NICE guidance

Automated percutaneous mechanical lumbar discectomy

Interventional procedures guidance
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nice.org.uk/guidance/ipg141

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. However, 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.

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.

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 Current evidence suggests that there are no major safety concerns associated with automated percutaneous mechanical lumbar discectomy. There is limited evidence of efficacy based on uncontrolled case series of heterogeneous groups of patients, but evidence from small randomised controlled trials shows

conflicting results. In view of the uncertainties about the efficacy of the procedure, it should not be used without special arrangements for consent and for audit or research.

1.2 Clinicians wishing to undertake automated percutaneous mechanical lumbar discectomy should take the following actions.

- Inform the clinical governance leads in their Trusts.
- Ensure that patients understand the uncertainty about the procedure's efficacy and provide them with clear written information. In addition, use of the Institute's information for the public is recommended.
- Audit and review clinical outcomes of all patients having automated mechanical percutaneous lumbar discectomy. The Institute may review the procedure upon publication of further evidence.

2 The procedure

2.1 Indications

2.1.1 Lumbar radicular pain, also known as sciatica, refers to pain that begins in the lower back and radiates down the leg. It is commonly caused by a herniated (or prolapsed) lumbar intervertebral disc. The herniation is a result of a protrusion of the nucleus pulposus through a tear in the surrounding annulus fibrosus. The annulus fibrosus may rupture completely, resulting in an extruded disc, or may remain intact but stretched, resulting in a contained disc prolapse. This may then compress one or more nerve roots, causing pain, numbness or weakness in the leg.

2.1.2 Conservative treatments include the use of analgesics, non-steroidal anti-inflammatory medicines, physical therapy and hot or cold compresses. Epidural injections of corticosteroid may also be used. Surgery to remove disc material may be considered if there is nerve compression or persistent symptoms that are unresponsive to conservative treatment.

2.1.3 Alternative surgical treatments include open discectomy and minimally invasive microdiscectomy.

2.2 Outline of the procedure

2.2.1 Automated percutaneous mechanical lumbar discectomy is performed using local anaesthetic with or without conscious sedation. Under fluoroscopic guidance, a cannula is placed centrally within the disc using a posterolateral approach on the symptomatic side. A probe connected to an automated cutting and aspiration device is then introduced through the cannula. The disc is aspirated until no more nuclear material can be obtained.

2.3 Efficacy

2.3.1 In a randomised controlled trial (RCT) of 71 patients, 29% (9/31) had a successful outcome after automated percutaneous lumbar discectomy, compared with 80% (32/40) of patients after microdiscectomy ($p < 0.001$). In a second RCT, 41% (7/17) of patients had an 'excellent' or 'good' outcome after automated percutaneous lumbar discectomy, compared with 40% (4/10) of patients after conventional discectomy. A third RCT compared automated percutaneous lumbar discectomy with chemonucleolysis and found that significantly more patients had a successful result after chemonucleolysis (61% [44/72] versus 43% [30/69], $p < 0.05$).

2.3.2 Two large case series reported that 68% (707/1047) and 82% (1216/1474) of patients had an 'excellent' or 'good' result at 6 months and 1 year, respectively. A third case series reported an overall success rate of 45% (52/115) after a mean follow-up of 55 months. In two further case series reports, 94% (47/50) and 52% (95/182) of patients were satisfied after mean follow-ups of 6 months and 2.5 years, respectively. For more details, refer to the Sources of evidence.

2.3.3 The Specialist Advisors stated that there was some uncertainty about the efficacy of the procedure.

2.4 Safety

2.4.1 Few complications were reported. Three studies reported discitis in between 0.2% (2/1146) and 1% (2/182) of patients. Two studies reported haematoma in 0.1% (1/1146) and 1.4% (1/69) of patients. Other complications included back muscle spasms, minor bleeding, minor radicular injury and vasovagal syncope. For more details, refer to the Sources of evidence.

2.4.2 The Specialist Advisors stated that vascular and nerve damage, discitis and infection were potential adverse effects of the procedure.

3 Further information

3.1 The Institute has also published guidance on laser lumbar discectomy.

Andrew Dillon
Chief Executive
November 2005

Sources of evidence

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

'Interventional procedures overview of automated percutaneous mechanical lumbar discectomy', February 2005.

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.

4 Changes since publication

As part of the NICE's work programme, the current guidance was considered for review in July 2009 but did not meet the review criteria as set out in the IP process guide. This guidance therefore remains current.

22 January 2012: minor maintenance.

5 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. Information about the evidence it is based on is also available.

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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.