

OriginalResearchArticle

A CLINICAL STUDY OF MANAGEMENT OF HYPERTROPHY OF INFERIOR TURBINATE, COMPARATIVE STUDY ON SUBMUCOUS DIATHERMY AND PARTIAL TURBINECTOMY IN THE MANAGEMENT OF INFERIOR TURBINATE HYPERTROHY

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ABSTRACT

Aim: To compare the surgical outcome of submucous diathermy and partial turbinectomy in comparison to each other.

Materials and Methods:

The prospective study conducted at Government Kakthiya Medical College, MGM Hospital Warangal during the period from January 2021 –September 2022. Patients clinically presenting with Inferior Turbinate Hypertrophy and Nasal Obstruction with or without allergic rhinitis were taken up.

Results: This prospective study was conducted totally in 100patients. based on our finding, Partial inferior turbinectomy was more effective in relieving the symptoms of nasal obstruction as compared to submucosal diathermy 50out of 100 underwent SUBMUCOUS DIATHERMY in which 45 patients (95%) recovered completely without any symptoms at the end of 6 months of follow up. 5 patients had mild nasal obstruction and dryness of nose. PARTIAL INFERIOR TURBINECTOMY was done in 50 patients of whom 48 (98%) completely recovered. Only 2 patients had rhinitis till the end of 6 months of post-operative follow up. Submucosal diathermy was most efficient method in reducing the total symptoms score. Submucosal diathermy had least complications compared to other technique. PARTIAL INFERIOR TURBINECTOMY was found to be more effective in reducing nasal obstruction long term basis. However, submucosal diathermy was a better procedure in respect of complications such as bleeding and crusting.

Conclusion: Our study recommends as Partial inferior turbinectomy an effective technique for the treatment of inferior turbinate hypertrophy, as no need for further nasal surgery for 6-month follow-up.

Keywords: Submucous Diathermy, Partial Inferior Turbinectomy, Nasal Bleeding, Rhinitis

INTRODUCTION

Inferior turbinate hypertrophy is one of the most common causes of nasal obstruction. Surgery on the inferior turbinates is reported as the eighth most common procedure performed by an otorhinolaryngologist. Inferior Turbinate is composed of conchal bone. It is a separate bone covered bylaminapropria including erectile tissue and ciliated pseudo stratified columnar epithelium. Autonomic nervous system controls the congestion of inferior turbinate.

Cyclic alteration of inferior turbinate vasculature results in nasal cycle which occurs every 4 to 12 hours. Its anterior head forms the posterior aspect of

the internal nasal valve. It offers 50% of resistance during airflow on inspiration.

Inferior turbinate hypertrophy is caused by rhinitis of various etiology those are allergic, infective, vasomotor, hormonal or medications induced. Most of the patients respond well with medical treatment such as topical or systemic corticosteroids, antihistamines and decongestants. Unexpectedly longterm irreversible hypertrophy may need surgical intervention.

In addition to mechanical obstruction, it has a role in functional obstruction. Sensation of airflow depends upon the airway resistance, whether high or low resistance leads to subjective complaints of nasal obstruction.

Hence, injured mucosa or absence of inferior turbinates may present with nasal obstruction instead of widely patent nasal airway. Inferior turbinate hypertrophy can be diagnosed by anterior rhinoscopic examination. Whole turbinate hypertrophy could be confirmed by diagnostic nasal endoscopy.

Various techniques have been described over the cause of years. Those are inferior turbinectomy, submucosal diathermy, steroid injection, inferior turbinate out fracture, cryosurgery, radiofrequency ablation, turbinoplasty, laser and coblationturbinoplasty and micro-debrider assisted turbinoplasty.

Here in this study, we compare the surgical outcome of submucous diathermy and partial turbinectomy in comparison to each other.

Aims and Obectives of the Study

- The purpose of study is to know the various surgical methods involved in management of inferoior turbinate hypertrophy
- To compare the surgical results submucous diathermy with that of partial inferior turbinectomy
- To find out the symptomatic improvement by pre-operative and post- operative clinical examination.
- To find out the healing process by post-operative diagnostic nasal endoscopic examination.

