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# "TO ASSESS THE OUTCOMES OF ENDOSCOPIC GUIDED TURBINOPLASTY IN PATIENTS OF CHRONIC RHINITIS"

Otorhinolaryngology

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## ABSTRACT

**Background:** Chronic rhinitis is characteristic of hypertrophy of turbinates, more so of inferior turbinates, leading to nasal obstruction. After failure of medical management, surgery is the only option left. Endoscopic turbinoplasty has shown effectiveness in reducing large turbinates, while preserving the mucosal continuity and submucosa covering the raw surface with a mucosal flap. The present study was undertaken to find out the benefits of endoscopic turbinoplasty in patients with inferior turbinate hypertrophy. **Materials & Methods:** The study was conducted in M.Y. Hospital, Indore during the study period 1st June 2022 to 31st December 2022. 75 patients with inferior turbinate hypertrophy were included. Standard procedure for endoscopic turbinoplasty was adopted in all patients. Assessment of inferior turbinate size, Friedman Grading system was used, pain was assessed using VAS and Nasal Obstruction Symptoms Evaluation Scale was used. The study was approved by the Institutional Ethics Committee. Mean scores were compared using Paired 't' test.

## KEYWORDS

Inferior turbinate hypertrophy, endoscopic turbinoplasty, chronic rhinitis

## INTRODUCTION

Rhinitis is the inflammation of the nasal mucosa. Inflammation persisting for more than 12 weeks is known as chronic rhinitis, which may be infectious or non-infectious in origin. 60% allergic rhinitis, 24% rhinitis vasomotor and 15% non-allergic chronic eosinophilic rhinitis constitutes the non-infectious chronic rhinitis. The causes of chronic rhinitis include pregnancy, medications, irritants in the air, smoking and other medical conditions such as asthma or chronic sinusitis.[1]

Chronic rhinitis is of two types – Allergic and non-allergic rhinitis. Allergic rhinitis is caused by allergic response to allergens, such as pollen, dust or animal dander. In allergic rhinitis, the body's immune system overreacts to these allergens, while in non-allergic rhinitis, body's immune system is not involved.

The symptoms of chronic rhinitis include sneezing, stuffy nose, runny nose, itchy nose, throat, eyes and ears, nose bleeds, clear drainage from the nose, ear infections that keep coming back, snoring, breathing through the mouth and tiredness.[2]

The characteristic feature of rhinitis is the hypertrophy of turbinates, more so of inferior turbinate. This leads to nasal obstruction. The treatment of chronic rhinitis include combination of medications and lifestyle modification, but in some cases surgery is needed.[3]

Surgical modalities includes cryotherapy, submucosal diathermy, laser turbinoplasty, turbinectomy, partial and total turbinectomy and endoscopic turbinoplasty.[4] The main aim of surgery is to relieve the nasal obstruction while preserving the function of the turbinates, as most of the techniques leads to destruction of the mucosa.[5]

Endoscopic assisted turbinoplasty has been found to be effective in reducing large volume of turbinates, while preserving the mucosal continuity and submucosa covering the raw surface with a mucosal flap. This is a minimally invasive procedure, which is safe and provides better evaluation of nasal turbinate extension, precise manipulation and efficient hemostasis, with minimal intraoperative blood loss and lower postoperative pain. Crusting and synechiae formation are the common complications seen.

### AIM:

To evaluate the efficacy of endoscopic guided turbinoplasty in patients with inferior turbinate hypertrophy in terms of relief of symptoms (nasal obstruction), postoperative recovery, postoperative complications and reduction in the size of the inferior turbinate compared to the preoperative size.

## MATERIAL AND METHODS

The present prospective, observational study was carried out in the Department of Otorhinolaryngology, M.G.M. Medical College & M.Y. Hospital, Indore (M.P.) during the study period from 1st June 2022 to 31st December 2022. Patients with nasal obstruction coming to the institution were included in the study. The study has been approved by the Institutional Ethics Committee and all the patients provided their voluntary written informed consent to participate in the study.

The inclusion criteria was – age between 18 to 60 years with allergic or non-allergic rhinitis and having nasal obstruction with hypertrophied inferior turbinate. Patients of age less than 18 years, having coexistent asthma, patients on beta-blockers, or patients having other medical / immunological disease, and not willing to participate in the study were excluded from the study.

