

COMPARISON OF SUBMUCOSAL DIATHERMY WITH PARTIAL INFERIOR TURBINECTOMY: A FIFTY CASE STUDY

Imad¹, Javed², Sanaullah³

ABSTRACT

Objective: To compare the results in respect of safety and efficacy of Submucosal diathermy with partial inferior turbinectomy in terms of bleeding, pain, crusting and healing.

Methodology: A prospective comparative study was done at the department of ENT, HMC and Mardan Medical Complex from 01 July 2008 to 31 June 2010. Fifty patients with inferior turbinate hypertrophy were selected by simple convenience method and divided into two groups. Group A was subjected to submucosal diathermy and group B to partial inferior turbinectomy. Patients were assessed with regard to nasal patency, pain, bleeding and crusting. Follow up was done at day 01, day 07 and one Month.

Results: Out of fifty patients, 28 were females and 22 males. They were in the age range of 20 – 60 years. At day one assessment 22 patients with SMD had no bleeding while 10 patients with PIT had moderate bleeding ($P=0.00$). None of the SMD patients had severe pain while 8 patients with PIT had severe pain ($P=0.002$). At day seven 12 patients of SMD had moderate crusting as compared to 21 patients of PIT ($P=0.008$). At the end of one month 23 of SMD patients had good healing while only 13 PIT patients were satisfied with healing ($P=0.002$).

Conclusion: We found Submucosal diathermy a safe and better procedure in respect of bleeding, pain, crusting and healing than partial inferior turbinectomy.

Key Words: Sub mucosal diathermy, partial inferior turbinectomy, Inferior turbinate.

This article may be cited as: Imad, Javed, Sanaullah. Comparison of Submucosal Diathermy with Partial Inferior Turbinectomy: A Fifty Case Study. J Postgrad Med Inst 2012; 26(1): 91-5.

INTRODUCTION

Nasal obstruction is one of the common presenting symptoms to Ear, Nose, and Throat out patient department¹⁻³. This may be either due to deviated nasal septum or turbinate Hypertrophy owing to vasomotor or perennial allergic rhinitis. Most cases of hypertrophic turbinate are treated conservatively with anti histamine therapy, local decongestant or allergy desensitization and steroid^{4,5}. Inferior turbinectomy has been described to relieve chronic nasal obstruction due to hypertrophied inferior turbinate but the procedure have several complications like post operative hemorrhage⁶, dryness, crusting^{7,8}, excessive secretion, foul odor, adhesion⁹, epiphora and even

neurological sequel such as greater palatine nerve dehiscence, oculomotor and trigeminal nerve palsy^{10,11,12}. However cases not responding to conservative measures will need surgical intervention. Neres first described sub mucosal diathermy in 1907 and Horn in 1908. In 1930 Beck reported the use of unipolar cautery and in 1931 Hurd used bipolar ablation for hypertrophied inferior turbinate¹³.

Woodhead described the changes caused to inferior turbinate by sub mucosal diathermy that induces sub mucosal fibrosis and thus reducing size of the turbinate^{14,15}. It can be done under local or general anesthesia. Care should be taken to avoid damage to nasal alae, columella, and nasal septum. The aim of study is to compare the results of sub mucosal diathermy with partial inferior turbinate resection in respect of safety and efficacy.

METHODOLOGY

A prospective comparative study was done at the department of E.N.T. H. M.C and Mardan Medical Complex from 1st July 2008 to 30 June 2010 to evaluate the effects of Submucosal diathermy with partial inferior turbinectomy in patients with nasal obstruction. A total of fifty patients of all ages and both sexes entered the

¹⁻³ Department of ENT, Lady Reading Hospital, Peshawar - Pakistan

Address for Correspondence:

Dr. Imad,

Department of ENT,
Bacha Khan Medical College, Mardan -
Pakistan
E-mail: imad.hameed@yahoo.com

Date Received: April 29, 2011

Date Revised: October 12, 2011

Date Accepted: November 5, 2011

study. Patients were divided in two groups A and B, each having 25 patients. Patients were randomly divided into two Groups using table of randomization and informed consent was taken from each patient. Group A had Submucosal diathermy of inferior turbinate and group B had partial resection of inferior turbinate.

Patients not willing for surgery, abnormal coagulation profile, having haemoglobin less than 10 gm/dl, any systemic illness or acute infection at the time of surgery were excluded from the study. Patients who were operated upon in conjunction with septal surgery or nasal polypectomy were also excluded. Patients with bilateral nasal obstruction or stuffiness due to enlarged inferior turbinate and not responding to conservative treatment, no previous surgery and disease free nasopharynx were included in the study.