MATERIAL SAND METHODS

STUDY DESIGN	Prospective Cohort Study
STUDY PLACE	Department of Otorhinolaryngology
	Government kakthiya Medical College, MGM, Hospital WARANGAL -506007
STUDY PERIOD	JANUARY 2021 – SEPTEMBER2022
SAMPLE SIZE	100patients
FOLLOW UP PERIOD	18 months

Mean

The study was conducted in100 patients who attended out-patient department the of Otorhinolaryngology in The Government Kakathiya Medical College Hospital, MGM hospital. Ethical committee clearance and approval was obtained prior to the commencement of study. Data Analysis was performed using EpiInfo software version 7.0 downloaded from the CDC website.

SELECTION CRITERIA

- Age more than 18 years and less than 50 years.
- Sex: Both male and female patients were considered for the study.
- Patients clinically presenting with Inferior Turbinate Hypertrophy and Nasal Obstruction with or without allergic rhinitis were taken up.
- Patients with previous history of nasal surgeries were excluded from this study

After getting the informed consent duly signed, these patients were subjected to detailed systemic and ENT examinations.

PRE-OPERATIVE ASSESSMENT

Clinically patient should have a symptom of nasal obstruction.

INVESTIGATIONS FOR ANESTHETIC **ASSESSMENT:**

Complete Blood CountTotal Leucocyte Count Differential Count Haemoglobin Erythrocyte Count

Erythrocyte Sedimentation RateMean Corpuscular Volume

Mean Corpuscular Haemoglobin

Corpuscular HaemoglobinConcentrationPlatelet Count

- Renal Function Tests Random Blood GlucoseBlood Urea Serum Creatinine
- Coagulation ProfileBleeding Time Clotting Time Prothrombin Time Activated Partial Thrombo-plastinTimeInternationalNormalised Ratio

• Viral Markers

HIV (Human Immuno - deficiency Virus)HBsAg (Hepatitis B surface Antigen) Anti HCV (Hepatitis C Virus) antibody

- Blood grouping and Rh typing
- Urine Examination
- Colour

Specific GravityErythrocytes Deposits Casts

- Chest X-ray PA (Postero-Anterior) view
- ECG(ElectroCardioGram)inallleads

ANTERIOR RHINOSCOPY

With Thudichum's Nasal Speculum, Anterior Rhinoscopy is performed. Hypertrophied Inferior Turbinate (as seen in Anterior Rhinoscopy

ENDOSCOPIC DIAGNOSTIC NASAL **EXAMINATION**

Under Local Anaesthesia, 4% Xylocaine with adrenaline soaked nasal packs arekept for 10 - 15 minutes as stated below:

1 In the floor of the nose

- 2. In the middle meatus
- 3. Posterior end of the middle turbinate and septum After removing the packs, 0° endoscope is then passed and the following structures are then examined on both sides subsequently.

FIRST PASS:

- Nasopharynx
- Choanae
- Septum
- Inferior Turbinate
- Inferior Meatus

NOSE SCALE QUESTIONNAIRE

SECOND PASS

- Sphenoid Sinus ostium ٠
- Spheno-ethmoidal recess
- Superior Turbinate
- Superior Meatus

THIRD PASS

- Middle Turbinate
- Middle Meatus
- Uncinate
- Bulla Ethmoidalis Accessory Ostia

Table 1: Symptom Scale					
	Nota problem	Very mild problem	Moderate problem	Fairlybad problem	Severe problem
Nasal obstruction	0	1	2	3	4
Difficulty in sleeping	0	1	2	3	4
Difficulty breathing at excersice	0	1	2	3	4

Obstruction score

- 1. inferior turbinate occupying < 25 % of nasal fossa
- inferior turbinate occupying > 25 % to 50 % of nasal fossa 2.
- inferior turbinate occupying > 50% but less than 100 % of nasal fossa 3.
- 4. inferior turbinate touching the nasal septum -100 %

Table 2: Post-Operative Subjective Score

Score s	Improvement
1	Significant improvement
2	Moderate improvement
3	Mild improvement
4	No improvement

ANAESTHESIA:LOCAL ANAESTHESIA **POSITION:**

Supine with head end elevated to about 30°. LOCAL ANAESTHESIA:

Local infiltration of 2% Xylocaine with 1 in 80,000 dilution adrenaline is given to anterior, middle and posterior end of the inferior turbinate.

