

TOTAL INFERIOR TURBINECTOMY FOR HYPERTROPHIED INFERIOR TURBINATES: POSTOPERATIVE RESULTS IN 135 PATIENTS

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ABSTRACT

The surgical treatment of hypertrophied inferior turbinate remains controversial. A wide variety of surgical procedures have been performed with universally unsatisfactory results. The objective of our study was to evaluate the efficacy and safety of total inferior turbinectomy in relieving nasal obstruction caused by hypertrophied inferior turbinates. The study was conducted at the Departments of Otolaryngology Combined Military Hospital Kharian and Peshawar, over a period of 5 years (January 1997 to December 2001). Three hundred and twenty two patients suffering from chronic nasal obstruction due to enlarged inferior turbinates underwent total inferior turbinectomy. Out of these, 135 were followed for one year postoperatively and included in the study. Postoperative evaluation was done by formal questionnaire and clinical examination. One hundred and twenty eight patients described marked improvement in their nasal breathing, 4 had mild improvement, and 3 had no change. Three patients developed postoperative bleeding which was controlled by anterior nasal packing only. No blood transfusion was required. Asymptomatic adhesions were found in 8 patients and none developed atrophic rhinitis. We conclude that total inferior turbinectomy is safe and very effective in relieving chronic nasal obstruction caused by hypertrophied inferior turbinates and does not require expensive instrumentation.

Keywords: Nasal obstruction, total inferior turbinectomy

INTRODUCTION

Chronic nasal obstruction is a very common and troublesome complaint in the practice of otolaryngology. In United States, over sixty billion dollars a year is spent on the surgical treatment of this complaint. The amount, humidity and temperature of the air flowing through the nose are regulated by the nasal septum and turbinates [1, 2]. In addition to the other less common causes, the obstruction is mainly caused by the deviated nasal septum and hypertrophied inferior turbinates. Procedures such as septoplasty and submucosal resection have been used to increase nasal airflow in patients with chronic

nasal obstruction from mechanical causes. In spite of these procedures, patients continue to present post-operatively with inadequate nasal airflow mainly due to hypertrophied turbinates [3].

Hypertrophied inferior turbinates are responsible for nasal obstruction more often than is commonly thought. Enlargement can be due to increase in soft tissues of turbinate or due to thickened bone. Exact aetiology is not known. Various factors involved are nasal allergy, vasomotor rhinitis, rhinitis medicamentosa and deviated nasal septum. Apart from the medical treatment by vasoconstrictor and local steroids, a wide variety of surgical procedures like partial resection, submucous resection,

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electrocautery, submucous diathermy (SMD), cryosurgery, Outfracture, laser ablation and endoscopic resection have been performed on the inferior turbinates for the relief of chronic nasal obstruction due to their hypertrophy [4,5,6], but the results have been universally unsatisfactory.

Total inferior turbinectomy has been stated to produce marked subjective improvement in nasal obstruction. Martinez, et al., [7] found this to be the only reliable procedure of decreasing mechanical airway obstruction. However, this procedure also remains controversial because of the bleeding associated with this, its effects on nasal physiology and fear of subsequent rhinitis sicca and/or secondary atrophic rhinitis. As yet, there is no totally satisfactory means for treating hypertrophied turbinates and the proper management of turbinate dysfunction remains controversial. The aim of this study was to evaluate the efficacy and safety of total inferior turbinectomy in relieving chronic nasal obstruction caused by hypertrophied inferior turbinates.

MATERIALS AND METHODS

This interventional study was conducted over a period of 5 years at Combined Military Hospital Kharian (from January 1997 to November 2000) and Combined Military Hospital Peshawar (from December 2000 to December 2001). During this period 322 patients underwent total inferior turbinectomy. Out of these 135 were followed for one year and included in this study. The youngest patient was an 8 years old boy and the oldest a 62 years old man.

Inclusion Criteria

Those patients who underwent total inferior turbinectomy and were followed for one year. Preoperatively, all these patients suffered from chronic nasal obstruction due to enlarged inferior turbinates, and failed to respond to local and systemic treatment of at least four months duration.

Exclusion Criteria

Those suffering from nasal polypi, nasal masses, sinusitis or other causes contributing to nasal obstruction and those lost to follow up.

Preoperatively all the patients were evaluated by detailed history of their symptoms and the treatment used. Thorough clinical examination was performed to determine turbinate hypertrophy and exclude other causes contributing to nasal obstruction. Sinus X-rays were used to determine sinusitis.

One hundred and twenty four patients underwent bilateral and eleven underwent unilateral inferior turbinectomy. All patients underwent the operation under general anaesthesia. The nose was prepared before the operation by packing soaked in a solution of adrenaline 1: 200,000 for 10 minutes. We used Welch Allyn head light for the operation.

