**ABSTRACT**

**OBJECTIVE:** To evaluate the effectiveness and safety of endoscopic assisted microdebrider resection of inferior turbinate, in cases of Inferior Turbinate Hypertrophy

**STUDY DESIGN:** A prospective interventional study.

**PLACE AND DURATION OF STUDY:** Study was conducted from 1\textsuperscript{st} April 2010 to 30\textsuperscript{th} Sep 2014, in POF Hospital Wah Cantonment.

**METHODOLOGY:** All the patients with bilateral nasal obstruction of more than 6 months duration and having bilateral Inferior Turbinate Hypertrophy were operated by microdebrider and the results were assessed and compared with national and international literature.

**RESULTS:** A total of 50 patients were operated, 60% were male and 40% female, age range was 18 to 40 years. All the patients underwent endoscopic assisted microdebrider resection of inferior turbinate. All the patients have significant subjective and objective improvement in nasal obstruction except one who developed recurrence of the disease. Only 10% patients developed complications like post-op infection 4% haemorrhage, 2% synachae formation 2% and recurrence 2%.

**CONCLUSION:** Since controlled amount of the tissue can be resected from the submucosal plane, the results with endoscopic assisted microdebrider resection of inferior turbinate are safe with minimal complication.

**KEYWORDS:** Endoscopic, Turbinoplasty, Microdebrider, Nasal Obstruction, Hypertrophied Inferior Turbinate.

**INTRODUCTION**

Inferior turbinate serves several important functions like warming and humidifying. They also have role in inspiratory resistance, which creates negative intrathoracic pressure needed for inspiration. In the mean time they are also the main cause of nasal obstruction.\(^1\)

Inferior turbinate hypertrophy is one of the most common causes of nasal obstruction. More than 13 procedures have been mentioned in literature for managing this problem surgically.\(^2\) Except for few, most of the procedures are not preserving one of the most important structures of the nose that is nasal mucosa. Controversy still exists about the optimal surgical procedure for reduction of inferior turbinate.\(^3\) The objective of the present study was to evaluate the results of endoscopic microdebrider assisted debulking of inferior turbinate hypertrophy which is one of the nasal mucosa preserving procedures.

Inferior turbinate is one of the important structure which plays significant role in air conditioning. Conservative treatment proves ineffective in a considerable number of cases.\(^4\) Nasal Turbinate is composed of bony shelf like projection with covering periostium and an extensive venous plexus covered with mucous membrane. The submucosa of the respiratory epithelium contains both serous and abundant mucous secreting goblet cell. Ciliated cells responsible for mucociliary clearance are integrated into the multiple row epitheliums. Venous capacity vessels are subepithelially located in the lamina propria of the Inferior Turbinate. In a hypertrophied condition the volume of the inferior turbinate can be increased by 3-4 times.\(^5\) These patients can present with complaints of nasal obstruction, mouth breathing and dryness in oropharynx, restlessness, malaise and sleep disorder leading to affect the quality of life. In case of failure of conservative treatment, surgical treatment is indicated. Procedures like sub mucosal diathermy, electrical cauter, chemical cauter, partial or total turbinectomy, cryoturbinecomty, laser turbinectomy therapy, fracture of inferior turbinate and intra turbinate steroid injection, are in practice for the treatment of hypertrophied turbinate. Multiplicity of techniques resulted in lack of consensus on a standard procedure for reduction of inferior turbinate.

There are many procedures which are commonly done for turbinate reduction though they are effective in releasing the nasal obstruction but results in ozaena, crusting and atrophy of nasal mucosa due to removal of large part of nasal mucosa covering the inferior turbinate.

Saving the most important structure of nasal cavity that is nasal mucosa with mucociliary mechanism is one of the most important advantages of endoscopic microdebrider technique. By doing this, optimal success can be achieved. This procedure is the most effective procedure for reduction/debulking of inferior turbinate with protection of mucociliary mechanism of nose. This study is done to assess the subjective and objective
outcomes as well as safety of this technique in cases of chronic inferior turbinate hypertrophy.

**METHODOLOGY**

This prospective, interventional study was carried out in the Department of Otorhinolaryngology, POF Hospital Wah Cantt from 1st April 2010 to 30th Sep 2014. The purpose of the present study was to see the effectiveness of endoscopic assisted microdebrider resection of inferior turbinate and to compare the data with the national and international literature. The POF hospital is a tertiary care teaching hospital which provide health care to the employees of Pakistan Ordinance Factories and their families as well as the private patients. Patients presented with bilateral nasal obstruction and diagnosed as inferior turbinate hypertrophy, were included in the study. Patients having sinusitis, nasal polyp, deflected nasal septum and those with previous history of nasal surgery were excluded from the study. All the patients were evaluated meticulously by a consultant and all surgeries were done by the same consultant. Preoperative routine investigations and CT scan paranasal sinuses were done for all the patients and they were evaluated by anesthetist and prepared for surgery. Straight Microdebrider (XOMED Medtronic, USA) 3.5mm tip with a serrated blade was used in all cases. All the patients underwent endoscopic assisted microdebrider debulking of hypertrophied inferior turbinate. Incision given with 15 number scalpel, vertically along the anterior end of inferior turbinate, mucosa elevated and submucosal tissues were resected by using zero nasal endoscope and microdebrider. All the data noted in a pre-designed proforma. Complication rate related to inferior turbinectomy was also measured. Postoperative evaluation was done subjectively and objectively after 07 days, 15 days, 02 months and then after 06 months duration. Subjective assessment was made by enquiring the amount of relief from nasal obstruction by using a questionnaire, and Visual Analog Scale (VAS). Each patient used a 10-cm VAS to grade nasal obstruction preoperatively and postoperatively in every follow up visit, till 06 months. A score of 0 represented no nasal obstruction and a score of 10 indicated complete nasal obstruction. Objective assessment was done by metallic tongue depressor and size of inferior turbinate was assessed, by anterior rhinoscopy. Frequency and percentage was measured in different genders and age groups. Frequency and percentage of relief from nasal obstruction after the procedure was observed among the patients. The data analysis was done by using SPSS version 20.

