Original Article

TURBINECTOMY VERSUS SUB-MUCOSAL DIATHERMY FOR TREATMENT OF HYPERTROPHIC TURBINATE

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ABSTRACT:

OBJECTIVE: To determine the efficacy of turbinectomy versus sub-mucosal diathermy for treatment of hypertrophic turbinates.

STUDY DESIGN: Randomized controlled trial.

PLACE AND DURATION OF STUDY: Ent Unit-1, Allied Hospital Faisalabad, Punjab Medical College, Faisalabad, From 01-04-2009 To 30-09-2009.

METHODOLOGY: In order to compare the two techniques i.e. inferior turbinectomy and S.M.D, we divided the 92 patients into two groups A and B. Group A-turbinectomy and group-B for S.M.D. Pre-operative assessment was done for nasal obstruction in both groups A and B. Then two techniques were applied and post-operative evaluation in terms of improvement in nasal airflow after 48 hours and two weeks for both right and left sides were assessed. The results were compared of both techniques for the improvement in nasal obstruction.

RESULTS: 42/46 group A patients having the overall improvement i.e. about 91.3 % after two weeks post-operatively. 36/46 group-B patients having the overall improvement which was about 78.3 %. The age range in both groups was 17 to 44 years and males in group-A were 36/46 and females were 10/46. In group-B males were 30/46 and females were 16/46.

CONCLUSION: The group-A patients after two weeks post-operatively have better improvement in nasal obstruction as compared to group-B.

KEY WORDS: Nasal obstruction, Hypertrophic turbinates, turbinectomy and S.M.D

INTRODUCTION:

Nasal obstruction is common and very embarrassing symptom in adult population. This may affect the patient's health by causing prolonged respiratory tract infection[1,2], secondary sinus involvement, diminution of sense of smell and sleep disorders. One major cause of nasal obstruction is hypertrophic inferior turbinates. The hypertrophied inferior turbinates are usually due to perennial allergic rhinitis and/or vasomotor rhinitis. The turbinate enlargement in these patients is usually bilateral and is caused by thickening of the mucosa without the underlying structures. Medical treatments[3,4] including anti-histamines, topical and systemic steroids, desensitization and allergen avoidance is usually helpful. If the medical treatment fails, surgery is advised. Multiple surgical options are reported in literature with variable merits and demerits[4,5]. These include partial turbinectomy, submucosal diathermy, submucosal injection of corticosteroids, sclerosants, cryosurgery (

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cryoturbinectomy), resection of entire inferior turbinate, submucosal resection of entire inferior turbinate and laser turbinectomy. Unfortunately these[5,6] procedures are traumatic and are often complicated by post-operative bleeding, infection, dryness, crusting, adhesions and widespread controversy over safety of resection of inferior turbinate has continued till to date. Success rate of bilateral inferior turbinectomy reported in the literature is 88-96 % and sub-mucosal diathermy ranges from 76-78 %[7].

Resection of obstructive inferior turbinate was first reported in 1895 and 5 years later Holmes reported his experience of 500 cases[7].

Sub-mucosal diathermy (S.M.D) of inferior turbinate was popularized in 1989[7] although it was reported in 1907. It is believed that[7] coagulative current produces tissue necrosis and that the ensuing fibrosis causes shrinkage of the soft tissues of the turbinates. The study was conducted internationally[1,2] and locally[4,5,6] but not in Allied Hospital Faisalabad which is a tertiary care hospital.

MATERIAL AND METHODS:

Setting: The study was conducted at ENT unit-2 Allied Hospital Faisalabad and either gender patients were taken from outdoor . Duration of study was six months from 01-04-2009 to 30-09-2009. The sample size was calculated by using WHO sample size calculator taking level of significance 5 %, power of test 80 %, anticipated population proportion p1 = p 2%, anticipated population proportion p2 = 77 %. Sample size 92 (46 each group). The study design was randomized controlled trial with consecutive sampling technique.

Inclusion criteria:

- Patient of chronic hypertrophic turbinates not responding to medical management both male and female.
- Patients between 10-60 years of age.

Exclusion criteria:

- IHD, bleeding disorders, HTN, immune-compromised patients, diabetes mellitus.
- Patients having DNS and compensatory hypertrophy of opposite inferior turbinate.
- Patients younger than 10 years and older than 60 years

For data analysis SPSS version 10 was used. All the quantitative variables like age were presented as the mean and the standard deviation. Frequency and % age was measured for all qualitative variables like gender and nasal obstruction before and after procedure for both sides. Chi square test was used to compare nasal obstruction before and after procedure for both sides. P- value <0.05 was considered as a level of significance.

