

A comparison of two methods of surgical fixation for the treatment of simple olecranon fractures in adults

Submission date 11/05/2020	Recruitment status No longer recruiting	<input checked="" type="checkbox"/> Prospectively registered
Registration date 19/05/2020	Overall study status Completed	<input checked="" type="checkbox"/> Protocol <input checked="" type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
Last Edited 19/06/2024	Condition category Injury, Occupational Diseases, Poisoning	<input type="checkbox"/> Individual participant data <input type="checkbox"/> Record updated in last year

Plain English summary of protocol

Background and study aims

Fractures (a break in the bone) of the olecranon (bony point of the elbow) are common and usually happen after a fall onto the elbow. The risk of having this fracture increases as we get older. If a patient is well enough they usually have surgery to fix the fracture as a day case. Commonly the bone is held using tension band wiring technique, a metal wire bent around the bone and two smooth pins. This is effective in holding the position for the fracture to heal. However, the wires can cause pain because they lie just under the skin. One in three patients will have a second operation to remove the wires, exposing them to further surgical risks and resulting in increased costs to the National Health Service. Another way to hold the bone is to use a strong material cord (tension suture fixation). Some small studies looking at this technique have shown that this can reliably hold the bones in a good position while they heal and that the patient does not experience any discomfort from the prominence of the suture material. One small study found the need for further surgery was reduced to less than one in twenty. This is better for the patients and could save the NHS about 4 million pounds a year but a larger study is needed to confirm this finding. This study aims to compare two methods of surgical treatment for adult patients with olecranon fractures to find out which has a better patient outcome in terms of return to function.

Who can participate?

Patients aged 16 years or older who attend a participating hospital with an olecranon fracture

What does the study involve?

Participants are randomly allocated to either receive surgery using tension suture repair or tension band wiring to fix the fracture. Participants are assessed at the start of the study, then at 4, 12 and 18 months, and some participants at 2 years. Participants complete a few questionnaires, an assessment of elbow range of motion (at 4 months), and have x-rays to check healing at 4 months. The cost of both treatments is calculated relative to their benefits to find out which is better value for money for the NHS.

What are the possible benefits and risks of participating?

Within the trial, participants allocated to receive tension suture repair may experience benefit as they may be less likely to require a second surgery to remove the fixation material, thereby reducing the risks associated with surgery and the inconvenience for the patient, though the purpose of the study is to provide evidence regarding this.

This study only includes treatments that are already used in the NHS but as with many medical procedures, there are some potential risks, mainly in relation to the surgery and anaesthesia. Most commonly, patients may experience pain around the arm. This usually improves after 48 hours or so as the body heals. Some patients feel nauseous or light-headed after surgery due to the anaesthetic, which usually passes over 24 hours. It is rare, but some people can have a bad reaction to anaesthesia. Severe allergic reactions to anaesthesia are very rare, less than 1 in 1000. Specific common risks to the tension wiring banding technique include that further surgical procedures may need to be carried out, for example, to remove the metalwork as it may be uncomfortable, move or fail. Based on clinical experience it is estimated that one in five may require removal. No specific common risks with tension suture repair technique have been identified. This is a newer technique and risks may include a need to re-operate if the fixation fails.

Where is the study run from?

Wrightington, Wigan and Leigh NHS Foundation Trust (lead site) (UK)

When is the study starting and how long is it expected to run for?

November 2019 to June 2024

Who is funding the study?

National Institute for Health Research (NIHR) (UK)

Who is the main contact?

Liz Cook

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Contact information

Type(s)

Scientific

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Additional identifiers

Integrated Research Application System (IRAS)

276873

Central Portfolio Management System (CPMS)

45217

Study information

Scientific Title

Suture fixation versus tension band wiring for simple olecranon fracture fixation: a multi-centre randomised controlled trial (Simple Olecranon Fracture Fixation Trial – SOFFT)

Acronym

SOFFT

Study objectives

The functional outcome, measured by the DASH score at 4 months, for the tension suture repair technique will not be inferior to traditional tension band wiring for the internal surgical fixation of Mayo Grade IIA fractures of the olecranon in adult patients over the age of 16 years.

Ethics approval required

Old ethics approval format

Ethics approval(s)

Approved 15/06/2020, North West - Greater Manchester Central Research Ethics Committee (3rd Floor, Barlow House, 4 Minshull Street, Manchester, M1 3DZ, UK; +44 (0)207 1048191; gmcentral.rec@hra.nhs.uk), REC ref: 20/NW/0234

Study design

Randomized; Both; Design type: Treatment, Surgery, Health Economic

Primary study design

Interventional

Study type(s)

Treatment

Health condition(s) or problem(s) studied

Olecranon fracture

Interventions

This is a multi-centre, randomised controlled non-inferiority trial, with an internal pilot phase to check the assumptions about recruitment and provide guidance on optimising the trial processes.

This study will be carried out in up to 35 NHS major trauma centres and Trauma Units within the UK treating olecranon fractures and with facilities to support research activity.

A total of 280 (140 in the intervention group and 140 in the control group) male and female patients will be recruited for the study.

