

The Efficacy of Endoscopic Turbinoplasty Surgery in Nasal Obstruction

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Abstract

There are different surgical techniques recently to reduce the size of the inferior turbinate such as; coblation technology, submucosal diathermy, endoscopic piriform turbinoplasty. The purpose of the study is to assess the effectiveness of endoscopic turbinoplasty in patients who are suffered from nasal obstruction because of inferior turbinate hypertrophy.

In our research 50 patients were included who are complained of nasal obstruction with bilateral inferior turbinate hypertrophy, surgery in form of endoscopic turbinoplasty were performed on them.

Finally, the endoscopic turbinoplasty is considered as an effective surgical management of inferior turbinate hypertrophy.

Introduction

Inferior turbinate is a separate bone covered with thick mucosa and submucosa which has a highly vascular cavernous plexus. It plays an important role in nasal breathing and physiology(1).

The submucosal layer of inferior turbinate represents the vital structure because of it contains the mucous gland, autonomic innervation, in addition it has a rich blood supply. However, the mucosa of the inferior turbinate is a respiratory epithelium which can catch the inhaled particles.(2) .

The main blood supply of the inferior turbinate are branches of sphenopalatine artery (SPA) as well as the sensory innervation via a branch of trigeminal nerve (TGN), namely the nasopalatine nerve which is a branch of maxillary division (V2) of TGN. Also, the inferior turbinate has an autonomic innervation which has crucial importance in changing the size of the inferior turbinate.

The inferior turbinate sometimes is considered problematic especially when it is enlarged that leads to nasal obstruction as in figure (1).

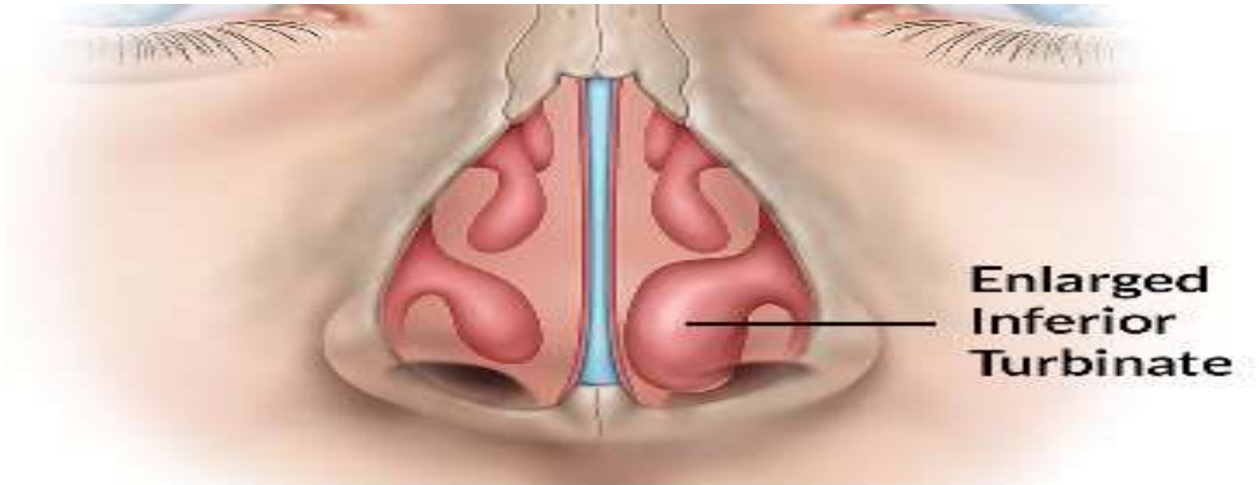
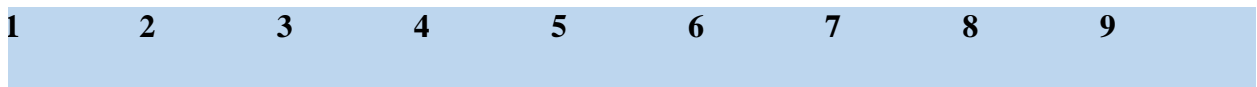


Figure (1).

