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COMPARISON BETWEEN MICRODEBRIDER ASSISTED FUNCTIONAL ENDOSCOPIC SINUS SURGEY (FESS) AND FESS USING CONVENTIONAL INSTRUMENTS IN THE SURGICAL MANAGEMENT OF SINO-NASAL POLYPOSIS.

Surgery

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ABSTRACT

since the very first descriptions of surgical techniques aimed at restoring the functional integrity of the paranasal sinuses . a number of surgical techniques as well as different surgical instruments have been introduced attempted at improving the disease eradication as well as minimizing the adverse outcomes of the paranasal sinus surgery. The most important among all of them perhaps was the introduction of powered instruments (microdebrider) which has been subject of a lot of controversies regarding it's efficacy and safety. Our study represents an endeavour to put an end to all such controversies by in depth study of the efficacy as well as the adverse outcomes associated with the use of the powered instruments .

KEYWORDS

Introduction:

Nasal polyposis (NP), consisting of multiple, bilateral nasal polyps, is considered as part of the spectrum of chronic rhinosinusitis[1-3]. The etiology of NP is unknown.The prevalence ranges from about 2 %[4] to 4 %[5]. They predominantly affect adults and are uncommon in children under ten years of age.

Treatment can be either medical and/or surgical. Medical treatment consists of intranasal and systemic corticosteroids[6] while as functional endoscopic sinonasal surgery (FESS) is the mainstay of surgical treatment. Along with the endoscope either conventional Blakesley's forceps or the more technologically advanced powered instruments (microdebrider) or more commonly a combination of both are used. A microdebrider is a type of hand-held surgical cutting tool with a rotary tip. The microdebrider is supposed to be very efficient in controlling intra-op blood loss ,minimizing complications and reducing operation times[7,8] and minimizing post-op crusting, synechiae formation and polyp recurrence[9]. Although, there have been some controversial studies regarding the complications [10,11]. On the other hand the conventional instruments like Blakesley's forceps may cause tearing and stripping of the mucosa and may expose the underlying bone[12].

Aims and objectives:

to compare (a) operative times and intraoperative blood losses on either side and (b) post operative symptom relief, crusting, synechiae formation and polyp recurrence.

Materials and methods:

our study was a prospective study that was carried out in the department of ENT ,Government Medical College, Srinagar from march 2015 to September 2016. A total of 27 patients were operated , among them 20 were males and 7 were females. Only adult patients with bilateral polyps were included. Patients at the extremes of age , those undergoing revision surgery ,those having acute upper respiratotry tract infections, and those with other concomitant metabolic disorders were excluded.

In every patient one side was operated using only conventional instruments while as other side was operated with the help of a micodebrider, therefore, the patient himself/herself served as his/her control. Blood losses were estimated using gravimetric methods and symptom scoring was done using a visual analogue scale from 0 to 10 cm and results compared for each group (conventional vs microdebrider) on a *t*-test.

Results:

(a).The microderbrider resulted in significantly lower operative times (table 1). The difference was more pronounced in higher polyp grades (fig. 1).

Table 1

Average time (min) taken on the debrider side	Average time (min) taken on the 'conventional only' side
67.4 (16)	80.6(18)

$p = 0.003$

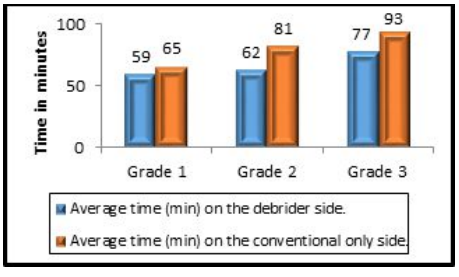

Fig.1. Graph comparing the mean operative times w.r.t. the polyp grade.

(b). The microdebrider group also showed lower intaoperative blood losses although statistically the results were insignificant (table 2). The debrider didn't seem to favour any particular polyp grade (fig. 2).

Table 2

Average blood loss (ml) on the debrider side	Average blood loss (ml) on the 'conventional only' side
81 (34)	94 (32)

$p = 0.15$

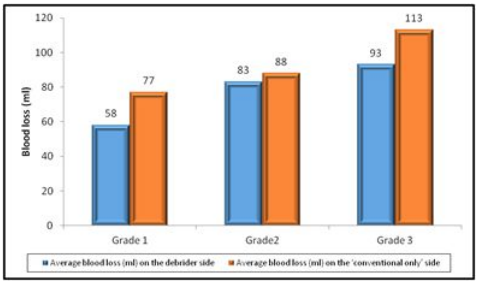

Fig.2. Graph comparing average blood losses w.r.t. the polyp grades.

©. Nasal obstruction: The microdebrider group showed marginally better mean VAS scores at both 8 weeks and 6 months post-op (figs. 3 &4).

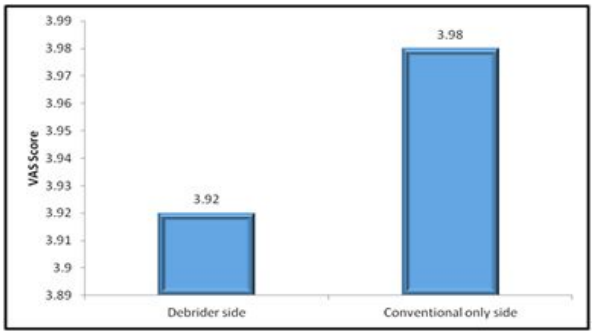

Fig 3. Graph showing nasal obstruction at 8 weeks post-op.

