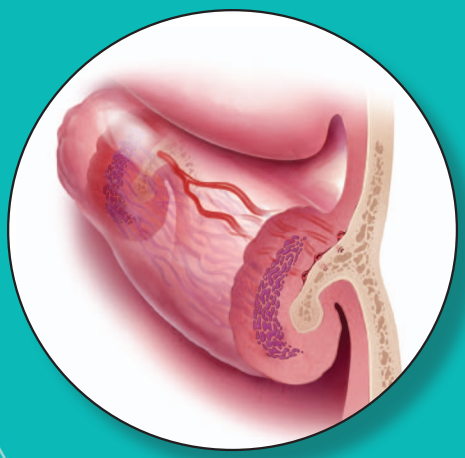
Medtronic

Inferior Turbinoplasty

SURGICAL TECHNIQUE



Surgical technique presented by
Laurence R. O'Halloran, MD, FACS

Figure 1

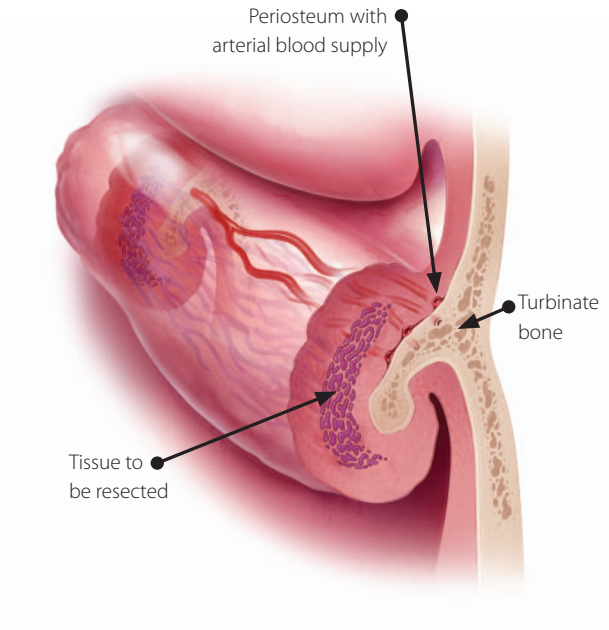
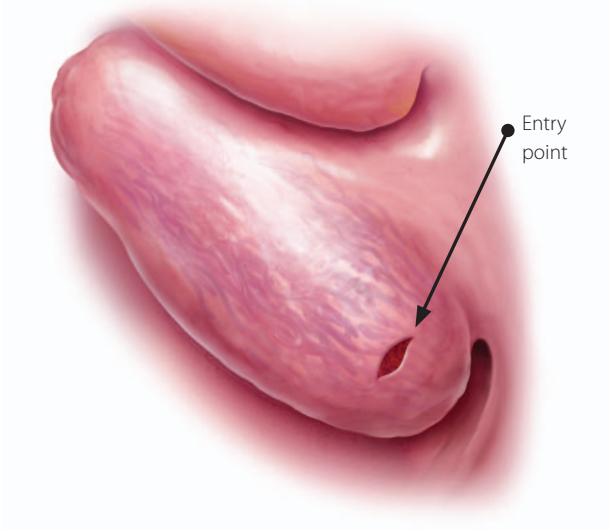


Figure 2



Philosophy

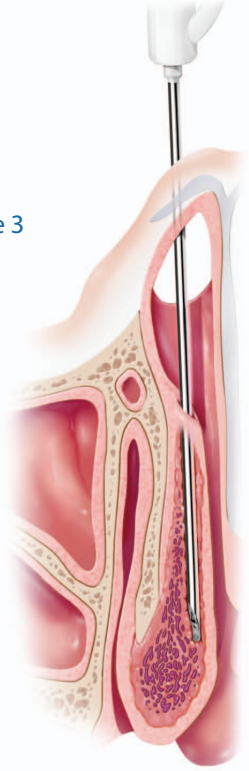
Inferior turbinate hypertrophy is a common cause of chronic nasal obstruction and remains a challenging problem to treat. Disadvantages of traditional techniques such as cautery, radiofrequency ablation (Coblation®, Somnoplasty™), partial or total turbinate resection, cryotherapy and laser treatment include bleeding, crusting, synechiae formation and atrophic rhinitis. In cases where mucosal resection has been over-aggressive, bone exposure and osteitis may develop. Inadequate volume reduction of the target tissue is another problem that relates to the unpredictability of tissue destruction with traditional methods.

A primary goal of ideal turbinate surgery is volumetric reduction of the submucosal vascular stromal tissue with preservation of the overlying respiratory epithelium **(Figure 1)**. This respiratory mucosa is essential to the proper physiologic functions of the turbinate, such as warming and humidification of inspired air and mucociliary clearance. Yanez[1], Friedman[2], Sacks[3] and O'Halloran[4] have authored reports on powered reduction of the inferior turbinates using the Straightshot® M4 Microdebrider. The following technique elaborates on the previously published techniques with a different instrument. This technique describes an elevator incorporated into a very small microdebrider blade (choice of 2.0 or 2.9mm). It provides a method for achieving the goals of volumetric reduction with mucosal preservation and with minimal risk of complications.