Patients and methods:

This is a retrospective case control study which was performed from June 2022- November 2022, during this period, 50 patients were included in this research, they are 16-50 years old were assessed postoperatively after 1 month post endoscopic turbinoplasty.

Patient's data information was collected via using the specifically designed paper which **relied on VAS (visual analogue scale) as described below:**



1 = No nasal obstruction

2 – 4 = Mild nasal obstruction

5 – 7 = Moderate nasal obstruction

8 – 10 = Severe nasal obstruction.

Initially, the patients were examined in ENT department which they are suffered from nasal obstruction either due to rhinitis or simple septal deviation with bilateral inferior turbinate

enlargement, however, all patients were received medical therapy such as; intranasal steroids with and without antihistamine.50 patients who were enrolled in our study have had little improvement for that reason the endoscopic turbinoplasty for them was done as follow:

At the beginning after full preoperative assessment via outpatient nasal endoscopy and CT - Sinuses, then the endoscopic turbinoplasty surgery as described below:

- 1 – All patients were under general anesthesia with hypotensive techniques in supine position with endotracheal intubation.
- 2 – Preparation of the nasal mucosa with temporarily packing impregnated with a proper vasoconstrictor.
- 3 – Then endoscopic medialization of the inferior turbinate with introduction of the microdebrider to debulk the anterior attachment of inferior turbinate with performing an incision along the inferior edge of the inferior turbinate. As in figure (2).:
- 4 –Elevate the medial and lateral inferior turbinate mucosal flaps with removal of turbinate bone with trimming of mucosal flap as required and out-fracturing of inferior turbinate to sit in the final shape and size as in figure (3):
- 5 – Ultimately, the procedure end with simple electrical cautery, application of surgical and merocel nasal packing for 24-48 hours as surgeon preference.

Post operative management includes the frequent nasal douching for 2 – 4 weeks, systemic antibiotics, topical nasal decongestion then after one month the patients were evaluated by using the VAS as mentioned above.



Figure (2).



Figure (3).

Results:

50 patients were admitted to perform the endoscopic turbinoplasty, 32 (64%) male and 18 (36%) female. The age of participants between 16-50 years (average age = 33), after one month the patients were assessed by VAS to check the nasal patency after the surgery. The results were 38 patients (76%) recorded (1) VAS assessment (no nasal obstruction) while 12 patients (24%) experienced 2-4 (mild nasal obstruction) according to VAS, this is mainly due to crustation or blood clot, or edema. The table below demonstrates the results: VAS evaluation after endoscopic turbinoplasty

VAS Grading	1= No Nasal Obstruction	2-4 = Mild Nasal Obstruction	5-7 = Moderate Nasal Obstruction	8-10=Severe Nasal Obstruction
No. of Patients	38	12	Nil	Nil

Inferior turbinate has an essential role in direction and warming the inspired air, in addition it may has a sensation of the air which is entered Discussion:

the nasal cavity (4) , inferior turbinate hypertrophy has many reasons such as chronic rhinosinusitis due to inflammatory mediators released from the diseased mucus secretions (5) , or from different types of rhinitis , especially due to over use of topical nasal decongestant in term of rhinitis medicamentosa (6) . however there are different surgical approaches to obtain the turbinate surgery but most of recent surgical techniques depends on the fact that the turbinectomy surgery is declined, in the practice inferior turbinate surgery such as co-blation turbinate reduction, SMD (submucosal diathermy), endoscopic submucosal microdebrider surgery and the endoscopic turbinoplasty as described in this research. the main benefit of our technique is the preservation of the inferior turbinate mucosa especially the medial and superior flap mucosa, as well as the flap with cover the remnant of the lateral flap to decrease the chance of postoperative crust formation. In addition, in this technique the inferior turbinate concha bone will be resected according to the patient’s need without interference with nasolacrimal system.

Furthermore, we have to put in your mind that the inferior turbinate has a rich blood supply through the lateral branch of sphenopalatine artery (SPA), so the surgery in the inferior turbinate associated with bleeding either immediately or late but with endoscopic turbinoplasty the postoperative attacks of epistaxis are less significant.

In conclusion, the endoscopic turbinoplasty is considered as a satisfactory surgical procedure to manage the enlarged inferior turbinate without loss of the function of the nasal turbinate mucosa.

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