

Endoscopic Sinus Surgery for Sinonasal Polyposis: Microdebrider or Conventional Instruments

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ABSTRACT

Introduction: Sinonasal polyposis is one of the commonest causes of nasal obstruction. Surgical management is treatment of choice. Microdebrider offers more advantage to conventional instruments. We aimed to find out outcome using microdebrider versus conventional instruments in endoscopic sinus surgery of sinonasal polyposis.

Methods: The cross sectional descriptive study carried out in patients aged 13 years and above with diagnosis of sinonasal polyposis. Total of 51 patients were operated on the right side with microdebrider and left side with conventional instruments. Postoperatively each patient assessed for nasal obstruction subjectively and by endoscopic examination to look for mucosal oedema, synechiae and recurrence at 4 weeks and 8 weeks postoperatively.

Results: The incidence of mucosal oedema in microdebrider and conventional instruments at 4 weeks and 8 weeks was statistically not significant with P value 0.089, 0.322 respectively. The incidence of synechiae in conventional group was more than microdebrider 1 (2%) versus 4 (7.8%) at 4 weeks follow up but the difference was statistically not significant (P value 0.773). There were 2 (3.9%) recurrences in microdebrider group and 3 (5.8%) recurrences in conventional group with P value 0.532.

Conclusions: Use of microdebrider offered fewer incidences of synechiae and recurrence. But we couldn't find statistical advantage over conventional instruments.

Keywords: *conventional instruments; endoscopic sinus surgery; microdebrider; sinonasal polyposis.*

INTRODUCTION

Surgery is the main option in patients with sinonasal polyposis, those not responding to medical management or has subsequent recurrences. Eventually 30-50% cases require surgical management.¹ The aim of surgery is to remove the pathologic tissues inside the ostiomeatal complex units and to restore the mucociliary clearance and sinus ventilation without harming normal nasal physiology and anatomy.²

Microdebriders have suction at the surgical site, so they offer improved visualization and less frequent interruptions during surgery.³ Also there is accelerated

healing time as the instrument does not strip mucosa, and there is minimal exposure of bone.⁴ Other observations include fewer postoperative synechiae, and fewer traumas to the middle turbinate mucosa and bone with a subsequent decrease in incidence of lateralization of this structure.⁴ So this study was planned to see advantages of this new technique as

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compared to the older technique.

This study was designed to evaluate the outcome of microdebrider as compared to conventional endoscopic sinus surgical instruments in the management of sinonasal polyposis.

METHODS

This was cross sectional descriptive study conducted in department of ENT-HNS, Tribhuvan university teaching hospital, Maharajgunj, Nepal from May to December in 2015. Patients with bilateral sinonasal polyposis with age more than 13 years without previous history of any surgical procedures for the same problem were included. Convenience sampling was done and total of 51 cases included in the study. Study was conducted according to Helsinki declaration. Written and verbal consent was taken.

Patient evaluated for nasal obstruction, graded as per NOSE scale⁵ and endoscopic examination was done, scored as per Mackay Lund. Operation was done under general anaesthesia, right side operated with microdebrider and left side with conventional instruments. Postoperatively patients were started on oral antibiotics and from 3rd POD steroid spray and nasal douching started in all patients. Patients followed up on POD 7, 4 weeks and 8 weeks. During each visit grade of nasal obstruction evaluated as per NOSE scale and endoscopic examination was done to look for mucosal oedema, synechiae and recurrence.

Comparisons of outcomes (subjective and objective) between two groups were performed by paired t-test and. SPSS version 21.0 used to analyze results. We regarded P value less than 0.05 as statistically significant.

RESULTS

Total of 51 patients were studied with age ranging from 13 yrs to 71 yrs. Preoperative NOSE scale and endoscopy scores in both sides of nose were shown in the Table 1. Mean NOSE scale and mean preoperative endoscopy score between microdebrider group and conventional groups were statistically not significant.

Postoperatively at 4 weeks NOSE scale and endoscopic findings were shown in Table 2. There was no significant difference between NOSE scale, mucosal oedema and synechiae in both the groups. Incidence of synechiae observed more in conventional group as compared to microdebrider group though statistically the difference wasn't significant. There were no recurrences in both the groups at 4 weeks postoperatively.

Table 1. Comparison of preoperative mean NOSE scale and mean endoscopy score (n = 51).

