



## COMPARATIVE STUDY OF ELECTROCAUTERY VERSUS CHEMICAL CAUTERY IN INFERIOR TURBINATE HYPERTROPHY

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### ABSTRACT

**Objective:** To compare the efficacy of electro cautery and chemical cautery in inferior turbinate hypertrophy. **Material and Method.** A total of 40 eligible patients with were allocated into 2 groups: From July 2015 to June 2017. Each of 20 patients who underwent electro cautery and chemical cautery. Patients were evaluated on the 7th post-operative day and 6 month after the surgery **Result.** Significant nasal obstruction and rhinorrhoea reduction 6 month post-procedure. The complications were more common in electrocautery than chemical cautery. **Conclusion:** Chemical cautery is easy to follow, has less complication, but failure rate is high, whereas electrocautery is procedure with less failure rate, but has to be carried out under special precaution and has more discomfort postoperatively.

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### INTRODUCTION

Hypertrophy of the inferior turbinates is a common cause of chronic nasal obstruction.<sup>[1]</sup> Nasal obstruction is a result of submucosal or mucosal hypertrophy due to increased vascularity as the anterior end of the inferior turbinate is an erectile tissue<sup>[2]</sup>. It can be started by inflammatory processes, including allergic and non-allergic rhinitis. It causes significant morbidity, once it determines a negative impact over the inferior airways, impairments in craniofacial development in children and altering in speech and language.

Corticosteroids and systemic and topical decongestants, as well as symptomatic, are used in the treatment of this condition.<sup>[3]</sup> however, surgery becomes necessary when no satisfactory result is achieved with clinical treatment.

Several surgical techniques of the inferior turbinates were already described: electro cauterization, cryotherapy, laser, radiofrequency, partial or total turbinectomy, turbinoplasty, but there are still controversies as to which offers better results and fewer complications.

### MATERIAL AND METHOD

The present study comprised of 40 patients with 2 groups of 20 each, presenting with symptoms of nasal obstruction. The patient age ranged from 14 to 58 years. All patients were examined clinically for ENT as well as for systemic manifestations.

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Those who were hypertensive and/or diabetic were referred to a general physician for control and fitness deferring surgery for a later date. Nasal endoscopy was performed in all cases. Patient with Sino nasal tumours, hypertrophic bulla conchosa or nasal polyposis were excluded. The associated symptoms were nasal discharge, post nasal drip, deviated nasal symptom, headache, obesity, hypertension, diabetes, and snoring and gastro oesophageal reflux disease. The patient lying in supine position with the head end inclined at 15 degrees, both nostrils were packed with cotton soaked in 4% xylocaine & with 26 gauze 3.75 cm long. Needle 2% local anaesthesia was infiltrated on each side, 1.5 ml in anterior part and 1.0 ml in posterior part of inferior turbinate. In group-A patients Inert electrode was placed under the right side of the shoulder and back, 7.5 cm 18 gauge spinal needle was used as monopolar electrode and inserted longitudinally into the lower anterior end of inferior turbinate. The cautery was switched on by foot switch control till the lower anterior end of inferior turbinate was coagulated but no charring, same way the second attempt was made in upper anterior part and coagulation done. Third attempt was made in posterior aspect with taking precaution not to burn the septal mucosa or alar skin. An additional coagulation may be required in the superior aspect of the inferior turbinate 1.0 cm posterior to the tip which may enhance the airflow to upper part of the nasal cavity. In group-B patients, infiltration was made of 0.03 mL of trichloroacetic acid 30% through insulin syringe and spinal needle number 22, in three points of the inferior turbinate: tail, mid-section, and head.

The initial grade of the symptoms was compared to the evaluation performed after 12 months of the realization of the

procedure. The pain caused by the infiltration was also assessed.

**RESULT**

Our study included 27 males and 13 females. The mean age of the patient was reported to be 41 years. The main symptom prior to surgery was 100% nasal obstruction in patients. On follow up the mean reduction in postoperative nasal obstruction was found to be 66.5±13.96 in first week and 63.0±16.25 on third month using electro cautery; 83.0±22.96 and 78.0±23.19 on first week and six month respectively using chemical cautery

Postoperative complications like synechiae, postoperative pain, post-operative bleeding and crusting was more in electero cautery than compared to chemical cautery.

