ORIGINAL Professional Med J Dec 2008; 15(4): 512-517./**PROF-1327**

PARTIAL INFERIOR TURBINECTOMY;
A BETTER MANAGEMENT OPTION FOR HYPERTROPHIED INFERIOR TURBINATES

***DR. TAHIR MANZOOR, FCPS**
Rawalpindi

****DR. ADNAN ASGHAR, FCPS**
Rawalpindi

DR. SOHAIL ASLAM, FCPS
Rawalpindi

***Dr. Muhammad Ali,* FCPS**
Rawalpindi

***Dr. Waqas Ayub,* FCPS**
Rawalpindi

Article received on: 08/01/2008

Accepted for publication: 01/09/2008

****Correspondence Address:**
Dr. Adnan Asghar (adnan_asghar786@hotmail.com)
Department of ENT, PNS Shifa Hospital, Defense-Karachi

ABSTRACT... Objective: To assess the effectiveness of partial inferior turbinectomy in relieving the symptoms of nasal obstruction in cases of inferior turbinate hypertrophy and to compare the results in terms of relief from nasal obstruction in response to total inferior turbinectomy. **Design:** Comparative Study. **Setting:** Department of Otorhinolaryngology and Head and neck surgery, CMH Rawalpindi. **Period:** From January 2004 to November 2004. **Patients and Methods:** A total of 60 patients with inferior turbinate hypertrophy were selected by convenient sampling. 30 patients were treated by partial inferior turbinectomy and 30 by total inferior turbinectomy and result in terms of relief of nasal obstruction based on VAS (Visual Analogue Score) was observed with follow up carried out at interval of one week and then two months. **Results:** All cases of both the groups showed complete relief of nasal obstruction after 02 months, showing 100% results. Out of 30 cases managed by total inferior turbinectomy 4 cases (13%) developed atrophic rhinitis. **Conclusion:** Partial inferior turbinectomy is as good as total inferior turbinectomy in relieving nasal obstruction with an edge of avoiding complications like atrophic rhinitis.

Key words: Inferior Turbinate, Partial Turbinectomy, Nasal Obstruction, Total turbinectomy.

INTRODUCTION

Nose performs important function of conducting and conditioning the air including humidification and temperature regulation meant for gaseous exchange in lower respiratory channels[1]. The air passing through nose is cleaned, warmed and humidified in such a way that exchange of gases in lungs can occur without damaging alveoli. Nasal cavity is lined by highly vascular mucous membrane which is capable of prompt swelling and shrinkage in response to various stimuli. There are

certain conditions, in which mucous membrane undergoes permanent structural changes and becomes hypertrophic and individual presents with nasal obstruction. Such an obstruction is usually refractory to medical treatment and calls for some surgical procedure like total or partial inferior turbinectomy, thus providing a wide passage for flow of air with no fear of recurrence. We carried out this study to assess the effectiveness of partial inferior turbinectomy in relieving the symptoms of nasal obstruction in cases of inferior turbinate enlargement and to compare the results in terms of relief from nasal obstruction with total inferior turbinectomy.

PATIENTS AND METHOD

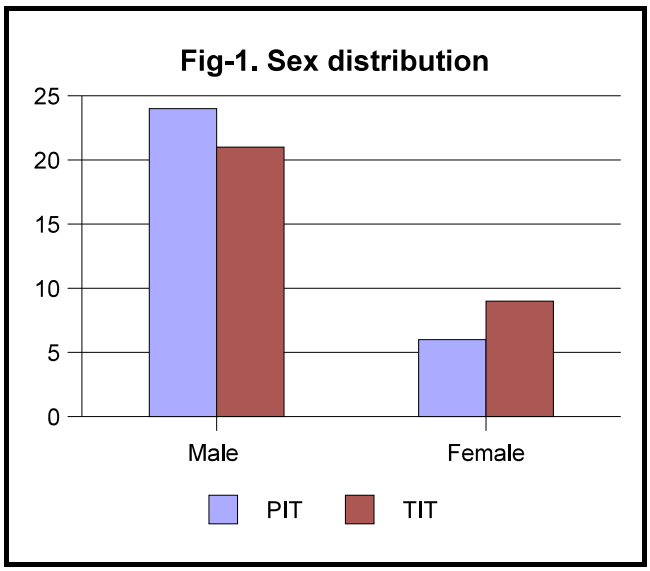
This was a comparative study which was carried out at CMH Rawalpindi and the comparison was made between effectiveness of total and partial inferior turbinectomy as treatment for relief of nasal obstruction in cases of hypertrophied inferior turbinates.

