COMPARISON OF NASAL PATENCY FOLLOWING SUBMUCOSAL RESECTION OF INFERIOR TURBINATE AND TOTAL INFERIOR TURBINECTOMY

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ABSTRACT

Objective: To compare the nasal obstruction following submucosal resection of inferior turbinate versus total inferior turbinectomy in patients with enlarged inferior turbinate.

Study Design: Randomized control trial

Place and Duration of Study: CMH Rawalpindi from June 2007 to November 2007.

Methods and Materials: Sixty patients of both gender clinically diagnosed to have inferior turbinate hypertrophy with history of nasal obstruction, not responding to medical treatment, having age >12 years with no history of previous nasal surgery were selected by convenience sampling. Thirty patients were treated by total inferior turbinectomy and thirty cases were treated by submucosal resection of inferior turbinate and results in terms of relief of nasal obstruction based on VAS (Visual Analogue Score) were observed with follow-up carried out at three weeks.

Results: Out of 30 cases managed by total inferior turbinectomy 83% cases showed marked improvement, and 17% had mild improvement in nasal obstruction 3 weeks after surgery. Among patients managed by submucosal resection 80% had marked, 17% had mild and 3% had no improvement of nasal obstruction.

Conclusion: Submucosal resection of inferior turbinates and total inferior turbinectomy are almost equally effective for relief of nasal obstruction in patients with hypertrophic turbinate.

Keywords: Submucosal resection, Total inferior turbinectomy

INTRODUCTION

Nose performs important function of conducting and conditioning the air meant for gaseous exchange in lower respiratory channels. Moreover the flow of inhaled air is reflexly regulated in the nose according to the requirements of body.

Inferior turbinates are two bony projections in the lower portion of nasal passages one on each side. In certain conditions mucous membrane and soft tissues of inferior turbinate undergo permanent structural changes and becomes hypertrophic. This obstruction is usually refractory to medical treatment and calls for some surgical procedure to get a lasting relief.

Cellular hyperplasia, tissue edema and vascular congestion of the mucosa, and sometimes even bony enlargement, lead to turbinate enlargement[1]. Nasal blockage due to turbinate enlargement leads to post nasal drip, nasal congestion and headache[2,3].Total inferior turbinectomy is a reliable method for treating hypertrophic inferior turbinates[4]. Other surgical methods available are electric cautry, submucous diathermy, lateral displacement of inferior turbinate, cryosurgery and submucous resection with microdebriders[3].

Submucosal resection of the inferior turbinate preserves most of the mucosa and allows for preservation of function[5]. It is likely to cause less postoperative dryness, crusting and adhesions as compared to total inferior turbinectomy. More over preservation of mucosa over the turbinates helps to minimize the chances of post operative bleeding[6].

The objective of this study was to compare the nasal patency following submucosal resection of inferior turbinate and total inferior turbinectomy in patients with enlarged inferior turbinate.

PATIENTS AND METHODS

These randomized control trial were conducted in ENT department Combined Hilitary Hospital Rawalpindi from june 2007 to November 2007. Sixty patients with inferior turbinate hypertrophy were included in the

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study using non probability convenience sampling into two groups A and B. Inclusion criteria were, clinically diagnosed cases of inferior turbinate hypertrophy, not responsinve to medical treatment, both genders, age 12 years and above. Exclusion criteria were bleeding disorders, previous turbinate surgeries, combined septal and turbinate surgery. All patients included had pre operative VAS score of either 9 or 10.

Thirty patients in group A underwent submucosal resection of inferior turbinate using powered endoscopic sinus surgery instruments. While 30 patients in group B underwent total inferior turbinectomy. Surgeries in both the groups were done under general anesthesia and followed by bilateral nasal packing with paraffin gauze. Patients in both the groups were given tab Co-Amoxiclav 625mg 8 hourly, tab Mefenamic Acid 500mg 8 hourly and tab Chlorphenaramine maleate 4mg 12 hourly for 5 days. Nasal packs were removed after 48 hours. Patients were advised regular nasal toilet, Xylometazoline and liquid paraffin nasal drops, 2 drops 8 hourly for 5 days.

Post-operative nasal patency of the patients were noted after 03 week interval by VAS (Visual Analogue Scale) and was divided into no (VAS 1-3), mild (VAS 4-7) and marked nasal obstruction (VAS 8-10). Collected data were recorded on a specially prepared proforma. All the collected data was analyzed in SPSS version 11. Descriptive statistics were used to describe the data. Independent sample t'test was applied to compare age between both the groups. Chi square test was applied to see the significance of results in both the groups at 3 weeks duration. $P < 0.05$ was taken as significant.

RESULTS

The study included 60 patients with inferior turbinate hypertrophy. The age of patients was from 16 to 47 years. Mean age in group A was 30.30±9.66. Mean age in group B was 29.73±9.059. In group A 18 (60%) patients were males and 12 (40%) were females. While in Group B 16 (53%) patients were males and 14 (47%) were females. Both the groups were compareable with respect to age (p>005) and gender (p<0.05). After 03 weeks out of 30 cases treated with inferior turbinectomy 25 (83%) patients had no nasal obstruction 5 (17%) patients had mild nasal obstruction. Among the patients of Group B at three weeks interval 24 (80%) had no, 5 (17%) had mild and only 1 (3.3%) had marked nasl obstruction (p>005) (Table).