As a "cold" technique, this method avoids unpredictable collateral thermal damage to surrounding mucosal and bony tissue. The volume of reduction is immediately apparent because there is no delay for scar contracture as with other techniques. Like other methods, it is repeatable for recurrent hypertrophy; however, as shown by Sacks and Liu et al, its benefits last significantly longer than those accomplished by heat-dependent techniques. Sacks' study demonstrated that inferior turbinates treated with electrocautery techniques had significantly higher re-hypertrophy rates at 12 months or more, compared to patients treated with the Medtronic ENT Inferior Turbinate Blade. The length of the blade is adequate to reach the posterior aspect of the turbinate. This allows easy debridement of the degenerated polypoid mucosa of the "Mulberry-Tip" that can be a major cause of symptomatic congestion, especially in the supine position. Risk of bleeding is minimal as a single anterior 2mm self-sealing entry point is created in the anterior face of the turbinate. An integrated Cottle-style elevator tip allows easy elevation of mucosa from the target stromal tissue.

Nota Bene: The technique description herein and the use of instructions for the related procedures are made available by Medtronic ENT to the healthcare professional to illustrate the author's suggested treatment for the uncomplicated patient. In the final analysis, the preferred treatment is that which, in the healthcare professional's judgment, addresses the needs of the individual patient.

Figure 3



Note: Blade creates a submucosal pocket, not a subperiosteal pocket.

Technique

The patient is prepped for a standard endonasal procedure. Anesthesia is accomplished with 4% cocaine-soaked cotton pledgetts, followed by injection of 1% Lidocaine with 1: 100,000 Epinephrine into the anterior aspect of the inferior turbinate. The turbinate blade is inserted into the anterior face of the inferior turbinate, just medial to the muco-cutaneous junction under direct visualization with a headlight **(Figure 2)**. Endoscopic visualization is possible, but can be somewhat cumbersome. The blade is firmly pushed towards the turbinate bone until it pierces the mucosa. No power is applied at this point.

Next, a submucosal pocket is dissected by tunneling the elevator tip in an anterior to posterior and superior to inferior sweeping motion **(Figure 3 – 5)**. The correct plane of dissection is submucosal and not subperiosteal. Although this is not a true anatomic plane, it does elevate quite easily.

Once an adequate pocket has been created, resection of stromal tissue is begun with the IPC® system set at 3,000 RPM using suction irrigation. The blade is positioned with its cutting edge facing laterally and is moved back and forth in a sweeping fashion in a manner analogous to liposuction. The intact mucosal layer is seen collapsing toward the blade and the process is continued until adequate volume reduction has been achieved. More aggressive resection may be accomplished by turning the cutting edge towards the mucosal surface, but care must be taken to minimize perforation of the mucosa. The length of the blade is adequate to reach the posterior aspect of the turbinate in order to treat the "Mulberry-Tip". Alternatively, a second, more posterior entry point may be created to better access the posterior area. In areas where the mucosa is more tightly adherent to the bone, injectable saline may be infiltrated to hydro-dissect or "plump-up" the turbinate tissue. Once turbinoplasty has been completed, the turbinate is routinely outfractured using standard techniques.

No suture or packing is necessary, although a 1cm square block of Gelfoam® or MeroGel® packing may be placed over the entry point at the surgeon's discretion.

Figure 4

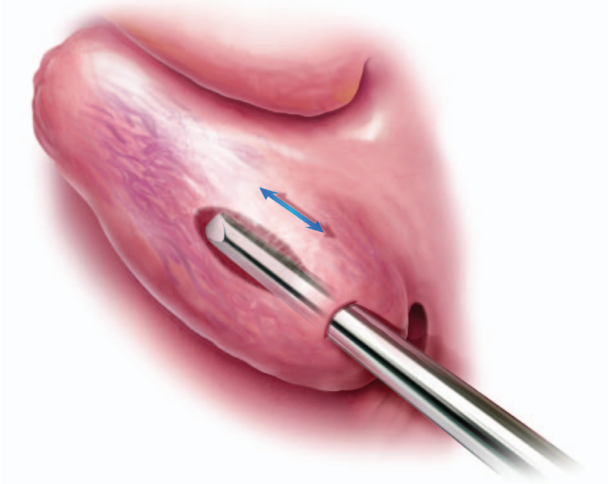
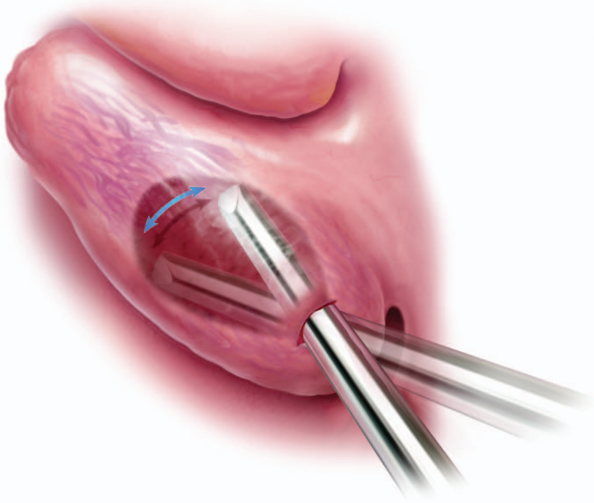


Figure 5



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