

A COMPARISON OF THREE TECHNIQUES FOR INFERIOR TURBINATE REDUCTION:A PROSPECTIVE RANDOMIZED STUDY

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Introduction

Chronic allergic or non-allergic rhinitis lead to irreversible hypertrophy of inferior nasal turbinates that results in one of the most common nasal symptoms as chronic nasal obstruction. Chronic nasal obstruction affects the life style of the patient. Effects will be like mouth breathing, nasal speech, dryness of oropharynx, sleep disorders, fatigue, decreased effort and restlessness. First line of management is conservative usually using intranasal corticosteroids so if it fails many other lines of surgical management can be conducted. Mucosal sparing techniques like microdebrider-assisted turbinoplasty, radiofrequency ablation and coblation assisted turbinoplasty are widely used nowadays. Diode laser can be used as an office procedure for turbinate reduction. Other techniques are turbinectomy either radical or partial, sub mucosal resection using conventional bipolar, out fracture of the inferior turbinate, injection of corticosteroids, injection of sclerosing agents, vidian neurectomy and Cryosurgery. The aim of any surgical procedure trying to reduce inferior turbinate size is to create adequate airway to alleviate symptoms, also to keep turbinate function besides not to over excise to avoid complications as empty nose syndrome and atrophic rhinitis. Other complications of inferior turbinate surgeries include crustations, bleeding, synechiae, dryness, charring and scarring.

Aim of the work

The aim of this study is to evaluate the outcomes of inferior turbinate reduction surgery techniques in three groups of patients namely: coblation assisted turbinoplasty (CAT), microdebrider assisted turbinoplasty (MAT), and conventional bipolar electrocautery turbinoplasty.

PATIENTS & METHODS

This present study has been conducted at the ENT Department, Faculty of Medicine, Alexandria University. All patients diagnosed as having bilateral inferior turbinate hypertrophy in the period from 1/6/2020 till 1/1/2021 will be included. Patients have been assessed before the surgical procedure and during each postoperative visit. All cases diagnosed as chronic nasal obstruction due to hypertrophied inferior turbinates unresponsive to medical treatment aged between 18–55 y. All patients received topical steroids and systemic anti histaminic drugs for 3 months and systemic steroids for 2 weeks at least.

All patients have been randomized into either group A, group B or group C by computer – generated randomization (online random generator): 1. Coblation assisted turbinoplasty (CAT) is group A. A reflex 45 degree wand adjusted at ablation power of three to four and coagulation power of two using an arthrocare ENT device. 2. Microdebrider assisted turbinoplasty (MAT) is group B. Microdebrider handle 2 mm and Medtronic device will be used and the power will be set on 5000. 3. Conventional electrocautery turbinoplasty (bipolar technique) is group C. Normal electrocautery of bipolar machine (KLS Martin) using custom made handle set at power of two to four.

Pre - procedure assessment included 1. Demographic data collection (e.g. age, sex, side...etc.) 2. History taking. 3. Endoscopic nasal Examination(Camacho grading system). 4. Multiplanar plain CT nose and paranasal sinuses. 5. Saccharin test. 6. NOSE scale and Post - procedure assessment included 1. Nasal endoscopy assessment (Camacho grading system) at 1st week, 1st month and 3rd month. 2. Saccharin test at 2nd month. 3. NOSE scale

Results

There has been a significant decrease in post-operative Camacho grading in each group individually as demonstrated in table 1. Also, there has been a significant decrease in NOSE scores post-operatively in each individual group as demonstrated in table 2. The main issue with CAT was that it is a less cost effective technique. MAT showed significant prolonged intra-operative time and intra-operative blood loss with difficulties in its manipulation. Bipolar technique showed increased crust formation and synechiae in relation to other two groups. These side effects were temporary and resolved easily.

Table (1): Comparison between the three studied groups according to Camacho grades pre and postoperatively.

Camacho N.E	Group A (n = 14)		Group B (n = 14)		Group C (n = 14)		χ^2	MCp
	No.	%	No.	%	No.	%		
Pre								
Grade 2	0	0.0	0	0.0	0	0.0	5.849	0.080
Grade 3	6	42.9	6	42.9	1	7.1		
Grade 4	8	57.1	8	57.1	13	92.9		
Post								
Grade 2	6	42.9	6	42.9	1	7.1	5.849	0.080
Grade 3	8	57.1	8	57.1	13	92.9		
Grade 4	0	0.0	0	0.0	0	0.0		

Table (2): Comparison between the three studied groups according to Nose scale.

Nose scale	Group A (n = 14)	Group B (n = 14)	Group C (n = 14)	F	p
Pre					
Min. – Max.	50.0 – 85.0	50.0 – 85.0	50.0 – 90.0	0.030	0.970
Mean \pm SD.	67.50 \pm 11.39	68.57 \pm 11.17	68.21 \pm 12.65		
Median (IQR)	65.0(60.0 – 80.0)	70.0(60.0 – 80.0)	70.0(60.0 – 75.0)		
Post					
Min. – Max.	0.0 – 10.0	0.0 – 15.0	0.0 – 15.0	5.823*	0.006*
Mean \pm SD.	3.21 \pm 4.21	3.57 \pm 4.97	8.93 \pm 5.61		
Median (IQR)	0.0(0.0 – 5.0)	0.0(0.0 – 5.0)	10.0(5.0 – 15.0)		
Sig. bet. groups	p1=0.980,p2=0.011*,p3=0.018*				

Conclusion

The chronic hypertrophy of inferior turbinates resulting in chronic nasal obstruction is considered one of the most common problems in humans. If there is a failure of the usual conservative treatment, surgical management should be considered. Subjective evaluation of the nasal obstruction is important in evaluating the effectiveness of any surgical technique.

Many surgical techniques have evolved through the years. Our study has compared three of the most effective surgical techniques in the world.

The bipolar cauterization using the modified handle has proved its effectiveness generally. Even the associated complications were minimal and transient. Still, these results were relatively worse after comparison with the microdebrider and coblation techniques.

The microdebrider technique proved its effectiveness, too. Although, there has been a concern regarding the intra-operative time and associated bleeding.

The coblation technique also proved its effectiveness with so minimal complications. The usual obstacle we face when we use CAT is its cost. This should be considered in w socioeconomic states. Bipolar and microdebrider techniques can be an effective alternative to coblation in this state.

It is important to emphasise on that all the previously mentioned complications were so minimal and temporary and added no risk to the patients.

The ideal technique for turbinoplasty should prove its effectiveness with no complications or cost burden. Well, this has not been discovered yet.



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