After removing the packs, the turbinate was fractured inwards and upwards by Hill's elevator and crushed along its line of attachment to the lateral wall by long artery forceps. This fracturing and crushing of the turbinate helped to make the trimming of the turbinate easy and less bloody. The upward turning of the fractured turbinate also gave better exposure of the posteroinferior part of the turbinate, an area that is very difficult to reach otherwise. The turbinate was then trimmed with the turbinectomy scissors. It was grasped with the Luc's forceps and pushed posteriorly towards nasopharynx to break any soft tissue attachments and then removed in one piece. Any bleeding point at the base of the excised turbinate was electrocauterized and nose packed with gauze to control bleeding. The procedure was repeated on the other side. After removing turbinates on both sides, the nose was packed with Vaseline impregnated ribbon gauze in finger gloves. The packs were removed on next day. First nasal cleansing was done on the 7th postoperative day. Two more nasal toilets

were done by suction at weekly intervals. Following this, patients were advised to douche the nose after instilling liquid paraffin drops into the nose.

Evaluation of the success of the operation was done by clinical examination and subjectively by asking the answers to the following questions.

- Whether his nasal breathing improved?
- Did he use any medications to relieve nasal obstruction?
- Had he experienced epistaxis, post operative pain, excessive secretions, dryness and/or crusting after the surgery?
- Did he notice foul smell since operation?
- Was he satisfied with the results of the operation?

Chi-square test was used for statistical analysis and p value < 0.05 was taken as significant.

RESULTS

Out of 322 patients who underwent the operation, 135 were followed for one year. The age and sex distribution of the patients is given in (Table-1). Bilateral nasal obstruction was complained by all the patients. A summary of pre-operative symptoms of all the patients included in the study is given in (Table-2). (Table-3) shows improvement in nasal obstruction one year after the turbinectomy. Postoperatively, 94.81% of the patients were free of nasal obstruction. The difference between the preoperative and postoperative states was statistically significant. None of the patients used any medication for relief of nasal obstruction. (Table-4) shows post-operative improvement in symptoms other than the nasal obstruction. A significant number of patients were

Table-1: Age and sex distribution of patients (n = 135)

	No. of patients	Percentage
Age		
Under 10 years	7	5.18
10 – 20 years	40	29.63
21 – 30 years	48	35.56
31 – 40 years	30	22.22
41 – 50 years	08	5.93
More than 50 years	2	1.48
Sex		
Male	99	73.33
Female	36	26.67

Table-2: Ppre-operative symptoms (n = 135)

Symptom	No. of patients	Percentage
Nasal obstruction (bilateral)	135	100
Nasal discharge	76	56.30
Headache	18	13.33
Hyposmia	15	11

Table-3: Improvement in nasal obstruction one year after total inferior turbinectomy (n = 135)

Improvement	No. of patients	Percentage
No obstruction	128	94.81
Improved	4	2.96
No change	3	2.22
Worse	Nil	0.00

Table-4: Improvement in other symptoms after total inferior turbinectomy

Symptom	Total No of patients with this complaint	Improved	No change	Worse
Nasal discharge	76	59 (77.63 %)	17 (22.37 %)	0
Headache	18	15 (83.33 %)	3 (16.67 %)	0
Hyposmia	15	6 (40 %)	9 (60 %)	0

Table-5: Complications after total inferior turbinectomy (n=135)

Complication	No. of patients	Percentage
Haemorrhage	3	2.22
Adhesions	8	5.93
Dryness	9	6.66
Crusting	Nil	0.00
Foul smell	Nil	0.00

relieved of nasal discharge (df = 1, p < .005) and headache (df = 1, p = .005). Although, out of the 15 patients with preoperative hyposmia, 6 described improvement, the result was not statistically significant (df = 1, p > .05).

Post-operative complications are shown in (Table-5). Three patients developed delayed postoperative haemorrhage: two within 10 days after the operation and the third on 12th postoperative day. In all the three patients, bleeding was controlled by anterior nasal packing only. No blood was transfused to any patient. No patient developed atrophic rhinitis. All but three patients were satisfied with the results of the operation.

DISCUSSION

Nasal obstruction is probably the most common chronic presenting symptom encountered by the otolaryngologists [8]. Septoplasty/submucous resection alone has been widely used but has high failure rate, especially when other obstructive elements such as hypertrophied turbinates are not addressed. Most patients with nasal obstruction have turbinate hypertrophy due to one or the other cause.

