



ENDOSCOPIC PRELACRIMAL RECESS APPROACH FOR THE BENIGN MAXILLARY SINUS PATHOLOGIES INVOLVING ANTERO MEDIAL WALL .

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ABSTRACT **INTRODUCTION** – Maxillary sinuses are the largest of paranasal sinuses ,pyramidal in shape ,prelacrimal recess is a concavity in medial and antero superior part of maxillary sinus . endoscopic prelacrimal recess approach is a minimally invasive physiological and functional surgical procedure in treating benign maxillary sinus pathologies like inverted papilloma ,antrochoanal polyp ,chronic rhinosinusitis (pyogenic and fungal) , recurrent sinonasal polyposis, involving antero medial wall with out injury to nasolacrimal duct and inferior turbinate . **AIMS AND OBJECTIVES** – To evaluate post operative treatment outcome and its complications like epiphora and crusting . **MATERIAL AND METHOD** – Institutional based observational study . 40 patients are included . follow up done at 3 weeks and at 3 months . **RESULT** – Most of the patients had no post of complication like epiphora at 3 weeks and 3 months and all patients had no post of complications at 3 weeks . **CONCLUSION** -We concluded that post op treatment outcome of endoscopic pre lacrimal recess approach is more feasible and its complications are also less in treating benign maxillary sinus pathologies .

KEYWORDS : Maxillary sinus (MS), Endoscopic sinus surgery, Prelacrimal recess approach (PLRA) and Nasolacrimal duct(NLD).

INTRODUCTION

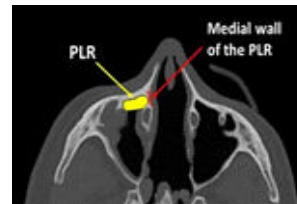
The maxillary sinus (MS), first identified by ancient Egyptians, has been well studied, particularly in relation to its structure, vasculature, and relationship with the dentition.^{1,2} The maxillary sinus begins to form during the 10th week of embryonic development as a result of invagination of ethmoid infundibulum mucosa. The sinus continues to enlarge throughout embryonic development and continues ossification up to the 37th week of gestation. Growth progresses throughout childhood until the maxillary sinus reaches its adult size between 18 and 21 years old.³

Functional endoscopic sinus surgery is the gold standard surgical treatment in patients with chronic rhinosinusitis .It has an 80-90% success rate in primary surgeries⁴ . However success rate drops to 50-70% in revision surgeries. The approach to the severely diseased sinus, especially the maxillary sinus is still controversial .Because of the anatomy of maxillary sinus and characteristics of diseases originating in it, as assessed with multi-angled telescopes, there are still some areas that cannot be viewed and handled⁵. Although a good visualization is provided for complete excision of the lesion, from the view point of minimal invasion, a drawback still exists in both external and intranasal surgical procedures. In conventional endoscopic sinus surgery compromise of the inferior turbinate [IT] and nasolacrimal duct [NLD] is often unavoidable⁶. The intranasal endoscopic prelacrimal recess approach [PLRA] provides a clear view. It enables us to accurately, mini-invade and completely remove benign maxillary sinus lesions. It is a physiological and functional surgery, and has great advantages in treating the diseases of maxillary sinus⁷. Prelacrimal recess is a concavity in medial, anterosuperior part of the maxillary sinus [MS] . It is located in front of eminence of the lacrimal passage on medial sinus wall. Most diseases of the maxillary sinus can be managed by endoscopic sinus surgery, which is used mostly to perform standard middle meatus antrostomy (MMA)⁸.

