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ROLE OF FUNCTIONAL ENDOSCOPIC SINUS SURGERY IN THE MANAGEMENT OF CHRONIC BACTERIAL SINUSITIS

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ABSTRACT Chronic bacterial sinusitis is one of the common complaints of Otorhinology clinics. In adults maxillary sinuses are the most commonly affected with acute and chronic sinusitis. We present a series of 50 cases of chronic bacterial sinusitis admitted in the department of ENT, Govt General Hospital, Kurnool, from December 2014 to August 2016.All cases were thoroughly investiged with CT Paranasal sinuses, Diagnostic Nasal Endoscopy and CBP. Functional Endoscopic Sinus Surgery was done in all cases, majority being Middle Meatal Antrostomy, followed by opening of Anterior and Posterior Ethmoids. Sphenoid and frontal Sinusotomies and Septoplasty, in selected cases of chronic sinusitis who presented with deviated nasal septum. Endoscopic Sinus Surgery is less traumatic to patients, intraoperative complications are fewer, with shorter hospital stays, faster patient recovery, rapid improvement in symptom profile, other associated pathologies like DNS can be corrected at the time of doing FESS.

KEYWORDS : Chronic bacterial sinusitis, Functional Endoscopic Sinus Surgery, Middle meatal Antrostomy, Septoplasty.

INTRODUCTION:

Chronic Bacterial Sinusitis is one of the common complaints of otorhinology clinics. In adults maxillary sinuses are the most commonly affected with acute and chronic sinusitis. Most cases are managed with medical management, if medical management fails , Endoscopic Sinus Surgery is needed to treat chronic sinusitis. FESS is directly related to patency of natural ostium of maxillary sinus and clearance of disease from Ethmoids, sphenoid and Frontal sinus which is essential for drainage and ventilation of sinus.

Endoscopic Sinus Surgery is preferred because:

1. Mucociliary clearance is towards natural Ostium.
2. Ease of Approach
3. Long term patency of Ostuim
4. Infection subsides once mucocililary clearance is established.

MATERIALS AND METHODS:

Study conducted in cases admitted in department of ENT, Govt. General hospital, Kurnool, from December 2014 to August 2016.This is the Prospective study of Role of Functional Endoscopic Sinus Surgery in the management of Chronic Bacterial Sinusitis. We present a series of 50 cases illustrating the variable presentation, diagnosis and management. FESS was done in all cases. Cases were followed up with Nasal Endoscopy and Radiological investigations at the end of 2 weeks and 3 months interval.

Surgical outcomes are measured in terms of subjective improvement of symptoms clinically, diagnostic nasal endoscopy findings and radiological findings postoperatively.

INCLUSION CRITERIA:

1. Patients of ages 20-60 years of both sexes
2. Patients with chronic rhinosinusitis refractory to medical treatment.

EXCLUSION CRITERIA:

1. Patients with systemic diseases like cardiovascular diseases, renal, bleeding disorders.
2. Patients with congenital defects of mucociliary dysfunction.
3. Pregnant women.
4. Patients with granulomatous diseases of nose ,atrophic rhinitis.

PREOP. ASESSMENT

Examination of ear, nose and throat were performed in all cases. Preop, CT Paranasal Sinuses was done followed by Preop. Diagnostic Nasal endoscopy.

Patients were admitted the night before and surgery was done under LA in all cases except in cases with Frontal and Sphenoid Sinusitis. These cases were done in GA. Premedication with 1 tab alprax 5mg and 1 tab Atenolol 25mg night before surgery, followed by 1 cc of pentozocine and 1 cc promethazine given intramuscularly 30 min.before surgery.

PROCEDURE: All patients have undergone standard surgical Endoscopic Middle Meatal Antrostomy with opening of Ethmoids, Frontal and Sphenoid Sinuses. Surgery was done under LA and GA in children and non cooperative patients.

In supine positon with head turned slighty to right. The patient is sedated and nasal cavity is sprayed with 4% xylocaine with adrenaline followed by packing the nose with ribbon gauze soaked in same solution. When draping the patient, eyes are kept uncovered. Before starting the surgery a through endoscopic examination of nasal cavity is done. A 0 degree endoscope is used for this purpose of visualizing ostium. Intially the scope is introduced between the septum and inferior turbinate and advanced, inspecting the inferior meatus, next between nasal septum and middle turbinate till posterior choana is reached and the Eustachian tube opening and nasopharynx are visualized on both sides.

With the appropriate instruments under the guidance of 30 or 70 degree nasal endoscope, some procedures can be performed inside the maxillary sinus through its natural or enlarged ostium. These procedures may include removal of an isolated large symptomatic cyst or pedunculated polyp or evacuation of retained secretions. The anterior wall of sphenoid can be visualized by passing the scopes in between middle turbinate and septum. The lateral wall of nose is infiltrated with 2%xylocaine with 1 in 200000 adrenaline. The infiltration is given at various points over the uncinate process and middle turbinate just above the inferior turbinate. The uncinate process is now cut with backbiting forceps and removed with twisting movement with Blekesley forceps, thus uncapping the infundibulum. The bulla ethmoidalis can now be visualized and ethmoial air cells are accessible.

