

MEDICAL VS SURGICAL TREATMENT FOR SYMPTOMATIC ENLARGED INFERIOR TURBINATE: A COMPARATIVE STUDY

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ABSTRACT

Objective: To determine the nasal patency after reducing the size of hypertrophied inferior turbinate with medication and surgery.

Study Design: Prospective comparative study.

Place and Duration of Study: Department of Ear, Nose, Throat, Head and Neck Surgery, Medical Teaching Institute, Lady Reading Hospital, Peshawar Pakistan, from Jan to Dec 2019.

Methodology: This study was conducted after sample size calculation using an online sample size calculator (OpenEpi) and after obtaining informed consent patients were divided into two groups. Patients in group A were put on medicine only and in group B surgery was conducted to reduce the size of hypertrophied inferior turbinate. Data were analyzed using SPSS version 25 and $p < 0.05$ was considered significant.

Results: This study comprised of total 86 patients, in the age range 15-55 years with mean \pm SD age 33.47 ± 9.57 years. Males were 47 (54.7%) and females were 39 (45.3%) with male to female ratio of 1.2:1. In group A, males were 22 (25.25%), females were 21 (24.41%), while in group B males were 25 (29.1%) and females were 18 (20.3%). There was no statistically significant difference in nasal patency between the two groups before treatment ($p=0.59$) and after 10 days of treatment ($p=0.69$). However, at the end of one month, there was a statistically significant difference in nasal patency between the medically treated and surgically treated groups of patients ($p=0.023$).

Conclusion: Surgical treatment is significantly effective than medical treatment alone.

Keywords: Hypertrophy, Inferior turbinate, Nasal obstruction, Outer displacement.

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INTRODUCTION

Nose is the vital organ of the human body, playing an important role in warming, humidifying and filtering inspired air before reaching the lungs. There are three paired projections from the lateral nasal wall called superior, middle and inferior turbinates. Inferior turbinate is a separate bone covered by mucosa. The normal size of inferior turbinate is 50-60mm long, 7.5mm high and 3.8mm wide. Inferior turbinate size can be enlarged either due to an increase in cell size called hypertrophy or increase in cell number called hyperplasia. Both the terms are used interchangeably.¹ Turbinate hypertrophies can occur due to increase in soft tissue mass, bone, or both. Inferior turbinate hypertrophy (ITH) may be associated with Deviated Nasal Septum (DNS) or may exist in isolation. Inferior turbinate hypertrophy causing nasal obstruction affects approximately 10-20% adult population. ITH may occur due to various clinical conditions such as allergic rhinitis, vasomotor rhinitis, and other iatrogenic rhinopathies. Hypertrophy of Inferior Turbinate (IT) may occur as

compensatory phenomenon due to the septal deviation to opposite side.^{2,3} ITH may present as nasal obstruction, difficulty in breathing, headache and facial discomfort. ITH causes decreased airflow through sinuses leading to sinusitis and subsequent complications. The aim of treatment of ITH is to reduce its size and ensure adequate air passage through nasal cavities.⁴ The size of enlarged inferior turbinate can be reduced with the help of medicines or surgical techniques. Amongst the medicines include topical corticosteroid nasal spray, anti-histamines, sympathomimetic agents and anticholinergic drugs. Sometime medical therapy is not sufficient to reduce soft tissue bulk of hypertrophied turbinate to obtain required results, soft tissue mass, bone or both can be reduced by various techniques.² Surgical procedures used by numerous otolaryngologists around the globe include partial or total turbinatectomy, turbinoplasty, submucous diathermy, radio frequency ablation, laser-assisted ablation, cryotherapy and ultrasonic reduction. The prime purpose of all these surgical techniques is to reduce the anatomical mass of the turbinate on one hand while maintaining physiological function of turbinate on other hand.⁵

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Multiple surgical techniques are exercised by different surgeons as there is no standardized technique until now due to its associated adverse effects like bleeding, crusting, dryness, adhesion, hyposmia, and bone necrosis.⁶

Keeping in view the trauma of surgery and its associated adverse events, this study aims to compare outcome of medical therapy with surgery for ITH in a tertiary care hospital, where it is the first research work of its nature.

METHODOLOGY

This prospective comparative study was conducted at the Department of Ear, Nose, Throat, Head and Neck Surgery, Medical Teaching Institute, Lady Reading Hospital, Pakistan, from January to December 2019. To test the hypothesis, the sample size was calculated using an online sample size calculator (OpenEpi: Sample size for X-Sectional, Cohort, and Clinical Trials, taking confidence interval of 95% and the margin of error of 5% <https://www.openepi.com/Menu/OE-Menu.htm>).⁷ Power analysis revealed that 43 patients were required for each group with a total sample size of 86 patients. These patients were divided into two equal groups. Patients in group A were subjected to medical therapy, while in group B, outfracture of hypertrophied inferior turbinate was conducted. A convenient (non-probability) sampling technique was adopted.