RESULTS:

Sample size of patients for both procedures was 92. These patients were divided into two equal groups by lottery method. Some patients had unilateral nasal obstruction while others A and B were assessed pre-operatively and post-operatively for both right and left sides. Mean and standard deviation of age in group A was 28.35 years and 8.12 years respectively. Mean and standard deviation in group-B was 30.93 and 7.72 respectively. 46 patients were in group A which were 50 % of total number of patients. Pre-operative assessment of nasal airflow was done on the basis of metal spetula test and the nasal airflow graded as:

No fogging = complete obstruction to airflow

Partial fogging = partial obstruction to airflow

Complete fogging = no obstruction to airflow

Pre-operatively, for right side group-A patients, % age fogging is shown in tabe-1, and for left side nasal airflow is shown in table-2.

Post-operative assessment after 48 hours of the procedures has been shown in table 3 and 4. Post-operative assessment after two weeks for both right and left side are shown in table- 5 and 6.

Overall improvement in group-A was 91.3 % and in group-B improvement was 78.3 % as shown in table-7.

DISCUSSION:

Nasal obstruction is probably the most common chronic nasal symptom encountered by otolaryngologists. Most patients with nasal obstruction have the turbinate hypertrophy due to vasomotor, allergic rhinitis or perennial rhinitis or due to DNS due to paradoxical phenomenon. Most of the cases are mild and respond to medical treatment which are antihistamines, decongestants or allergy desensitization, topical and systemic steroids. Systemic steroids have to be used with caution and with tapering of the dose. But in some cases when the medical treatment fails, the surgical treatment is required. The surgical treatment is controversial and many surgical methods of treatment have been proposed.

NASAL OBSTRUCTION:

In the present work we compared two widespread methods of surgical treatment. In terms of improved nasal obstruction of both right and left side. We compared the two methods i.e., turbinectomy and S.M.D in 92 patients in Ent-2 Department, Allied Hospital Faisalabad.

Firstly 48 hrs after surgery and then two weeks post-operatively and compared the results in overall improvement in nasal obstruction after two weeks. Two weeks after the surgery the success of the operation for nasal obstruction was 91.3% for turbinectomy and 78.3% for the S.M.D patients (p value is > 0.05) which is approximately very near to local and international study. Local study was conducted in Holy Family Hospital Rawalpindi by Baig M, Akhtar FP[6]. The study was conducted on 116 patients and success rate of inferior turbinectomy was 94.7% and in S.M.D success rate was 75 %.

Our result of turbinectomy was 91.3% and in S.M.D 78.3% which was very close to previous study.

The most common complication of total inferior turbinectomy appears to be the haemorrhage. The procedures often require nasal packing after completion. Also nasal synechiae, crusting and discomfort are frequent occurrences for several months afterward because of exposed bone at the lateral wall of nose. In 1985 retrospective study at Moore et al[53] 8 condemned total inferior turbinectomy, reporting that 66% of their 18 patients had ozoena or advanced atrophic rhinitis characterized by chronic crusting and dysosmia even leading to anosmia due to destruction of olfactory cells. Others such as Ophir[23] 9 have refuted this notion and atrophic rhinitis is rare and even insignificant complication of total inferior turbinectomy. In our study we did not note such complication., only the patients complaining of crusting post-operatively and that was overcome by frequent nasal douching with alkaline saline solution.

Partial resection of turbinate is the procedure developed to remove the anterior part of the turbinate. Nasal patency rates showed great improvement immediately after surgery, with one retrospective study, suggesting that 70 out of 76 patients reporting improvement at about 8 years[20,21,22] post-operatively. In our study, it was about 91.3%. Electrocautery has been used successfully in the ablation of inferior turbinate. Two forms of procedures exist. S.M.D and mucosal cautery. Both procedures can be performed under local anesthesia. Mucosal cautery as the name implies, utilizes the electrocautery device to burn from posterior to anterior end of inferior turbinate. This causes more pain and more risk of haemorrhage[18,19] 13,14. S.M.D avoids these risks. S.M.D involves inserting a spinal needle from anterior end of inferior turbinate to the posterior end and then touching the diathermy point to the needle for 30 seconds. S.M.D is an effective method of treatment for symptomatic inferior turbinate hypertrophy[28,29,30] 15,16,17. It reduces the nasal blockade by 65% (jones et al 1989)[19]14. But in our study it was 78.3%. many rhinologists advocate S.M.D in cases where inferior turbinates shrink with alpha receptor agonists[19] 14. But in our study most of our patients complain of nasal blockage and rhinorrhea post-operatively which was due to the post-operative edema and irritation which was settled on after two weeks.