PROCEDURE:

- Diathermic cautery was performed using an insulated needle electrode. The needle tip was pressed against the anterior end oftheinferiorturbinate and activated for a short period giving a devascularized zone to reduce bleeding.
- The needle was then introduced into the submucosa through this zone to the posterior end of the turbinate with special care to stay close to the bone.
- The mono-polar power diathermy is then turned on whilst the needle is slowly withdrawn over a period of 5 seconds.
- Three to five such passes were performed for each inferior turbinate at a coagulation current of 70W.
- If the diathermy current is sufficient, the mucosa of the turbinate blanches and shrinks.
- After both techniques of turbinate reduction, ribbon gauzes soaked in ephedrine (1:1000) were used to secure hemostasis during the procedure.

- Final hemostasis was maintained byusingaantibiotic soaked nasal pack which usually was removed after 48 hours.
- All patients were received antibiotics in the form of cephalosporin (1 gm daily) and analgesics in the form of paracetamol (500 mg three times per day) for 7-10 days postoperatively, also patients were instructed to use local nasal decongestants and nasal douche with sodium bicarbonate for 2 weeks postoperatively.

POST OPERATIVE FOLLOW UP

Follow up for 1 month & then monthly for 6 months symptoms score (at first week and the postoperatively, at 1st month, 3rd month, 6th month) were assessed &recorded.-up: All patients were assessed in postoperative period, weekly.

ANAESTHESIA

Local/General Anaesthesia

POSITION

Supine with head end elevated to about 30°. LOCAL ANAESTHESIA

Local infiltration of 2% Xylocaine with 1 in 80,000 dilution adrenaline is given to anterior, middle and posterior end of the inferior turbinate.

PROCEDURE

- Under 0° endoscopic visualization, •
- Using Freer's Elevator, the lower end of the inferior turbinate is elevated.

- Initially anterior head and anterior 1/3 of the turbinate is crushed with the help of artery forceps to lmit bleeding followed by excise the required section a Heymann'sTurbinectomy scissors.
- Nasal pack soaked in 4% Xylocaine with adrenaline is kept in the operated site and observed for a period of 3 to 5 minutes. Remove the packs after acheivnghempostasis.
- Final hemostasis was maintained byusingaantibiotic soaked nasal pack which usually was removed after 48 hours.

POSTOPERATIVE CARE

The nasal pack was removed 48 hours surgery. Intravenously Antibiotic was given during surgery and followed by oral antibiotics for one week. Douching with nasal saline advised for 2 weeks. Diagnostic nasal endoscopic was done every regular interval and finding noted. The post operativefollow up suction was done a week after discharge and then every month for six months. Postoperative follow up was done days 7,14, 21, 28 and 60 after surgery. The level of scarring, crusting, recurrence and synechiae were documented at each visit.

RESULTS

The results of this study showed that there was no significant difference between groups

as regards age and sex distribution. The results of this study showed that there was no significant difference between groups as regards age and sex distribution. The results showed that there were no significant differences between groups in nasal score mean at pre-operative, 1 week and 1 month (postoperative), however, endoscopic partial turbinectomy group (group, b) had significantly lower nasal score mean at 6 months compared to Submucosal diathermy group (group, I), (8.7 vs. 39.6%). By another side, in submucosal diathermy group (group, a), nasal score recorded a significant decrease (improvement in nasal obstruction) at 1 week (48.7%) and 1 month (27.8%) post-operative, however, it increased significantly to (39.6%) at 6 months. However, in endoscopic partial turbinectomy group (group, b), nasal score recorded a significant decrease at 1 week (49.3%), 1 month (25.8%) and 6 months (8.7%) postoperative, respectively.

This means that group (a) had a significant type of recurrence compared to group (b).

SEX DISTRIBUTION

A total of 100study participants were included.50 study participants who underwent submucousdiathermy taken under GROUP A. The other 50 study subjects who underwentpartial inferior turbinectomy alone are taken under GROUP B.

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Table3: Gender Distribution Between Groups			
Gender	Group A	Group B	Total
Male	28	34	62
Female	22	16	38
total	50	50	100

Table 4: Age Distribution Between Groups

Table 4: Age Distribution between Groups			
Gender	Group A	Group B	Total
<18years	18(36%)	8(16%)	26(26%)
20-24years	8(16%)	16(32%)	24(24%)
25-29years	6(12%)	8(16%)	14(14%)
30-34years	6(12%)	8(16%)	14(14%)
35-39	4(8%)	6(12%)	10(10%)
40-45	8(16%)	4(8%)	12(12%)
Total	50(50%)	50(50%)	100(100%)

