Comparative Evaluation of Middle Meatus Antrostomy with or Without Partial Middle Turbinectomy

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Abstract A considerable controversy surrounds the advisability and efficacy of middle turbinate resection in endoscopic sinus surgery. Some are in favor of middle turbinate preservation considering it to be important anatomic and physiological structure and others advocate middle turbinate resection as it improves nasal air flow and decreases synechiae formation. So a study was undertaken to evaluate the efficacy of middle turbinate resection in patients of chronic sinusitis undergoing Functional Endoscopic Sinus Surgery (FESS). 40 patients of chronic sinusitis were selected and divided into 2 groups, group I undergoing FESS with middle turbinate preservation and group II undergoing FESS along with middle turbinate resection. Final results were recorded 6 months after the operative procedure. 50% patients had relief in nasal obstruction in group I as compared to 88% in group II. Postoperative synechiae formation was seen in five patients in group I and in one patient in group II.

Keywords Functional endoscopic sinus surgery · Middle turbinate preservation · Middle turbinate resection · Middle meatus antrostomy

Introduction

The middle turbinate is an important landmark in endoscopic sinus surgery and its management serves as a point of

controversy. Today, there are two schools of opinion, largely based on surgeon's training. There are those who favor anterior middle turbinate preservation (MTP) [1–3] and others who practice total or partial middle turbinate resection (MTR) [4–6]. Turbinate preservationists think that the middle turbinate is an important anatomic and physiologic structure and the unnecessary resection increases complications. Those who believe in conservative resection think that the benefits of improved visualization and decreased risk of turbinate lateralization outweigh the preservationists concern. However, there is general agreement that patients with concha bullosa as well as paradoxical curvature of middle turbinate are candidates for resection.

The anterior part of middle turbinate, lying medial to osteomeatal complex, may exhibit anatomic deformity and mucosal hyperactivity, causing restriction to sinus ventilation. After surgery of osteomeatal complex, adhesions or synechiae formation between the middle turbinate and lateral nasal wall is common complication [7, 8] and may lead to restenosis of region and recurrent disease.

As there is difference of opinion whether anterior part of middle turbinate should be resected or not as a part of Functional Endoscopic Sinus Surgery (FESS), the following study was undertaken.

Materials and Methods

The present study was conducted in the Department of Otorhinolaryngology, Pt. B.D. Sharma, Postgraduate Institute of Medical Sciences, Rohtak. A total of 40 patients between the ages of 15–50 years having symptoms and signs of chronic maxillary sinusitis with CT scan PNS showing disease in maxillary sinus and osteomeatal complex were selected.

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Patients having allergic symptoms, mass in nasal cavity, DNS, concha bullosa were excluded from the study. The selected patients were randomly divided into two groups of 20 patients each.

Group I ($n = 20$) underwent MMA only.

Group II ($n = 20$) underwent MMA with partial middle turbinate resection.

Patients were taken up for the surgery under local anesthesia after the routine investigations.

In group I patients, only uncinectomy and middle meatus antrostomy was done. In-group II patients, endoscopic partial middle turbinectomy was accomplished before uncinectomy and middle meatus antrostomy. Turbinate scissors or through cut forceps were used to resect approximately anterior 1/3rd of middle turbinate. At the time of discharge from the hospital, the patients were given systemic antibiotics for 10 days along with oral decongestants, saline nasal drops, alkaline nasal douching and steroid nasal spray. Patients were advised follow up after 1 week, 3 weeks, 6 weeks and 6 months. Subjective assessment for symptomatic improvement was done and objective results were assessed by check endoscopy. The results were then compiled.

Observations

The findings in 40 cases of chronic sinusitis were recorded. It was observed that the age of patients in the study ranged from 15 to 55 years with the most common age affected being 15–33 years (77.5%).

The males were more commonly affected than females, the ratio being 2.1:1.

Nasal obstruction was most common symptom in both groups being 70% in Group I and 85% in group II followed by postnasal drip (Group I 65%, Group II 70%), rhinorrhoea (Group I 55%, Group II 60%), headache (Group I 45%, Group II 70%) and sneezing (Group I 50%, Group II 40%).

All the patients were subjected to CT scan paranasal sinuses and scoring was given as per Modified Lund system [9]. According to it, Scoring is done as 0 (no abnormality), 1 (partial opacification) or 2 (total opacification) for each sinus. The osteomeatal complex is scored as 0 (not occluded) or 2 (occluded). The scoring of both group I and group II are given in Table 1.

In group I only uncinectomy and middle meatus antrostomy was done and group II middle turbinate resection was done along with uncinectomy and middle meatus antrostomy. No complications were seen peroperatively. Patients were called after 1 week and endoscopic examination and suction was done. Final evaluation was

Table 1 CT Scoring as per Modified Lund System

Score range	No. of patients	
	Group I	Group II
4	10	13
3	8	7
2	1	0
1	1	0

done at 6 months subjectively and objectively. The results are tabulated in Tables 2 and 3.

Discussion

Resection of middle turbinate remains a source of considerable debate and controversy in the surgical management of sinonasal disease. Despite the volume of literature both supporting and disparaging the removal of middle turbinate, objective evidence either favoring or discouraging the procedure remains sparse [10].

In group I headache and nasal obstruction were relieved in 56 and 50% patients respectively as compared to 86 and 88% patients in-group II. This is in accordance to Morganstein and Krieger, who reported the efficacy of middle turbinectomy for improving the nasal airway and relieving headache associated with middle turbinate pathology and good to excellent results with no long term adverse sequelae including crusting, drying or infection [6]. Kennedy et al. studied that partial middle turbinectomy greatly improves nasal airflow and 95% of his patients felt relief in nasal obstruction after FESS [11]. The study of Toffel et al. is also in congruence with our study who stated that partial middle turbinectomy relieved nasal obstruction in 98% of patients [12].

In our study, 75% of patients had patent MMA in group I and this number increased to 90% in-group II. Postoperatively only 1 patient had synechiae formation in group II as compared to 5 patients in group I. This may be due to the fact that MTR prevents lateralization of turbinate over antrostomy site and thus decreases the synechiae formation. Similar findings were observed by LaMear et al. [13] Beidlingmaier [5], and Ramdan & Allen [8] who all concluded that MTR improves nasal patency and decreases prevalence rate of synechiae formation. The practice of middle turbinate resection has been condemned by some authors due to the increased incidence of postoperative epistaxis [14]. But we did not encounter any such problem.

Thus it can be concluded that partial middle turbinate resection during FESS has advantage over middle turbinate preservation for symptomatic relief, middle meatus

Table 2 Subjective assessment at 6 months

Sr. no.	Improvement in symptoms	Group I		Group II	
		No. of patients having improvement	%	No. of patients having improvement	%
1.	Nasal obstruction	7/14	50	15/17	88
2.	Rhinorrhoea	7/11	64	8/12	67
3.	Headache	5/9	56	12/14	86
4.	Post nasal drip	10/13	77	13/14	93
5.	Sneezing	1/10	10	2/8	25

Table 3 Objective assessment at 6 months

Sr. no.	Endoscopic findings	Group I		Group II	
		No. of patients	%	No. of patients	%
1	Patency of MMA	15/20	75	18/20	90
2	Synechiae	5/20	25	1/20	5

antroscopy patency and it also lowers the incidence of synechiae formation.

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