Rakover and rosen[39] 18 who compared the effectiveness of turbinectomy with that of cryosurgery in 52 patients reported 77% relief of nasal obstruction in turbinectomy and 62% in cryosurgery. Before surgery we could not predict the outcome of the operation. All the patients who underwent B.I.T and S.M.D had the engorged turbinates and underwent the same procedure. But in some patients the outcome of procedure was different and relief of nasal obstruction was not achieved. Overall four patients of inferior turbinectomy i.e., 8.7% of total patients were not improved for nasal obstruction i.e., 21.7%. there was a significant difference between the outcomes in terms of nasal obstruction for two methods. The turbinectomy patients had greater improvement in their nasal obstruction after surgery. A partial failure of the S.M.D technique could result if the diathermy needle did not always reach the posterior end of the inferior turbinate and there may be the difference in the post-operative outcomes.

Table-1: Pre-operative assessment Right side Group-A & Group-B

		Group A	Group B	total
Pre-operative Assessment Right side	No fogging	31 (67.4%)	27 (58.7%)	58
	Partial fogging	12 (26.1%)	13 (28.3%)	25
	Complete fogging	3 (6.5%)	6 (13 %)	9
Total		46	46	92

Chi-square = 1.316 p = 0.259

Table-2: Pre-operative assessment Left side Groups A & B.

		Group A	Group B	total
Pre-operative Assessment Left side	No fogging	32 (69.6%)	32 (69.6%)	64
	Partial fogging	12 (26.15)	10 (21.7%)	22
	Complete fogging	2 (4.3%)	4 (8.7)	6
Total		46	46	92

Chi-squre =0.848 p = 0.33

Table-3: Post-operative assessment after 48 hours right side

		Group A	Group B	total
Postoperative Assessment after 48 hrs Right side	No fogging	5 (10.9%)	5 10.9%)	10
	Partial fogging	30 (65.2%)	26 (56.5%)	56
	Complete fogging	11 (23.9)	15 (32.6%)	26
Total		46	46	92

Chi-square = 0.90 p = 0.318

Table–4: Post-operative assessment after 48 hrs left side

		Group A	Group B	Total
Post-operative Assessment after 48 hrs left side	No fogging	4 (8.7%)	7 (15.2%)	11
	Partial fogging	32 (69.6%)	26 (56.5%)	58
	Complete fogging	10 (21.7%)	13 (28.3%)	23
Total		46	46	92

Chi-square = 1.83 P = 0.20

Table–5: Post operative assessment after two weeks Right side

		Group A	Group B	Total
Post-operative Assessment after two weeks right side	No fogging	4 (8.7%)	7 (15.2%)	11
	Partial fogging	2 (4.3%)	1 (2.2%)	3
	complete fogging	40 (87%)	38 (82.6%)	78
Total		46	46	92

Chi-square = 1.20 P = 0.274

Table–6: Post-operative assessment after two weeks left side

		Group A	Group B	Total
Post operative Assessment after two weeks left side	No fogging	3 (6.5%)	9 (19.6%)	12
	Partial fogging	2 (4.3%)	1 (2.2%)	3
	Complete fogging	41 (89.1%)	36 (78.3%)	77
Total		46	46	92

Chi-squre = 3.68 P = 0.08

Table–7: Overall Improvement Crosstabulation

		Improvement		Total
		Yes	No	
Group	Group A	42(91.3%)	4(8.7%)	46
	Group B	36(78.3%)	10(21.7%)	46
Total		78	14	92

CONCLUSIONS:

In present study two widely practiced surgical procedures for reduction of inferior turbinates were evaluated and compared in 92 patients 50% for each

procedure on the basis of lottery method.

1. Both the procdures SRIT and SMD were found effective in relievivng nasal obstruction.
2. The effectiveness of inferior turbinectomy was found somewhat better than SMD 91.3% versus SMD (overall improvement Chi-square = 3.00 and P value= 0.41.)
3. Both procedures can be performed under local or general anesthesia and do not require expensive instruments.
4. Both procedures are relatively safe and effective in relieving nasal obstruction caused by chronic hypertrophic inferior turbinates.

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Submitted for publication: 02-06-2014

Accepted for publication: 20-08-2014