

# Subthalamotomy for Parkinson's disease

## 1 Guidance

- 1.1 Current evidence on the safety and efficacy of subthalamotomy for Parkinson's disease does not appear adequate to support the use of this procedure without special arrangements for consent and for audit or research.
- 1.2 Clinicians wishing to undertake subthalamotomy for Parkinson's disease 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.
  - Audit and review clinical outcomes of all patients having subthalamotomy for Parkinson's disease.
- 1.3 Subthalamotomy for Parkinson's disease is a treatment option in the PD Surg trial, which is expected to complete randomisation in 2005/6. Clinicians are encouraged to consider randomising patients in the trial ([www.pdsurg.bham.ac.uk/trial/](http://www.pdsurg.bham.ac.uk/trial/)).
- 1.4 Publication of safety and efficacy outcomes will be useful in reducing the current uncertainty. The Institute may review the procedure upon publication of further evidence.
- 1.5 It is recommended that patient selection should be made with the involvement of a multidisciplinary team, and that patients

should be offered the procedure only when their disease has become refractory to best medical treatment.

## 2 The procedure

### 2.1 Indications

- 2.1.1 Parkinson's disease is a chronic disease of the brain characterised by gradually worsening tremor, muscle rigidity, and difficulties with starting and stopping movements. The condition is usually treated with drugs. Surgery may be considered for people who have responded poorly to drugs, who have severe side effects from medication or who have severe fluctuations in response to drugs (on-off syndrome).
- 2.1.2 Parkinson's disease affects about 0.5% of people aged 65 to 74 years and 1–2% of people aged 75 years and older. Experts believe that 1–10% of people with Parkinson's disease might be suitable for brain surgery.
- 2.1.3 Surgery for Parkinson's disease is carried out on structures within the brain that are responsible for the modification of movements, such as the thalamus, the globus pallidus and the subthalamic nucleus. Surgery may be carried out on these structures in either or both hemispheres of the brain.
- 2.1.4 Surgical treatment aims to correct the imbalance created by diminished function of the substantia nigra – the underlying abnormality in Parkinson's disease. Surgery alters, either through destruction or electrical stimulation, the function of brain nuclei (such as the thalamus, globus pallidus or

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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.

subthalamus) that interact functionally with the substantia nigra. Subthalamotomy is one form of surgery for Parkinson's disease.

## 2.2 Outline of the procedure

2.2.1 Subthalamotomy involves inserting very fine needles into the brain through small holes made in the skull, to destroy a part of the subthalamic nucleus using heat or radiofrequency. The exact points of needle insertion may be different in each patient. The procedure is usually carried out under local anaesthetic. Patients remain awake during the procedure so that the effects on movements can be monitored.

## 2.3 Efficacy

2.3.1 The evidence was limited to small case series, with only two case series assessing efficacy on a total of 32 patients. Both these studies suggested an improvement in motor skills as measured by the Unified Parkinson Disease Rating Scale (UPDRS) at 12 months' follow-up. For more details, refer to the Sources of evidence (see right).

2.3.2 The Specialist Advisors commented that there were not enough data to assess the long-term benefits of subthalamotomy for Parkinson's disease, and that subthalamic electrical stimulation had become the preferred intervention.

## 2.4 Safety

2.4.1 Reported complications included persistent dyskinesia, deterioration in learning and retrieval, and deterioration in spatial working memory. In one study of 66 patients, signs of cerebellar dysfunction persisted in 41% (27/66) of patients 2 weeks after surgery. For more details, refer to the Sources of evidence (see right).

2.4.2 The Specialist Advisors listed the potential complications as risk of stroke; hemiballismus; and disturbance of speech, swallowing or gait. One Advisor was concerned about the irreversible nature of subthalamotomy and the potential need for repeated surgery.

## 2.5 Other comments

2.5.1 Current evidence relates to relatively young patients.

## 3 Further information

3.1 The Institute has produced guidance on deep brain stimulation for Parkinson's disease ([www.nice.org.uk/IPG019guidance](http://www.nice.org.uk/IPG019guidance)). The Institute is also in the process of producing a clinical guideline on Parkinson's disease, which is due to be published in March 2006.

Andrew Dillon  
Chief Executive  
June 2004

## Information for the Public

The Institute 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/IPG065publicinfo](http://www.nice.org.uk/IPG065publicinfo)

## Sources of evidence

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

*Interventional procedure overview of subthalamotomy for Parkinson's disease*, December 2002

Available from: [www.nice.org.uk/ip090overview](http://www.nice.org.uk/ip090overview)

### Ordering information

Copies of this guidance can be obtained from the NHS Response Line by telephoning 0870 1555 455 and quoting reference number N0594. *Information for the Public* can be obtained by quoting reference number N0595 for the English version and N0596 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/IPG065distributionlist](http://www.nice.org.uk/IPG065distributionlist)

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National Institute for Clinical Excellence

MidCity Place, 71 High Holborn, London WC1V 6NA, website: [www.nice.org.uk](http://www.nice.org.uk)

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