COMPARISON OF POWERED TURBINECTOMY AND SUBMUCOUS RESECTION TECHNIQUES OF SURGICAL MANAGEMENT OF INFERIOR TURBINATE HYPERTROPHY

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ABSTRACT

Background: Most authors agree that when clinical treatment is not enough to offer good nasal permeability, surgical treatment should be indicated for the treatment of nasal obstruction due to turbinate hypertrophy. So we compared these two Powered turbinectomy and submucous turbinate procedures have being taken for prospective analysis which is being done commonly in our Viswabharathi medical college Kurnool.

Materials and Methods: a prospective study conducted in the Viswabharathi medical college Kurnool Between Sept 2016 to Oct 2017 with 30 patients with nasal obstruction and inferior turbinate hypertrophy not responding to medical treatment with or without septal deviation were included and underwent these procedures by random allocation for Submucous resection and Powered turbinectomy.

Results: In present study we observed in Submucous resection group in the pre and post operative state showed 66.67% and 0% to have severe nasal obstruction respectively. Endoscopic examination revealed 60% and 0% to have grade III size of the inferior turbinate in pre and post operative states respectively. Out of 10 patients who had severe nasal obstruction, only four of them had mild nasal obstruction post operatively. One patient who had moderate nasal obstruction was not improved. But in Powered turbinectomy group Pre operative and post operative assessment of nasal obstruction by subjective analysis showed 80% and 0% to have moderate nasal obstruction respectively. Objective analysis revealed 67% to have grade II inferior turbinate and 33% to have grade II turbinate size in pre and post operative state respectively.

Conclusion: In powered turbinectomy, the overall improvement is 100% by both subjective and objective assessment. On analyzing these two turbinectomy procedures, the powered turbinectomy procedure is best for relieving nasal obstruction and for reducing turbinate size.

KEY WORDS: Inferior Turbinate Hypertrophy, Submucous resection and Powered turbinectomy.

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BACKGROUND

Swelling of the nasal mucosa is a part of the normal process called as ‘nasal cycle’. The periodical changes may alter from side to side, or change at the same time in both sides of the nasal cavity or may be completely irregular [1,2]. However, mucosa over the turbinates are prone for excessive enlargement owing to infectious or allergic causes [3]. There are 3 or sometimes 4 turbinates (chonche) which are attached to the lateral wall of nose. They are thin curved shell like bones covered with ciliated respiratory mucosa. Inferior turbinate creates the high inspiratory resistance which creates negative intrathoracic pressure required for normal breathing. The mucosa of the turbinates is essential to maintain normal nasal defense, humidification, warming and
cleaning the air [4-7]. Hypertrophy of inferior turbinate will impair normal nasal airflow and mucociliary functions, which can lead to chronic sinusitis, headache and various other manifestations. Although there is a strong need to give symptomatic relief to the patients, we also have to keep in mind the functional role of inferior turbinates in nasal breathing. Modern pharmacology offers a large number of options for clinical treatment of nasal obstruction due to turbinate hypertrophy. Whatever the origin it may be [allergic, idiopathic, drug related or others and by immunology], when clinical treatment is not enough to offer good nasal permeability, surgical treatment should be indicated [8].

Nasal mucociliary function is impaired in the majority of surgical reductions of the inferior turbinate [9]. The goal of turbinate surgery is to obtain an improvement of nasal breathing with preservation of the physiological function of the turbinate and minimal discomfort or adverse effects [10]. Studies reporting turbinectomy date from 1908 with Escat followed by Citelli who described surgical technique to treat nasal obstruction. Labayle, in 1949 explained the physiological role of the nasal conchae and described turbinectomy of the bone sub mucosa. In 1959, House described distinct surgical procedures for nasal conchae of bones and mucosa. Missaka, in 1972, described partial recovery of nasal mucous structures after 6 months of surgery [10]. Techniques of turbinate reduction include turbinectomy, Submucous turbinectomy, inferior turbinoplasty, Cryotherapy, Submucous resection, Submucous electro surgery, CO₂ laser turbinoplasty, powered turbinectomy and Others. No surgical technique which has been used previously for turbinate reduction has shown enough potential for the correction of the same and each is associated with known short-term and long-term complications. The variety of surgical techniques available indicates the lack of consensus on the optimal technique [11].

Classic Submucous resection of the inferior turbinate is a technique designed to preserve the mucosa, but it is, in fact, a misnomer because the resection includes some mucosa. The main goal of this type of surgery should be preservation of mucosal surfaces with reduction of the submucosal and bony tissue. Powered instrumentation used in a functional approach to inferior turbinates offers advantages over traditional techniques with regard to complications and mucosal preservation [12].

