

Efficacy of Submucosal Diathermy in Inferior Turbinate Hypertrophy

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Objective: To evaluate the efficacy of submucosal diathermy in inferior turbinate hypertrophy.

Setting: ENT Outpatient clinic.

Design: Prospective study.

Method: During four years (from May 2007 to April 2011), eighteen patients with inferior turbinate hypertrophy were diagnosed and scheduled for submucosal diathermy (SMD). Before surgery, each patient has to pass the decongestant test. Under local anesthesia the turbinate were cauterized at 4-5 spotted areas of the turbinate using a monopolar with an isolated needle. Patients were followed-up for one year.

Result: Eighteen patients, 15 males and 3 females with a mean age of 34 year were included in this study. Fourteen had bilateral and 4 unilateral turbinate hypertrophy. Their main complaint was chronic nasal obstruction. The possible etiologies were vasomotor rhinitis, allergic rhinitis, idiopathic rhinitis or compensatory hypertrophy due to septal deviation. All patients underwent SMD under local anesthesia. Fifteen patients showed excellent improvement after one month of follow-up. Three patients with compensatory hypertrophy showed little improvement and they underwent a septal corrective surgery. Mean follow-up was 6.5 months.

Conclusion: SMD is an effective technique to reduce turbinate hypertrophy. It is safe and has long-term positive outcome.

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Chronic nasal obstruction resulting from inferior turbinate hypertrophy is a common subjective complaint encountered in the practice of rhinology. Allergic rhinitis, vasomotor rhinitis, idiopathic rhinitis and compensatory hypertrophy in septal deviation are the most common causes for the inferior turbinate hypertrophy^{1,2}.

Conservative therapy including nasal spray, systemic decongestants, antihistamine and allergic desensitization have been tried, but they were often ineffective and of short duration^{3,4}. Desensitization, in selected cases have long lasting effect, up to 10 years. Surgery is suggested to provide adequate relief to the patients. Various reduction techniques have been tried to improve the nasal airways such as radio frequency coblation, ultrasound, LASER cautery and monopolar submucosal diathermy⁵⁻⁸.

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The aim of this study is to evaluate the efficacy of submucosal diathermy in inferior turbinate hypertrophy.

METHOD

An informed consent has been obtained from each patient before his or her enrollment in the study. All patients were seen and treated by the author. Patients attended the clinic complaining of chronic nasal obstruction. Detailed history was taken from each patient about rhinology symptoms. Accordingly, nasal endoscopy and computed tomography (CT) was performed for each patient, blood test and skin prick test for allergy was selectively requested by the author. After the diagnosis was established, submucosal diathermy (SMD) unilateral or bilateral was suggested to the patient.

Patients were asked to use nasal decongestant (ephedrine), one puff three times a day for one week before surgery, in order to assess the type of hypertrophy and the expected effect of SMD (decongestant test). The effect of ephedrine was washed out with nasal saline for 2 weeks. The turbinates were anesthetized with lidocaine hydrochloride gel 2% before being cauterized at 4-5 spotted areas of the turbinate using a monopolar power with an isolated cautery needle, see figure 1,2.

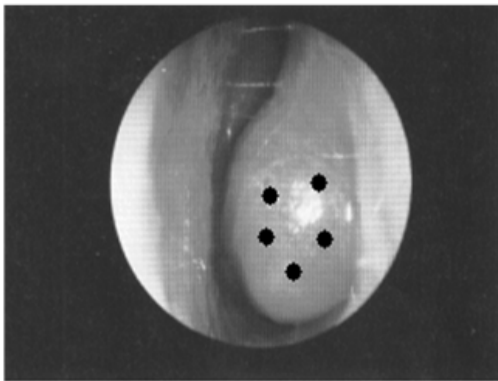


Figure 1: Inferior Turbinate with Scattered Areas for Cautery



Figure 2: Isolated Cautery Needle

The needle was inserted deep to the conchal bone and withdrawn gradually while the power on (within 4-5 seconds). The strength and length of cauterization is judged by the amount of discoloration of turbinate. There was no bleeding and therefore, no nasal packing was required. The postoperative follow-up schedule was as follows: 2 days, 4 days, one week, 2

weeks, 4 weeks, 3 months, 6 months and 1 year. During the first week, nasal decrusting was performed by the surgeon, then by the patient using alkaline nasal douche followed by a steroid cream application, once a day for 3 weeks.

