

## COMPARATIVE STUDY OF EFFICACY OF MUCOSAL ELECTROCAUTRY VERSUS SUBMUCOSAL DIATHERMY FOR THE TREATMENT OF INFERIOR TURBINATE HYPERTROPHY OF NOSE.

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### ABSTRACT

**Objective:** To compare the efficacy of submucosal electrocautry versus submucosal diathermy for the surgical treatment of inferior turbinate hypertrophy of nose and to analyze the outcome of both treatment options.

**Methodology:** Retrospective study was done in 100 cases at the department of otorhinolaryngology, head and neck surgery department JPMC and PMCH Nawabshah, from January 2007 to July 2008. The patients suffering from inferior turbinate hypertrophy were included in this study having ages between 20 to 35 years. Demographic data were obtained from the patient files at the Hospital and were compiled for result.

**Results:** Among one hundred patients which were evaluated and surgically treated, 30 cases were of allergic rhinitis, 28 cases of vasomotor rhinitis, 22 cases were of chronic hypertrophic rhinitis and rest of 20 cases had mild septal deviation. The results were evaluated for the patients, pre-, post-operative symptoms and clinical findings.

**Conclusion:** Submucosal diathermy was found more successful in relieving the patients' symptoms and decreasing the size of the inferior turbinates as compared to mucosal electrocautry.

**KEY WORDS:** Allergic rhinitis, Vasomotor rhinitis, Chronic hypertrophic rhinitis, Mucosal electrocautry, Submucosal diathermy.

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## INTRODUCTION

Nasal blockage/Stuffiness is one of the common complaints made by patients and some may complain of pinkish mass inside the nose in layman terms even complained by some educated people also. This condition not only affects human beings but also dogs, cats and horses.<sup>1</sup> There are certain physiological and anatomical conditions in which turbinates get hypertrophied. The inferior turbinate undergo cyclical fluctuations in size throughout the day as a part of the nasal cycle, though we are

unaware of these changes routinely, but they may be very apparent in those people with narrow nasal cavities, septal deviations, a constricted bony pyramid or narrow nasal aperture. The method of mucosal electric cautery and submucosal diathermy was described by Arnold, et al., in 1990.<sup>2</sup>

Hypertrophy of inferior turbinates causing nasal obstruction is noticed in both allergic and non-allergic rhinitis cases.<sup>2</sup> The middle turbinates often don't compromise the air entry unless there is co-existing nasal deformity or an ectopic ethmoid has grown into turbinate. Inferior turbinate are often at fault.<sup>3</sup> In certain conditions mucus membrane and soft tissue of inferior turbinates undergo permanent structural changes and become hypertrophic, with presenting symptom of nasal obstruction. Thus the enlargement of the inferior turbinates is mostly due to swelling of mucosa and rarely due to enlargement of bone itself. Those patients with history of nasal obstruction due to inferior turbinate hypertrophy which is not satisfactorily relieved by medical treatment need surgical treatment for the relief of symptoms and reduction of its bulk.

The objective of this study was to compare the efficacy of mucosal electro cautery versus submucosal diathermy for the treatment of inferior turbinate hypertrophy of nose.

### METHODOLOGY

It was a retrospective study done in 100 cases at the Department of Otorhinolaryngology, Head & Neck Department, Jinnah Postgraduate Medical Centre (JPMC) and Peoples Medical College & Hospital (PMCH), Nawabshah, from the January 2007 to July 2008. The patients suffering from the inferior turbinate hypertrophy between 20 to 35 years with mean age of 27.5 were included in this study. Seventy patients were males while thirty were females. There was predominance of males with a M:F ratio of 2:1. These patients were selected from outpatient departments (OPDs) and Department of Otorhinolaryngology and Head & Neck Surgery having history of nasal obstruction/ Stuffsiness which was not relieved by medical

treatment satisfactorily and on clinical examination and investigations, these patients were suffering from either allergic rhinitis, vasomotor rhinitis, chronic hypertrophic rhinitis or compensatory hypertrophy of inferior turbinate with mild septal deviation in some cases.

*Exclusion Criteria:* All those patients below the ages of 20 years and above 35 years, Hypertensives, Diabetics, with co-morbidities and those lost from follow-up were excluded from the study. All collected data for patients were evaluated for pre-, post-operative symptoms and clinical findings.

### RESULTS

One hundred patients were included in this study, ranging between 20 to 35 years of age with mean age of 27.5. Seventy were males while 30 were females. All the patients had nasal obstruction of different duration and severity. History, clinical examination and related investigations were carried out. Mucosal electrocautery was performed in sixty percent (60%) and submucosal diathermy was performed in forty percent (40%).

The disease pattern, number of patients with their percentage is shown in Table-I. The results were correlated with pre and postoperative clinical features. Complication of surgical procedures are depicted in Table-II.

During the follow up period in the first week some of the patients complained of blood stained nasal discharge with nasal obstruction. On examination white slough was found

Table-I: Disease pattern

<i>Disease Pattern</i>	<i>No. of Patients (%)</i>
Allergic rhinitis	30(30)
Vasomotor rhinitis	28(28)
Chronic hypertrophic rhinitis	22(22)
Compensatory hypertrophy inferior turbinates associated with mild septal deviation	20(20)
Total	100(100)

Table-II: Complications rate of surgical procedures

Complication	Mucosal electrocautry	Submucosal diathermy
Blood stained nasal discharge	++	+
Postoperative pain	++	+
Crust formation	+++	+
Adhesions	+	0
Dryness of throat	+	+
Mild +	Moderate ++	Severe +++

covering the inferior turbinates. During 2<sup>nd</sup> week there was history of passing of slough pieces spontaneously & in some cases sloughs were removed with Tilly's nasal forceps to relieve the nasal obstruction. In case of mucosal electrocautry patients, underneath there was raw ulcerative area, but this was not seen in submucosal diathermy. Blood stained nasal discharge was seen in 20 cases of electrocautry, 22 cases developed postoperative pain, crusting in 30 cases adhesions in 10 cases and dryness of throat was complained by 10 patients. After one month of mucosal electrocautry the nasal patency improved and in submucosal diathermy after two months.