Nakamaru et al. (2010) introduced the surgical creation of a corridor made by breaking a hole through the anterior part of the medial wall of Maxillary sinus - Prelacrimal Recess, which is usually one of the most difficult positions to manipulate during standard MMA. This surgical corridor can provide an unobstructed view of almost any aspect of the maxillary inner linings⁹ : The Prelacrimal recess (PLRA) approach to the maxillary sinus provides the rhinological surgeon with a technique that allows access to all aspects of the maxillary sinus while preserving the inferior turbinate and nasolacrimal duct¹⁰. The prelacrimal recess approach provides wide access to the entire maxillary sinus, especially the frequently inaccessible anterior wall and medial wall of maxillary sinus which are not amenable to treat by conventional endoscopic sinus surgeries. Its advantage is that it preserves the inferior turbinate (IT) and nasolacrimal duct (NLD) and therefore, is considered less disruptive to nasal physiology than the medial maxillectomy or Denker's procedure¹⁰.

Prelacrimal recess(PLR) :

It is the concavity in medial and antero superior part of the maxillary sinus and located in the front of lacrimal passage on the medial maxillary sinus wall.

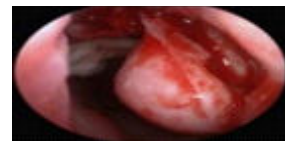


Prelacrimal recess approach(PLRA) :

This is a minimally invasive physiological and functional surgery .And it has the great advantage in treating the benign maxillary sinus pathologies involving antero medial wall.

Surgical steps of Endoscopic Prelacrimal recess approach:

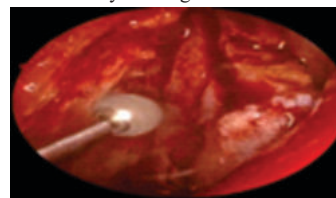
- The procedure was done under general anaesthesia.
- Nasal cavity is examined with nasal endoscope.
- Curved mucosal incision is made on the lateral wall of the nasal cavity at pre lacrimal recess area.



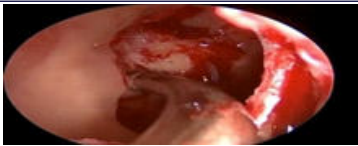
- Then mucoperiosteal flap is elevated.
- Nasolacrimal duct(NLD) is released from its canal.



- After that anteromedial wall of maxillary sinus exposed and pre lacrimal recess widened by Drilling.



- Entry into the maxillary sinus done via pre lacrimal recess area



H) Then the tumor is resected out from the maxillary sinus.
 I) And the NLD mucosal flap is repositioned and incision is closed.

METHODOLOGY

It is a institutional based observational study, conducted from january 2021 to june 2022. We included total 40 patients and the data were analysed by standard statistical methods (software version 25).

Patients of age ≥ 10 years and < 65 years and of any sex were included .We took the patients with presence of maxillary pathologies such as inverted papilloma and other benign maxillary pathologies like antrochoanal polyp, chronic rhino sinusitis (pyogenic and fungal), and patient with history of recurrent sinonasal polyposis and endoscopic nasal surgery in which anterior maxillary remnants are suspected, such as antrochoanal polyp cases, and cases of fungal and pyogenic rhinosinusitis. And patients having no contraindication for surgery under general anesthesia they are taken. We excluded patients of age < 10 years and > 65 years with comorbidities such as uncontrolled diabetes and hypertension, patients with the presence of any aggressive tumor extending out of the maxillary sinus, and patients having suspected malignant vascular tumor and other malignancies in maxillary sinus, and patients having contraindication for general anesthesia and those with Suspicious history of Samter's triad & hereditary disorder ae also excluded.

In pre-operative assessment we checked for the symptoms like nasal obstruction, nasal discharge, post nasal drip, epistaxis, diagnostic nasal endoscopy (DNE) and CECT. During Post operative period follow up done at 3 weeks and 3 months with symptoms- nasal obstruction ,nasal discharge ,post nasal drip, epistaxis and diagnostic nasal endoscopy(DNE) done at 3 weeks and 3 months and CECT done at 3 months.

RESULT AND ANALYSIS

In our study we included total 40 patients range from ≥ 10 years to < 65 years.

Male: Female ratio= 1.5: 1 (16 female and 24 male),. Mean age was 37.2250 ± 12.8452 .