Table: Comparison of post op nasal obstruction

Groups	Nasal Obstuction		
	No (VAS 1-3)	Mild (VAS 4-7)	Marked (VAS 8-7)
Group A (n=30)	25 (83%)	5 (17%)	0
Group B (n=30)	24 (80%)	5(17%)	1(3%)

- GROUP A: Patients treared with submucosal resection of inferior turbinate
- GROUP B: Patients treared with total inferior turbinectomy
- P > 0.05

DISCUSSION

Hypertrophy of the inferior turbinates is a common cause of nasal obstruction. Medical treatment for turbinate enlargements with local or systemic steroids and antihistamines is effective initially but there is high recurrence when the drug is stopped[3]. Total inferior turbinectomy is a reliable method for treating hypertrophic inferior turbinates[4]. Other surgical methods available are electric cautry, submucous diathermy, lateral displacement of inferior turbinate, cryosurgery and submucous resection with microdebriders[3].

Among the patients managed by total inferior turbinectomy 83% had complete resolution of symptoms, where as in patients managed by submucosal resection 80% had complete resolution of symptoms. These results show that both types of procedures are equally effective in dealing with enlarged inferior turbinates.

A number of studies have been performed throughout the world about the medical and surgical management of inferior turbinates. Barbosa Ade[7] conducted a study to assess the pre and post operative symptomatology in patients after inferior turbinectomy which showed that 98% of patients were completely

relieved of nasal obstruction. Olarinde[8] showed excellent results with inferior turbinectomy in a study which involved 100 patients with hypertrophied inferior turbinates. Eliashar R[9] conducted a similar study with improvement of nasal symptoms in 87% of cases treated with inferior turbinectomy. A study involving 357 patients was conducted at Department of Otolaryngology-Head and Neck Surgery, Western .Galilee Hospital, Nahariya which showed that even in a hot and dusty climate, total inferior turbinectomy is an effective and relatively safe procedure in relieving nasal obstruction[10]. A prospective clinical study was conducted at Ear Nose and Throat department Combined Military Hospital Lahore to evaluate the results of total inferior turbinectomy in patients suffering from nasal obstruction due to hypertrophied inferior turbinates[4]. One hundred patients were operated upon and followed up for nine months. Nasal obstruction was relieved in 96% patients. The results of inferior turbinectomy in our study are in accordance with the above mentioned international and local studies.

Submucosal resection of inferior turbinate is done to preserve nasal mucosa of turbinate while removing the submucosal tissue thus preserving the physiological function of nasal mucosa over turbinate. Zhang P[5] analyzed three operative methods on hypertrophied inferior turbinate. One hundred and sixty-two cases were treated separately by submucosal resection of inferior turbinate, partial inferior turbinectomy and submucosal hot-coagulation of inferior turbinate with microwave. Cases were followed up for one year after the operation and it was found that the effective rates had no significant difference among the three groups ($p > 0.05$).

Passali[11] compared a number of surgical techniques commonly performed to control the symptoms of inferior turbinate hypertrophy. He reported long-term results in 382 patients randomly assigned to receive electrocautery, cryotherapy, laser cautery, submucosal resection (with and without lateral displacement) and turbinectomy. Outcomes were assessed by rhinomanometry, acoustic rhinometry, mucociliary transport time, and secretory immunoglobulin A and symptom scores before and yearly after surgical treatment. He concluded that submucosal resection with lateral displacement of the inferior turbinate resulted in the greatest increases in airflow and nasal respiratory function with the lowest risk of long-term complications. In our study the results regarding patency following submucosal resection and turbinectomy were almost equal because we did not combine the submucosal resection with lateral displacement.

In a study conducted by Ishida[12] in which submucous resection of the inferior turbinate was done in 43 patients with nasal obstruction, patients exhibited satisfactory improvement in symptoms only with a few crust formations. The macroscopic intranasal findings and allergic tests improved after surgery. Saccharin transport time remained normal. The number of anti-tryptase positive mast cells significantly decreased in the epithelial layer and in the superficial layer of the lamina propria of the postoperative inferior turbinate mucosa. In accordance with our results his study not only showed excellent relief of nasal obstruction by submucosal resection, but it further elaborated that the normal functioning of mucosa is not disturbed after this conservative procedure.

In a local study performed in Holy Family Hospital, Rawalpindi[4] in which inferior turbinectomy was effective in controlling the symptoms of 94% patients with inferior turbinate hypertrophy. However with submucous resection only 60% patients got relief from nasal obstruction. These results are in contrary to our study in which relief of nasal obstruction was almost equal with both the procedures. Though the relief of nasal obstrution with the more conversant method of inferior turbinectomy was as good as in our study, but we have been able to achieve better results with submucus resection.

For future trials it is recommended that other methods of reduction of inferior turbinate

like cryosurgery, laser, radiofrequency ablation, coagulation reduction, sub-mucosal bipolar radio-frequency therapy and microwave should also be compared. Such studies should also be conducted in our country so that our local population should also begin to benefit from the latest trends of surgery in rhinology.

CONCLUSION

Submucosal resection of inferior turbinate is a less traumatic, mucosa preserving procedure and is equally effective technique in relieving nasal obstruction due to turbinate hypertrophy as compared to total inferior turbinectomy.

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