There has been an ongoing debate on the extent of resection needed for these patients with hypertrophy. Studies have shown good benefit using radical procedures such as resection of turbinates, whereas similar results have also been shown with less radical procedures such as turbinoplasty [13]. However, the studies regarding reduction of inferior turbinates that have been performed till date have not been conclusive on the ideal approach to deal with this situation. This study will help in better understanding of two surgical procedures with respect to patient symptomatology pre and post operatively. To analyze the improvement of nasal obstruction after surgical procedures and their effects on nasal function. The present study will help us to bridge the knowledge gap in this area and choose the ideal procedures for the management of inferior turbinate hypertrophy which are being done commonly in our Viswabharathi medical college Kurnool.

**MATERIALS AND METHODS**

In this prospective study all patients with nasal obstruction attending Viswabharathi medical college Kurnool between September 2016 – October 2017 after obtaining of informed consent and willingness from adult patients with nasal obstruction and inferior turbinate hypertrophy not responding to medical treatment with or without septal deviation were included who are having Nasal obstruction with inferior turbinate hypertrophy with Sino nasal polyposis, Fungal sinusitis, Neoplasms and chronic sinusitis Patients were excluded from the study. Patients attending during the study period with features of nasal obstruction and inferior turbinate hypertrophy were treated with topical decongestants and anti histaminics for a period of six weeks. Those who did not improve with medical treatment were included in our study. Subjective assessment of nasal obstruction was done by visual analogue scoring before surgery and graded in to mild, moderate, and severe. They were also subjected to nasal endoscopy
for objective assessment of inferior turbinate size and graded as I, II, III.

Patients included in this study underwent these procedures by random allocation for submucous resection and powered turbinectomy. The improvement in nasal obstruction following surgery was assessed after three months by complete questionnaires and size of the inferior turbinate assessed by nasal endoscopy. Grading of inferior turbinate size Grade I – Mild enlargement with no obvious nasal obstruction. Grade II – The inferior turbinate occupies half of the nasal cavity with nasal obstruction. Grade III – Complete occlusion of the nasal cavity. This study conducted only after informing the patients and after obtaining their written consent for surgical intervention.

**Inferior Turbinate Size Grading**

Grade-I

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<tr>
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<td></td>
<td>Powered Turbinectomy</td>
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**Table 1:** Assessment of nasal obstruction in submucous resection and Powered Turbinectomy patients.

**Table 2:** Assessment of inferior turbinate size in Submucous resection and Powered Turbinectomy patients.

**RESULTS**

The following data is obtained from the Patients attending Viswabharathi medical college Kurnool during the period of study that had features of nasal obstruction with inferior turbinate hypertrophy that had undergone Submucous Resection and Powered Turbinectomy procedures.

**DISCUSSION**

Inferior turbinate surgeries are advocated for relief of symptoms in patients with nasal obstruction. 30 patients with inferior turbinate hypertrophy and nasal obstruction had undergone procedures like partial Submucous resection, and powered turbinectomy by random allocation. Hence 15 patients underwent each procedure. They were analyzed subjectively and objectively by visual analogue scale and nasal endoscopy respectively both in pre operative and post operative state.

**Submucous resection:** In present study we observed in the pre and post operative state
showed 66.67% and 0% to have severe nasal obstruction respectively. Endoscopic examination revealed 60% and 0% to have grade III size of the inferior turbinate in pre and post operative states respectively. Out of 10 patients who had severe nasal obstruction, only four of them had mild nasal obstruction post operatively. One patient who had moderate nasal obstruction was not improved. In other study done by Mori et al followed 45 patients who were submitted to Submucous resection during 3 to 5 years after surgery. They observed that there was significant improvement of nasal obstruction: 82% responded well after three years and 79% after five years. In our study the improvement was 93% (14). In our study post operative analysis was done after three months, so after sometime patients may recur.

**Powered turbinectomy:** Pre operative and post operative assessment of nasal obstruction by subjective analysis showed 80% and 0% to have moderate nasal obstruction respectively. Objective analysis revealed 67% to have grade II inferior turbinate and 33% to have grade II turbinate size in pre and post operative state respectively. In other study done by Friedman et al (11) found that the ideal turbinate surgery would be limited to the erectile submucosal tissue and to the bony turbinate. Reduction of bone creates more space; while surgery on sub mucosal tissue creates 52 scarring that minimize the engorgement of inferior turbinate. They conducted a study in 120 patients with symptoms in the severe and moderate range of nasal obstruction. They found 100% improvement in nasal obstruction post operatively.

**CONCLUSION**

In Submucous resection, the overall improvement is 93% by both subjective and objective assessment, and in powered turbinectomy, the overall improvement is 100% by both subjective and objective assessment. On analyzing these two turbinectomy procedures, the powered turbinectomy procedure is best for relieving nasal obstruction and for reducing turbinate size.

**REFERENCES**