Original Article

Comprehensive study of Microdebrider in endoscopic sinus surgery

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Abstract

Background: Microdebriders are widely used now a day in Endoscopic Sinus Surgery. This study is done to evaluate the advantages of microdebrider in Endoscopic Sinus Surgery in terms of blood loss during surgery, visibility of the field during surgery, duration of surgery and post operative healing. **Methods:** This is a prospective study done in a Medical college hospital over a period of 1 year. Patients who were diagnosed as sinonasal polyposis and underwent endoscopic sinus surgery with microdebrider were taken into study and the results were documented and analysed in terms of blood loss during surgery, visibility during surgery, duration of surgery and post operative healing. **Results:** Out of 60 patients, majority of the patients had an average blood loss of 180 ml and preoperative visibility of grade 2 and average duration of surgery of 60 minutes. Most of the patients had grade A post operative healing **Conclusions:** Microdebriders are an inevitable tool in the functional endoscopic sinus surgery for the management of sino nasal polyposis.
Key Word: microdebrider, endoscopic sinus surgery

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INTRODUCTION

Endoscopes have markedly improved visualization for sinus surgery, but expanding concepts of FESS have out placed available operative instrumentation. The surgical techniques are continually improving[1,2], but the basic concepts of the newer instruments have changed very little. With currently available FESS instruments, surgeons often find that they do little short of the precise and delicate surgery demanded by the functional approach[3]. Consequently, the goals of m*eti*culous cutting, a near bloodless field, unimpaired vision, and continuous removal of resected tissue remains elusive. The instruments used so far tend to strip the mucosa from the underlying bone. This approach predisposes to increased bleeding, which is the archenemy of the surgeon, because it leads to decreased visibility, the cornerstone of complications. The lack of continuous suction at the operative site is a technical limitation that compounds the stress for the surgeon and increases the inherent risk for the patient. Attention was therefore directed towards laser. However enthusiasm for the laser in endoscopic sinus surgery has waned due to increased post op scaring and necrosis. The microdebrider facilitates preservation of mucosa and vital structures by resecting only diseased, obstructive tissue with very limited blood loss4. Simultaneous continuous suction at the operative site is a marked benefit of this instrument, which helps to overcome the well recognized problem of blood pooling that increases the potential for operative morbidity[5].

METHOD

Patients diagnosed to have Sinonasal Polyposis in a tertiary care centre during a period of one year, were taken up. Patients undergoing Endoscopic Sinus Surgery

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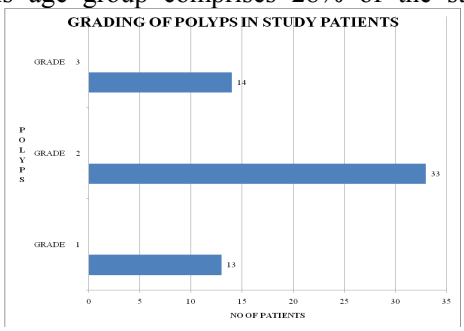
for Sinonasal Polyposis b*et*ween 12 to 60 years were included in the study. Nasal endoscopic surgeries for pathologies like skull base lesions, pituitary surgeries and chronic dacryocystitis and tumors6, below 12 years and above 60 years and patient not willing for the study were excluded. The total number was 60 patients. Using 0 and 30 degree Hopkins Rod Endoscope 1st pass, 2nd pass and 3rd pass was done. Middle meatus was examined in all patients and the polyps were graded as follows: O-No polyps present, I - polyps confined to middle meatus, II-polyps beyond middle meatus (reaching inferior turbinate or medial to middle turbinate), III - polyps almost or completely obstructing nasal cavity. Computed tomography of the paranasal sinuses were done for all the patients who had nasal polyps in DNE. The opacification and expansion of involved sinuses were noted. After getting informed written consent the study group were given oral antibiotics for two weeks and oral steroids 30mg prednisolone for 10 days pre operatively. Assessment of blood loss during surgery was calculated by subtracting saline irrigation from the amount of blood collected in the suction apparatus. The duration of surgery was calculated after intubation from the time of infiltration up to the time of anterior nasal packing. The surgical field visibility was graded by Boezaart Vandermerwe grading

