone is held still with a screw. In the last few years, it has become more common to fix the broken bone with a screw in the first few days after injury, instead of resting the wrist in a plaster cast. It is not clear if fixing the bone early with a screw, compared with resting the wrist in a cast, gives better outcomes for patients and if one treatment is better value for money for the NHS.

In this study, 439 adult patients agreed either to have surgery to hold the broken scaphoid with a special screw or to have the wrist held still in a plaster cast (with surgery offered after 6 weeks to those who were still not healed). The decision about which treatment to use was made using randomisation, which is similar to tossing a coin. Patients reported their own wrist pain and function at 6, 12, 26 and 52 weeks. Information was also collected on general health, bone healing, grip strength and range of movement, complications from treatment and costs.

No important differences were found in patients’ wrist pain and function at 52 weeks. The bone did not heal properly in four patients in the surgery group or in nine patients in the plaster cast group at 52 weeks. For one of these patients in the surgery group and four of these patients in the plaster cast group, the bone did not join at all. Eight patients in the surgery group had further surgery following their initial operation to fix their wrist, and one patient in the cast group required repeated surgery because the bone did not join at all. The overall cost of treating with a plaster cast was lower than that of early surgery. Therefore, the findings of the study suggest that a plaster cast should be used initially and that the bone should be immediately fixed with a screw if it does not heal.
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/).

Editorial contact: journals.library@nihr.ac.uk

The full HTA archive is freely available to view online at 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

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 11/36/37. The contractual start date was in April 2013. The draft report began editorial review in May 2018 and was accepted for publication in March 2019. 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 2020. This work was produced by Dias 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), produced by Prepress Projects Ltd, Perth, Scotland (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 Senior Clinical Researcher, 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**  Professor of Wellbeing Research, University of Winchester, UK

**Professor John Norrie**  Chair in Medical Statistics, University of Edinburgh, 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

**Professor Martin Underwood**  Warwick Clinical Trials Unit, Warwick Medical School, University of Warwick, UK

Please visit the website for a list of editors: www.journalslibrary.nihr.ac.uk/about/editors

**Editorial contact:** journals.library@nihr.ac.uk