	Microdebrider	Conventional	P value*
Mean preoperative NOSE scale	2.79	2.77	0.728
Mean preoperative endoscopy score	1.77	1.81	0.713

*paired t test

Table 2. Comparison of postoperative NOSE scale and endoscopy findings at 4 weeks (n = 51).

	Microdebrider	Conventional	P value*
NOSE scale	0.20	0.24	0.709
Mucosal oedema	15(29.4%)	16(31.4%)	0.089
Synechiae	1(2%)	4(7.8%)	0.773
Recurrence	0	0	-

*paired t test

At 8 weeks postoperatively, the NOSE scale and endoscopic findings were shown in Table 3. There was no significant difference between NOSE scale, mucosal oedema and synechiae in both the groups. There were 2 recurrences in microdebrider group and 3 cases in conventional group but the difference was not statistically insignificant.

Table 3. Comparison of postoperative NOSE scale and endoscopy findings at 8 weeks (n = 51).

	Microdebrider	Conventional	P value*
NOSE scale	0.058	0.196	0.059
Mucosal oedema	4 (7.8%)	4 (7.8%)	0.322
Synechiae	0	0	-
Recurrence	2 (3.9%)	3 (5.8%)	0.322

*paired t test

DISCUSSION

In our study, there was significantly decreased nasal obstruction in both the groups. Difference between microdebrider and conventional group was statistically not significant (P value at 4 weeks 0.709 and at 8 weeks 0.059). This result was in accordance with the study done by Magdy et al.⁶ But in study done by Singh et al over 3 years with sample size of 40 (20

patients operated with microdebrider and 20 patients with conventional instruments), there was significant improvement in nasal symptoms including nasal obstruction in microdebrider than conventional group (P value 0.004).⁷

In our study, there was mucosal oedema in 16 and 17 patients respectively in microdebrider and conventional group at 4 weeks postoperatively. Similarly, at 8 weeks postoperative follow up there were 4 patients each in both the groups. There was statistically no significant difference between both the groups at 4 and 8 weeks postoperatively. The study of incidence of mucosal oedema postoperatively following surgery has not been much mentioned in literatures.

Synechia formation is the most frequently occurring complication after functional endoscopic sinus surgery ranging from 6 to 27%.⁸ Synechia is formed when two opposing denuded mucosal surfaces come in contact during the healing process. Depending on the site, and extent of synechia, it may be an incidental finding or, in some cases, may cause symptomatic sinus outflow tract obstruction. Most synechia were described anteriorly between the anterior end of the middle turbinate and the lateral nasal wall. These anterior synechia may be caused by middle turbinate trauma, lateral nasal wall trauma by the backbiter, and/or stripping of the mucosa at the junction of the middle turbinate and the lateral nasal wall by forceps. The reason for increased incidence of synechia in conventional instruments group has been postulated as because of stripping and tearing of mucosa. Minimizing tissue trauma and preserving normal mucosa are of utmost importance in avoiding excessive scarring, and this is what the microdebrider offers advantages over conventional instruments.

In our study synechia was found more in conventional group than microdebrider group 4 (7.8%) versus 1 (2%) but the difference was statistically not significant (P value 0.773). This result is in accordance with study by Magdy et al (n=200).⁶ Sauer et al (n=50) found

similar result in both the groups.⁹ In the study done by Magdy et al. there was no synechia in cases operated with powered instruments but four cases of synechia in conventional group which was statistically significant (P value <0.001). Similar result was seen in the study done by Krouse et al.¹⁰

In our study recurrence found to be more in conventional group than microdebrider group 3 (5.8%) versus 2 (3.9%) but it was statistically not significant (P value 0.322).

This is similar with study done by Magdy et al.⁶ In the study there was 18% recurrence rate in microdebrider group and 22% recurrence in conventional group. The difference between the two groups was statistically not significant (P value >0.05). Singh et al found 25 recurrences in microdebrider group and 70 recurrences in conventional group but difference was statistically not significant (P value 0.053).⁷

Recurrence in endoscopic sinus surgery of sinonasal polyposis is related with allergy, asthma and aspirin intolerance. These aetiological factors were not studied in this study. Also this study addresses only the short term post-operative outcomes which may change over a longer period of time. Also the sample size of the study was small which might affect the result.

This study can be continued for a longer duration. Another study with larger sample size and longer follow up is necessary to have increased validity.

CONCLUSIONS

Use of microdebrider offered fewer incidences of synechia and recurrence. But we couldn't find statistical advantage over conventional instruments. A large-scale with long follow up randomized control trial is necessary for further evaluation.

Conflict of Interest: None.

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