A thorough history, ear, nose, throat and general physical examination was done in all cases. The main variable was relief of nasal obstruction in all patients. Nasal obstruction was analyzed by V.A.S (visual analogue scale) system by asking the patient to score his/her nasal obstruction from 1-10 and was categorized as mild 1-3, moderate 4-7, severe 8-10. Pre-operative investigations like complete blood count, urine analysis, prothrombine time, APTT were done in all patient .In patient older then 40 year of age, x-ray chest, ECG, blood glucose, urea and electrolytes estimation was carried out. Both the groups were operated under G.A. with 4% xylocain and adrenaline (1:1000) packing for heamostasis. All patients were put on antibiotics, analgesics and liquid paraffin drops for 7- 10 days

post –operatively. Follow up was done at day 01 ,07 and one month to asses bleeding, nasal obstruction, pain crusting, infection or any adhesion formation.

RESULTS

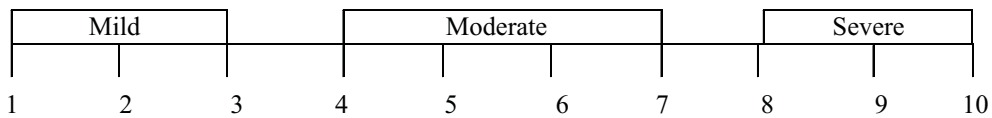
A total of fifty patients entered the study. Twenty five patients had submucosal diathermy and twenty five partial inferior turbinectomy. 28 patients were females and 22 males with age range of 20 – 60 years.

On first post op day only 3(12%) patients with S.M.D. had mild bleeding while 15(60%) patients with P.I.T. had mild and 10(40%) patients moderate bleeding (P=0.00). None of the patients with S.M.D. complained of severe pain ,only 14(56%) had mild and 11(44%) moderate pain .On the other hand ,8(32%) patients with P.I.T. complained of severe pain with 12(48%) moderate pain on the first post op day (P=0.002).

After one week 21(84%) patients with P.I.T. complained of crusting, this was found in only 12(48%) patients with S.M.D (P=0.008). The difference in nasal permeability at the end of 1st week was not significant.

After One weeks, 23(92%) patients with S.M.D had good healing, while only 13(52%) patients with P.I.T. were satisfied with healing (P=0.002). No patients complained of crusting at one month follow up with S.M.D, while 5(20%) patients with P.I.T still presented with crusting (P=0.025). The ratio of nasal permeability b/w the two procedures (S.M.D.:P.I.T.) after One month was 11:14.

Visual Analogue Scale



Post-op day-1 assessment

Table 1: Nasal Bleeding

		Method		TOTAL
		SMD	PIT	
Bleeding	None	22 (88.0%)	--	22 44.0%
	Mild	3 (12.0%)	15 (60.0%)	18 (36.0%)
	Moderate	--	10 (40.0%)	10 (20.0%)
Total		25 (100.0%)	25 (100.0%)	50 (100.0%)

p-value=0.00 (Fisher exact test)

Table 2: Pain

		Method	
		SMD	PIT
Pain	Mild	14 (56%)	5 (20%)
	Moderate	11 (44%)	12 (48%)
	Sever	--	8 (32%)

p-value=0.002 (Fisher exact test)

Post-op day-7 assessment**Table 3: Crusting**

		Method		Total
		SMD	PIT	
Crusting	None	13 52.0%	4 16.0%	17 34.0%
	Moderate	12 48.0%	21 84.0%	33 66.0%
Total		25 100.0%	25 100.0%	50 100.0%

p-value=0.008 (Fisher exact test)

Post-op one month assessment.**Table 4: Nasal Permeability**

		Method		Total
		SMD	PIT	
Nasal Permeability	Moderate	17 68.0%	14 56.0%	31 62.0%
	Good	8 32.0%	11 44.0%	19 38.0%
Total		25 100.0%	25 100.0%	50 100.0%

p-value=0.280 (Fisher exact test)

DISCUSSION

Chronic nasal obstruction caused by hypertrophied inferior turbinate is treated in a variety of ways^{1,2}.

Surgical reduction of the turbinate can be performed by several different techniques³⁻⁵. One method is lateral out fracturing of the inferior turbinate at its attachment. Goode argued that the turbinate returns to its original position and the benefits are temporary^{6,7}. Hegazy used microdebrider for the turbinate size reduction but results are not as satisfactory, though short operative time and less bleeding has been reported

in the literature with use of submucosal microdebrider⁸.

Anterior nasal bleeding is the major problem with turbinectomy. Maskel et al reported significant bleeding in his study of lesser turbinectomy⁹. Nausheen reported partial inferior turbinectomy as the treatment option for interior turbinate hypertrophy⁷. However the procedure is associated with more bleeding⁷. Antonio found that sixty percent of his patients complained of mild bleeding¹⁵. Qazi reported 6% of patient with turbinectomy who needed anterior nasal packing for severe hemorrhage³.

M. Tahir et al, studied total and partial inferior turbinectomy and found 97% improvement in patients with total inferior turbinectomy. Bleeding was the major problem which required anterior nasal packing for 48 hours¹⁴. This did not happen in our patients of SMD. In our study 10 cases (40%) of partial inferior turbinectomy has moderate bleeding, while only 3 cases of submucosal diathermy had mild bleeding.

