

Total wrist replacement

Interventional procedures guidance

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www.nice.org.uk/guidance/ipg271

1 Guidance

- 1.1 There is evidence that total wrist replacement relieves pain, but this is based on small numbers of patients and there is insufficient evidence of its efficacy in the long term. The procedure is associated with a risk of the recognised complications of prosthetic joint replacement. Therefore total wrist replacement should only be used with special arrangements for clinical governance, consent and audit or research.
- 1.2 Clinicians wishing to undertake total wrist replacement should take the following actions.
 - Inform the clinical governance leads in their Trusts.
 - Ensure that patients understand the possible alternatives to total wrist replacement and the uncertainty about its efficacy in the long term, such that further surgery may be required, including fusion of the wrist joint. They should provide them with clear written information. In addition, the use of the Institute's [information for patients](#) ('Understanding NICE guidance') is recommended.

- Audit and review clinical outcomes of all patients having total wrist replacement (see section 3.1).
- 1.3 This procedure should be undertaken only on carefully selected patients, by surgeons with special expertise in interventions for the hand and wrist.
- 1.4 Further publication of safety and efficacy outcomes will be useful. The Institute may review the procedure upon publication of further evidence.

2 The procedure

2.1 Indications and current treatments

- 2.1.1 Wrist arthritis can result from rheumatoid arthritis, osteoarthritis, trauma or sepsis. It can cause pain, stiffness and swelling.
- 2.1.2 Conservative management includes the use of analgesics, non-steroidal anti-inflammatory drugs, disease-modifying antirheumatic drugs or steroid medication. If these are inadequate, surgical treatments such as proximal row carpectomy, limited or partial carpal fusion, or total wrist arthrodesis can be used.

2.2 Outline of the procedure

- 2.2.1 Total wrist replacement aims to create a stable, pain-free joint with a functional range of movement.
- 2.2.2 The procedure is performed under either general or regional anaesthesia, usually with the use of a tourniquet. A dorsal approach is made to the wrist, and bone is removed from both sides of the joint using jigs. The prosthetic components are then implanted into the bones and may be further fixed with screws before the bearing surface is attached onto the ends of these components. Fluoroscopy may be used to confirm positions of the implants. Postoperatively, the wrist may be immobilised to promote healing, followed by physical therapy and mobilisation.

Sections 2.3 and 2.4 describe efficacy and safety outcomes which were available in the published literature and which the Committee considered as part of the evidence about this procedure. For more details, refer to the Sources of evidence.

2.3 Efficacy

- 2.3.1 A non-randomised controlled trial of 51 patients comparing wrist implant (27 wrists) with arthrodesis (24 wrists) reported no statistically significant difference in wrist function.
- 2.3.2 In a case series of 19 patients (22 wrists), mean disabilities of the arm, shoulder and hand (DASH) score improved from 46.0 points at baseline to 32.1 points at 12-month follow-up ($p < 0.05$).
- 2.3.3 A case series of 30 patients (32 wrists) reported a significant improvement in range of motion in all directions, apart from radial deviation, after 20 months. A case series of 27 patients (29 wrists) reported improvement in some movements at 4-year follow-up. Pain was significantly reduced ($p \leq 0.002$).
- 2.3.4 A case series of 25 patients (28 wrists) reported pain as absent in 72% (18/25), moderate in 20% (5/25) and severe in 8% (2/25) of patients 47 months after the wrist implant. Another case series reported pain relief in all 25 patients, although 20% (5/25) reported mild discomfort on the ulnar side (follow-up period not stated).
- 2.3.5 The Specialist Advisers considered key efficacy outcomes to include long-term pain relief, range of motion, functional movement and prosthesis survival.

2.4 Safety

- 2.4.1 The non-randomised controlled trial of 51 patients reported superficial wound complications in 22% (6/27), joint instability in 15% (4/27) and persistent paraesthesia in 4% (1/27) of patients.
- 2.4.2 In four case series, wrist implant dislocation occurred in 16% (5/32), 14%

(3/22), 0% (0/25) and 0% (0/28) of wrists. Joint loosening was reported in 16% (5/32), 10% (3/29), 0% (0/25) and 0% (0/28) of wrists.

- 2.4.3 In the non-randomised controlled trial, hardware-related fracture occurred in 0% (0/27) and 4% (1/24) of patients in the implant and arthrodesis groups, respectively.
- 2.4.4 In the case series, implant complications or errors in implantation occurred in 32% (8/25), 19% (5/27) and 12% (3/25) of patients, and in 27% (6/22) of wrists.
- 2.4.5 The Specialist Advisers considered key safety outcomes to include rates of infection, dislocation, loosening, stiffness and neurovascular complications. Additional theoretical events include tendon rupture, periprosthetic fracture and complex regional pain syndrome.

2.5 Other comments

- 2.5.1 The Committee saw evidence on several different implants, some of which have been withdrawn. The implant design continues to evolve.
- 2.5.2 Most of the evidence seen by the Committee related to patients with rheumatoid arthritis.
- 2.5.3 The Committee noted that the National Joint Register intends to enable data collection on total wrist replacement in the future.

3 Further information

- 3.1 This guidance requires that clinicians undertaking the procedure make special arrangements for audit. The Institute has identified relevant audit criteria and developed an [audit tool](#) (which is for use at local discretion).
- 3.2 NICE has published interventional procedures guidance on [artificial metacarpophalangeal and interphalangeal joint replacement for end-stage arthritis](#) and [artificial trapeziometacarpal joint replacement for endstage osteoarthritis](#), and a clinical guideline on the [care and](#)

[management of osteoarthritis in adults.](#)

Sources of evidence

The evidence considered by the Interventional Procedures Advisory Committee is described in the [overview](#).

Information for patients

NICE has produced [information describing its guidance on this procedure for patients and their carers](#) ('Understanding NICE guidance'). It explains the nature of the procedure and the decision made, and has been written with patient consent in mind.

4 About this guidance

NICE interventional procedure guidance makes recommendations on the safety and efficacy of the procedure. It does not cover whether or not the NHS should fund a procedure. Funding decisions are taken by local NHS bodies after considering the clinical effectiveness of the procedure and whether it represents value for money for the NHS. It is for healthcare professionals and people using the NHS in England, Wales, Scotland and Northern Ireland, and is endorsed by Healthcare Improvement Scotland for implementation by NHSScotland.

This guidance was developed using the NICE [interventional procedure guidance](#) process.

We have produced a [summary of this guidance for patients and carers](#). Tools to help you put the guidance into practice and information about the evidence it is based on are also [available](#).

Changes since publication

10 January 2012: minor maintenance.

Your responsibility

This guidance represents the views of NICE and was arrived at after careful consideration of the available evidence. Healthcare professionals are expected to take it fully into

account when exercising their clinical judgement. This guidance does not, however, override the individual responsibility of healthcare professionals to make appropriate decisions in the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Implementation of this guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to avoid unlawful discrimination and to have regard to promoting equality of opportunity. Nothing in this guidance should be interpreted in a way which would be inconsistent with compliance with those duties.

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Endorsing organisation

This guidance has been endorsed by [Healthcare Improvement Scotland](#).