

AN EFFECTIVE AND SAFE TECHNIQUE: MICRODEBRIDER ASSISTED INFERIOR TURBINOPLASTY

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INTRODUCTION

Inferior turbinate hypertrophy is common cause of chronic nasal obstruction and remains a challenging problem of treatment.

Today, various surgical methods are used for the treatment of nasal obstruction in patients with inferior turbinate hypertrophy. Conventional surgical options are partial or total turbinectomy, turbinoplasty, sub-mucosal turbinectomy, electrocautery and cryosurgery.^[1,2] A primary goal of ideal inferior turbinate surgery volumetric reduction of erectil submucosal vascular stromal tissue with preservation of overlying respiratory epithelium. This respiratory mucosa is essential to the proper physiologic functions of inferior turbinate, such as warming and humidification of inspired air and mucociliary clearance.

Here, we talked about the microdebrider-assisted inferior turbinoplasty (MAIT) technique used in inferior turbinate reduction. MAIT technique was first described by Micheal Friedman. The main purpose of this technique is the reduce of submucosal and bone tissue while preserving the mucosal surfaces. For this reason, this method it prevents collateral thermal damage surrounding mucosal and bone tissue, in conclusion does not impair nasal functions.

KEYWORDS: Inferior turbinate hypertrophy, turbinoplasty, microdebrider.

Surgical technique

MAIT technique is performed in patients with inferior turbinate hypertrophy who refractory to medical treatment. Inferior turbinates are graded from I to III according to its size. Grade I is mild enlargement without obvious obstruction, grade III is complete obstruction of the nasal cavity, the turbinates in between are grade as II.^[3]

MAIT technique is applied grade II and III turbinates with mucosal hypertrophy. If there is a thick, calcified conchal bone, the overlying mucosa is thin and not suitable candidates.

The patient prepped for a standard endonasal procedure. MAIT can be performed under local or general anesthesia and it is performed under direct vision using a straight, 4 mm diameter, 0° endoscope. For hydrodissection, the anterior end of inferior turbinates is injected with distilled water in a submucosal plane.

After making a vertical incision with a #15 blade on the anterior surface of the inferior turbinate, with a free elevator a submucosal pocket is created along the medial end of the conchal bone from anterior to posterior. If the turbinate tail is very hypertrophied, a second entry point should be opened near the tail. The microdebrider unit is set at 3000 – rpm oscillating mode. The procedure of MAIT is performed by inserting a microdebrider submucosally, medial to the conchal bone from the anterior head of the inferior turbinate along its entire length until the posterior end. The space formed after debridement is evaluated with a 0-degree endoscope. After optimal reduction is achieved, the inferior turbinate is out-fractured, later with the elevator, the mucosa of the turbinate is lateralized and approached towards the conchal bone. The author describing this procedure stated that out-fractured and lateralizing the inferior turbinate increases the chances of success. Size reduction of the inferior turbinate is easily recognized immediately after the procedure. Nasal pack is placed within both nasal passages.

DISCUSSION

Inferior turbinate hypertrophy, which is one of the most common causes of nasal obstruction. Hypertrophied inferior turbinates can be result of either mucosal or bony hypertrophy. Nasal obstruction due to inferior turbinate hypertrophy is a condition that can significantly affect the quality of life of patients.^[4] It may also produce extranasal symptoms such as headache, fatigue, sleep disturbances.^[5]

Inferior turbinate hypertrophy is usually seen in allergic rhinitis, vasomotor rhinitis or sometimes as compensatory hypertrophy response to septum deviation. Medical treatments such as antihistamines, systemic decongestants, topical decongestants or topical corticosteroids often provide only slight relief in some patients while some patients often refractory to these medical treatment and the patients complain about permanent symptoms. Refractory to medical treatment patients with grade 2 and 3 turbinate hypertrophy and mucosal hypertrophy are suitable patients for MAIT (Figure 1).

MAIT is a technique to reduce the size of the hypertrophic inferior turbinate intratubinally under endoscopic guidance. A submucosal pocket is dissected by tunneling with freer's elevator and microdebrider blade with dissecting tip in an anterior to posterior and superior to inferior sweeping motion. A 2.9 mm diameter microdebrider rotating continuously in a circular fashion is set at 3,000 rpm while using suction irrigation, is applied to remove all the stromal tissue from inside of the turbinate with preservation of the mucosal flap. If the posterior end of the inferior turbinate has a berry appearance, it may be necessary to open a second entry point near the end of the inferior turbinate for reduction.

The main purpose of inferior turbinate reduction surgery should be to restore of nasal respiratory volume, to provide humidification and cleaning of the air, maintain nasal function and to minimize complications rate.^[6,7,8,9]

Surgery to the inferior turbinates has been a widely used procedure for over 100 years to improve the nasal airway. Various methods have been described for this aim, from devastating total turbinectomy to the recently developed MAIT.^[10] For one of these techniques, the aim is only to decrease the mucosal volume, while in others aim to both the

mucosa and bone volume decrease.^[11] MAIT is a minimally invasive endoscopic procedure and causes a noticeable reduction in both bone volume and submucosal soft tissue volume immediately after the procedure.

MAIT has been shown in various studies that method causes the inferior turbinate volume to decrease more than others.^[12,13,14] MAIT is a submucosal resection technique. In MAIT, debridement of submucosal tissue from the inferior turbinate is performed in the submucosal plane on the medial surface of the inferior turbinate with a microdebrider blade. Although this procedure is referred to as “turbinoplasty”, some surgeons prefer partial turbinectomy, adding resection of the overlying mucosa of the turbinate tissue to the procedure.^[15]

Since MAIT is a cold technique, it does not cause thermal damage to the mucosa and bone tissue like hot techniques. Since it does not form scar tissue, its effect is seen immediately after the procedure (Figure 2). Due to the integrity of the mucosa is preserved, both nasal physiology such as mucociliary activity, heating and humidification of the inhaled air is preserved and the risk of complications is minimized. In a study examining the ultrastructural aspects of the nasal mucosa after inferior turbinate reduction, the microdebrider was shown to gently remove soft tissue and nasal mucosa without burning the resection margins, allowing a re-epithelialization process.^[16] Since the mucosa is preserved in this technique, side effects such as bleeding, crust formation, post-operative pain, foul odor, synechia or atrophic changes are rare. Most common complication is mucosal tears and it occurs most often in the medial part, but there is no loss of mucosa and no treatment is needed.

CONCLUSION

MAIT is a more effective surgical technique compared to other techniques in reducing nasal obstruction in patients with inferior turbinate hypertrophy. In addition, minimally invasive, not disturb the physiology of the nasal, fast, well tolerated, low morbidity, mucosa protective technique.

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