Less operative time and pain has also been reported with laser by Maskel et al, though the relief achieved in nasal obstruction is short lived and the facility is not available throughout⁹. In Antonio series of SMD 20% had moderate pain and 80% mild pain. 44% of our patient with SMD complained of moderate pain on post operative day and 32% of patient with PIT had severe pain¹⁵.

Crusting, in literature has been mentioned as another common problem with nasal surgery¹⁴. Nousheen also reported crusting in her series of PIT⁷. In our series 21 (84%) cases of PIT had moderate crusting at post of day – 7 assessment and 5 patients at one month follow up. S Maskel reported 29.5% of patient with laser turbinectomy to present with crusting in first two weeks⁹. Moderate crusting was reported by Antonio in 50% of patient with SMD at 14th post operative day¹⁵. In our study crusting was noticed in only 48% of SMD patients as compared to 84% of PIT patient on 7th post operative day, while at the end of two weeks no patient with SMD had crusting while 20% patients with PIT still complained of crusting. Good healing was noted 92% of SMD patients as compare to 52% of PIT patients at end of 1st month.

The inferior turbinate transected edge results in an exposed edge of the inferior turbinate bone. Crusting will continue until the bone is covered with a mucosal surface¹. Total inferior turbinectomy, though not considered physiological and safe by many due to loss of humidification and temperature regulation function of inferior turbinate^{10,11} is favored by many otolaryngologists. Nasirullah et al reported good nasal patency results in his series of total inferior turbinectomy but found crusting as common complication¹². This is in accordance with our study. Green also studied the effects of submucosal diathermy on inferior turbinate and reported as case oculomotor nerve palsy following SMD¹⁴. We did not encounter any such complication.

CONCLUSION

We found Submucosal diathermy a safe and effective method with less bleeding, pain and crusting. However, post-operative nasal permeability is almost similar in both groups.

Grant Support, Financial Disclosure and Conflict of Interest

None Declared

REFERENCES

1. Fradis M, Malatskey S, Magamasa I, Golz A. Effects of submucosal diathermy in chronic nasal obstruction due to turbinate enlargement. *Am J Otolaryngol* 2002;23:332-6.
2. Talmon Y, Samet A, Gilbey P. Total inferior turbinectomy operative result and technique. *Ann Otol Rhinol Laryngol* 2000;109:1117-9.
3. Azeem QA, Khalil H, Barlas NB. Is total inferior turbinectomy a reliable answer for nasal obstruction caused by hypertrophied inferior turbinates. *Pak Postgrad Med J* 2002;13:120.
4. Musharaf MB, Faheem PA. Management of the hypertrophied inferior turbinate. *Professional Med J* 2000;7:127-9.
5. Magarey MJ, Jayaraj SM, Saleh HA, Sandison A. Ball valve nasal obstruction following incomplete inferior turbinectomy. *J Laryngol Otol* 2004;118:146-7.
6. Bandos RD, Rodrigues de Mello V, Ferreira MD, Rossato M, Anselmo-Lima WT. Clinical and ultrastructural study after partial inferior turbinectomy. *Braz J Otorhinolaryngol* 2006;72:609-16.
7. Qureshi N. Role of partial anterior inferior turbinectomy in nasal obstruction. *J Rawal Med Coll* 2006;10:70-2.
8. Hegazy HM, Eibadawey MR, Hassan AA. Endoscopic submucous inferior turbinate reduction with microdebrider: a study of 50 cases. *Tanta Med Sci J* 2007;2:194-9 .
9. Maskell S, Eze N, Patel P, Hosni A. Laser inferior turbinectomy under local anaesthetic: a well tolerated out patient procedure. *J Laryngol Otol* 2007;121:957-61.
10. Orabi AA, Sen A, Timms MS, Morar P. Patient satisfaction survey of outpatient-based topical local anaesthetic KTP laser inferior turbinectomy: a prospective study. *Am J Rhinol* 2007;21:198-202.
11. Chand G, Kumar S, Khemani AM. Comparative study efficacy of mucosal electrocautery versus sub mucosal diathermy for the treatment of inferior turbinate hypertrophy of nose. *Pak J Med Sci* 2010;26:454-7.
12. Green KMJ, Board T, O'Keefe LJ.

- Oculomotor nerve palsy following submucosal diathermy to the inferior turbinates. *J Laryngol Otol* 2000;114:285-6.
13. Khan NU, Arshad M, Ahmad T, Ashfaq M. Total inferior turbinectomy for hypertrophied inferior turbinates: postoperative results in 135 patients. *Pak Armed Forces Med J* 2005; 55:187-92.
 14. Manzoor T, Asghar A, Aslam S, Ali M, Ayub W. Partial inferior turbinectomy. *Professional Med J* 2008;15:512-7.
 15. Nassif Filho AC, Ballin CR, Maeda CA, Nogueira GF, Moschetta M, de Campos DS. Comparative study of the effects of submucosal cauterization of the inferior turbinate with or without out facture. *Braz J Otorhinolaryngo* 2006;72:89-95.

CONTRIBUTORS

I, J and S contributed equally to the research and preparation of the manuscript. All authors listed contributed significantly to the research that resulted in the submitted manuscript.