**DISCUSSION**

The aim of inferior turbinate reduction is to reduce the size of turbinate in order to create sufficient space for normal nasal cycle regulation [4]. Only subjective assessment was done postoperatively for nasal obstruction and complications associated procedures.

With submucosal diathermy using monopolar electrocautery and bipolar electrocautery, histological mucosal changes occur which include conversion of columnar epithelium into cuboidal epithelium as a result of burn injury.

Sub mucous or intraturbinate monopolar and bipolar diathermy has given variable results Hol and Hiuzing evaluated 13 surgical techniques that have been used for inferior turbinate hypertrophy over the past 130 years and inferior turbinate reduction to be method of choice [5].

In our series of postoperative results of electrocautery and chemical cautery was comparable but amount of pain, discomfort and post-operative oedema was more in electrocautery . Higher is the frequency lesser is the intensity required, more precise is the coagulation and lesser is the surrounding tissue damage but no technique is perfect and has got short term as well as long term complication specifically atrophic rhinitis crusting and bleeding [6].

Almost all patients reported reduction of rhinorrhea, nasal obstruction after 6 monthof the procedure. Yao *et al.* [7] also observed improvement of other symptoms of allergic rhinitis, such as rhinorrhea and sneezing, after the application of the trichloroacetic acid, and demonstrated in recent research, that occurred a reduction of the mucosa infiltration of T cells, Th2 type, admittedly responsible by the allergic answer of rhinitis, after the topical utilization of trichloroacetic acid, suggesting that the migration of these cells was inhibited by the local action of the acid.

The comparison of the infiltration of turbines with steroids and botulinum toxin presented by Yang *et al.* [8] showed that the toxin is safest and most efficient than steroids in the treatment of allergic rhinitis with hypertrophy of the turbines, reducing nasal obstruction, rhinorrhea, sneezing and prurience, but the effect has limited duration (20 weeks), and we should point out that its cost is elevated. In our study after one year of the procedure, the improvement of electrocautery was more significant than chemical cautery but.The infiltration of the inferior turbines with trichloroacetic acid proved safe and with few complications.

Only two patients presented synechiae, resolved in ambulatory regimen. There was no significant history of bleeding, frequent occurrences in the electrocautery, turbinectomy, and turbinoplasty procedures. The pain had spontaneous resolution in less than 24 hours. There were no bigger complications, such as those associated to infiltration of steroids which, despite being an old practice in otorhinolaryngology, may lead to visual loss, transitory or permanent, as described by Martin *et al.* [9] and Marby *et al.* [10].

**Table 1** Sign & Symptoms

Sign& Symptoms	No.	percentage
Nasal obstruction	40	100
Nasal discharge	10	25
Post nasal drip	5	12.5
Deviated nasal septum	11	27.5
Headache	12	30
Snoring	18	45
Gastro oesophageal reflux disease	6	15

**Table 2** Age & Sex distribution

No.	Group-A		Group-B	
	Male	Female	Male	Female
Age				
11-25	1	1	3	1
26-40	11	4	10	5
41-60	2	1	-	1
Total	14	6	13	7

**Table 3** Sign symptoms preoperatively and 7th post-operative days

Sign & Symptoms	Group-A(Electro cautery)	7 <sup>th</sup> post op.	Group-B(Chemical cautery)	7 <sup>th</sup> post op.
	Pre op.		Pre op.	
Nasal obstruction	20	8	20	10
Nasal discharge	7	4	8	6
Post nasal drip	3	1	2	2
Dryness	0	3	0	1
Headache	5	6	7	5
Snoring	10	8	8	7
Crusting	0	12	0	2
Blood and blood mixed discharge	0	14	0	3

**Table 4** Post-operative sign symptoms after six month: a comparison

Sign & Symptoms	Group-A(Electro cautery)	After 6 month of Post op.	Group-B(Chemical cautery )	After 6 month of Post op.
	Pre op.		Pre op.	
Nasal obstruction	20	4	20	7
Nasal discharge	7	3	8	4
Post nasal drip	3	1	3	3
Dryness	0	1	0	-
Headache	5	1	7	1
Snoring	10	3	8	5
Crusting	0	1	0	-
Blood and blood mixed discharge	0	-	0	-

**CONCLUSION**

Chemical cautery is easy to follow, has less complication ,but failure rate is high, whereas electrocautery is procedure with less failure rate, but has to carried out under special precaution and has more discomfort postoperatively.

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