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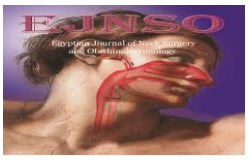

Endoscopic Evaluation of Surgical Partial Inferior Turbinectomy versus Coblation Assisted Turbinectomy

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Abstract

Introduction: Hypertrophy of the inferior turbinate is considered as one of the major causes of chronic nasal obstruction, which sometimes doesn't respond to medical treatment and need surgery. Different surgical techniques have been described for inferior turbinate hypertrophy

Aim of the work: This study aimed to compare effectiveness and safety of partial turbinectomy and coblation in reduction of hypertrophied inferior turbinate.

Materials and methods: The study was conducted in the Department of ENT, Qena faculty of medicine South Valley university. Sixty patients with inferior turbinate hypertrophy were enrolled in this study. Patients were divided in two groups (A and B), each group includes 30 patients. Group A had turbinate reduction through partial turbinectomy, and group B had turbinate reduction through coblation

Results: In group A: nasal obstruction was lower in post-operative than pre-operative (1.20± 0.41 vs. 7.70± 0.47), post–operative pain was grade II in 18 patients; post-operative bleeding was recorded in 3 cases. In group B: nasal obstruction was lower in post-operative than pre-operative (1.77 ±1.01vs. 7.60 ±0.50), post–operative pain was grade I in 21 patients; post-operative bleeding was recorded in 6 cases.

Conclusion and significance: Partial turbinectomy is more effective than coblation as regarding improvement of nasal obstruction.

Keywords: Nasal obstruction, turbinate, nasal surgery, partial turbinectomy, coblation

Introduction

Enlargement of the inferior turbinates is one of the most frequent causes of chronic nasal obstruction which is a common symptom of nasal diseases.[1] The hypertrophy of the inferior turbinates may be due to various causes including allergic reaction, vasomotor rhinitis or drug-induced rhinitis.[2] Pharmacological therapy is generally the treatment of choice. In many cases intranasal topical steroids, antihistamines and decongestants often yield good results. Patients who do not respond will usually be treated by surgical reduction of the turbinate. There is considerable controversy over the merits of the various techniques. [3] These techniques include surgeries as partial turbinectomy, total turbinectomy and electrosurgery such as laser ablation, electrocautery, cryosurgery and radiofrequency (Coblation). [4]

Patients and Methods:

The current study is a prospective comparative study that was done at the department of Otorhinolaryngology, Qena University hospital from April 2017 to May 2018 to evaluate the effects of partial turbinectomy versus coblation in patients with chronic hypertrophied inferior turbinates causing nasal obstruction in terms of both subjective and objective relief of symptoms. Sixty patients were randomly divided in two groups (A and B), each group included 30 patients. Group (A) underwent partial turbinectomy and group (B) underwent coblation. Detailed history was taken, thorough clinical examination, CT and examination with the aid of nasal endoscope was done to all patients.

Surgical technique:

Partial turbinectomy: This procedure involves clamping the inferior turbinate at its base to achieve hemostasis, followed by the use of nasal scissors or endoscopic instruments to resect the entire turbinate along its base under general anesthesia. [5]

Coblation assisted turbinectomy: A bipolar radiation-producing probe is used. The probe was inserted in the submucosal plane and it is marked at 3 symmetric locations roughly 1 centimeter apart. Beginning posteriorly and moving anteriorly, the probe was then activated for 30 seconds at each location under general anesthesia. [6]

The patients were called for follow-up on 1st week, 3rd week 2nd month and 4th month.

Subjective findings:

For evaluation of postoperative pain, we used Guttman scale which classifies pain according to intensity and disability into 4 classes [7]:

Grade I: low intensity- low disability .

Grade II: low disability- high intensity.

Grade III: high intensity- moderately limiting .

Grade IV: high disability- severely limiting.