Table 5: Comparison of Side Effected Between Groups				
Side effected	Group A	GROUP B	TOTAL(N)	
RIGHT	16(32%)	14(28%)	30(30%)	
LEFT	34(68%)	36(72%)	70(70%)	
TOTAL	50(100%)	50(100%)	100(100%)	

 Table 6: Comparison of Nasal Obstruction Score between Study Groups (N=100)

Nasal Obstruction Score	Group		
	Group A (n=50) n(%)	Group B (n=50) n(%)	
preop			
3	18 (36.0)	12 (24.0)	
4	32 (64.0)	38 (76.0)	
Chi-Square Test, P Value= 0	.190, Not significant		
At 3 months			
1	29 (58.0)	15 (30.0)	
2	21 (42.0)	35 (70.0)	
Chi-Square Test, P Value= 0.005, significant			
At 6 months			
1	19 (38.0)	30 (60.0)	

2	31 (62.0)	20 (40.0)
Chi-Square Test, P Value= 0.028, significant		

Table 7.1: Comparison of Crusting between Study Groups (N=100)

Crusting	Group	
	Group A (n=50) n (%)	Group B (n=50) n (%)
1 Month		
Present	20 (40.0)	40 (80.0)
Absent	30 (60.0)	10 (20.0)
Chi-Square Test, P Value < 0.001, Significant		

Table 7.2: Comparison of Crusting between Study Groups (N=100)

Crusting	Group	Group	
	Group A (n=50) n (%)	Group B (n=50) n (%)	
At 3 months			
Present	8 (16.0)	23 (46.0)	
Absent	42 (84.0)	27 (54.0)	
Chi-Square Test, P Value = 0.001, Significant			

Table 7.3: Comparison of Crusting between Study Groups (N=100)

Crusting	Group	
	Group A (n=50) n (%)	Group B (n=50) n (%)
At 6 Months		
Present	3 (6.0)	5 (10.0)
Absent	47 (94.0)	45 (90.0)
Chi-Square Test, P Value = 0.461, Not Significant		

Table 8: Comparison of Synechiae between Study Groups (N=100)				
Synechiae	Group			
	Group A (n=50) n (%)	Group B (n=50) n (%)		
1 Month				
Present	19 (38.0)	5 (10.0)		
Absent	31 (62.0)	45 (90.0)		
Chi-Square Test, P Value = 0.001, Sig	gnificant			
At 3 months				
Present	8 (16.0)	3 (6.0)		
Absent	42 (84.0)	47 (94.0)		
Chi-Square Test, P Value = 0.110, Not Significant				
At 6 Months				
Present	3 (6.0)			
Absent	47 (94.0)	50 (100.0)		
Chi-Square Test, P Value = 0.079, No	ot Significant			

Table 9: Comparison of Intra-Operative Bleeding between Study Groups (N=100)

Bleeding	Group		
	Group A (n=50) n (%)	Group B (n=50) n (%)	
Present	19 (38.0)	37 (74.0)	
Absent	31 (62.0)	13 (26.0)	
Chi-Square Test, P Value <0.001, Significant			

Table 10: Comparison of post-Operative Bleeding between Study Groups (N=100)

Bleeding	Group		
	Group A (n=50) n (%)	Group B (n=50) n (%)	
Present	2 (4.0)	5 (10.0)	
Absent	48 (96.0)	45 (90.0)	
Chi-Square Test. P Value = 0.240. Not Si	ignificant		

Table 11: Comparison of Reuse of medication between Study Groups (N=100)

Reuse of Medication	Group		
	Group A (n=50) n (%)	Group B (n=50) n (%)	
Yes	17 (34.0)	7 (14.0)	
No	33 (66.0)	43 (86.0)	
Chi-Square Test, P Value = 0.019, Significant			

Table 12: Comparison of Need for Surgery between Study Groups (N=100)				
Need for Surgery	Group			
	Group A (n=50) n (%)	Group B (n=50) n (%)		
Yes	5 (10.0)			

DISCUSSION

This is a prospective study conducted in 100 patients. Inferior turbinate is an important anatomical structure in the inferior part of nose. It is a separate bone. It gets development from maxillo- turbinal projection during 5th month of intra uterine life which contributes to about 50% of nasal resistance during inspiration. It is a part of internal nasal valve boundary. Inferior turbinate mucosa is lined by pseudo-stratified ciliated columnar epithelium as a whole except in the anterior part. Muco-ciliary action is towards the naso- pharynx.

