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NHS
National Institute for Clinical Excellence

Laser lumbar discectomy

1 Guidance

1.1 Current evidence on the safety and efficacy of laser lumbar discectomy does not appear adequate to support the use of this procedure without special arrangements for consent and for audit or research. Clinicians wishing to undertake laser lumbar discectomy should inform the clinical governance leads in their Trusts. They should ensure that patients offered it understand the uncertainty about the procedure's safety and efficacy and should provide them with clear written information. Use of the Institute's *Information for the Public* is recommended. Clinicians should ensure that appropriate arrangements are in place for audit or research. Publication of safety and efficacy outcomes will be useful in reducing the current uncertainty. NICE is not undertaking further investigation at present.

2 The procedure

2.1 Indications

2.1.1 Laser lumbar discectomy is a minimally invasive procedure used to treat prolapsed intervertebral discs. Prolapsed (or herniated) lumbar discs cause backache and sciatica in some patients.

2.1.2 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 it may remain intact but stretched, resulting in a contained disc prolapse. This may then compress one or more nerve roots, resulting in pain and numbness in the leg.

2.1.3 Surgery is considered when there is nerve compression or persistent symptoms that are unresponsive to conservative treatment. Laser discectomy can be performed when the prolapse is contained. It is one of several minimally invasive surgical techniques, which are alternatives to open repair procedures such as open lumbar discectomy or laminectomy.

2.2 Outline of the procedure

2.2.1 Laser lumbar discectomy works by vaporising part of a prolapsed disc. A probe is inserted into the disc through a small incision in the patient's back. The needle is inserted through the annulus fibrosus into the nucleus pulposus. Laser energy is then delivered through the probe, to vaporise part of the nucleus pulposus. Several types of laser are available for the procedure, and they differ in absorption, energy requirements, and rate of application. The procedure is performed using radiographic imaging.

2.3 Efficacy

2.3.1 The main potential benefit of this procedure is pain relief. In an uncontrolled UK study of 348 patients with chronic back pain, 210 (60%) patients reported good or excellent results at 1 year. The validity of studies on this procedure was compromised by high rates of loss to follow-up and the lack of long-term data on efficacy outcomes. For more details refer to the sources of evidence below.

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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.

2.3.2 The Specialist Advisors had concerns about the efficacy of this procedure. One Advisor thought that most spinal surgeons believed the procedure to be ineffective. Another felt that the results of laser discectomy were unlikely to be better than with conventional treatment. The same Advisor was concerned that operations could often be unnecessary, given that the symptoms of disc prolapse often resolve without treatment.

2.4 Safety

2.4.1 Complications reported in the studies included discitis, thermal damage, and soft tissue injury. In one study, 12 of 164 patients (7%) reported experiencing postoperative dysaesthesia.

2.4.2 The Specialist Advisors listed the main potential complications as nerve damage, damage to the vertebral endplates and neighbouring structures, and disc-space infection.

2.5 Other comments

2.5.1 It was noted that different types of laser might produce different effects, and there was concern about potentially serious complications including nerve damage.

3 Further information

3.1.1 NICE has also issued guidance on endoscopic laser foraminoplasty (IPG031). Guidance on prosthetic intervertebral disc replacement, percutaneous intradiscal electrothermocoagulation and percutaneous radiofrequency thermocoagulation are currently in progress and will be published in 2004 after public consultation.

Andrew Dillon
Chief Executive
December 2003

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 from www.nice.org.uk/IPG027publicinfoenglish and in English and Welsh from www.nice.org.uk/IPG027publicinfowelsh.

Sources of evidence

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

Interventional procedure overview of laser lumbar discectomy, October 2002

Available from: www.nice.org.uk/IP075overview

Ordering information
Copies of this guidance can be obtained from the NHS Response Line by telephoning 0870 1555 455 and quoting reference number N0382. *Information for the Public* can be obtained by quoting reference number N0383 for the English version and N0384 for a version in English and Welsh.

The distribution list for this guidance is available on the NICE website at URL www.nice.org.uk/IPG027distributionlist

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