RESULT

Eighteen patients, 15 males and 3 females, with a mean age of 34 year were included in this study. Fourteen had a bilateral and four unilateral turbinate hypertrophy. All patients were complaining of chronic nasal obstruction. Other presenting symptoms were mouth breathing, sore throat, dry mouth, bad mouth odor, nasal allergic symptoms and headache.

The etiology inferior turbinate hypertrophy was vasomotor rhinitis in two patients, allergic rhinitis in one, idiopathic rhinitis in twelve and unilateral compensatory hypertrophy in three, due to septal deviation. Fifteen patients showed subjective and objective excellent improvement after one-month follow-up; all their complaints and symptoms disappeared. To evaluate the improvement anterior rhinoscopy and nasal endoscopy were used. No rhinometry was used. The three patients with compensatory hypertrophy had little improvement and therefore underwent a corrective septal surgery. The follow-up ranged from 1–12 months with a mean of 6.5 months.

DISCUSSION

Inferior turbinate hypertrophy is the commonest cause for chronic nasal obstruction^{1,2}. Conservative treatment failed to show good long lasting results in certain cases^{3,4}. Radiofrequency coblation, LASER cautery, ultrasound and monopolar submucosal diathermy have been claimed to produce long lasting and satisfactory turbinate reduction⁵⁻⁸.

Monopolar diathermy is an old technique for the reduction of submucosal tissue of the inferior turbinate, but still widely practiced⁹.

The hypertrophy of the inferior turbinate is either due to increased thickness of the medial mucosal layer which could be attributed to hypertrophy of the lamina propria that houses subepithelial inflammatory cells, venous sinusoids and submucosal glands or it could be due to an increase in the size of the bony structure of the inferior turbinate⁹⁻¹¹. Only patients with inferior turbinate hypertrophy due to thickness of the mucosal layer could benefit from SMD. If the hypertrophy is due to an increase in bony structure, only turbinoplasty is the solution to improve the airway¹². Therefore, patient's selection for turbinate surgery should be based on patient's complaints, surgeon's clinical judgment and nasal decongestant¹³.

The effect of SMD is achieved through coagulation of the venous sinusoids within the turbinate, leading to submucosal fibrosis^{9,14}. In SMD, an area of coagulation necrosis is formed along the electrode passage, which is replaced with sclerotic connective tissue providing a stable reduction of the enlarged turbinate^{15,16}. Although turbinate tissue volume reduction by various techniques leads to shrinkage of the nasal turbinate, epithelial changes of chronic hypertrophic turbinate remains more or less unaltered⁹. Talaat et al examined his patients histologically after SMD of the inferior turbinate one month after surgery and observed significant postoperative clinical and histopathological improvement in non-allergic subjects, whereas improvement in allergic patients was less¹⁴.

Controversy exists regarding how long the resulted improvement in the nasal airway passage and the reduction of turbinate after SMD will continue. Irfan et al reported 60% improvement in their patients after one year and 36% after two-year post SMD¹⁷. On the other hand, Fradis et al reported 86-89% subjective and objective improvement among their patients after one-year post SMD⁵.

Fradis et al reported 96% improvement after 2 weeks and 88% after 2 month post SMD; 20% needed revision surgery^{11,18}. In our study, 84% of patients showed excellent improvement after one month and 17% (3 patients with compensatory hypertrophy) showed poor improvement and required septoplasty¹⁹.

All reduction techniques available provide more or less the same clinical and histological outcomes with no significant difference⁹. The most common side effects of SMD are crusting and postoperative edema of the mucosa, causing blockage of the nose for up to four weeks. Therefore, a follow-up of four weeks is required in order to assess the outcome of surgery^{14,20}.

CONCLUSION

In our study 84% of patients showed excellent improvement after one month and 17% required septoplasty.

Submucosal diathermy is an effective technique to reduce inferior turbinate hypertrophy, alleviate nasal obstruction and improve subjective and objective symptoms without affecting the turbinate mucosal function. It is safe, causes only minor discomfort and has a reasonable long-term positive result.

Potential conflicts of interest: No

Competing interest: None **Sponsorship:** None

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Ethical approval: Approved by the director of the clinic.

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