RESULT

In this study out of sixty patients, 35(58%) were males and 25(42%) were females. The age distribution in this study is between 14 years and 60 years. In the age group of 14-20 years there are 9 patients out of whom 5 are males and 4 are females. This age group comprises 15% of the study population. In the age group of 21-30 years there are 17 patients out of whom 14 are males and 3 are females. This age group comprises 28% of the study population. In the age group of 31-40 years there are 27 patients out of whom 11 are males and 16 are females. This age group comprises 45% of the study population. In the age group of 41-50 years there are 6 patients out of whom 5 are males and 1 female. This age group comprises 10% of the study population. In the age group of 51-60 years there is only one patient who is a female comprising 2% of study population. Out of 60 patients in the study, 13 had Grade 1 polyps, 33 had Grade 2 polyps and 14 had Grade 3 polyps (Figure.1). Intra operative blood loss was assessed. Out of 60 patients, 13 had 190ml of blood loss, 10 had 200 ml of blood loss, 9 had 180 ml of blood loss, 8 had 170 ml of blood loss, 6 had 210 ml of blood loss, 4 had 160 ml of blood loss, 3 had 150 ml of blood loss, 2 had 155 ml of blood loss, 2 had 180 ml of blood loss and 2 more had 200 ml of blood loss. It is found that most of the patients had blood loss around 170-200ml.The average blood loss was 180ml. Blood loss according to the grades of polyps is shown in table 1. Of the 60 patients in this study, 15 patients were operated in a time period of 80 minutes, 14 were operated in 70 minutes, 11 were operated in 60 minutes, 10 were operated in 90 minutes, 4 were operated in 50 minutes, 2 were operated in 100 minutes, 2 in 120 minutes, 1 operated in 120 minutes, and another one in 140 minutes. The average duration of the surgery was 60 minutes. Per operative visibility was graded according to boezaart vandermerwe grading. Of the 60 patients, 48 patients (80%) were operated with a field visibility of Grade 2, eight patients (13.3%) were operated with a field visibility of Grade 1, four (6.7%) were operated with Grade 3 visibility and no case had Grade 4 visibility (Figure. 2). Out of 60 patients, 44 (73.3%) had Grade A post-operative healing, 11 (18.4%) had Grade B post-operative healing and 5 (8.3%) had Grade C post-operative healing (Table 2).



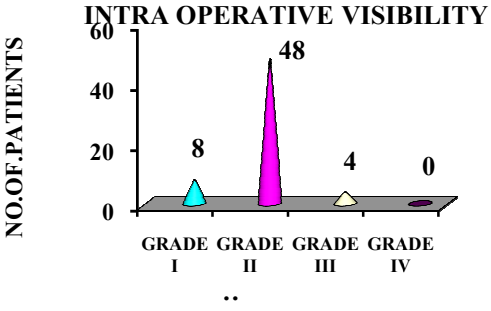


Table 1

Grades of polyps	Average blood loss in ml]
I	170
II	180
III	190

Table 2

	post op healing grading	
Grade	No. of. patient	%
A	44	74
B	11	18
C	2	8

DISCUSSION

Different parameters like, pre operative preparation, duration of surgery, per operative bleeding, visibility of field during surgery and post operative complications[7] were assessed and compared comprehensively. Prior to elective surgery for inflammatory disease, infection should be minimized if possible, to reduce intra operative bleeding[8]. With this basis, antibiotics were given preoperatively to the study group. Eight patients had no preoperative medications but there was no significant change found in relation to blood loss and visibility during surgery[9]. Duration of surgery was also not altered in those 8 cases compared to the cases that had preoperative preparation. In this study the advantage of microdebrider was studied in relation to the duration of surgery[10]. Duration of surgery was significantly reduced in our study group with the average duration of 60 minutes. Using microdebrider in endoscopic sinus surgery has significantly reduced the blood loss during the surgery[11]. The clotted blood may adhere to damaged mucous membrane and can produce middle meatal scarring. Middle meatus collapse is a disaster[12]. It prevents inspection of the frontal, ethmoid, and maxillary sinuses, may obstruct them leading to recurrent or persistent disease. The cause of middle meatus collapse is a weakened middle turbinate. Middle turbinate fracture and removal of too much middle turbinate basal lamella posteriorly result in the collapse[13]. In this study of 60 patients, most of the people had good post-operative healing. In most of the cases there was no synechiae or crusts. In almost all cases, there was no middle meatal collapse. Moriyama and co-workers[14] demonstrated improved functional results in FESS when mucosa was preserved. Krouse and Christmas[15] compared the results using the standard FESS technique and powered shavers. Significantly decreased blood loss, reduced synechiae formation, a reduced ostial occlusion rate, and faster healing occurred in the shaver.

CONCLUSION

To conclude, the advantages of microdebrider in endoscopic sinus surgery in this study includes per operative blood loss was minimal, even for grade III Polyposis. The average duration of surgery was less in this study. The visibility of surgical field was good in the study group. The postoperative period of the study group was good and there was a good mucosal presesvation after the procedure. The use of powered soft tissue shavers or microdebriders in endoscopic sinus surgery offers significant advantages over the use of conventional instrumentation. Increased safety, improved results and decreased bleeding are significant advantages by the use of this instrumentation. It can provide the surgeon with the means to perform more precise and efficient surgery.

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