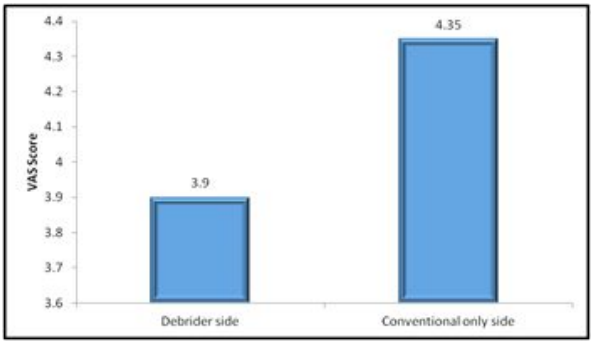

Fig 4 . graph showing nasal obstruction at 6 months post-op.

(d) Facial pain : At 8 weeks post-op debrider side seemed to fare better, although the results were insignificant (fig.5).

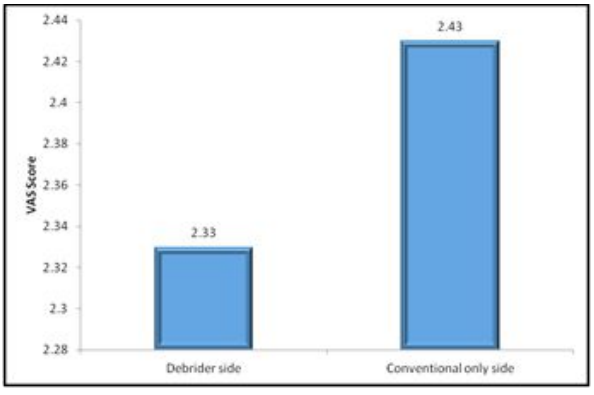

Fig 5. Graph comparing the severity of the facial pain on the debrider side with that on the conventional only side at 8 weeks postoperatively.

The conventional only side fared better at 6 months, although, the results were insignificant again (fig. 6)

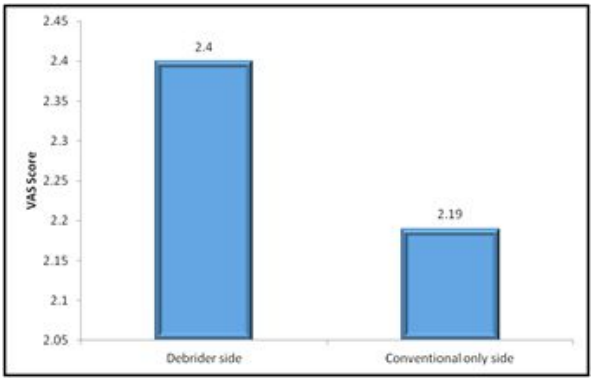

Fig 6. Graph comparing the severity of the facial pain on the debrider side with that on the conventional only side at 6 months postoperatively.

(e) Excessive crusting of the sino-nasal cavity was noted in both groups at 8 weeks post-op as shown in table 3, however debrider fared better (6 nasal cavities compared to 11).

Table 3

Polyp grade	No. of cases	
	Debrider group	'Conventional only' group
Grade 1	0	2
Grade 2	2	2
Grade 3	4	7
Total	6	11

(f) Three nasal cavities had synechiae formation among the debrider sides as compared to five among the conventional only sides (table 4) at 6 months.

Table 4

Polyp grade	No. of cases	
	Debrider side	'Conventional only' side
Grade 1	0	1
Grade 2	1	1
Grade 3	2	3
Total	3	5

(g)Although all of the procedures passed un-eventfully, two patients developed delayed epistaxis after two weeks of surgery and one among them required blood transfusion and further exploration and hemostasis under general anaesthesia.

Table 5

Intra-op complications	Immediate post-op complications	Delayed post-op complications
None	None	2 patients developed delayed haemorrhages.

(g).None of the patients was detected with recurrent polyposis within the follow-up period of six months of surgery on either side.

Disscusion;

The microdebrider is a cylindrical, electrically powered shaver supplied with continuous suction. It precisely resects tissues minimising inadvertent tissue trauma and stripping. This is paramount in avoiding excessive scarring and resultant post-operative complications. In contrast, the blakesly forceps traditionally used in endonasal sinus surgery may cause an undue amount of trauma by tearing and stripping normal mucosa and exposing bone [13]. The limitations of microdebrider are that the tactile feedback component is markedly diminished especially during soft tissue removal.

Setliff and Parsons (1994) [14], who introduced microdebrider for nasal surgery, observed limited blood loss, accelerated healing time, reduced synechiae formation and decreased middle turbinate trauma. Bernstein et al. (1998) [13] presented 40 cases of endoscopic sinus surgery performed with the microdebrider showing rapid mucosal healing, minimal crust formation and a low incidence of synechiae formation,results of our study are consistent with these results.

Sauer et al. (2007) [15] presented a double-blind randomised study on 50 patients comparing the microdebrider and standard instruments in endoscopic sinus surgery. Krouse and Christmas (1996)[16]reported a non-randomised non blinded study of 250 patients who underwent microdebrider assisted surgery and compared them with 225 patients who had undergone traditional endoscopic surgery. They found that surgical bleeding was reduced by more than half in the microdebrider group.our study also shows reduced intra operative bleeding in microdebrider side.

Conclusion:

The microdebrider resulted in significantly lower operative times (esp. in extensive polyposis) and also showed better results when intraoperative bleeding was compared (although statistically insignificant). Microdebrider resulted in marginally better postoperative mucosal healing. The incidence of postoperative synechiae formation was also less in the microdebrider group. Symptoms in general improved after surgery and although the microdebrider group seemed to fare better the results were again

statistically insignificant. We did not encounter any major complications on either side except for two instances of delayed epistaxis which could not be attributed to any group directly.

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