## DISCUSSION

Nasal obstruction due to inferior turbinate hypertrophy is one of the common problems encountered in daily practice. It is quite common in developing countries due to pollution, poor socio-economic conditions, anxiety and humidity. The inferior turbinate is a scroll like bone extending from lateral wall of nose to posterior choana. It over hangs and delineates the inferior meatus, in the anterior part of the meatus opens nasolacrimal duct orifice that opens at the anterior end of the meatus.<sup>4</sup>

The superior lateral surface of the inferior turbinate is a useful land mark in sinus surgery for identification of the thin bony lateral wall

that separates the maxillary sinus from the middle meatus.<sup>5</sup> The mucosa that wraps the turbinates for most of its length is pseudo stratified ciliated columnar epithelium containing goblet cells. Deep to the mucosa, the lamina propria contains mucus and serous glands within mucosa are large number of thin walled sinusoids surrounded by smooth muscle. These are located between the capillaries and venules and are capable of significant expansion when filled with blood. This account for turbinates erectile abilities.<sup>6</sup>

The inferior turbinate is the main regulator of Nasal air flow and thus normal respiration. The mucosa of the inferior turbinate is essential to maintain normal nasal defence, humidification, warming and cleaning of air. The mucosal swelling of the turbinates is part of the physiologic vascular changes which takes place during respiration. Hyper reactivity, infection and allergy may enhance these changes.<sup>7</sup> Review of the literature reveals that various types of surgical techniques have been carried out for the reduction of the size of the inferior turbinates at different centers through out the world from time to time. The goal of surgical treatment of the inferior turbinate hypertrophy is to improve nasal obstruction and to avoid complications in the short and long term. This study was conducted to compare the results of mucosal electrocautry with submucosal diathermy with the other studies. The merits and demerits of both surgical techniques were recorded. The merits of the mucosal electrocautry were like less time consuming, cheap, was done under local anesthesia, improvement of nasal air way on the operation table and can easily be repeated when ever required. The demerits were patients felt burning sensation and sense of burning of own flesh and felt its smell.<sup>2</sup> Mucociliary function of the nasal mucosa is disturbed, hot electrode sometimes touches the nasal septum leading to formation of septal adhesion, burning of vestibule, excessive slough, crust formation and infection.

*Merits of submucosal diathermy:* It can be done under local or general anesthesia, improvement of nasal air way is better as compared to

mucosal electrocautry.<sup>8</sup> Mucociliary activity is not disturbed. No raw surface is exposed therefore there are less chances of development of adhesions.<sup>9</sup> There is either minimum or no bleeding. While the demerits are: it is a costly, technically difficult done by the experts, and some times serious bleeding can occur due to secondary infection. Even rarely the inferior turbinate bone can get devitalized, sequestered and shed in 2-3 months, leading to blood stained discharge and crusting.<sup>10</sup>

### CONCLUSION

Inferior turbinate hypertrophy is one of the common sequale in our society either due to allergic rhinitis, vasomotor rhinitis, chronic hypertrophic rhinitis and compensatory hypertrophy due to DNS. For the better cure and results it is important to have an early diagnosis. We found that submucosal diathermy was better in comparison to mucosal electro cautry.

### REFERENCES

1. Jones AS. Intrinsic rhinitis. In Scott-Brown's Otolaryngology, 6<sup>th</sup> edition, Butter worth, Heinemann 1997;4-10.
2. Maran AGD, Lund VJ. Clinical Rhinology. Infections and Non Neoplastic Disease. Thiem Medical publisher, New York 1990;83-84.
3. David NF, Gorden F, Raphael D. Oto laryngology Head and neck surgery. In Charles W Comings, John M. Fredrickson, Lee A Harker, Charles J. Krause, David E. Shuller 2<sup>nd</sup> Edition, Mosby St louis London 1993;783.
4. W Henry, Hollin Shead. "The Nose and paranasal sinues" Anatomy for surgeons 2<sup>nd</sup> Edition Hoeber Medical Division harper and Row, publisher New York, Evanston, and London 1968;226-267
5. Anand VK, Panje WR. 'Radiological Anatomy for nose and paranasal sinus" Practical Endoscopic Sinus Surgery. New York, N.Y: MC-Graw Hill, 1993;97-98.
6. Anand VK. Anatomy and surgical land marks in endoscopic sinus surgery. In: Charles W. Cummings John M. Fredrickson, Lee A Harker, Charles J. Krause and David E. Shuller Oto laryngology and Head and Neck surgery, 2<sup>nd</sup> Edition Mosby St louis Baltimore, Boston, Chicago London, 1986; 1-15.
7. Luisa F Grymer. "The Management of enlarged turbinates" Scott Brown Oto laryngology Head and Neck Surgery 7<sup>th</sup> Edition Hodder Arnold London 2008;2:1589
8. Ballenger JJ (B). The clinical anatomy and physiology of the nose and accessory sinus in Ballenger JJ Ed. Diseases of nose, throat, ear, head & neck. 14<sup>th</sup> ed: Philadelphia Lee and Fibiger 1991;5-15.
9. Bhutta & Bhutta: Text book of ENT diseases. A comprehensive book of ENT, National Book Foundation, Islamabad 1997;374.
10. Brain D: The nasal septum. Scott-brown's otolaryngology 5<sup>th</sup> ed: Butterworth International ed: 1987;177.