

Comparison of frequency of synechiae formation in patients of sinonasal polyposis undergoing endoscopic sinus surgery with and without using microdebrider

Tabassum Aziz, Ahmed Hasan Ashfaq, Kashif Mahmood, Faisal Bashir

Department of ENT and Head and Neck surgery, Holy Family Hospital, Rawalpindi Aziz Bhatti Shaheed Hospital, Gujrat, Pakistan and Shaheed Benazir Bhutto Medical College, Mirpur, AJK

Objectives: To compare the frequency of synechiae formation in patients with allergic nasal polyps undergoing endoscopic sinus surgery with and without use of microdebrider.

Methodology: The comparative study was conducted in ENT department Holy Family Hospital, Rawalpindi, Pakistan from July 2013 to July 2015. It included 110 patients of sinonasal polyposis due to nasal allergy selected through non probability convenience sampling technique. They were divided into two groups; A and B with 55 patients in each group. In group A, endoscopic sinus surgery was done with the use of microdebrider while group B patients underwent endoscopic sinus surgery without the microdebrider. The outcome of both methods was compared by evaluating the frequency of formation of synechiae at 1st, 2nd and 4th postoperative week.

Results: In Group A, 38.18% (n=21) patients were between 15-30 years and 61.82% (n=34) were between 31-45 years of age. In Group B, 47.27% (n=26) were between 15-30 years and 52.73% (n=29) were between 31-45 years of age. Mean age in group A and B was 33.25 ± 7.48 and 32.07 ± 7.11 , respectively. 3.64% (n=2) of the patients in group A developed synechiae as compared to 16.36% (n=9) patients in group B ($P=0.02$).

Conclusion: The frequency of synechiae formation in patients with allergic nasal polyps undergoing endoscopic sinus surgery with microdebrider was significantly less as compared to those in which microdebrider is not used. (Rawal Med J 201;42:363-365)

Keywords: Microdebrider, endoscopic sinus surgery, synechiae.

INTRODUCTION

Allergic nasal polyps originate as a result of inflammatory process in the upper part of nose around the opening of ethmoid sinuses. The polyp protrude from middle and superior meatus into nasal cavity which results in nasal obstruction.¹ The prevalence of nasal polyps all over the world is considered to be 4%.² The main causes of polyps involve allergy and inflammation however, exact origin of nasal polyps is not yet known.³⁻⁵ Other possible causes are infections, anatomical variations, genetic predisposition, autonomous dysfunction, ciliary dysfunction, enzymatic, epithelial, and mucosaccharide abnormalities.⁶ Increased level of eosinophils are present in most nasal polyp patients as a result of actions of the cytokines granulocyte-macrophage colony stimulating factor (GM-CSF) and interleukins (IL)5, which function to prolong eosinophil's

survival.⁶

The treatment of nasal polyps could be either medical or surgical. Now a days, endoscopic sinus surgery is considered to be the standard surgical option.⁷ The principal involves re-establishing the ventilation and drainage through the ostia with minimal damage to sinonasal mucosa.⁸ The common complications of endoscopic sinus surgery involve bleeding, trauma, CSF leak, synechiae formation and recurrence.⁹ Synechiae formation leads to occlusion of sinus ostia causing nasal blockage.¹⁰ Nasal obstruction, because of synechiae results in poor quality of life and recurrence of infection and polyposis. Both techniques are in practice. The aim of this study was to compare the frequency of synechiae formation in patients with allergic nasal polyps undergoing endoscopic sinus surgery with and without use of microdebrider.

METHODOLOGY

This hospital based comparative study was conducted in ENT department Holy Family Hospital Rawalpindi, Pakistan from July 2013 to July 2015. 110 patients of sinonasal polyposis secondary to nasal allergy were selected through non probability convenience sampling technique. Their demographic profile, medical history, clinical features and treatment modalities were recorded. A detailed history about nasal obstruction and other symptoms of nasal polyps like post nasal drip, snoring, and anosmia was taken. Computerized tomography scan was done in all cases. Patients with bony erosion, bony destruction, cystic fibrosis diagnosed on sweat test, acute rhinosinusitis and Co morbid conditions like immunosuppression were excluded. Patients were divided into two group A and B with 55 patients in each group. An informed consent was taken from the patients and approval of the study was taken from the hospital ethics committee.