60 patients of ages 15 – 50 and of both sexes suffering from nasal obstruction due to hypertrophied inferior turbinates were selected by convenient sampling.

Thirty patients were treated by partial inferior turbinectomy and 30 by total inferior turbinectomy. Sex distribution of both groups shown in Fig 1.

Patients not willing for surgery, patients with abnormal co-agulation profile, those having Hemoglobin less than 10 gm/dl, those having any systemic illness or any acute infection at time of surgery were excluded. Patients who were operated upon in conjunction with septal surgery or nasal polypectomy were also excluded.

After detailed history each patient underwent examination of ear, nose and throat including anterior rhinoscopy, nasal patency and sympathomimetic pack application.



The main variable was relief of nasal obstruction in 2 groups. Nasal obstruction was analyzed by VAS (Visual Analogue Score) system by asking the patient to score his/her nasal obstruction from 1-10 and was categorized as:

Mild	VAS 1 - 3
Moderate	VAS 4 - 7
Severe	VAS 8 - 10

The patients planned for surgery, were investigated pre-operatively including blood complete picture, urine analysis, prothrombin time (PT) and partial thrombo plastin time with kaolin (PTTK). In patients older than 40 years of age X-ray chest, ECG, Blood glucose and urea electrolyte estimation was also carried out. Both the groups were operated under general anaesthesia.

Both the groups were managed post operatively by Vaseline gauze nasal packs for 48 hours, injection Augmentin (Amoxicillin, clavulanic acid) for 48 hrs along with injection Diclofenac sodium 75 mg intramuscular deep 12 hourly which was followed by tablet

Augmentin 625 mg 8 hourly and Tab Brufen (ibuprofen) 400 mg 8 hourly for 05 days.

In both groups follow up was carried out after 01 week and 02 months in terms of nasal obstruction which was analyzed according to VAS (Visual Analogue Score) system by asking the patients to score relief of nasal obstruction post operatively from 1-10 and was categorized as follows:-

No improvement	VAS 1-3
Patient improvement	VAS 4-7
Complete improvement	VAS 8-10

Cases that lost their follow up were also excluded from the study.

In first week follow up , in addition to above mentioned nasal obstruction due attention was also paid to following aspects:-

1. Presence of pain
2. Crusting
3. Infection
4. Adhesion formation

The results were statistically analyzed using SPSS II and Chi – Square test was applied.

RESULTS

Patients treated with partial inferior turbinectomy

After 48 hours

Out of 30 patients 70 %(21) felt complete improvement (VAS – 8-10) of nasal obstruction while 30 %(9) patients felt partial improvement (VAS-4-7) in symptom after removal of nasal Packs. Mild Pain was present in 70%(21) patients and moderate pain was present in 30%(9) patients.

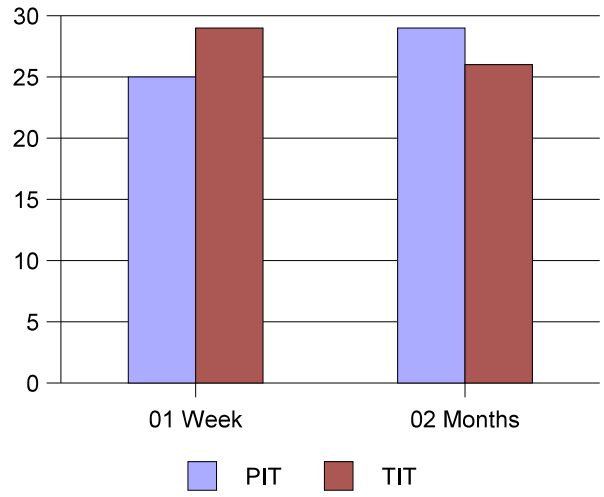
After 01 Week

Out of 30 cases 83%(25) patients had complete improvement (VAS-8-10) of nasal obstruction while 17%(05) did not feel any improvement (VAS-1-3) because of presence of Soft tissue oedema and crusting.