All the patients included in the study were put on medical management for 3 months. Tablet Levocetrizine (5 mg) and Tablet Montelukast (10 mg) was given once a day, along with fluticasone nasal spray (1 puff twice a day in each nostril). Patients who did not respond to the medical management were included in the study.

All these patients underwent endoscopy guided turbinoplasty under local / general anesthesia.

### Surgical Procedure:

- Under 0 degree endoscopic visualization and using Freer's Elevator, the lower end of the inferior turbinate was elevated.
- Initially, anterior 1/3 of the inferior turbinate was crushed followed by crushing the whole turbinate there of using a Heymann's Turbinectomy scissors.
- Medial mucosa was rotated laterally to cover exposed area of lateral part of inferior turbinate.
- Anterior nasal packing was done using antibiotic soaked (Soframycin with Flucort) ribbon gauze for 48 hours.

### Postoperative Protocol:

All patients were advised not to blow hard or sneeze. Pack was removed after 48 hours. Diagnostic nasal endoscopy was performed. Scores were assessed. Nasal douching with 0.9% saline solution was given to remove the crusts and continued till nasal mucosa healed. Oral antibiotics were given for 7 days. Patient was discharged with advice to use nasal spray containing steroid.

Patients were asked to follow-up at 1 month, 3 months and 6 months postoperatively. The degree of bleeding, crusting and synechiae formation was documented.

**ASSESSMENT TOOLS USED:**

**A. FRIEDMAN GRADING SYSTEM:**[7]

Grade I – Mild enlargement and with no obvious nasal obstruction.
Grade II – The inferior turbinate occupying half of the nasal cavity with nasal obstruction.
Grade III – Complete occlusion of nasal cavity.

**B. VISUAL ANALOGUE SCALE (VAS):**[8]

A Visual Analogue Scale (VAS) of 10 was used. It was a scale of 10 cm with markings from 0 to 10 cm, where '0' meant 'no pain' and '10' meant 'pain as bad as it could be'.

Pain and nasal obstruction was assessed using Visual Analogue Scale.

**C. NASAL OBSTRUCTION SYMPTOMS EVALUATION SCALE (NOSE)**

| Problem | None | Mild | Moderate | Severe |
|---|---|---|---|---|
| Nasal congestion | 0 | 1 | 2 | 3 |
| Nasal blockage or obstruction | 0 | 1 | 2 | 3 |
| Trouble breathing through my nose | 0 | 1 | 2 | 3 |
| Trouble sleeping | 0 | 1 | 2 | 3 |
| Unable to get enough air through my nose during exercise or exertion | 0 | 1 | 2 | 3 |

**RESULTS**

In the present study, 75 patients with nasal obstruction requiring surgical intervention were included. The mean of the patients was 32.84 ± 11.56 years ranging from18 to 60 years. Majority of the patients were in the age group 21-40 years. Males (58.7%) were more common than females (41.3%).

The preoperatively, the right sided turbinate grade showed 78.7% patients were in Grade III, 17.3% in Grade II and only 4% in Grade I. After the surgery, all 100% patients were in Grade I at 1 and 3 months, and 97.3% at 6 months. The left side turbinate grade showed that preoperatively, 86.7% patients were in Grade III, 10.7% in Grade II and only 2.7% in Grade I. After the surgery, all 100% patients were in Grade I at 1 and 3 months, and 96% at 6 months. There is an improvement in turbinate grade both right and left side by 6 months compared to preoperative. (Table 1)

**Table 1 : Comparison Of Turbinate Grades At Different Time Intervals**

| Side | Turbinate Grade | Preoperative | Postoperative Period | | |
|---|---|---|---|---|---|
| | | | At 1 month | At 3 months | At 6 months |
| Right side | Grade I | 3<br>4.0% | 75<br>100.0% | 75<br>100.0% | 73<br>97.3% |
| | Grade II | 13<br>17.3% | | | 2<br>2.7% |
| | Grade III | 59<br>78.7% | | | |
| Left Side | Grade I | 2<br>2.7% | 75<br>100.0% | 75<br>100.0% | 72<br>96.0% |
| | Grade II | 8<br>10.7% | | | 3<br>4.0% |
| | Grade III | 65<br>86.7% | | | |
| | Total | 75<br>100.0% | 75<br>100.0% | 75<br>100.0% | 75<br>100.0% |