Patients were given oral corticosteroids in tapering doses starting from 30mg/day for about a week before surgery. In group A, endoscopic sinus surgery was done with use of microdebrider. In Group B, endoscopic sinus surgery without microdebrider was performed. All patients were operated upon under general anesthesia. All the patients undergoing surgery were operated by the same surgeon using same surgical technique. Postoperative treatment like oral corticosteroids, antihistamine, nasal decongestant, intranasal steroid spray, alkaline nasal douching and antibiotics were given to both groups for the same period of time. The outcome of both methods was compared endoscopically by evaluating the frequency of formation of synechiae at 1st, 2nd and 4th postoperative week. P value of <0.05 was taken as significant.

RESULTS

In group A, 38.8% (n=21) patients were between 15-30 years and 61.82% (n=21) were between 31-45 years while in group B, 47.27% (n=26) were between 15-30 years and 52.73% (n=29) were between 31-45 years of age. Mean age of the patients in group A and B was 33.25 ± 7.48 and

32.07 ± 7.11 , respectively. Male to female ratio in group A was 1:0.72 and in group B it was 1:0.96. 58.18% in Group A and 50.91% (n=28) in group B were male while 41.82% (n=23) in group A and 49.09% (n=27) in group B were females.

Table. Synechiae formation in two groups (n=110).

Synechiae Formation	Group-A (n=55)		Group-B (n=55)	
	Number	%	Number	%
Yes	2	3.64	9	16.36
No	53	96.36	46	83.64
Total	55	100	55	100

P=0.02

On 1st and 2nd week's postoperative visit, no synechiae were seen in either group. However, at 4th week's postoperative visit, 3.64% (n=2) of the patients in group A developed synechiae as compared to 16.36% (n=9) patients in group B (P=0.02) (Table).

DISCUSSION

Endoscopic sinus surgery is gold standard when medical treatment fails. Several modifications are being done and one of which is use of powered microdebrider. The aim behind use of microdebrider is to exenterate the disease with minimum trauma to normal tissue. The microdebrider is cylindrical in shape. It is electrically powered shaver and is supplied with continuous suction.¹⁴ It accurately resects tissue causing minimum tissue trauma and stripping thus helps to avoid excessive scarring and post operative complications.¹⁴ In contrast, Blakesly forcep, previously used in endoscopic sinus surgery can cause undue trauma by tearing and stripping.¹⁴ The aim of our study was to evaluate the effectiveness of microdebrider in terms of postoperative synechiae formation in operative area. Our results collaborates with the study of Taqadas and Hao, in which there was 0% incidence of synechiae formation post operatively with microdebrider as compared to surgery without microdebrider where there was 13.3% incidence of synechiae formation.¹⁰

Ceylan et al compared the outcome of 97 patients in two groups with similar results showing reduced formation of synechiae, minimal morbidity and

improved surgeon's and patient's comfort with powered instruments in treatment of nasal polyps.¹¹ However, Sauer et al compared microdebrider and standard instruments in endoscopic sinus surgery in a double blind randomized study and found no significant difference between the two techniques.¹² Giancarlo et al compared microdebrider with traditional Blakesley forceps and concluded that manual instrument have lower recurrence rate but they result in increased incidence of synechia formation.¹³

CONCLUSION

In the view of our study we conclude that endoscopic sinus surgery with microdebrider is better as compared to without microdebrider in term of frequency of synechia formation. The availability of microdebridors should be ensured in ENT departments so as to achieve a better outcome for the patients.

