

Mini-incision surgery for total knee replacement

1 Guidance

- 1.1 Current evidence on the safety and efficacy of mini-incision surgery for total knee replacement does not appear adequate for this procedure to be used without special arrangements for consent and for audit or research. More evidence is required on the long-term safety and efficacy of this procedure and clinicians should submit data to the National Joint Registry (www.njrcentre.org.uk).
- 1.2 Clinicians wishing to undertake mini-incision surgery for total knee replacement should take the following actions.
 - Inform the clinical governance leads in their Trusts.
 - Ensure that patients understand the uncertainty about the procedure's safety and efficacy and provide them with clear written information. Use of the Institute's *Information for the public* is recommended.
- 1.3 Clinicians undertaking this procedure should have adequate training before performing this technique.
- 1.4 Further research will be useful. Clinicians are encouraged to enter patients in well-defined trials and to collect longer-term follow-up data. The Institute may review the procedure upon publication of further evidence.

2 The procedure

2.1 Indications

- 2.1.1 The most common indication for a total knee replacement is degenerative arthritis (osteoarthritis) of the knee joint.
- 2.1.2 Conservative treatments for arthritis symptoms include oral or topical medication for pain and inflammation, and physiotherapy. In addition, corticosteroids may be injected into the knee joint to relieve inflammation. If these therapies do not work, a partial or total knee replacement may be necessary.

2.2 Outline of the procedure

- 2.2.1 This technique is distinct from a standard knee replacement because specialised instruments are used to manoeuvre around the soft tissue rather than cut through it. The kneecap can be moved to one side rather than inverted. This type of exposure reduces the need to cut muscle. The same prostheses are inserted, but in this procedure the incision is much smaller (about 10–12 cm rather than 20–30 cm).
- 2.2.2 An incision 10–12 cm long is made over the knee. A padded bolster is used to flex the hip, or a knee holder is used to support the leg, allowing the weight of the leg to open the joint space and push the tissue away. The surgeon can extend or flex the joint to expose different parts of the knee. The articular surfaces of the tibia and femur are removed using specially designed instruments.

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This guidance is written in the following context:

This guidance represents the view of the Institute which was arrived at after careful consideration of the available evidence. Health professionals are expected to take it fully into account when exercising their clinical judgement. This guidance does not, however, override the individual responsibility of health professionals to make appropriate decisions in the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

2.3 Efficacy

- 2.3.1 Two non-randomised controlled trials and three case series were identified. Two studies were reported from the same centre, but the extent of the overlap in the patient groups is unclear. In one study, 50 patients with a mini-incision total knee replacement were compared with 20 patients who had a standard total knee replacement. At 6 weeks, patients with the mini-incision procedure had a greater range of movement than patients with standard surgery, but the difference was not statistically significant. One case series of 166 patients (216 knees) with a minimum 2-year follow up reported that 98% (195/216) of knees had 'good' or 'excellent' objective patient satisfaction indices. For more details, refer to the Sources of evidence.
- 2.3.2 The Specialist Advisors stated that there was some uncertainty regarding the long-term functional outcome of this procedure compared with a standard total knee replacement.

2.4 Safety

- 2.4.1 There was limited information on safety outcomes for most of the studies. In a case series of 66 patients, 4% (3/66) of patients had a complication arising from the procedure. These complications were pulmonary embolism (1 patient), transient peroneal nerve palsy (1 patient) and intraoperative myocardial infarction (1 patient). In a case series of 20 patients, 10% (2/20) of patients had painful crepitus and 5% (1/20) had haemarthrosis. In a case series of 166 patients, 2% (5/216) of knees required re-operation. For more details, refer to the Sources of evidence.
- 2.4.2 The Specialist Advisors stated that poor positioning of the components was the main safety concern.

2.5 Other comments

- 2.5.1 The Committee noted that the definition of mini-incision knee replacement related more to the use of specialised instruments than to the precise length of the incision.
- 2.5.2 Computer-assisted navigated techniques are being developed with a view to increasing the safety and efficacy of mini-incision surgery for total knee replacement.

Andrew Dillon
Chief Executive
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Information for the public

NICE has produced information describing its guidance on this procedure for patients, carers and those with a wider interest in healthcare. It explains the nature of the procedure and the decision made, and has been written with patient consent in mind. This information is available, in English and Welsh, from www.nice.org.uk/IPG117publicinfo.

Sources of evidence

The evidence considered by the Interventional Procedures Advisory Committee is described in the following document.

Interventional procedure overview of mini-incision surgery for total knee replacement, April 2004.

Available from: www.nice.org.uk/ip247overview

Ordering information

Copies of this guidance can be obtained from the NHS Response Line by telephoning 0870 1555 455 and quoting reference number N0845. *Information for the public* can be obtained by quoting reference number N0846 for the English version and N0847 for a version in English and Welsh.

The distribution list for this guidance is available at www.nice.org.uk/IPG117distributionlist

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