NICE guidance

Total wrist replacement

Interventional procedures guidance
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www.nice.org.uk/guidance/ipg271

Your responsibility

This guidance represents the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take this guidance fully into account, and specifically any special arrangements relating to the introduction of new interventional procedures. The guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the Yellow Card Scheme.

Commissioners and/or providers have a responsibility to implement the guidance, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties. Providers should ensure that governance structures are in place to review, authorise and monitor the introduction of new devices and procedures.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

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 NICE's information for the public 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. NICE may review the procedure on 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.

2.3 Efficacy

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, see the overview.

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 ($p\leq0.002$).

2.3.4 A case series of 25 patients (28 wrists) reported pain as absent in 72% (18 out of 25), moderate in 20% (5 out of 25) and severe in 8% (2 out of 25) of patients 47 months after the wrist implant. Another case series reported pain relief in all 25 patients, although 20% (5 out of 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 out of 27), joint instability in 15% (4 out of 27) and persistent paraesthesia in 4% (1 out of 27) of patients.

2.4.2 In four case series, wrist implant dislocation occurred in 16% (5 out of 32), 14% (3 out of 22), 0% (0 out of 25) and 0% (0 out of 28) of wrists. Joint loosening was reported in 16% (5 out of 32), 10% (3 out of 29), 0% (0 out of 25) and 0% (0 out of 28) of wrists.

2.4.3 In the non-randomised controlled trial, hardware-related fracture occurred in 0% (0 out of 27) and 4% (1 out of 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 out of 25), 19% (5 out of 27) and 12% (3 out of 25) of patients, and in 27% (6 out of 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. NICE 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 end-stage osteoarthritis, and a guideline on osteoarthritis in over 16s.

Sources of evidence

The evidence considered by the Interventional Procedures Advisory Committee is

described in the overview.

Information for patients

NICE has produced information for the public on this procedure. It explains the nature of the procedure and the decision made, and has been written with patient consent in mind.

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Endorsing organisation

This guidance has been endorsed by Healthcare Improvement Scotland.