Prior to study involvement: Patients will be given a participant information sheet to read and be given sufficient time to consider this information.

Eligible and consenting patients will be randomly allocated to either tension suture repair or standard tension band wiring. Participants will not be informed of their treatment allocation.

Intervention: fixation using tension suture repair

Control: fixation using tension band wiring

Postoperatively, patients will receive all other medical care including physiotherapy as per standard of care.

All patients randomised into the two groups will also receive standardised, written physiotherapy advice detailing suggested exercises they are to perform.

The researchers will assess outcomes at the start of the study, then at 4, 12, and 18 months and some at 24 months when participants will complete questionnaires that measure elbow function and pain. Participants will attend a clinic visit that will include x-rays to check healing at 4 months. The associated costs of both treatments to the NHS will also be evaluated.

Intervention Type

Procedure/Surgery

Primary outcome(s)

Physical function of the upper limb measured using the Disabilities of the Arm Shoulder and Hand (DASH) score at 4 months

Key secondary outcome(s)

Collected at 4, 12 and 18 months post-randomisation for the whole population, and at 24 months post-randomisation only for those who reach that follow-up point within the trial recruitment and follow-up window of up to month 48 of the study (unless stated otherwise):

1. Physical function of the upper limb measured using the Disabilities of the Arm Shoulder and Hand (DASH) score at 12, 18, and 24 months
2. Pain measured using a Numeric Rating Scale
3. Patient satisfaction measured using a Net Promotor Score
4. Health-related quality of life measured using EuroQol 5 Dimensions (5L) Score (EQ5D-5L). EQ-5D-5L data will be collected twice at baseline: i.e. once to assess patient health-related quality of life on the day (after the injury) and once with regard to the week before injury.
5. Radiological union measured using x-ray imaging at 4 months
6. Complications collected by patient-reported questionnaires and review of hospital records
7. Elbow range of movement (flexion, extension, pronation and supination) assessed by a suitably trained independent observer using a hand-held goniometer following trial-specific instructions at 4 months
8. Re-operations related to the injury or to remove metalwork; reason for reoperation will be recorded
9. Resource use and work impact: patient-reported questionnaires and hospital forms will be designed to collect information on hospital stay (initial and subsequent inpatient episodes, outpatient hospital visits and A&E admissions); primary care consultations (e.g. GP, nurse and physiotherapy); work impact of both interventions; and return to work and return to normal activities.

Completion date

30/06/2024

Eligibility

Key inclusion criteria

1. Patients aged ≥ 16 years
2. Mayo Grade IIA acute olecranon fracture within 3 weeks of injury
3. Closed or Gustillo and Anderson grade 1 open injury
4. The surgeon believes the patient will benefit from surgical intervention
5. Ability to give informed consent

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Adult

Lower age limit

16 years

Sex

All

Total final enrolment

280

Key exclusion criteria

1. Surgery contra-indicated
2. Gustillo and Anderson grade 2 or 3 open injury
3. Associated upper limb injuries or prior upper limb pathology adversely affecting function
4. Evidence of fracture comminution (Mayo Grade IIB) or instability around the elbow and/or forearm (Mayo Grade III)
5. Evidence that the patient would be unable to adhere to trial procedures or complete questionnaires
6. Previous entry into SOFFT
7. Concurrent olecranon fracture in the opposite limb

Date of first enrolment

13/10/2020

Date of final enrolment

31/12/2022

Locations

Countries of recruitment

United Kingdom

England

Scotland

Study participating centre

Wrightington, Wigan and Leigh NHS Foundation Trust (Lead Site)

Wrightington Hospital

Hall Lane

Appley Bridge

Wigan

United Kingdom

WN6 9EP

Study participating centre

University Hospitals Of Leicester NHS Trust

Leicester General Hospital

Gwendolen Road

Leicester
United Kingdom
LE5 4PW

Study participating centre

NHS Lothian

Edinburgh Royal Infirmary
Royal Infirmary of Edinburgh
51 Little France Crescent
Edinburgh
United Kingdom
EH16 4SA

Study participating centre

North West Anglia NHS Foundation Trust

Peterborough City Hospital
Bretton Gate
Peterborough
United Kingdom
PE3 9GZ

Study participating centre

Brighton and Sussex University Hospitals NHS Trust

Royal Sussex County Hospital
Eastern Road
Brighton
United Kingdom
BN2 5BE

Study participating centre

Cardiff and Vale University Health Board

Cardiff and Vale UHB Headquarters
University Hospital of Wales (UHW)
Heath Park
Cardiff
Cardiff
United Kingdom
CF14 4XW