After 02 Months

After 02 months 96%(29) cases had complete improvement (VAS-8-10) of nasal obstruction while 4%(1) had partial improvement showing 100% results. These results are also shown in fig 2.

Fig-2. Results of partial vs complete inferior turbinectomy compete involvement



PATIENTS TREATED WITH TOTAL INFERIOR TURBINECTOMY

After 48 hours

Out of 30 cases 96%(29) felt complete improvement (VAS – 8-10) of nasal obstruction after removal of nasal Packs. 4%(1) patients had partial improvement.

Mild Pain was present in 86%(26) patients and Moderate

Pain was present in 14%(4) patients.26%(8) patients had postoperative bleeding on removal of nasal packs which was controlled by local pack of 2% lignocain with adrenaline for half an hour.

After 01 Week

Out of 30 cases 29 patients had complete improvement (VAS-8-10) of nasal obstruction, 1 case felt partial improvement (VAS-4-7) in symptoms.

Soft tissue oedema and crusting was also found in these patients. Crusts were removed.

After 02 Months

After 02 months 26 cases had complete improvement (VAS-8-10) of nasal obstruction showing 87% result. 4 cases developed atrophic rhinitis and were managed accordingly. These results are also shown in fig 2.

The statistical analysis of results using chi square test revealed that (values .085 at 1 week and .161 at 2 month) there is not very significant difference in relief of nasal obstruction between 02 groups of patients (P> 0.05).

DISCUSSION

Inferior turbinate hypertrophy is one of the common causes of nasal obstruction[2]. Various forms of surgical techniques for reduction in size of enlarged inferior turbinate are being employed and studied at different countries throughout the world[3,4,5,6,7,8]. While medical management of enlarged inferior turbinate includes use of topical steroid sprays, decongestants and both topical and systemic antihistamines. The classically performed procedure for inferior turbinate enlargement is total inferior turbinectomy and procedure definitely widens nasal airway and has been shown to be one of the most effective procedures in achieving long term nasal patency. Several clinical trials reported success rates from 80 to 96%[9,10,11].

A retrospective study by Ophir et al showed that 80% patients had subjectively improved nasal breathing and 91% had widely patent nasal airways.

Partial inferior turbinectomy is procedure directed at relieving nasal obstruction by removing enlarged part of turbinate while leaving a portion of turbinate to continue its function of air conditioning.

There are various studies which had shown that partial inferior turbinectomy is as effective procedure in relieving nasal obstruction as total inferior turbinectomy with success rate ranging from 70 to 80%[4,12,13].

However partial inferior turbinectomy should be performed cautiously in order to protect anatomical structures and physiological functions of nose.

Both total and partial inferior turbinectomy carry serious complication rate including hemorrhage, damage to surrounding structures, adhesions, dryness, crusting, nasal obstruction (Ball valve effect) and irritation as shown by various studies[14,15,16,17].

However there are studies which had shown that partial inferior turbinate resection should be preferred because of less side effects and amount of turbinate excised can be altered according to degree of symptomatology[18].

Recently laser surgery has been used successfully to treat patients with inferior turbinate enlargement[19]. This technique has several advantages including clear and clean operative field, easy to operate with lesser complications[20].

In our study a total number of 60 patients were studied. 30 patients were treated by total inferior turbinectomy and rest of 30 patients were treated by partial inferior turbinectomy. After a period of 02 months 97% of patients treated by partial inferior turbinectomy were

symptom free as compared to 87% improvement after a period of 02 months in patients treated by total inferior turbinectomy. However complications including pain, bleeding, crusting, adhesions, dryness and irritation were seen in both patient groups.

In order to control post operative bleeding, post operative nasal packing is required for 48 hours[21]. Various materials are used for this purpose, which include paraffin gauze, gloved finger packs and ribbon gauze soaked in soft paraffin or bismuth iodoform paraffin paste (BIPP). In this study we used paraffin gauze for post operative nasal packing because they were easy to remove and caused less pain on pack removal.

Davis and Nishioka advocate for endoscopic partial inferior turbinectomy. They used a powered cutting instrument for removal of diseased part of inferior turbinate under endoscopic control and concluded that this new technique is safe, quick and enables removal of same amount of tissue as is removed with other procedures.

