

Microdebrider-assisted Inferior Turbinectomy: Improving Quality of Life in Patients with Nasal Allergy

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ABSTRACT

Objective: To assess the effectiveness of resection of inferior turbinate with assisted powered instrumentation in patients with nasal allergy.

Study design: A total of 50 patients presenting to the outpatient Department of Otorhinology in Sree Balaji Medical College & Hospital, Chennai, India, with nasal allergy with turbinate hypertrophy on examination between the age of 19 to 45 years were included in the study during the period between December 2014 and July 2015.

Materials and methods: All patients were assessed subjectively by a questionnaire regarding their symptoms and objectively graded by the size of turbinate hypertrophy as grades I, II, and III. Patients with grade II and III turbinate hypertrophy were subjected to inferior turbinectomy using microdebrider and followed up for postoperative outcome and any complications.

Results: The advantage of the microdebrider technique is the precise control of the amount of tissue and location of tissue, i.e., removed on a submucosal plane. There are very less complications. There was no crusting or excessive bleeding during the procedure.

Conclusion: The results show that submucous resection of inferior turbinates with a microdebrider is a safe method of achieving turbinate size reduction with minimal morbidity.

Keywords: Microdebrider, Submucous resection, Turbinate.

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INTRODUCTION

Inferior turbinates are known to play an important role in the reduction of nasal airflow. Studies show that patients with hypertrophic turbinates or with vasomotor rhinitis can benefit from turbinate reduction in cases where medical treatment fails. There are several techniques of

turbinate reduction that include turbinectomy, submucous turbinectomy, inferior turbinoplasty, cryotherapy, submucous electrosurgery, CO₂ laser turbinoplasty, and others. Most of the techniques described involve treatment of submucous tissue with sacrifice of mucosa for access to the target area. Classical submucous resection of the inferior turbinates helps to preserve the mucosa. Preservation of mucosal surfaces with reduction of the submucosal and bony tissue should be the main goal in this type of surgery. Powered instrumentation offers advantages over conventional techniques with regard to mucosal preservation with lesser complications.

MATERIALS AND METHODS

Inclusion Criteria

A prospective study was conducted in Sree Balaji Medical College & Hospital, Chennai, India, involving patients with symptoms and signs of nasal obstruction and stuffiness with nasal allergy from December 2014 to July 2015.

Criteria for inclusion consisted of enlarged inferior turbinates, with or without nasal septal deformity. Anterior rhinoscopy and diagnostic nasal endoscopy were done before and 6 weeks after surgery for evaluating the inferior turbinates. We graded the inferior turbinates from I to III:

Grade I—Mild enlargement with no obvious obstruction; Grade III—Complete occlusion of the nasal cavity; Grade II—The turbinates in between.

Patients were given questionnaires regarding their nasal symptoms before the procedure and 6 weeks later.

Patients with moderate or severe nasal airway obstruction and stuffiness were included in the study.

Surgical Technique

Under general anesthesia, using 0 degree endoscope, local infiltration was given in the inferior turbinates in a submucosal plane. An incision was made in the anterior aspect of the inferior turbinate. The straight microdebrider (4-mm tip with Tru-Cut blade) was applied through the incision. The bony turbinate with some of the submucosal tissue was debrided. The mucosal flap was preserved. Hemostasis was achieved under direct vision with suction electrocautery when necessary. The incision was not closed. Merocel packs were kept *in situ*

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for 48 hours. Complications of bleeding, crusting, foul odor, mucosal tears, synechia, and nasolacrimal duct injury were recorded. Patients were followed up at 1st, 2nd, and 4th week for suction clearance. Patients were assessed for their symptomatic improvement.

RESULTS

A total of 50 patients (28 male and 22 female patients) who presented to the outpatient Department of Otorhinolaryngology in Sree Balaji Medical College & Hospital, Chennai, India, between the ages of 19 and 45 years with symptoms in the severe and moderate range and whose examination findings were consistent with grade II and III inferior turbinates met the inclusion criteria and were taken in the study group. A total of 40 patients underwent bilateral microdebrider inferior turbinectomy, and 10 underwent unilateral microdebrider inferior turbinectomy. Patients were followed for 6 months. Table 1 summarizes the subjective data gathered from the questionnaires. Symptoms of bilateral nasal obstruction and stuffiness were almost completely resolved; 40 patients suffered from severe and 10 from moderate nasal obstruction and stuffiness before the surgery. After the surgery, 10% of the patients had mild nasal obstruction and stuffiness symptoms and 90% had no nasal obstruction or stuffiness. None of the patients had crusting or dryness in the nose before or after surgery.