Inclusion Criteria: All patients of both genders in the age range from 15-50 years.

Exclusion Criteria: Patients having ITH with DNS, patients with a history of previous ITH surgery, patients, who were not willing for study, patients having other rhinopathies beside ITH.

Well informed written consent was taken from all patients explaining details of the study. Patients fulfilling inclusion criteria were meticulously evaluated in terms of details history, thorough examination and relevant investigations. All the patients whether treated medically or surgically were dealt by author only. Patients were interrogated regarding nasal obstruction, dyspnea, headache and other otorhinolaryngological and systemic illness, and any previous medical and surgical intervention. Thorough otorhinolaryngological and systemic examination was carried out focusing on the nose and paranasal status. Relevant biochemical investigations along with x-ray paranasal sinuses and CT paranasal sinuses where needed, were performed. Nasal obstruction due to ITH was assessed pre- and

post-treatment by using 100mm standardized Visual Analogue Scale (VAS). VAS was categorized in No (VAS 1-3), Mild (VAS 4-7) and Severe (VAS 8-10) nasal obstruction. Patients in group A were put on oral antibiotic Amoxicillin Clavulanate (Augmentin) 30 mg/kg/day in 12 hourly divided doses, Oral antihistamine Loratadine (Tab Lorin NSA 10mg) once daily and corticosteroid (Fluticasone Propionate) nasal spray (Flexosone 50 mcg 7.5 ml) 2 puffs twice a day. Medical treatment was given for a period of minimum 10 days. Nasal Obstruction was assessed using VAS before medical treatment, on 10th day and 30th day of treatment. Patients in group B were subjected to outfracture of IT. After admission, the patients were properly evaluated by Anesthetist one day before surgery for general anesthesia. On the day of surgery nose was packed with ribbon gauze soaked in 4% xylocaine with adrenaline in aseptic environment. Then after intubation under general anesthesia in a supine position patient was draped aseptically. Nose was properly examined using head light. Hypertrophied inferior turbinate was initially fractured medially and superiorly and then with the help of appropriate instrument it was displaced laterally. Thus, ensuring sufficient airway, then nose was splinted and then packed with medicated ribbon gauze. The patient was shifted to ENT ward after uneventful recovery from anesthesia. All patients were put on oral antibiotics, analgesics and antihistamine and vasoconstrictor nasal spray. Anterior nasal pack was removed after 24 hour and patient was discharged with post-operative instructions and for follow-up visits on 10 and 30 days of surgery. Nasal obstruction was assessed before surgery and on 10th and 30th day of surgery. All the collected data were recorded on a specially designed proforma and analyzed using SPSS-25. Quantitative data were presented as means \pm SD, while qualitative data were presented as frequency and percentage. Chi-square test was used to look for statistical significance of the results in both groups and $p < 0.05$ was considered significant.

RESULTS

This study comprised of total 86 patients, in age range 15-55 years with mean \pm SD age 33.47 ± 9.57 years. Males were 47 (54.7%) and females were 39 (45.3%) with male to female ratio of 1.2: 1. In the group A males were 22 (25.25%), females were 21 (24.41%), while in group B males were 25 (29.1%) and females were 18 (20.3%). The commonest complaint of patients was bilateral nasal obstruction in 35 (40.69%) patients in the medically treated group and in 37 (43.02%)

patients in the surgically treated group. Among unilateral nasal obstruction right side nasal obstruction was found in 5 (5.81%) patients in group A and in 4 (4.65%) patients in group B, while left-side nasal obstruction was recorded in 4 (4.65%) and in 2 (2.32%) patients in group A and B respectively (Table-I). There was no statistically significant difference in nasal patency between the two groups before treatment ($p=0.59$) and after 10 days of treatment ($p=0.69$). However, at the end of one month, there was a statistically significant difference in nasal patency between the medically treated and surgically treated groups of patients ($p=0.023$) (Table-II).

Table-I: Frequency and Percentage of presentations of patients in both groups (n=86).

Presentation		Group A (n=43), No (%)	Group B (n=43), No (%)
Bilateral Nasal Obstruction		35(40.69%)	37(43.02%)
Unilateral Nasal Obstruction	Right-Sided Nasal Obstruction	5(5.81%)	4(4.65%)
	Left-Sided Nasal Obstruction	4(4.65%)	2(2.32%)
Headache		14(16.27%)	8(9.30%)
Difficulty in breathing		10(11.62%)	9(10.46%)
Facial Discomfort		8(9.30%)	6(6.97%)
Nasal Allergic symptom		11(12.79%)	2(2.32%)

Table-II: Nasal Patency measured before treatment and at 10 and 30-days post-treatment in both groups.

