How I Do It: Medial Flap Inferior Turbinoplasty

With Illustration and Video

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ABSTRACT

Introduction: *Techniques for inferior turbinate reduction vary from complete turbinectomy to limited cauterization. Surgical methods differ on the degree of tissue reduction and reliance on surgical tissue removal versus tissue ablation.*

Method: *The technique and surgical steps of our preferred method of turbinate reduction are presented.*

Results: *Critical steps include proper design of the medial flap and removal of turbinate bone and lateral mucosa to allow lateral positioning of the medial flap. Bipolar cautery of the inferior turbinate artery branches allows complete haemostasis and undermining of the head allows proper debulking of the anterior aspect of the turbinate and widening of the nasal valve area.*

Conclusion: *The medial flap inferior turbinoplasty provides consistent, robust results. Long-term relief of obstructive symptoms without additional risk of complication is expected with this procedure.*

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Inferior turbinate hypertrophy, as a common cause of nasal obstruction, can result from inflammatory disorders (allergy [type 1], occupational [type 4]), drug reactions, hormonal abnormalities, and idiopathic vasomotor changes. Compensatory or contralateral turbinate hypertrophy is also associated with nasal septal deviation. Since the first surgical treatment of hypertrophied inferior turbinates in 1895, many techniques have been described, and considerable debate continues as to the most effective method.[1,2] Surgical reduction should preserve mucosa and ideally preserve physiologic function. Such physiologic preservation avoids distorted airflow and abnormal perceptions of breathing. A physiologically preserving approach may help avoid the phenomenon associated with the "empty nose syndrome." The ideal turbinate reduction procedure removes the obstructive nonfunctional portions of the turbinate while preserving the medial physiologic mucosal and maintaining the warming and humidification of inspired air. Techniques for turbinate reduction should reliably reduce nasal obstruction while maintaining normal mucosal function and limiting the propensity for complications such as bleeding and crusting.[3,4] A technique is described that leads to accurate tissue reduction, controlled hemostasis, and minimal exposure of healing tissue to airflow. This technique is not conservative but provides a robust and reliable reduction, and recontouring of the inferior turbinate. This technique produces a superior overall success rate at 12 and 60 months, and good correlation between examiner and patient findings when compared with submucosal electrocautery and submucosal powered turbinoplasty techniques.[5]

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Preparation

The patient's airway is maintained by either an endotracheal tube or a laryngeal mask, which is taped to the lower right commissure in an effort to allow unimpeded hand mobility for a right-handed surgeon. The patient is prepared topically with 1% ropivacaine and 1:2,000 adrenaline-soaked neurosurgical Cottonoids placed within the inferior meatus and over the anterior head of the inferior turbinate. Endoscopically, the mucosa is injected with 1% ropivacaine and 1:100,000 adrenaline along the inferior border and anterior head of the inferior turbinate. The patient's head is placed in the neutral anatomic position, and the operative bed is placed in 15–20° reverse Trendelenburg position with total intravenous anesthesia.[6]

Description

The procedure commences with the creation of a window to the inferior meatus at the anterior inferior turbinate in the axilla between the inferior turbinate medially and the pyriform aperture laterally (Fig. 1A). This step allows access to the inferior meatus without

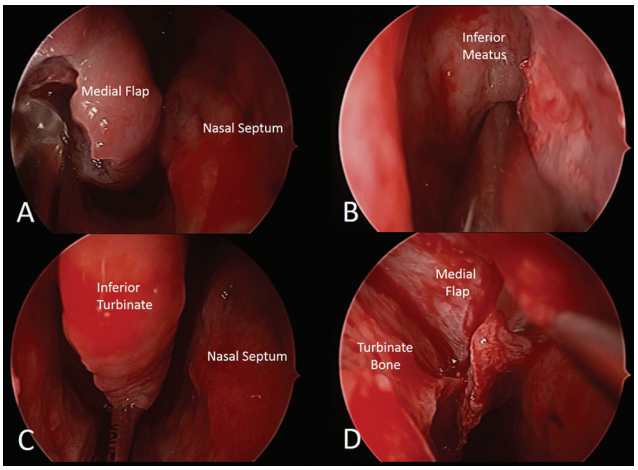

Figure 1. *Right nasal cavity: (A) creation of window, (B) inferior meatus, (C) medial flap creation, and (D) elevation of medial flap.*

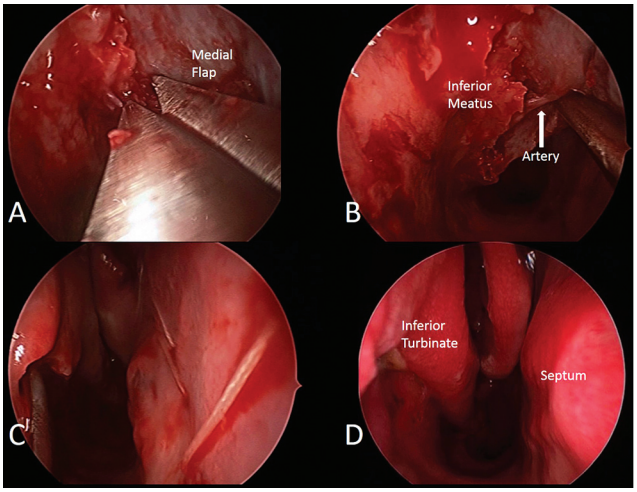

Figure 2. *Right nasal cavity: (A) bone removal along vertex of inferior meatus, (B) inferior turbinate artery, (C) final positioning of medial flap, and (D) 10-day postoperative appearance.*

destabilizing the turbinate (Fig. 1B) and visualization of the valve of Hasner to prevent injury. The mucosa of the apex of the inferior meatus can be removed to prevent lateral stripping during the procedure. The posterior soft tissue tail is removed with a microdebrider (Fig. 1C), and a medial flap is created by removal of the inferior border at a variable distance on the medial side, depending on the extent of reduction required. The remaining mucosal flap is elevated in a subperiosteal plane (Fig. 1D) by using a cottle dissector. Any inferior attachments can be released with iris scissors. The turbinate bone and lateral mucosa are then removed along the vertex of the inferior meatus (Fig. 2A). Once the bone and lateral mucosa have been removed, the arterial supply, the medial and lateral branches of the inferior turbinate artery, is identified and exposure is maximized (Fig. 2B). A Kerrison Rongeur can be used to help remove the bony encasement of the artery. With adequate exposure and visualization, precise cautery can be applied by using a bayoneted bipolar forceps. This is not a neurovascular pedicle because the posterolateral nasal nerves supply the medial mucosa. Attention is then directed at sculpting the anterior head and undermining the soft tissue with a microdebrider or ensuring that bone removal is flush to the pyriform, which will help to ensure that the critical area at the internal valve is adequately reduced. The medial flap is then placed in its final position (Fig. 2C), curving inferolaterally, and surgical dressing is placed over the inferior cut edge. Because this procedure leaves minimal exposed mucosa and no bone exposure, the medial flap heals rapidly, with minimal crusting (Fig. 2D).

Postoperative care

Nasal irrigation commences on postoperative day 1, and the patient follows up between 7 to 10 days postoperatively for removal of any remaining dressing or postoperative crusts. Doyle splints are very useful if concomitant septoplasty is performed. The lateral airway of these stents provide excellent support to the medial flap, and these stents are comfortable when an adequate turbinate reduction has occurred.

CONCLUSION

The medial flap inferior turbinoplasty is a technically straightforward procedure that provides long-term relief of obstructive symptoms. It provides a robust approach to volume reduction, control over hemostasis, and minimal crusting.

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