A standard visual analog scale (VAS) ranging from 0 (no symptoms, satisfied with the situation) to 10 (the most severe symptoms, dissatisfied) was used to assess both nasal obstruction and hyposmia pre and postoperative. [8]

Objective findings:

Nasal examination using sinuscope (Karl Storz 4 mm) to observe the size of turbinates, crustation and bleeding.

Statistical analysis:

The collected data were revised, SPSS 22.0 statistical package used for the social sciences. Pearson chi square test was used in analysis of the qualitative variables and the student t-test was used for the continuous variables. Mann-Whitney test was used to compare between partial turbinectomy and Coblation. Wilcoxon Signed Ranks test was used to compare between pre-operative and post-operative in the same group. P values < 0.05 is considered statistically significant.

Results:

The study was done on 60 patients, 39 males accounting for 65 % totally and 21 females accounting for 35 % totally. The age of group A was ranged from 21 to 50 years old with the mean 29, while the age of group B ranged from 22 to 50 years old with the mean 32.16.

Time of operation: In group A: in partial inferior turbinectomy longer time than group B it takes about 30 minutes but coblation turbinectomy

takes about 15 minutes from the beginning.

Intraoperative blood loss: In group A the patients lose variable amounts of blood range from 150 to 250 ml but in group B the amount of blood loss doesn't exceed few mls.

Nasal obstruction: recorded by VAS system. In group A: preoperative mean was 7.70± 0.47 while post-operative mean was 1.20± 0.41 with P-Value (0.001). In group B: pre-operative mean was 7.60 ±0.50 while post-operative mean was 1.77 ±1.01 with P-Value (0.001). There was a significant difference for partial turbinectomy over coblation as regard of nasal obstruction with P-value (0.014). Table (1)

Table (1): Evaluation of nasal Obstruction pre and postoperative after 4 months

Nasal obstruction	Group A	Group B	P-value
Pre-operative:			0.421
Mean ± SD	7.70± 0.47	7.60 ± 0.50	
Range	7.0 - 8.0	7.0 - 8.0	
Post-operative:			0.014
Mean ± SD	1.20 ± 0.41	1.77 ± 1.01	
Range	1.0 - 2.0	1.0 - 4.0	
P-value	0.001	0.001	

Hyposmia: was recorded by VAS system. Hyposmia was improved in 12 patients (40%) in group A after 4 months postoperative, worsened in 8 patients (26.6%), while 10 patients did not change (33.3%). It was improved in 8 patients (26.6%) in group B after 4 months postoperative, worsened in 12 patients (40%) and did not change in 10 patients (33.3%). Improvement of hyposmia was not statistically significant neither for coblation (p=0.052) nor for partial turbinectomy (p=0.310).

Postoperative Complications:

1. **Post-operative pain:** recorded by Guttman scale. In group A after one-week Grade II recorded in 18 patients (60%), but it regressed after three weeks to Grade I in 15 patients (50%) and the rest were free of pain. Finally, after four months in 11 patients (36.7%) it was Grade I, and 19 patients (63.3%) were free of pain. In group B after one-week Grade I was recorded in 21 patients (70%), but after three weeks 19 patients (63.3%) were free of pain and finally after four months it was Grade I in 4 patients (13.3%) and the 26 patients (86.7%) were free of pain. Comparing between both techniques revealed there was a significant difference especially for partial turbinectomy with P-Value (0.037). Table (2)

Table (2): Post-operative pain

Pain at 4 months post-operative	Group A (n= 30)		Group B (n= 30)		P-value
	No.	%	No.	%	
No pain	26	86.7	19	63.3	0.037
Grade I	4	13.3	11	36.7	
Grade II	0	0.0	0	0.0	