Table 2 summarizes objective data. All of the inferior turbinates exhibited a decrease in size after the procedure. Postoperative bleeding occurred in two patients and was controlled by electrocauterizing a bleeding vessel. Neither patient suffered a significant change in vital signs, hemoglobin, or hematocrit levels. Mucosal tears were fairly common in 60% of the patients, but there was no loss of mucosa. We observed synechia in 8% of the patients. We did not observe any crusting, foul odor, or nasolacrimal duct injury complication (Table 3).

Table 1: The subjective assessment of symptoms compiled from questionnaires

	Preoperative			Postoperative		
	Severe	Moderate	None	Severe	Mild	None
Bilateral nasal obstruction	40	10	–	–	5	45
Crusting	–	–	50	–	–	50
Dryness	–	–	50	–	–	0

Table 2: Objective assessment of turbinates before and after surgery

	Preoperative		Postoperative	
	II	III	I	II
Quantity	27	63	74	16

Table 3: Postoperative complications following turbinectomy

Complications	
Bleeding	2 (4%)
Mucosal tear	30 (60%)
Nasolacrimal duct injury	0
Crusting	0
Foul odor	0
Synechia	2 (4%)

DISCUSSION

Pathology in the inferior turbinates including turbinate hypertrophy is a well-known cause for nasal obstruction, especially in cases of allergy.^{1,2} Inferior turbinate surgery is advocated for relief of symptoms in patients with chronic nasal congestion.² Numerous reports substantiate the usefulness of inferior turbinate surgery.³⁻⁷

However, concomitant nasal septal surgery with the inferior turbinate surgery in some cases limits our ability to attribute the relief of nasal obstruction and stuffiness symptoms merely to the reduction in the size of the inferior turbinates. Nasal obstruction symptoms are often unilateral in patients with deviated nasal septum. The nasal stuffiness may persist in patients with inferior turbinate hypertrophy even after septoplasty was done for deviated septum.

Our study group comprised patients with history of nasal allergy with complaints of nasal stuffiness and obstruction symptoms. The visual identification of turbinate reduction combined with the elimination of symptoms improved the quality of life in these patients after having several failed medical therapies for their symptoms. The ideal turbinate surgery would be limited to the erectile submucosal tissue and to the bony turbinate. Preservation of mucosa helps improve the continued function of the inferior turbinates to warm and humidify the inspired air. Allergy counseling for lifestyle modifications was advised. They were on oral antihistamines for 3 weeks, and selected patients were also started on steroid nasal sprays.

All of the techniques performed for turbinate reduction have potential complications that fall into several categories.⁸ No technique is perfect, and each is associated with known short-term and long-term complications, such as bleeding and atrophic rhinitis.⁸

Partial or submucous resection of the turbinates is not precise and at times may result in excessive removal of tissue, with subsequent atrophic rhinitis. Frequent sequelae of exposed bone include prolonged crusting with foul odor and sometimes bleeding. Inferior turbinate surgery is associated with an incidence of postoperative bleeding and crusting.^{2,8} Microdebrider-assisted inferior turbinectomy removes tissue precisely, and crusting does



not occur at all. Scabbing and necrosis are often seen during the postoperative course of inferior turbinectomies.^{8,9} We did not observe any of these complications in our patients. Debulking of the turbinate with preservation of mucosa is the major advantage of this procedure. Endoscopic examination of the turbinate pocket⁸ with suction electrocautery is routinely used to improve hemostasis on completion of the procedure. There can be postoperative bleeding, which is common among all methods.⁸

Lippert and Werner¹⁰ compared the CO₂ laser with neodymium-doped yttrium aluminum garnet laser in the treatment of hyperplastic inferior turbinates and mentioned postoperative bleeding rates up to 16% and marked crusting up to 52%. Patients with bony hypertrophy covered with a thin layer of mucosa are not good candidates for microdebrider turbinectomy. The thick, calcified bony turbinate might predispose the patient to mucosal tears. All of the mucosal tears were in the medial flap.

Mucosal tears were fairly common, but only 5% of them persisted as synechia to the septum. Delicate septal surgery without any mucosal damage also prevents this complication. The incidence of tears decreased significantly during the course of this study owing to the learning curve of a new procedure. When tears do occur, no treatment is needed.

The study demonstrates a technique that improves symptoms and reduces complications in patients with inferior turbinate hypertrophy. However, the relative short follow-up is insufficient to make definitive statements about the long-term outcome.

CONCLUSION

Our study has proven the betterment in postoperative care and outcome improving the quality of life in our

patients who underwent microdebrider submucous resection of inferior

Turbinates, which help in achieving turbinate size reduction with acceptable morbidity in patients with nasal airway obstruction secondary to turbinate disease, commonly nasal allergy. Bleeding is a rare complication. Preservation of mucosa leads to early healing and absence of crusting and exposed bone. The microdebrider technique lends a precise tissue removal with satisfactory reduction of tissues.

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