20% in Grade 2. After the surgery, at 1 month 97.3% were in Grade 1, at 3 months 96% were in Grade 1 and at 6 months all 100% patients were in Grade 1. The left side nose grade showed that preoperatively, 89.3% patients were in Grade 3 and 10.7% in Grade 2. After the surgery, at 1 month 63% were in Grade 1, at 3 months 97.3% were in Grade 1 and at 6 months 94.7% patients were in Grade 1. There is an improvement in nose grade both right and left side by 6 months compared to preoperative. (Table 2)

**Table 2 : Comparison Of Nose Grades At Different Time Intervals**

| Side | Turbinate Grade | Preoperative | Postoperative Period | | |
|---|---|---|---|---|---|
| | | | At 1 month | At 3 months | At 6 months |
| Right side | Grade 0 | | 73<br>97.3% | 72<br>96.0% | 75<br>100.0% |
| | Grade 1 | | 2<br>2.7% | 3<br>4.0% | |
| | Grade 2 | 15<br>20.0% | | | |
| | Grade 3 | 60<br>80.0% | | | |
| Left Side | Grade 0 | | 72<br>96.0% | 73<br>97.3% | 71<br>94.7% |
| | Grade 1 | | 3<br>4.0% | 2<br>2.7% | 3<br>4.0% |
| | Grade 2 | 8<br>10.7% | | | 1<br>1.3% |
| | Grade 3 | 67<br>89.3% | | | |
| | Total | 75<br>100.0% | 75<br>100.0% | 75<br>100.0% | 75<br>100.0% |

The pain score was assessed using Visual Analogue Scale (VAS). The mean VAS score on Day-2 on right side was 3.92 ± 1.78 and at 6 months it was 0.07 ± 0.25. (Table 3) The mean VAS score on Day-2 on left side was 3.13 ± 1.69 and at 6 months it was 0.09 ± 0.37. There is a significant reduction in the pain score on both sides from Day-2 to 6 months. (Table 4)

**Table 3 : Comparison Of Pain Score On The Right Side At Different Time Intervals**

| Pain Score (Right side) | No. | Mean ± SD | 't' value | P value |
|---|---|---|---|---|
| Day 2 | 75 | 3.92 ± 1.78 | 14.500, df=74 | 0.001* |
| 1 Month | 75 | 1.81 ± 1.14 | | |
| 1 Month | 75 | 1.81 ± 1.14 | 13.379, df=74 | 0.001* |
| 3 Months | 75 | 0.87 ± 0.79 | | |
| 3 Months | 75 | 0.87 ± 0.79 | 9.423, df=74 | 0.001* |
| 6 Months | 75 | 0.07 ± 0.25 | | |

**Table 4 : Comparison Of Pain Score On The Left Side At Different Time Intervals**

| Pain Score (Left side) | No. | Mean ± SD | 't' value | P value |
|---|---|---|---|---|
| Day-2 | 75 | 3.13 ± 1.69 | 13.220, df=74 | 0.001* |
| 1 Month | 75 | 1.60 ± 1.29 | | |
| 1 Month | 75 | 1.60 ± 1.29 | 11.226, df=74 | 0.001* |
| 3 Months | 75 | 0.71 ± 0.85 | | |
| 3 Months | 75 | 0.71 ± 0.85 | 7.638, df=74 | 0.001* |
| 6 Months | 75 | 0.09 ± 0.37 | | |

Complications were seen in 14 patients. Synechiae formation was seen in 6 (8%) patients, crusting and bleeding in 4 (5.3%) patients respectively.

At final outcome, 18.7% patients were still symptomatic, while 81.3% patients were asymptomatic.

**DISCUSSION**

There are many surgical modalities for the treatment of hypertrophied inferior turbinates in patients with chronic rhinitis, but there is no consensus on which modality is superior.

We had included 75 patients with nasal obstruction, in whom medical management. All these patients underwent endoscopy guided turbinoplasty for hypertrophied inferior turbinates.

The mean age of the patients was 32.84 ± 11.56 years, ranging from 18 to 60 years, with a higher proportion of males (58.7%) in the study. The mean age of the patients in **Kavin Kumar *et al.***[9] study was 33.67 ± 7.88 years in endoscopic turbinoplasty group and 35.93 ± 8.13 years in conventional partial inferior turbinectomy group. The mean age of our study patients and gender distribution is comparable to the study done by Kavin Kumar.

There is a consistent improvement in the turbinate grade as well as nose grade of both sides till 6 months compared to the preoperative turbinate grade. **Kavin Kumar *et al.***[9] study showed a significant reduction in the SNOT22 (sino-nasal outcome test) in endoscopic turbinoplasty group compared to conventional partial inferior turbinectomy group.