Author Contributions:

Conception and design: Tabassum Aziz
Collection and assembly of data: Tabassum Aziz
Analysis and interpretation of the data: Ahmed Hasan Ashfaq
Drafting of the article: Ahmed Hasan Ashfaq
Critical revision of the article for important intellectual content: Ahmed Hasan Ashfaq
Statistical expertise: Kashif Mahmood
Final approval and guarantor of the article: Faisal Bashir
Corresponding author email: Ahmed Hasan Ashfaq: saqiy2k@hotmail.com

Conflict of Interest: None declared

Rec. Date: Dec 31, 2016 Revision Rec. Date: Mar 19, 2017 Accept Date: Apr 3, 2017

REFERENCES

- Niels M, Valerie LJ. Nasal polyposis. In: Gleeson M. Scott-Brown Otorhinolaryngology Head and Neck Surgery 7th ed. Great Britain, Edward Arnold 2008;1549-9.
- Micheletto C, Visconti M, Trevisan F, Tognella S, Bertacco S, Dal Negro RW. The prevalence of nasal polyps and the corresponding urinary LTE4 levels in severe compared to mild and moderate asthma. *Eur Ann Allergy Clin Immunol* 2010;42:120-4.
- Munozdel CF, Jurado RAI. Allergic profile of nasal polyposis. *J Investig Allergy Clin Immunol* 2009;19:110-6.
- Alexiou A, Sourtzi P, Dimakopoulou K, Manolis E, Velonakis E. Nasal polyps heredity, allergies and environmental and occupational exposure. *J Otolaryngol Head Neck Surg* 2011;40:58-63.
- Ba L, Du L, Liu Y, Shang T, Yang F, Bian P. The expression and significance of interleukin-17 and the infiltrating eosinophils in nasal polyps and nasal mucous of allergic rhinitis. *Lin Chung Er Bi Yan Hu Tou Jing Wai Ke Za Zhi* 2010;2.
- Muñoz del Castillo F, Jurado-Ramos A, Fernandez-Conde BL, Soler R, Barasona MJ, Cantillo E, et al. Allergic profile of nasal polyposis. *J Investig Allergy Clin Immunol* 2009;19:110-6.
- Kastl KG, Betz CS, Siedek V, Levniq A. Control of bleeding following functional endoscopic sinus surgery using carboxy-methylated cellulose packing. *Eur Arch Otorhinolaryngol* 2009;266:1239-43.
- Shoman N, Gheriani H, Flamer D, Javer A. A Prospective, double-blind, randomized trial evaluating patient satisfaction, bleeding, and wound healing using bio degradable synthetic polyurethane foam (nasopore) as a middle meatal spacer in functional endoscopic sinus surgery. *J Otolaryngol Head Neck Surg* 2009;38:112-8.
- Re M, Massegur H, M Giuseppe, Ferrante L, S Vittorio, Farneti G. Traditional endonasal and microscopic sinus surgery complications versus endoscopic sinus surgery complications: a meta-analysis. *Eur Arch Otorhinolaryngol* 2012;269:721-9.
- Taqadas A, Hao MM. Use of microdebrider in endoscopic nasal polypectomy: a comparison with simple endoscopic sinus surgery. *Pak J Otolaryngol* 2008;24:53-5.
- Ceylan K, Bayiz U, Kizilkaya Z, Lale O, Emir H, Ünlü I. Impact of microdebrider in surgical treatment of nasal polyposis in terms of health related quality of life and objective findings: a comparative randomized single blinded clinical study. *KBB-Forum* 2007;6:60-5.
- Sauer M, Lemmens W, Vauterin T, Jorissen M. Comparing the microdebrider and standard instruments in endoscopic sinus surgery: a double-blind randomized study. *B-ENT* 2007;3:1-7.
- Giancarlo T, Annalisa G, Giacomo Tofanelli. Surgical treatment of nasal polyposis: A comparison between cutting forceps and microdebrider. *Am J Rhinol Allergy* 2013;27:202-6.
- Bernstein JM, Lebowitz RA, Jacobs JB. Initial report on post operative healing after endoscopic sinus surgery with the microdebrider. *Otolaryngol Head Neck Surg* 1998;118:800-803.