Any chemical irritants or known case of allergic mucosa leads to pathological enlargement of inferior turbinate which subsides with anti- allergic medication and avoidance of irritants. If it does not subside even after 6 months course of medicine. typically patients having symptoms due to inferior turbinate hypertrophy without having any ostiomeatal complex disease, had been taken for surgical procedure.

Various techniques were used in the past days. Initially they used steroid injection, then with due advances in surgical field, cryotherapy, conventional turbinectomy without endoscope, electro cautery both mono-polar and bi-polar, radio frequency method, then micro debrider assisted, inferior turbinoplasty, laser and coblator technique are employed.

Our study involved two different techniques in two groups of patients of same age group viz., one group underwent submucousdiathemy and another underwent endoscopic. partial turbinectomy Hence our main aim of the study was to determine the effect of both surgical techniques in relieving the nasal obstruction & to know their effect in long term.

SUBMUCOUS DIATHERMY

However, at three months postoperatively, 50 patients in group I who underwent submucosal diathermy had improvement in nasal breathing. 58% had significant improvement & rest had moderate improvement. The size of inferior turbinate was reduce to grade 1 (>25%) in 29 patients, remaining patients had inferior turbinate size measuring grade 2 (25-50%) at three months.

At six months 19 patients (38%) had significant improvement in symptoms & 31 patients (67%) had moderate improvement in symptoms. ten patients had turbinate shrunk to grade1 & 19 patients (67%) had turbinate shrunk to grade 2. Shahinian reported a good outcome of 412 patients undergoing submucosal diathermy. Further studies have shown improvements in nasal airflow between 75-96%. subsided by packing intra-nasally with oxymetazoline decongestant nasal pack. 3 patients had throat irritation and dryness on the first week of follow up which subsided spontaneously during further follow up. 4 patients had nasal crusting in the operated field on the first week which was removed during endoscopic examination.

POST INFERIOR TURBINECTOMY

Partial inferior turbinectomy (PIT) was also found to be effective in reducing the nasal obstruction in all 50 patients.

At 3 months post operatively 10 (33%) patients had complete relief from nasal obstruction & 20 (67%) patients had moderate improvement. There were no cases with recurrence of nasal obstructionAt 6 months, 18 patients (60%) had turbinate size reduced to less than 25%, 12 patients (40%) had turbinate size occupying 25-50% of nasal fossae.

These results also agreed with Gomma,^[1] who compared both techniques used in our study and did not find any significant differences between groups regarding age and sex distribution. To our knowledge, this is important to ensure the homogenization of the studied groups to get accurate results from the comparison between groups and to eliminate bias.

In addition, Nawaz,^[2] studied the nasal patency following sub mucosal diathermy (SMD) of inferior turbinate and inferior turbinectomy (IT), they found that both the groups are comparable with respect to age and gender In this study we used the NOSE scale (score) for the evaluation of the degree of nasal obstruction in our study. The results showed that there were a significant post-operative improvement in nasal obstruction in both used techniques (submucosal diathermy and endoscopic partial turbinectomy) at 1 week and 1 month.

However, this significant improvement continued to 6 months in endoscopic partial turbinectomy group (preoperatively, 50% of cases had extreme obstruction and 43.3 % of them had severe one and 27 cases (90.0%) were significantly improved and had mild obstruction. However, 3 cases (10.0%) had no symptoms at6 months post-operatively "100% improvement"). While, a type of recurrence was happened in submucosal diathermy group at 6 months (postoperative), 14 cases of them (46.6%)had moderate obstruction after they were at mild obstruction grade at 1 month. Our results agreed with those of Datta.^[3] who evaluated the efficacy of submucosal diathermy and partial inferior turbinectomy in the treatment of hypertrophied inferior turbinate.

They found that both techniques were found to be effective in reducing nasal obstruction. Also, similar to our findings, they found that there were 5 cases with recurrence of nasal obstruction from no symptom to mild symptom at 6 months in submucosal diathermy group while no cases of recurrence were observed in the partial inferior turbinectomy

The present results also are similar with Smitha,^[4] who analyzed and evaluated the efficacy of sub mucosal diathermy and partial inferior turbinectomy

in the treatment of symptomatic hypertrophied inferior turbinates in allergic rhinitis patients. They found that in submucosal diathermy group, significant improvement of nasal airflow was seen in 14% of patients &85.9% had moderate improvement. In partial inferior turbinectomy group, 41.3% of patients had significant improvement & 58.6% had moderate improvement. They concluded that partial inferior turbinectomy was found to be more effective in relieving nasal obstructionin allergic rhinitis patients for longer duration and with no major complications.

