

Electrosurgery (diathermy and coblation) for tonsillectomy

This document replaces previous guidance on coblation tonsillectomy (*NICE interventional procedure guidance no. 9*), and interim guidance on diathermy for tonsillectomy that was issued jointly with the British Association of Otorhinolaryngologists – Head and Neck Surgeons.

1 Guidance

- 1.1 Current evidence on the safety and efficacy of electrosurgery (diathermy and coblation) for tonsillectomy appears adequate to support the use of these techniques, provided that normal arrangements are in place for consent, audit and clinical governance.
- 1.2 Surgeons should avoid excessive use of diathermy during tonsillectomy. Surgeons using diathermy in tonsillectomy for dissection and/or haemostasis should be fully trained in its use and should understand the potential complications.
- 1.3 Use of coblation for tonsillectomy can result in higher rates of haemorrhage than other techniques and clinicians wishing to use coblation should be specifically trained. The British Association of Otorhinolaryngologists – Head and Neck Surgeons has agreed to produce standards for training.
- 1.4 Surgeons should ensure that patients or their parents/carers understand the risk of haemorrhage after tonsillectomy using these techniques. In addition, use of the Institute's 'Information for the public' is recommended (available from www.nice.org.uk/IPG150publicinfo).

- 1.5 Surgeons should audit and review the rates of haemorrhage complicating tonsillectomy in their own practices and in the context of the techniques they use. Publication of further information about the influence of different techniques and other factors (such as age) on the incidence of haemorrhage after tonsillectomy would be useful in guiding future practice.

2 The procedure

2.1 Indications

- 2.1.1 Indications for tonsillectomy include recurrent acute or chronic tonsillitis, peritonsillar abscess and pharyngeal obstruction/obstructive sleep apnoea. Life-threatening complications of these conditions are rare and the main aim of surgery is to relieve symptoms.
- 2.1.2 Traditional 'cold steel' tonsillectomy consists of two stages: removal of the tonsil followed by haemostasis. Bleeding is controlled by pressure, followed by ligatures. Ligatures may be supplemented by diathermy and the use of packs.

Interventional Procedure Guidance 150

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. Interventional procedures guidance is for health professionals and people using the NHS in England, Wales and Scotland.

This guidance is endorsed by NHS QIS for implementation by NHSScotland.

2.2 Outline of the procedure

- 2.2.1 Diathermy uses radiofrequency energy applied directly to the tissue, and can be bipolar (current passes between the two tips of the forceps) or monopolar (current passes between the forceps tips and a plate attached to the patient's skin). The heat generated may be used in dissection to incise the mucosa and divide the strands of tissue that bind the tonsil to the pharyngeal wall. It may also be used for haemostasis, by coagulating the vessels that run in these strands and any other bleeding vessels.
- 2.2.2 Coblation involves passing a radiofrequency bipolar electrical current through a medium of normal saline, producing a plasma field of sodium ions that dissects the tissue by disrupting intercellular bonds leading to tissue vaporisation. Coblation heats surrounding tissue less than diathermy.

2.3 Efficacy

- 2.3.1 A systematic review of the published evidence on electrosurgery (diathermy and coblation) for tonsillectomy was commissioned by the Institute and completed in June 2005.
- 2.3.2 The mean operating time across the 18 studies that reported this outcome was shortest for diathermy (mean 16.6 minutes), followed by cold steel with ligatures and/or diathermy haemostasis (mean 18.2 minutes). The longest time taken was with coblation (mean 24.5 minutes). No test of statistical significance between lengths of operating times was undertaken in analysis.
- 2.3.3 Four studies looked at the time taken to return to a normal diet after tonsillectomy using diathermy versus cold steel for dissection. Three of the studies favoured cold steel (range 5–9 days for cold steel compared with 7–11 days for diathermy) while the fourth study favoured diathermy. Of two studies investigating the time taken to return to a normal diet after tonsillectomy using diathermy versus coblation, one study favoured diathermy (mean 6.7 days after diathermy compared with 7.4 days after coblation, $p = 0.4$) and the other favoured coblation (mean 2.4 days after coblation versus 7.6 days after diathermy, $p < 0.0001$). For more details refer to the Sources of evidence (see page 3).