Uncinate remnants should be identified and removed, pressure aganist the frontanelles may make bubbles appear through the natural ostium

and thereby reveal its location. When locating the ostium of maxillary sinus, it is best to palpate along insertion of the inferior turbinate into lateral nasal wall. This prevents accidental perforation of the orbit.

MAXILLARY SINUS OSTIOTOMY:

If there is pathology in maxillary sinus the ostium should be identified and entered with upward biting forceps, it provides adequate drainage. This can be done simultaneously while operating on the bulla ethmoidalis and middle ethmoidal cells. Here dissection should be done only just above the attachment of inferior turbinate to avoid damage to the lamina papyracea and orbital contents, that are situated at slightly higher level. The antrostomy window should be posterior to the anterior end of the middle turbinate to avoid injury to nasolacrimal duct.

ETHMOIDECTOMY:

In Anterior ethmoidetomy bulla is opened by gently inserting Freer's elevator or straight closed blakesley in its anterior face inferomedially. The lumen of bulla is identified and anterior and medial walls are removed. The supra bullar cells are then removed by using either debrider or tru-cut forceps to complete anterior ethmoidectomy.

In posterior ethmoidectomy, the ground lamella should be visualized and confirmed by following the middle turbinate backwards to the point where it turns laterally into lamina papyracea.The ground lamella should be perforated medially and inferiorly. Posterior ethmoidal cells are cleared till the lamina laterally, skull base superiorly and superior turbinate medially.

FRONTAL SINUSOTOMY:

Using 0^0 endoscope, initially uncinectomy is done. The agger nasi cell encountered, is removed using curette. An angled 45^0or 70^0 is used when dissecting frontal recess. Once the frontal sinus is visualized the frontal sinus may be flushed with saline.

SPHENOIDAL SINUSOTOMY:

Sphenoid sinus is entered medially adjacent to septum, approximately 1.5 cm above the choana, approximately one-third of the way up the anterior sphenoid wall, 7cm and 30^0 from the anterior nasal spine. This approach is more physiological as it deals with sinus ostium with minimum disruption of ostiomeatal complex.

POST OPERATIVE CARE:

After surgery nose is packed with soframycin and the pack is removed after 24 hrs, patients should be kept on antibiotics and antihistamines. Using nasal suction, nasal secretions are cleared to prevent crust formation and synechiae between the turbinate and lateral nasal wall. Saline nasal douching can be done by patient himself to prevent crust formation and synechiae between septum and turbinates. Nasal Endoscopy and radiological investigations are carried out at the end of 2 weeks and 3 months interval.

RESULTS:

Total 50 cases were done during a period from December 2014 to August 2016, among them 20-40 years constituted for about 80% of study.28(56%) were male and 22 (44%) were females.

Middle Meatal antrostomy was done in all 50 cases(100%), Ethmoidectomy both anterior and posterior were done in 15 cases(30%),Frontal sinusotomy was done in 5 cases (10%), sphenoidotomy in 2 cases(4%) and both FESS and septoplasty in 10 cases(20%).

Success rates were evaluated in terms of relief of signs and symptoms pre and postoperatively such as nasal obstruction(preop 43 patients, postop nasal obstruction relieved in 40 patients) ,nasal discharge (preop 41 patients, postop nasal discharge relieved in 38 patients), headache (preop 20 patients, postop headache relieved in 18 patients) facial pain (preop facial pain 35 patients, postop facial pain relieved in 30 patients). Staphlococcus aureus constitutes about 44% followed by Escherichia coli (20%) and streptococcus pneumoniae(12%).Patients were followed up with nasal endoscopy and x ray paranasal sinuses 2^{nd} week and 12^{th} week.

The above results shows that following Endoscopic Sinus Surgery techniques like Middle Meatal Antrostomy, Ethmoidectomy, Frontal and Sphenoid sinusotomies, we can achieve very good results in terms of relief of signs and symptoms. Persistence of symptoms and signs in some patients are due to irregular follow up and poor patient self care.