At the end after a keen look of above mentioned study of two series of patients, it is obvious that partial inferior turbinectomy as management of hypertrophied inferior turbinate has better results than total inferior turbinectomy, as far as relief of nasal obstruction and preservation of normal respiratory function is concerned.

CONCLUSION

It is concluded by this study that partial inferior turbinectomy is, generally considering, a safe and reliable treatment for hypertrophied inferior turbinates and has shown better results in relief of nasal obstruction avoiding complications like atrophic rhinitis as compared to result in cases managed by total inferior turbinectomy. Following precautions can reduce frequency of hemorrhage during operation.

1. Application of hemostat (Long artery forceps) at proposed site of resection just before cutting the turbinate.
2. Post operative packing of nose for 48 hours.

REFERENCES

1. Drake Lee A. **The physiology of the nose and Paranasal sinuses in Kerr AG ed.** Scot – Brown's otolaryngology 6th ed. Oxford. Butterworth and Heinemann 1997; (4): 4/6 – 12.
2. Elizabath Whitaker MD, **Rhinoplasty, turbinate reduction,** Medicine, Oct 2002.
3. Ophr, D, et AL, **"Total inferior turbinectomy for nasal airway obstruction" Archives of Otolaryngology 111:,** 93, 1985.
4. Contiss, E.H et al **"Resection of obstructing inferior turbinates a 6 year follow-up",** plastic reconstructive surgery 72: 913,1983.
5. Jacksan, lance E et al **"Controversies in management of inferior turbinate hypertrophy : A comprehensive review", Lippincott Williams and Wilkins,** plastic and reconstructive surgery 103 (1) pgs, 300-312.
6. Sandhu As, Templs RH, Timms MS **"Partial laser turbinectomy: two year outcomes in patients with allergic and non-allergic rhinitis"** Rhinology 2004 Jun; 42 (2):81-4.
7. Ross DA, Nguyen DB **"Inferior turbinectomy in conjuction with septodermoplasty for patients with hereditary hemorrhagic telangiectasia"** Laryngoscope 2004 Apr;114(4):779-81.
8. Passali D, Passali FM, Damiani V, Passali GC, Bellussi L **"Treatment inferior turbinate hypertrophy: a randomized clinical trail"** Ann Otol Rhinol Laryngol 2003 Aug: 112 (8):683-8.
9. Falcon P, Amanou L, Bonfils P, Ann **Otolaryngol** chir cervicofac, 1998 Oct ; 115(4): 228-33.
10. Fradis M, Golz A, Danino J, Ann **otol Rhinol Laryngol** 2000 Nov ; 109(11):1040-5.

11. Talmon Y, Samet A, Gilbey P, Ann **otol Rhinol laryngol** 2000 Dec, 109(12 pt 1) 1117-9.

12. Fanous N, Arch **Otolaryngol Head Neck Surg** 1986 Aug; 112(8) 850-2.

13. Serrano E, Percolani J, Woisard V, **An Otolaryngol** Chir Cervicofac 1996; 113(7-8): 379-83.

14. Garth RJ, Cox HJ, Thomas MR, Clin **Otolaryngol** 1995 Jun; 20(3): 236-8.

15. Oburva HO, East Afr Med J 1995 Feb; 72(2): 101-2.

16. Tamosi M, Charpentier P, Lombard P, Rev **Laryngol Oto Rhinol** (Bord) 1993; 114(1): 146-7.

17. Magarey MJ, Jayaraj SM, Saleh HA, Sandison A **"Ball valve nasal obstruction following incomplete inferior turbinectomy"** J Laryngol Otol 2004 Feb; 118(2): 146-7.

18. Lippert BM, Werner JA, HNO 2000 Apr; 48(4): 267-74.

19. Takeno S, Osada R, Ishino T, Yajin K **"Laser surgery of the inferior turbinate for allergic rhinitis with seasonal exacerbation: an acoustic rhinometry study"** Ann Otol Rhinol Laryngol 2003 May; 112(5): 455-60.

20. Liu B **"Treatment of chronic hypertrophic rhinitis by Nd: YAG laser under nasal endoscope"** Lin Chaung Er Bi Yan Hou Ke Za Zhi 2000 Jun; 14(6): 267-8.

21. el – Silimy D. **Inferior turbinate resection: the need for a nasal pack.** J Laryngol Otol 1993; 107(10): 906-7.