2.4 Safety

- 2.4.1 Bleeding is an important complication of tonsillectomy. It can occur intraoperatively, during the first 24 hours after the operation (defined in most studies as primary haemorrhage), or after 24 hours (secondary haemorrhage). Postoperative haemorrhage may require the patient to be readmitted to hospital and possibly undergo further surgery.

Primary haemorrhage

- 2.4.2 Data from the systematic review and from the Wales Single-use Instrument Surveillance Programme (SISP; 3690 patients) indicated that the highest rates of primary haemorrhage requiring return to theatre were associated with cold steel dissection with ligature haemostasis (1.1% and 0.9%, respectively). By contrast, data from the National Prospective Tonsillectomy Audit (which covered England and Northern Ireland; 33,921 patients) indicated that the lowest rates of primary haemorrhage requiring return to theatre were associated with cold steel dissection with bipolar diathermy haemostasis; and with bipolar diathermy dissection and haemostasis (both 0.3%, 95% confidence interval [CI] 0.2–0.4%). The highest rates were associated with monopolar diathermy dissection and haemostasis (0.9%, 95% CI 0.3–2.3%), and with coblation (1.1%, 95% CI 0.7–1.7%).
- 2.4.3 Data from the National Prospective Tonsillectomy Audit final report on rates for all primary haemorrhage indicated that the lowest rates were associated with bipolar diathermy dissection and haemostasis, and with cold steel dissection combined with diathermy haemostasis. The highest rates were associated with coblation, and with monopolar diathermy dissection and haemostasis.

Secondary haemorrhage

- 2.4.4 Crude overall data from the studies included in the systematic review and data from the Wales SISP suggested that cold steel dissection with ligature haemostasis was associated with lower rates of secondary haemorrhage requiring return to theatre, while use of diathermy for dissection and haemostasis was associated with higher rates. In the National Prospective Tonsillectomy Audit final report, the lowest rate of secondary haemorrhage requiring return to theatre was associated with cold steel dissection with ligature haemostasis (0.2%, 95% CI 0.1–0.4%). Higher rates were associated with cold steel dissection with diathermy haemostasis (0.3%, 95% CI 0.1–0.7% with monopolar diathermy; and 0.4%, 95% CI 0.3–0.5% with bipolar). The highest rates of secondary haemorrhage requiring return to theatre were associated with coblation (0.7%, 95% CI 0.4–1.3%), and with diathermy dissection and haemostasis (0.7%, 95% CI 0.2–1.9% with monopolar diathermy; and 0.8%, 95% CI 0.6–0.9% with bipolar).
- 2.4.5 A similar pattern was observed for all secondary haemorrhages (both those requiring and those not requiring further operation). The lowest rates were associated with cold steel dissection with ligature haemostasis, higher rates with cold steel dissection and diathermy haemostasis, and the highest rates with coblation and with diathermy for both dissection and haemostasis. For more details, refer to the Sources of evidence.

2.5 Other comments

- 2.5.1 It was noted that the recommendations of the National Prospective Tonsillectomy Audit were that all surgeons undertaking tonsillectomy should be trained in the use of cold steel dissection and ligature haemostasis, as well as the use of any electro-surgical techniques.
- 2.5.2 It was noted that it would be helpful for all diathermy equipment to record the total amount of energy used during each operation. The Medicines and Healthcare products Regulatory Agency is addressing this issue.

3 Further information

- 3.1 The National Prospective Tonsillectomy Audit was published in May 2005, and contains recommendations for tonsillectomy (www.tonsil-audit.org/documents/ta_finalreport.pdf).

Andrew Dillon
Chief Executive
December 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. This information is available from www.nice.org.uk/IPG150publicinfo

Sources of evidence

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

'Systematic review of the safety and efficacy of electro-surgery for tonsillectomy', May 2005

Available from www.nice.org.uk/ip_324review



Ordering information

Copies of this guidance can be obtained from the NHS Response Line by telephoning 0870 1555 455 and quoting reference number N0953. *Information for the public* can be obtained by quoting reference number N0954.

The distribution list for this guidance is available at www.nice.org.uk/IPG150distributionlist

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