TABLE 1 SHOWING SIGNS AND SYMPTOMS

SIGNS AND SYMPTOMS	NO. OF PATIENTS	PERCENTAGE
Nasal obstruction	43	86%
Nasal discharge	41	82%
Facial pain	35	70%
Headache	20	40%
Earache	7	14%
Dental pain	3	6%
Hyposmia	7	14%
Halitosis	4	8%

TABLE 2: SURGERIES DONE

PROCEDURES PERFORMED	NO OF PATIENTS	PERCENTAGE
MMA ONLY	35	70%
MMA+ETHMOIDECTOMY	10	20%
MMA+ETHMOIDECTOMY+FRONTAL SINUSOTOMY	3	6%
MMA+ETHMOIDECTOMY+FRONTAL SINUSOTOMY+SPHENOIDOTOMY	2	4%
FESS+SEPTOPLASTY	10	20%

DISCUSSION:

The surgical management of Chronic Sinusitis has evolved tremendously from use of various different techniques to a standard procedure aimed at good results. FESS came into existence through pioneering work of Dr.Messerklinger and Dr.Stammberger[1].

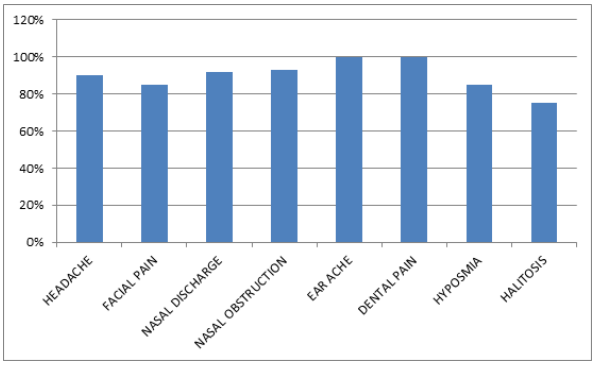
Present study comprises of about 50 patients and mainly focussed on interaction between symptom profile before and after FESS. In present study average hospital stay was 1.5 days there by reducing burden on the health system. In a study by Xavier duration of hospital stay was from 1 to 2 days including operative day following endoscopic sinus surgery[2] In a study by Albu average hospital stay was 2 days which correlated with our study. In present study 80% of patients are operated under local anaesthesia. In a study by K.Joe Jacob et al all patients were operated under local anaesthesia which correlated with our study[3]. However, in a study by Nasser A Fageeh et al[4] 90% of patients were operated in general anaesthesia.

Post operative Endoscopic Ostium patency rate in present study is 90% which was 86.7% in Zhan B et al, Han d et al, Liu et al[5] and 98% in Kennedy et al, Zinrich et al, Shaalan et al[6].

Post operative follow up symptoms relief were seen in 93% of patients in our study, while study done by D Schafer et al[7] in 1 in 20 months of follow up 83% were improved, success rate of around 90% were reported by Rice et al,study by Colclasure et al[8] there was 94% improvement in symptom profile, in a retrospective study conducted by Crovette Martinez [9]in maxillary sinusitis treated by FESS 92.3% were cured.

Most common bacteria isolated in present study was gram positive Staphylococcus Aurues (44%),in a study by Itzhak Brook et al[10] Staphlococcus aureus was most common, in a study by Ph.Rombaux,J.Gigi et al[11] in 148 samples among them Staphlococcus aureus was most common

GRAPH 1:POSTOPERATIVE SUBJECTIVE RELIEF OF SYMPTOMS



GRAPH 2:POSTOPERATIVE RELIEF OF MAJOR SYMPTOM PROFILE

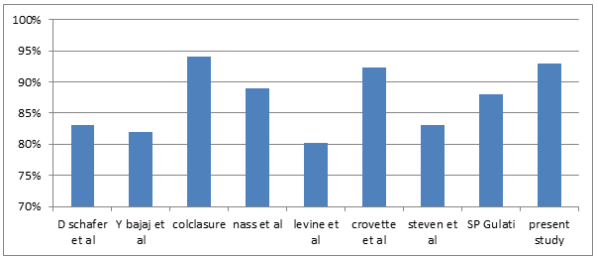
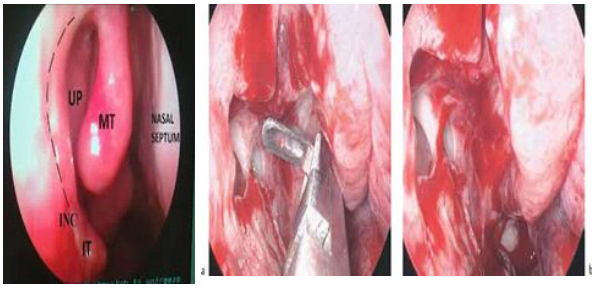


DIAGRAM SHOWING MIDDLE MEATAL ANTROSTOMY



CONCLUSION:

Endoscopic Sinus Surgery is less traumatic to patients ,intraoperative complications are fewer, hospital stays are significantly shorter decreasing the burden on health system on long run, faster patient recovery thereby restricting loss of man hours, rapid improvement in symptom profile, other asscociated pathologies like DNS can also be corrected at the same time of doing FESS.

Finally we can conclude that, FESS is a minimally invasive procedure with less rate of complications and rapid postoperative recovery.

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