Research Paper

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A Comparative Study of Middle Meatal Antrostomy and Inferior Meatal Through An Endoscopic Approach in Chronic Maxillary Sinusitis.

MEDICAL SCIENCE

KEYWORDS : Maxillary sinusitis,Surgical procedures,Endoscopy,treatment outcome.

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ABSTRACT

Objectives : Maxillary sinusitis is most often occurring common aliment in ENT out patient department. Since the introduction of FESS, Inferior meatal antrostomy as a procedure has taken back seat due to apprehension that it could tamper with the normal mucociliary mechanism. Hence this study was done to clinically evaluate efficacy of middle meatal antrostomy, compared to inferior meatal antrostomy in chronic maxillary sinusitis. Methods : 60 patient aged between 20-50 yrs with chronic maxillary sinusitis who fulfilled the inclusion criteria were sequentially randomized into 2 groups who either underwent middle meatal antrostomy or inferior meatal antrostomy. Patients were followed up regularly at 1st month, 6th month and 1 year. In each visit, data was recorded in a proforma regarding the condition of antrostomy, patency, complications and symptoms scores. Results : Significant reduction in the severity of individual symptoms by middle meatal antrostomy was noted compared to inferior meatal antrostomy was noted (P<o.o1). symptom score decreased from baseline mean by 99-100% in MMA compared to 90-91% in IMA group.Long term patency of maxillary ostium was noted in group I than group II. Conclusion : MMA is superior in relieving symptoms compared to IMA. Intra and post operative morbidity was noted to be significantly minimum with MMA procedure. Recurrence of original symptoms as well as damage of mucosa is negligible in MMA.

Introduction :

Prevalence of sinusitis is on the rise. Approximately 33 million cases of chronic sinusitis are reported annually to the centre of disease control and prevention in USA[1]. Chronic maxillary sinusitis may be due to infection, allergy, or autoimmune disorders. Symptoms include combination of nasal congestion, thick green / yellow discharge, headache, general malaise, facial fullness and halitosis, lasting longer than 3 months. Most of these cases can be managed with medical line of treatment with antibiotics, decongestants and antihistamines. In those who do not respond to medical line of treatment given for 3 weeks and 3-4 times of antral wash, surgery is indicated. Since the introduction of functional endoscopic sinus surgery(FESS),inferior meatal antrostomy(IMA) as a procedure has taken back seat due to apprehension that it is an 'unphysiological' operation which could tamper with the normal mucociliary mechanism and FESS restores normal mucociliary clearance pathway thus having a better outcome. Hence this study was done to clinically evaluate efficacy of middle meatal antrostomy(MMA) compared to IMA in chronic maxillary sinusitis.

Materials and Methods : For this study 60 patients with inclusion criteria- 1) Patient with maxillary sinusitis not responding to medical line of treatment for 3 weeks or antral wash 3-4 times. 2) Age group 20-50 yrs. 3) Both sexes. 4) patient willing to give informed consent for taking part in the study were choosen among out patients, attending department of ENT, KIMS, Bangalore. Patients were evaluated by means of proper history taking with the help of proforma, clinical examination, and relevant lab investigations. Patients with 3 or more of the following symptoms- Nasal obstruction, postnasal drip, nasal discharge, headache, facial pain, toothache, halitosis, poor smell were selected. Patients were excluded from the study if they had any of the following. 1) Sinonasal polyposis. 2) Allergic rhinitis and deviated nasal septum. 3) Benign and malignant conditions of nose. 4) Patients with acute symptoms, pregnant, lactating and with medical contraindications. Patients were sequentially randomised into 2 groups- Group I (30 patients) who underwent MMA and group II (30 patients) who underwent IMA. MMA: Here uncinectomy is done. The natural maxillary ostium is identified in the middle meatus and widened using back biting forceps, with clearance of contents of maxillary sinus.



Fig.1- showing middle meatal antrostomy.

IMA: The lateral nasal wall is perforated with a curette about 1cm posterior to Hasner's valve in the inferior meatus. The opening is then enlarged with the help of antral perforator and burr, and the contents of the maxillary sinus is suctioned out.

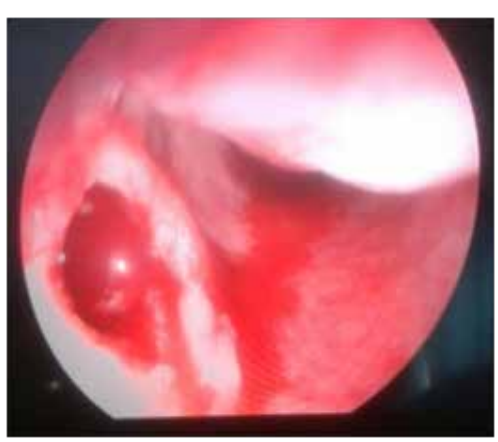


Fig.2- showing inferior meatal antrostomy.

Post surgery, every patient was asked to come for regular follow up at the end of 1st month, 6th month and 1 year**.** Data was recorded in a proforma regarding condition of antrostomy, patency and complications if any, decrease in symptoms and recurrence, if any.