In a study by Kafle,^[5] they compared effectiveness of sub mucosal diathermy and partial resection of inferior turbinate. Following six months of follow up, six patients of group undergoing SMD had recurrence with nasal blockage and in patients undergoing inferior turbinectomy none had recurrence.

It was concluded In the same line to our findings, Khosa,^[6] studied the outcome of SMD and partial inferior turbinectomy in patients with chronic hypertrophic rhinitis in terms of relief of nasal obstruction.

They found that both these procedures are simple and easy to perform, SMD leads to a dramatic fall in nasal obstruction but the patient do not have concurrent medical treatment, inferior turbinate re- hypertrophy within 15 months.

They concluded that both the procedures are relatively safe and effective and do not need expensive instrumentation.

All surgical methods aim mainly in reducing the size of turbinate to relieve nasal obstruction, but few studies have shown that surgical methods are known to reduce nasal discharge, improve hyposmia and decrease the attacks of asthma and sneezing.^[7]

Recently, Vishnu and Rajamma,^[8] evaluated and analyzedthe impact of partial turbinectomy and SMD on nasal obstruction and to compare the results of either procedures in respect of safety and efficacy. They found that SMD is relatively safe and less invasive than partial turbinectomy but its effectiveness compared to partial turbinectomy is shortlived. In the long run, partial turbinectomy was found to be more effective.

Gomma,^[9]showed thatboth techniques (submucosaldiathermy and partial inferior turbinectomy) were equally effective in improving of nasal obstructionSimilar success rates were observed by Fradis,^[10] where nasal breathing had improved post submucosal diathermy by 89%. In addition, Farmer and Eccles,^[11] reported a good outcome The present results showed that there was a significant improvement in nasal obstruction along with time evidenced by the significant decrease in cases with extreme, severe and moderate obstruction at 1week, 1 month postoperative (to be in mild grade). However, a type of recurrence was happened at 6 months where 14 cases (46.6%) had moderate obstruction after they were at mild obstruction grade at 1 month.

Ophir,^[12] studied the effects of total inferior turbinectomy in one hundred and fifty patients. He found that 91% of patients had patent nasal airway post operatively; they showed 82% success even after 10-15 years. A study involving 357 patients was conducted at Department of Otolaryngology-Head and Neck Surgery, Western Galilee Hospital, Nahariya which showed that even in a hot and dusty climate, total inferior turbinectomy was an effective and relatively safe procedure in relieving nasal obstruction. In addition, the results of inferior turbinectomy in our study are in accordance with the above mentioned international studies.

Besides, Khan,^[13] studied post-operative results in 135 patients who underwent inferior turbinectomy for hypertrophied inferior turbinates. They found that 128 patients reported marked improvement in nasal breathing, four had mild improvement, and three had no change. Also, it was found that total inferior turbinectomy is safe and very effective in relieving chronic nasal obstruction caused by hypertrophied inferior turbinates and did not require expensive instrumentation. A study was also performed on one hundred and sixteen patients in which inferior turbinectomy was found to be effective in controlling the symptoms of 94% patients with inferior turbinate hypertrophy.

There were various studies, which showed that partial inferior Turbinectomy is as effective procedure in obstructionas relieving nasal total inferior turbinectomy with success rate ranging from 70 to 80%.^[18] However partial inferior turbinectomy should be performed cautiously in order to protect anatomical structures and physiological functions of nose Monopolar diathermy is an old technique for the reduction of sub-mucosal tissue of the inferior turbinate, but still widely practiced.^[16] This study had some limitations, of them: the relative small sample size and that we could not involve some investigated variables such as assessment of nasal pain, postoperative bleeding and complications.

CONCLUSION

The present study concluded that PARTIAL INFERIOR TURBINECTOMY was found to be more effective in reducing nasal obstruction long term basis. However, submucosal diathermy was a better procedure in respect of complications such as bleeding and crusting. Our study recommends as Partial inferior turbinectomy an effective technique for the treatment of inferior turbinate hypertrophy, as no need for further nasal surgery for 6-month followup.

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