Nasal Patency	Group A (n=43)	Group B (n=43)	p-value
Pretreatment Nasal Patency (Mean ± SD)	2.74 ± 0.49	2.93 ± 0.33	0.59
Nasal Patency after 10 Days (Mean ± SD)	1.86 ± 0.55	1.81 ± 0.54	0.69
Nasal Patency after 30 Days (Mean ± SD)	1.30 ± 0.51	1.09 ± 0.29	0.023

DISCUSSION:

Nasal obstruction due to ITH is common otolaryngological complaint faced by general physician and otorhinolaryngologist. This is a challenging issue for both patients and treating clinician, due to the lack of standardized treatment protocols developed by otolaryngologist around the globe. Thus numerous medical and surgical therapies have been practiced by otolaryngologists.⁸ This study is also an effort to focus on medical treatment of the issue. In this study there was a slight predominance of male gender (male to female ratio of 1.2:1), Similarly male predominance are also reported in other studied both from Asian and western

countries that could be explained either probably due to social norm of the society where females have less chance of getting outdoor consultation, or ITH may affect men more than women due to high chance of exposure to environmental hazards.⁹⁻¹¹ The age of patients studied ranged 15 -55 years with mean age of 33.47± 9.57 years that is comparable with results of Chavan who divided the patients in two groups and in one group patient mean age was 29.48 years while in other group mean age was 28.28 years.¹² Similarly in a Turkish study mean age of the patients was 32.16 ± 10.48 years (range 20-59 years).¹³ The reason is that the 3rd and 4th decade is the most active time of life, one can be affected easily by environmental hazards and seeks a solution on a priority basis to eliminate any health issues.

The main complaint of ITH is nasal obstruction, that if untreated in time may cause the upper or lower respiratory tract infection. In the current study, bilateral nasal obstruction was the commonest findings; in 35 (40.69%) and, 37 (43.02%) patients in group A and B, respectively. This is supported by other studies too. Nelson found in his work that nasal obstruction was the most bother some preoperative symptoms in all patient groups.^{7,8,14} Mokbel from Egypt also carried study on reduction of ITH with a simple technique and he reported that nasal obstruction was accounted in all patients (100%).¹⁵ Nasal obstruction was recorded in both groups before treatment and there was no statistically significant difference ($p>0.05$), as reported by Kaymakci that pre-operative nasal obstruction frequency and severity scores were not different between the two groups ($p=0.97$ and $p=0.130$).¹⁶ Likely Nelson conducted a study on the comparison of symptoms and quality of life before and after the reduction of the inferior turbinate hypertrophy by two techniques and observed that there was no statistically significant difference between the two techniques before intervention ($p=0.05$).¹⁴ Thus it is not necessary that before intervention any difference may be found in patients. So patients can be grouped accordingly and comparison can be performed. In this study one group was subjected to medical therapy solely while the second group was subjected to a surgical technique called outfracturing of inferior turbinate to see the difference between the two treatment modalities. After 10 days of both treatment modalities nasal patency was checked using standardized VAS, and no significant difference was noted between the two groups ($p=0.69$), but at one month follow-up there was a significant difference between the two treatment modalities ($p=0.023$), thus it is sho-

wed from this study that surgery is a better option for reducing the size of hypertrophied inferior turbinate. This observation agrees with results of Mokbel who performed a comparative study for the reduction of ITH and noted that preoperative mean symptom score was 7.90 ± 5.50 , while the postoperative mean symptom score was 1.50 ± 1.70 with statistically significant improvement of symptom of nasal obstruction ($p < 0.05$).¹⁵ Similarly Unsal conducted a study on the reduction of ITH and its effect on the nose volume and found that the total volume of nose increased significantly after the treatment of ITH ($p < 0.001$).¹³ This study is also in consistence with Kaymakci's result who reported that both frequency and severity of nasal obstruction were significantly reduced after the reduction of the size of the inferior turbinate with radiofrequency and lateral displacement ($p < 0.001$).¹⁶⁻¹⁸

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IMITATION OF STUDY

Limitation of this study is a short follow-up, so other studies with large sample size and long follow up may be conducted for long-term results.

CONCLUSION

Although there was no difference between the medical and surgical treatment modalities for the reduction of hypertrophied inferior turbinate at 10 days follow-up of treatment, however after one month surgical treatment was significantly effective than medical treatment.

Conflict of Interest: None.

Authors' Contribution

HR: Conceived the manuscript, FW: Collected the data, BZ: Analyzed the data and drafted the manuscript, MJ: Critically reviewed the manuscript, NUH: Proof reading

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