Results :

Mean age of patients in group I was 27.64 and group II was 31.68. Both the groups had statistically same mean age group with P=0.187, there were 16 males and 9 females in group I and 17 males and 8 females in group II. The duration of illness is statistically similar between the two groups with P=0.134.

Both treatment groups had comparable mean total symptoms score at baseline indicating, similar severity of symptoms among all patients at the start of study. There was 100% change of median symptoms score in group I compared to 91.67% in group II post treatment. Nasal obstruction was present in all subjects included in the study in both groups.MMA was effective in relieving 27 patients (90%) as compared to IMA in 20 patients(66.66%).

Post nasal drip was present in all the patients in both groups. 23patients (76.66%) in group I compared to 17 patients (56.66%) in group II were relieved of nasal obstruction. Nasal discharge was present in all the patients with relief of symptoms in 96.66% of patients who had underwent MMA compared to 46.66% with IMA. Headache was present in 23 patients (76.66%) in group I and 29 patients (96.60%) in group II. IMA was effective in relieving this symptom in all patients compared to relief of 22 patients (95.65%) with MMA. In other symptoms like facial pain, poor smell, toothache and in general both the procedures are equally effective.

Table 1- showing effect of treatment on individual symptoms in Group I.

Symptoms	Group I- MMA		
	Before treatment	After treatment	P value
Nasal obstruction	30 (100.0%)	3 (10.0%)	<0.01
Post nasal drip	30 (100.0%)	7 (23.33%)	<0.01
Nasal discharge	30 (100.0%)	1 (3.33%)	<0.01
Head ache	23 (76.66%)	1 (3.33%)	<0.01
Facial pain	27 (90%)	-	<0.01
Poor smell	18 (60%)	-	0.007
Tooth ache	10 (33.33%)	-	<0.01
In general	10 (33.33%)	-	0.001

Table 2- showing effect of treatment on individual symptoms in Group II.

Symptoms	Group II- IMA		
	Before treatment	After treatment	P value
Nasal obstruction	30 (100.0%)	10 (33.33%)	0.001
Post nasal drip	30 (100.0%)	13 (43.33%)	0.007
Nasal discharge	30 (100.0%)	16 (53.33%)	0.023
Head ache	29 (96.66%)	-	<0.01
Facial pain	26 (86.66%)	-	<0.01
Poor smell	19 (63.33%)	-	<0.01
Tooth ache	16 (53.33%)	-	<0.01
In general	13 (43.33%)	-	<0.01

At the end of the study it was observed that in group I patients with MMA, out of 30 patients, 27(90%) had normal patency and 3 (10%) narrowed ostium. In IMA 20(66.66%) cases had normal patency and 10(33.33%) not patent, out of that 8(80%) were closed completely and 2(20%) narrowed. Long term patency of maxillary ostium was noted in group I who underwent MMA.Non of the patients in MMA group required surgery where as 3 patients underwent revision surgery during the 1st year of follow-up. Complications were noted in IMA group with haemorrhage during surgery in 2 patients and neuralgia in 1 patient.

Discussion :

Ostial obstruction plays a major factor in the pathogenesis of sinusitis. Functional endoscopic sinus surgery is aimed at clearing the diseases from the "key areas" of the anterior ethmoid and osteomeatal complex and restoring normal mucociliary clearance pathway[2]. Whereas importance of dependent drainage of the maxillary sinus has been argued in favour of inferior meatal antrostomy[3]. Kennedy et al[4] noted that surgical procedures performed to improve maxillary sinusitis by inferior meatal antrostomy leave residual disease in the osteomeatal area and may result in persistent mucociliary obstruction.

Success rates of around 90% have been reported by Lund et al[5] using inferior meatal antrostomy.Similar success rate were also reported in FESS studies by Kennady et al[4], Rice et al[6] and Stammberger et al[2]. Maran et al, in their comparative study, concluded that FESS group did better on the symptoms of nasal stuffiness.

Arnes et al[7] found no difference in their trial of inferior verses middle meatal antrostomy. In Fairley's study, a middle meatal antrostomy fashioned by FESS was also not shown to be superior to an inferior meatal antrostomy formed by traditional sinus surgery techniques[8].In our study, there was significant reduction in the severity of individual symptoms by MMA as compared to IMA.Symptom score decreased from baseline mean by 99-100% in MMA as compared to 90-91% in IMA group. In group I patients with MMA, out of 30 patients, 27(90%) had normal patency and 3 (10%) narrowed ostium. In IMA 20(66.66%) cases had normal patency and 10(33.33%) not patent, out of that 8(80%) were closed completely and 2(20%) narrowed. Long term patency of maxillary ostium was noted in group I who underwent MMA.This goes in favour of a study done by Zuo B et al[9] which showed MMA patency rate was 86.7% and closure rate of 13.3% compared to patency rate of 54.7% and 45.3% of closure in IMA after 3-15 months of follow-up.Hence, we conclude that in our study, MMA is superior in relieving symptoms compared to IMA and with less recurrence rate as well as damage to the nasal mucosa.

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