For many years total inferior turbinectomy had been condemned and surgeons hesitated to perform this, considering the procedure not physiologic and associated with complications particularly haemorrhage and atrophic rhinitis. Martinez, et al., [7] described their experience of total inferior turbinectomies on 40 patients. Twenty nine of these were followed for 2 to 60 months postoperatively by clinical examination and by formal questionnaire. Twenty five of these patients showed marked improvement in their nasal breathing, 3 had mild improvement, and 1 had no improvement at all. All patients had patent nasal airways by clinical examination. Only 1 patient, 1 year postoperatively described excessive dryness and none complained of foul smell or pain. Ahmed T, Khan IZ and Khan MA [9] performed 115 inferior turbinectomies, 52 bilateral and 11 unilateral on 63 patients and followed them for one year. They found improvement in nasal breathing in 95 % of patients. Two

patients developed postoperative bleeding requiring repacking and none of the patients felt foul smell. In 1988 Wight RG, Jones S and Beskingham [10] described that all their 20 patients who underwent total inferior turbinectomy showed objective increase in nasal airflow. One patient had minor post operative haemorrhage resolving spontaneously without further packing or transfusion. Talmon et al., [11] in a series of 357 total inferior turbinectomies over a period of 6 years described improvement in nasal breathing in 348 (97.48%) patients. Six patients (1.7%) experienced postoperative haemorrhage that required emergency intervention. Forty five patients showed improvement in symptoms of poor quality of sleep and headache. In 1978, Courtiss, et al., [12] described their experience with 119 total inferior turbinectomies performed in 88 patients. Their follow up ranged from 2 to 37 months. Three patients developed postoperative bleeding necessitating repacking and 1 required blood transfusion. No untoward sequel or abnormal intranasal pathology was observed in any patient. Subjective improvement had been noted by almost all the patients. Salam and Wengraf [13] performed total inferior turbinectomy in 25 patients and followed them for 6 months. They found improvement in nasal obstruction in all patients. Out of 20 patients having the symptom of nasal discharge preoperatively, 15 (75%) were free of this symptom 6 months after the operation. No patient had postoperative haemorrhage or infection. Segul et al, [14] followed 227 children of less than 10 years of age and found significant relief in nasal obstruction in 179 at one year follow up after inferior turbinectomy. Out of 47 children who had thick secretions and did not respond to antibiotics therapy before the operation, 42 had significant relief post-operatively. Post-operative complications were few and their number did not exceed that of adults. Dawes [15] compared the incidence of bleeding after turbinectomy with that of tonsillectomy and found no significant difference between the two.

All these studies show a significant success in the subjective relief of nasal obstruction and a low incidence of complications. In our study, subjective improvement in nasal obstruction occurred in 132 (97.77%) patients, whereas objectively a larger airspace was apparent in all the patients confirming the clinical impressions of other authors. In addition to nasal obstruction, total inferior turbinectomy also relieved other symptoms like nasal discharge, headache and hyposmia in a significant number of patients. The beneficial effect of the operation is mainly mechanical, by reduction of the resistance to nasal airflow. In our series, 3 patients (2.22%) developed postoperative bleeding which was controlled by anterior nasal packing only. This small percentage is acceptable and should not be considered a contraindication for the procedure. Atrophic rhinitis has been considered to be associated with total inferior turbinectomy, discouraging the surgeons from performing this operation. In our series, no patient developed such rhinitis. Review of the literature also did not reveal any documented case of atrophic rhinitis due to total inferior turbinectomy. However, in our study, out of 322 patients who underwent the operation, only 135 could be followed for one year. One reason for the loss of a larger number of patients to follow up was the transfer/posting of military persons and their families (patients) to different places. Secondly, Combined Military Hospital Kharian is located in rural areas and patients from far flung areas could not come regularly for the follow up.

Resection of the inferior turbinates may disrupt the normal physiological functions of the nose leading to inefficient warming and humidification of the inspired air with drying and crusting. However, the inferior turbinates comprise only a portion of the total intranasal structures which perform these functions. Removal of normal turbinates is not physiologic and is objectionable. However, in situations where they become pathologic and interfere with adequate nasal airflow, their

removal might be justified. Moreover, the results of many studies also revealed that patients who underwent this procedure remained free of nasal obstruction and other associated symptoms without any morbidity.

CONCLUSION

The results of our study showed that after total inferior turbinectomy nasal obstruction was relieved in 94.81 % of patients and the difference between the preoperative and postoperative states was statistically significant ($p < 0.005$). Postoperative bleeding occurred in a small percentage (2.22 %) of patients and none developed atrophic rhinitis. These results are comparable with those of the other studies in the literature. We found total inferior turbinectomy, safe and very effective in relieving chronic nasal obstruction caused by obstructive inferior turbinates. It does not require expensive instruments that may not be available in many hospitals. We recommend that this procedure be considered when routine septoplastic procedures have failed or likely to fail to provide adequate nasal airflow.

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