2. **Postoperative** bleeding: for partial turbinectomy presented in 3 patients (10%) after 1 week postoperative and for coblation presented in 6 patients (20%) after 1 week postoperative and there was no uncontrolled bleeding and there were no cases of bleeding recorded after 4 months postoperative .
3. **Postoperative crustation:** after partial turbinectomy occurred in 4 patients (13.3%) after 1 week postoperative and for coblation occurred in 6 patients (20%) after 1week postoperative with no significant difference, but after 4 months postoperative crustation

did not occur in any patients in both groups

Discussion :

Various types of turbinate surgery are commonly used for treatment of nasal obstruction, but the best method is still a matter of controversy. All methods should be judged by the degree of alleviation of nasal obstruction, evaluated both subjectively and objectively, and by the occurring short-term and long-term side effects.[9] In our study nasal obstruction improved obviously by both techniques in both sides post-operatively than pre-operatively in all patients according to VAS system scores and this was statistically significant (p=0.001), but the improvement in nasal obstruction was more in partial turbinectomy than coblation and that showed significant difference (p=0.014). Our results were close to the results to the study of **Barbosa Ade et al., (2005)** in which nasal obstruction improved after partial inferior turbinectomy by 98% according to acoustic rhinometry.[10] Also we are in agreement with **Bitar et al.,(2014)** study in which nasal obstruction improved by 100% of the patients after coblation and the median VAS score for nasal obstruction dropped significantly, from 9 (range:7–10) preoperatively to 0 (range:0-2) within 1 month postoperatively (P<0.001). [11] Also we are in agreement with **Salzano et al., (2009)** study in which according to VAS scores, patients underwent partial turbinectomy experienced the most rapid and intense symptom relief. After only 1 week, these patients reported significant symptom improvement (P=.001), which was more intense than maximum improvements reported by patients underwent coblation. Both coblation and partial turbinectomy reported significant improvement at 2 months, but even the initial improvement in partial turbinectomy at 1 week was greater than that seen in coblation patients at 2 months. [8]

We found that partial turbinectomy is less painful than coblation in the postoperative period as measured by Guttman scale, we found that after 4 months postoperative, for partial turbinectomy 26 patients (86.7%) were free of pain and only 4 patients (13.3%) reported grade I, but for coblation 19 patients (63.3%) were free of pain and 11 patients (36.7%) reported grade I. This disagrees with the study of **Cavaliere et al., (2005)** in which postoperative pain was minimal in patients underwent coblation as compared with patients underwent surgery (0.92± 1 vs. 1.36± 1.07 on day 7 postoperative), but the difference was not significant (P=0.14).[12] However, our results agree with **Gomaa et al., (2015)** study in which there was a complete absence of nasal pain after 3 months postoperatively and the pain occurred at lower incidence in patients underwent partial turbinectomy. [13]

We found that Improvement of hyposmia was not statistically significant neither for coblation (p=0.052) nor for partial turbinectomy (p=0.310). These results are in contrast to the study of **John Mathai (2004)** study in which 20 patients (26.6%) were complaining of hyposmia preoperative. All of them showed significant improvement postoperative. [14] However, these results agree with **Akdag et al., (2014)** study in which no olfactory changes were encountered after surgery in all patients. [15]

We found that there was no significant difference between the two techniques as regard post-operative bleeding with P-Value (0.472). These results agree with the results of the study of **Sahin et al., (2003)** in which no uncontrolled bleeding occurred

intraoperative or postoperative after coblation or partial turbinectomy. [16]

We found that there was no significant difference between the two techniques as regard postoperative crustation with P-Value (0.488). These results agree with **Sahin et al., (2003)** who reported that during the postoperative period after partial turbinectomy thick crusts were observed in eight of the patients, but these crusts disappeared after close follow up, while after coblation no crusts developed. [16]

Conclusion:

Both partial turbinectomy and coblation assisted turbinectomy are effective surgical methods regarding improvement of nasal obstruction and there was no significant difference between them in postoperative bleeding, crustation nor hyposmia. However, partial turbinectomy was more effective than coblation regarding improvement of nasal obstruction and less painful.

Conflict of interest

The authors declare no competing interests.

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