**RESULTS**

A total 50 patients were operated during the study period and among them 60%(n=30) were male and 40%(n=20) female. Both subjective and objective evaluation showed significant postoperative improvement in nasal obstruction in all the cases. The severity of nasal obstruction after the surgery began to improve from the 7th day and was maximum at 06 months, the results are summarized in Figure - 1

It was also observed that postoperative improvement in symptoms like sleep disturbance, dry/sore throat, post nasal drip, smells acuity, were also appreciable. Very few patients developed postop complications. One patient has nasal bleeding on first postop of day, two patients presented with infection, one has synachae formation and one has recurrence of the disease, Table – I.

**DISCUSSION**

Nasal obstruction is one of the most common complaints among patients presenting to otolaryngologists which disturbs the quality of life. Many surgical procedures have been adopted for dealing this problem but controversy still exists in finding a gold standard procedure. An ideal turbinate surgery should care for improvement in factors – like post nasal drip, rhinorrhea and smell acuity in addition to improvement in nasal obstruction. Though the results of turbinectomy mentioned in literature are excellent for relief of nasal obstruction but high incidence of post-operative bleeding, discomfort, dryness of the nasal and pharyngeal mucosa, headache, long stay in hospital and atrophic rhinitis are reasons forcing for alternate procedure. One of the important reasons for these complications is not caring for the most important structure of nose that is nasal mucosa.

In our technique all these issues were taken care. In our study all the patients got relief from nasal obstruction except one who developed recurrence of the disease. Only 10% of patients had complications which were minor. Literature review and our study reveal that the endoscopic microdebrider assisted inferior turbinectomy resulted in subjective and objective improvement in nasal obstruction as well as preserving the normal mucocilliary function of the nasal mucosa. Farmer SE criticized...
lack of standards in the area of instruments and methods used.8

Hegazy performed endoscopic submucosal resection of the inferior turbinate with a microdebrider in 50 patients. They found symptoms of nasal obstruction and stuffiness were almost resolved.9 Turbinate reduction using shaver offers a good alternative for the treatment of hypertrophied turbinate.

In a recently published comparative study between bipolar radiofrequency assisted turbinoplasty and microdebrider assisted turbinoplasty in patients with inferior turbinate hypertrophy, not responding to medical treatments, Vijay Kumar found improvement in both groups postoperatively, but there were three cases of recurrence at 6th months of postoperative period in 1st group. They concluded that MD assisted inferior turbinate procedure is superior, safe and less stressful.10

Endoscopic microdebrider-assisted inferior turbinoplasty has been recognized as an efficient surgical technique in the management of hypertrophied inferior turbinate. It has become a popular method for relieving symptoms of hypertrophic rhinitis. Lee et al in their study of microdebrider assisted reduction of inferior turbinate found significant improvement in symptom.11

Lorenz found microdebrider-assisted inferior turbinaloplasty is a minimally invasive procedure with maintaining mucosal integrity and short healing time.12 Yanez in a long-term (10-years) study concluded that this method has several advantages like minimal invasiveness, cost savings, simplicity and more effective and controlled anterior-to-posterior reduction of the turbinate stroma and bone without damage to nasal mucosa.13 Friedman in a study used microdebrider noted that the procedure is ideal for sparing the mucosal lining.14–16 Yu-Lin Chen was of the opinion that microdebrider assisted inferior turbinaloplasty is superior to Submucosal resection with regard to preserving the nasal mucosa.17 Chen and colleagues made comparison of MD and RF found that both methods are effective in relieving nasal obstruction.18

In a recent study, Kizilkaya did not find a statistically significant difference between radiofrequency and microdebrider-assisted turbinoplasty.19 Cigna compare the post-operative outcome between turbinate reduction with radiofrequency and microdebrider-assisted partial turbinoplasty suggested early Post-operative improvement in patient who had microdebrider assisted turbinate resection comparing with the other group.20 Ozcanet suggested measurement of the inferior turbinate size in paranasal CT is a useful objective method for evaluation of the inferior turbinate hypertrophy and the assessment of the surgical outcomes.21 Bouetel in their study suggested that microdebrider-assisted inferior turbinoplasty is effective procedure for reducing the turbinate size and increasing the nasal patency.22 Our limitation in this study was unavailability of Rhinomanometry which is an accurate objective test for nasal air flow.

CONCLUSION

Microdebrider assisted debulking is safe and effective procedure with minimal morbidity, minimally invasive, having good patient acceptance. Preservation of mucosa leads to early healing and absence of crusting, precise tissue removal with satisfactory reduction of tissues. So the technique must be utilized where facilities available. However further studies with a prospective designed is needed to strengthen the evidence.

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