There is a significant reduction in the pain score on both sides from Day-2 to 6 months.

Complications were seen in 14 patients. Synechiae formation was seen in 6 (8%) patients, crusting and bleeding in 4 (5.3%) patients each,

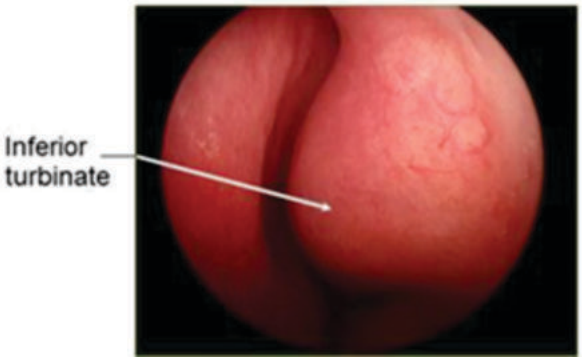
respectively. **Kavin Kumar *et al.*[9]** in their study found lower incidence of crusting, nasal discharge and no synechiae at follow-up in endoscopic turbinoplasty compared to conventional partial inferior turbinectomy group. **Gupta *et al.*[10]** reported minimal adverse effects in their study.

At final outcome, 18.7% patients were still symptomatic, while 81.3% patients were asymptomatic in the present study. Good symptomatic recovery was observed in endoscopic turbinoplasty group compared to conventional surgery.

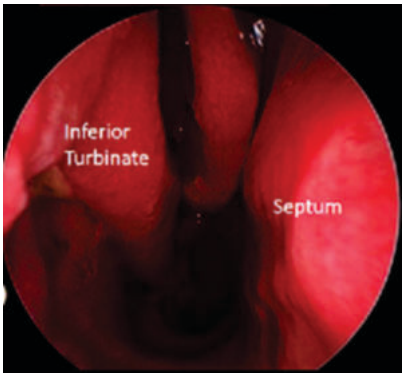
## CONCLUSION

Endoscopy guided turbinoplasty has proved very effective in the treatment of hypertrophied inferior turbinates. More than 80% patients were asymptomatic after the surgery with very low Pain and Nose Scores. Synechiae formation, crusting and bleeding were the complications encountered, but the proportion of these complications was less. The other advantages of endoscopic inferior turbinoplasty include greater visualization during the elevation of the mucosal flap and during turbinate resection, which gives an edge to the operating surgeon.

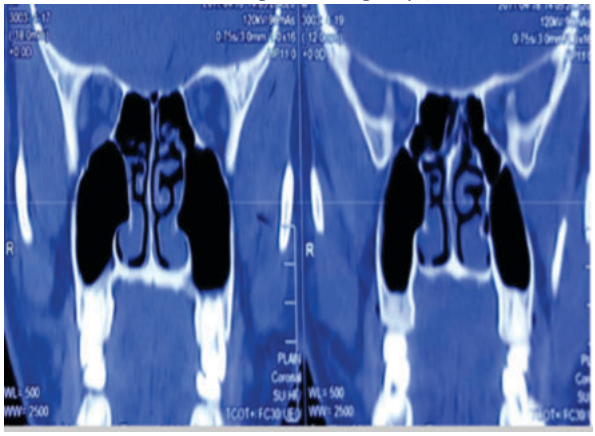
Hence, based on the results of our study, we highly recommend endoscopy guided turbinoplasty for hypertrophied inferior turbinates.



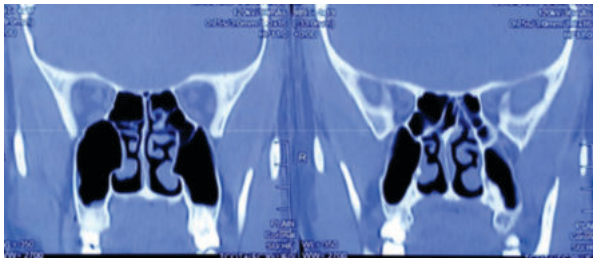

**Inferior Turbinate Hypertrophy (preoperative)**




**Status Post Inferior Endoscopic Turbinoplasty (After 6 Months)**



**Computed Tomography Scan Showing Paranasal Air Sinuses (Inferior Turbinate Hypertrophy)**



**Postoperative computed tomography scan after 12 months**

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