Study participating centre

Barts Health NHS Trust

The Royal London Hospital
80 Newark Street
London
United Kingdom
E1 2ES

Study participating centre

Greater Glasgow Health Board

Glasgow Royal Infirmary
84 Castle Street
Glasgow
United Kingdom
G4 0SF

Study participating centre

East and North Hertfordshire NHS Trust

Lister Hospital
Coreys Mill Lane
Stevenage
United Kingdom
SG1 4AB

Study participating centre

Royal Devon and Exeter NHS Foundation Trust

Royal Devon & Exeter Hospital
Barrack Road
Exeter
United Kingdom
EX2 5DW

Study participating centre

The Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation Trust

Gobowen
Oswestry
United Kingdom
SY10 7AG

Study participating centre

Tayside Health Board

Ninewells Hospital

Dundee
United Kingdom
DD1 9SY

Study participating centre

Betsi Cadwaladr University Local Health Board

Ysbyty Gwynedd
Penrhos Garnedd
Bangor
United Kingdom
LL57 2PW

Study participating centre

Oxford University Hospitals NHS Foundation Trust

John Radcliffe Hospital
Headley Way
Headington
Oxford
United Kingdom
OX3 9DU

Study participating centre

Kings College Hospital NHS Foundation Trust

Kings College Hospital
Denmark Hill
London
United Kingdom
SE5 9RS

Study participating centre

Homerton University Hospital NHS Foundation Trust

Homerton Row
London
United Kingdom
E9 6SR

Study participating centre

Cambridge University Hospitals NHS Foundation Trust

Addenbrookes Hospital

Cambridge
United Kingdom
CB2 0AU

Study participating centre

University College London Hospitals NHS Foundation Trust
250 Euston Road
London
United Kingdom
NW1 2PG

Study participating centre

Milton Keynes University Hospital NHS Foundation Trust
Standing Way
Eaglestone
Milton Keynes
United Kingdom
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Liverpool University Hospitals NHS Foundation Trust
Royal Liverpool University Hospital
Prescot Street
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United Kingdom
L7 8XP

Study participating centre

Lewisham and Greenwich NHS Trust
University Hospital Lewisham
Lewisham High Street
London
United Kingdom
SE13 6LH

Study participating centre

St George's University Hospitals NHS Foundation Trust
Blackshaw Road
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SW17 0QT

Study participating centre

Epsom and St Helier University Hospitals NHS Trust
St Helier Hospital
Wrythe Lane
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United Kingdom
SM5 1AA

Study participating centre

Royal United Hospitals Bath NHS Foundation Trust
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BA1 3NG

Study participating centre

Wirral University Teaching Hospital NHS Foundation Trust
Arrowe Park Hospital
Arrowe Park Road
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United Kingdom
CH49 5PE

Study participating centre

Hampshire Hospitals NHS Foundation Trust
Basingstoke and North Hampshire Hos
Aldermaston Road
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RG24 9NA

Study participating centre

Frimley Health NHS Foundation Trust
Portsmouth Road
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GU16 7UJ

Study participating centre
Maidstone & Tunbridge Wells NHS Trust
The Tunbridge Wells Hospital
Tonbridge Road
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TN2 4QJ

Study participating centre
The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust
Queen Elizabeth Hospital
Gayton Road
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Study participating centre
Calderdale and Huddersfield NHS Foundation Trust
Trust Headquarters
Acre Street
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HD3 3EA

Study participating centre
North Cumbria Integrated Care NHS Foundation Trust
Pillars Building
Cumberland Infirmary
Infirmary Street
Carlisle
United Kingdom
CA2 7HY

Study participating centre
Bradford Teaching Hospitals NHS Foundation Trust
Bradford Royal Infirmary
Duckworth Lane

Bradford
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BD9 6RJ

Study participating centre

North Bristol NHS Trust

Southmead Hospital
Southmead Road
Westbury-on-trym
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BS10 5NB

Study participating centre

James Paget University Hospitals NHS Foundation Trust

Lowestoft Road
Gorleston
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NR31 6LA

Study participating centre

Southport and Ormskirk Hospital NHS Trust

Town Lane
Southport
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PR8 6PN

Study participating centre

Royal Cornwall Hospitals NHS Trust

Royal Cornwall Hospital
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TR1 3LJ

Study participating centre

Kingston Hospital NHS Foundation Trust

Galsworthy Road

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United Kingdom
KT2 7QB

Study participating centre
Sheffield Teaching Hospitals NHS Foundation Trust
Northern General Hospital
Herries Road
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S5 7AU

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Whittington Health NHS Trust
The Whittington Hospital
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N19 5NF

Study participating centre
Somerset NHS Foundation Trust
Musgrove Park Hospital
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Sponsor information

Organisation
Wrightington, Wigan and Leigh NHS Foundation Trust

ROR
<https://ror.org/028mrx52>

Funder(s)

Funder type
Government

Funder Name

NIHR Evaluation, Trials and Studies Co-ordinating Centre (NETSCC); Grant Codes: 127739

Results and Publications

Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study (fully anonymised) will be available upon request after the publication of the study results from Prof. David Torgerson (David.Torgerson@york.ac.uk).

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Protocol article		01/01/2023	24/01/2023	Yes	No
HRA research summary			28/06/2023	No	No
Other files	Health economics analysis plan version 1	14/05/2024	19/06/2024	No	No
Statistical Analysis Plan	version 1	21/02/2024	17/06/2024	No	No
Study website	Study website	11/11/2025	11/11/2025	No	Yes