

Radiofrequency tissue reduction for turbinate hypertrophy

Interventional procedures guidance

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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, and specifically any special arrangements relating to the introduction of new interventional procedures. 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.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the [Yellow Card Scheme](#).

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. Providers should ensure that governance structures are in place to review, authorise and monitor the introduction of new devices and procedures.

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.

This guidance replaces IPG36.

1 Recommendations

- 1.1 Current evidence on the safety of radiofrequency tissue reduction for turbinate hypertrophy is adequate. Evidence on efficacy in the short and medium term (to about 2 years) is also adequate. Therefore, this procedure may be used with normal arrangements for clinical governance, consent and audit.
- 1.2 During the consent process patients should be informed about alternative treatment options. They should be warned about the risk of recurrence of symptoms and the possible need for further treatments.

2 Indications and current treatments

- 2.1 Inferior turbinates are ridges inside the nose, covered by mucous membrane, which increase the surface area within the nose and help to filter and humidify inspired air. Inflammation of the mucous membrane (rhinitis) can cause inferior turbinates to swell (turbinate hypertrophy). This narrows the nasal passage, and may cause complete nasal obstruction. Symptoms include breathing difficulties, excessive mucous secretion (rhinorrhoea), postnasal drip, facial discomfort or pain and mid-facial headaches.
- 2.2 Treatment options depend on the duration and severity of turbinate hypertrophy. Medical treatments include corticosteroid injections, nasal corticosteroid sprays and decongestants. Surgical treatments include microdebrider-assisted

turbinoplasty and laser-assisted turbinoplasty. These procedures are reserved for patients with persistent symptomatic turbinate hypertrophy that has not responded to medical management, or for patients in whom medical management is contraindicated.

3 The procedure

- 3.1 Radiofrequency tissue reduction (radiofrequency-assisted inferior turbinoplasty) aims to reduce the size of inferior turbinates that are inflamed because of vasomotor or allergic rhinitis.
- 3.2 Radiofrequency tissue reduction is usually performed using local anaesthesia in an outpatient setting. A radiofrequency probe is inserted submucosally at the anterior end of the inferior turbinate and is advanced to its posterior end. Radiofrequency energy is applied for a number of seconds to the anterior, middle and posterior third of each inferior turbinate, heating the submucosal tissue around the probe and causing coagulation. Small blood vessels responsible for the enlargement of the turbinate are also ablated during the procedure, limiting their ability to swell and expand. The submucosal tissue shrinks during healing, thereby reducing excess tissue volume.

4 Efficacy

This section describes efficacy outcomes from the published literature that the Committee considered as part of the evidence about this procedure. For more detailed information on the evidence, see the [overview](#).

- 4.1 In a randomised controlled trial of 120 patients treated by radiofrequency or microdebrider-assisted turbinoplasty, mean visual analogue scale scores (ranging from 1 to 10, with lower scores indicating better outcomes) for nasal obstruction, sneezing, rhinorrhoea and snoring improved from 8.5 to 1.5, 6.0 to 1.8, 6.6 to 1.7 and 6.6 to 1.6 respectively in the radiofrequency group at 6-month follow-up (p values <0.05). In the microdebrider group, mean visual analogue scale scores for nasal obstruction, sneezing, rhinorrhoea and snoring improved from 8.7 to 1.4, 6.2

to 1.7, 7.0 to 1.6 and 6.7 to 1.6 respectively (p values <0.05). No statistically significant differences in visual analogue scale scores were observed between the 2 treatments at 6-month follow-up. At 3-year follow-up, mean visual analogue scale scores for nasal obstruction, sneezing, rhinorrhoea and snoring were 8.3, 5.6, 6.5 and 6.2 in the radiofrequency group and 1.6, 1.9, 1.7 and 1.8 respectively in the microdebrider group. All inter-group comparison p values were less than 0.05.

- 4.2 In a randomised controlled trial of 50 patients treated by radiofrequency-assisted turbinoplasty or traditional surgery, mean scores for endoscopic evaluations of turbinate oedema (scores ranged from 0 to 4 with lower scores indicating better outcomes) decreased from 2.6 to 0.6 and from 2.5 to 0.6 respectively at 3-month follow-up (p values for changes within groups <0.05; no inter-group comparison p value was reported). Mean scores for endoscopic evaluations of turbinate secretions decreased from 1.7 to 0.6 in the radiofrequency-assisted turbinoplasty group and from 1.7 to 0.5 in the traditional surgery group at 3-month follow-up (p values for changes within groups were less than 0.05; no inter-group comparison p value was reported).
- 4.3 In the randomised controlled trial of 120 patients treated by radiofrequency or microdebrider-assisted turbinoplasty, mean total nasal resistance measurements (using 75 Pa as the reference point) improved from 0.31 to 0.15 Pa/ml/s (p<0.05) and from 0.32 to 0.15 Pa/ml/s (p<0.05) respectively at 6-month follow-up (inter-group comparison p value not significant). At 3-year follow-up, mean total nasal resistance measurements in the radiofrequency and microdebrider-assisted turbinoplasty groups were 0.31 and 0.16 Pa/ml/s respectively (p<0.05).
- 4.4 In a case series of 197 patients treated by radiofrequency-assisted turbinoplasty, mean volumes of the region extending from the nostril to 5 cm within the nasal cavity increased from 5.55 cm³ at baseline to 10.56 cm³ at 5-year follow-up (p<0.05).
- 4.5 Specialist advisers listed key efficacy outcomes as subjective improvements of the nasal airway assessed by validated questionnaires such as the Sino-Nasal Outcome Test.

5 Safety

This section describes safety outcomes from the published literature that the Committee considered as part of the evidence about this procedure. For more detailed information on the evidence, see the [overview](#).

- 5.1 Crusting was reported in 6% (10 out of 158) of patients in a case series of 158 patients (time of occurrence not reported). In the same study, rhinorrhoea, bleeding, soreness, increased nasal obstruction and impaired olfactory sense were reported in 3% (5 out of 158), 2% (3 out of 158), 1% (2 out of 158), 1% (2 out of 158) and 1% (1 out of 158) of patients respectively (time of occurrence not reported).
- 5.2 Mucosal oedema was reported in 70% (14 out of 20) of patients in the radiofrequency-assisted turbinoplasty group in a randomised controlled trial of 80 patients treated by radiofrequency-assisted turbinoplasty, high-frequency diathermy, electrocauterisation or partial inferior turbinotomy at 2-month follow-up (occurrence in other groups not reported).
- 5.3 A case report described a patient with an arteriovenous haemangioma at the site of radiofrequency ablation, diagnosed 1 year after the procedure. The author suggested that thermal damage by the radiofrequency probe, post-surgical oedema of the nasal mucosa or an asymptomatic infection at the surgical site might have induced angiogenesis leading to the formation of the arteriovenous haemangioma.
- 5.4 A case report described a patient with de novo intractable post-nasal drip, caused by perforation of the mucosa in the posterior part of an inferior turbinate by the radiofrequency probe.
- 5.5 Specialist advisers listed theoretical adverse events as bleeding from the turbinates leading to epistaxis, swelling (oedema) leading to worsening nasal obstruction, intranasal adhesions, crusting and atrophy of nasal mucosa.

6 Further information

Sources of evidence

The evidence considered by the Interventional Procedures Advisory Committee is described in the [overview](#).

Information for patients

NICE has produced [information for the public on this procedure](#). It explains the nature of the procedure and the guidance issued by NICE, and has been written with patient consent in mind.

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Endorsing organisation

This guidance has been endorsed by [Healthcare Improvement Scotland](#).