

# Stereotactic radiosurgery for trigeminal neuralgia using the gamma knife

This document replaces previous guidance on stereotactic radiosurgery for trigeminal neuralgia using the gamma knife (Interventional Procedures Guidance no. 11).

## 1 Guidance

- 1.1 Current evidence on the safety and efficacy of stereotactic radiosurgery for trigeminal neuralgia using the gamma knife appears adequate to support the use of this procedure provided that the normal arrangements are in place for consent, audit and clinical governance.

## 2 The procedure

### 2.1 Indications

- 2.1.1 Stereotactic radiosurgery with the gamma knife is used to treat trigeminal neuralgia. This is a condition characterised by sudden bursts (paroxysms) of facial pain. These bursts may be triggered by touch, talking, eating or brushing teeth. The pain occurs in the areas supplied by the trigeminal nerve: the cheeks, jaw, teeth, gums, lips and, less often, around the eyes or forehead. Trigeminal neuralgia is rare; the annual incidence is 4 per 100,000 population.
- 2.1.2 Some people with mild symptoms recover without treatment. For most people, the paroxysmal bursts of severe pain continue indefinitely.
- 2.1.3 The first-line treatment for trigeminal neuralgia is medication. Surgery is considered for people who experience severe pain despite medication, or who have adverse effects from medication.

### 2.2 Outline of the procedure

- 2.2.1 Gamma knife radiosurgery involves aiming a focused beam of radiation at the trigeminal nerve at the point where it leaves the brain. It does not require skin incision, needle insertion or general anaesthesia.
- 2.2.2 Other treatments for severe trigeminal neuralgia include: glycerol injection, which involves inserting a needle into the nerve under X-ray guidance; radiofrequency treatment, which involves applying short bursts of radiofrequency energy to the nerve through a needle; and balloon microcompression, which involves inflating a balloon near the nerve. All of these are minimally invasive surgical procedures. Microvascular decompression is a more invasive procedure that involves opening the skull.

### 2.3 Efficacy

- 2.3.1 This procedure was the subject of a systematic review commissioned by the Institute and completed in January 2004. The review reported that between 33% and 90% of patients achieved complete pain relief immediately after stereotactic radiosurgery using the gamma knife. After a mean follow-up period of 18 months, the proportion of patients with recurrence of pain ranged from 0% to 34%, with an average of 14%. For more details, refer to the Sources of evidence (see overleaf).

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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.

## 2.4 Safety

2.4.1 The most common complication reported was facial numbness, affecting 8% (139/1757) of patients. New or worsened trigeminal nerve dysfunction was reported in 4% (66/1757) of patients. Facial paraesthesia occurred in 2% (33/1757) of patients. Less commonly reported complications included troublesome dysaesthesia, loss of taste, corneal numbness and deafness. For more details, refer to the Sources of evidence (see right).

## 2.5 Other comments

2.5.1 These recommendations were based only on evidence on the use of the gamma knife. It is noted that other forms of stereotactic radiation treatment exist.

2.5.2 There is a lack of long-term data and the condition can recur.

2.5.3 Although the recurrence rate appears to be higher after stereotactic radiosurgery than after other treatments, the patient groups reported were not comparable. Relapse is most common in patients with multiple sclerosis and atypical neuralgia.

Andrew Dillon  
Chief Executive  
August 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/IPG085publicinfo](http://www.nice.org.uk/IPG085publicinfo)

## Sources of evidence

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

Lim JNW and Ayiku L (2004) *Systematic review of the clinical efficacy and safety of stereotactic radiosurgery (gamma knife) in the treatment of trigeminal neuralgia*. University of Sheffield; Review Body for Interventional Procedures.

Available from:  
[www.nice.org.uk/ip173systematicreview](http://www.nice.org.uk/ip173systematicreview)

*Interventional procedure overview of stereotactic radiosurgery for trigeminal neuralgia using the gamma knife*, January 2003

Available from: [www.nice.org.uk/ip173overview](http://www.nice.org.uk/ip173overview)

### Ordering information

Copies of this guidance can be obtained from the NHS Response Line by telephoning 0870 1555 455 and quoting reference number N0677. *Information for the Public* can be obtained by quoting reference number N0678 for the English version and N0679 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/IPG085distributionlist](http://www.nice.org.uk/IPG085distributionlist)

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