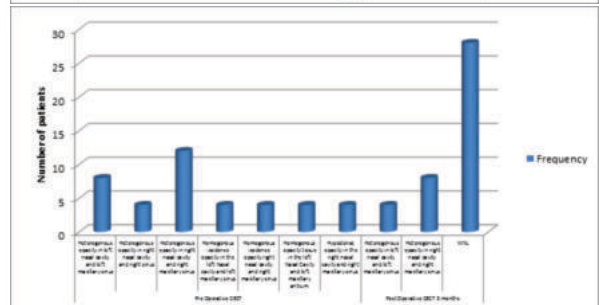
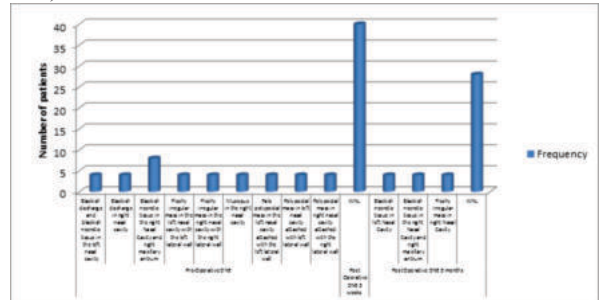
SYMPTOMS: In pre-operative period all the 40(100%) patients had nasal obstruction, 8(20%) patients had epistaxis, 8 patients (20%) had post nasal drip, 32 patients (80%) had nasal discharge but in post-operative period at 3 weeks none of them had nasal obstruction, epistaxis, post nasal drip and nasal discharge but at 3 months only 8(20%) patients had nasal obstruction, 4patients (10%) had epistaxis, none of them had post nasal drip and 4patients (10%) had post nasal discharge.

DNE (Diagnostic Nasal Endoscopy) :Out of 40 patients 8 patients (20%) blackish necrotic tissue in right nasal cavity and right osteomeatal area and 4 patient (10%) with blackish discharge and blackish necrotic tissue in the left nasal cavity, 4 patients (10%) with blackish discharge in right nasal cavity, 4 patients (10%) with fleshy irregular mass in the left nasal cavity attached with the left lateral wall, 4patients (10%) had fleshy irregular mass in the right nasal cavity attached with the right lateral wall, 4patients(10%) with mucopus in the right nasal cavity, 4 patients (10%) with pale polypoidal mass in the left nasal cavity attached with the left lateral wall, 4patients (10%) with polypoidal mass in left nasal cavity attached with the left lateral wall and 4 patients (10%) with polypoidal mass in right nasal cavity attached with the right lateral wall. In post-operative period at 3 weeks all the patients had normal DNE findings (no pathology found). But at 3 months of post-operative period 4 patients (10%) had blackish necrotic tissue in left nasal cavity, 4 patients (10%) had blackish necrotic tissue in the right nasal cavity and right maxillary antrum, 4 patients (10%) had fleshy irregular mass in right nasal cavity and 28 patients (70%) were insignificant (Within normal limit).

CECT : In pre-operative period 12 patients (30%) had heterogenous opacity in the right nasal cavity and right maxillary sinus, 8 patient (20%) had heterogenous opacity in the left nasal cavity and left maxillary sinus, 4 patients (10%) had heterogenous opacity with

calcification in right nasal cavity and right maxillary sinus, 4 patients (10%) had homogenous isodense opacity in left nasal cavity and left maxillary sinus, 4 patients (10%) had homogenous isodense opacity in right nasal cavity and right maxillary sinus, 4 patient (10%) had hypodense opacity in right nasal cavity and right maxillary sinus, 4 patient (10%) had homogenous opacity in left nasal cavity and left maxillary sinus.

In post-operative period at 3 months 8 patient (20%) had heterogenous opacity in the right nasal cavity and right maxillary sinus, 4 patient (10%) had heterogenous opacity in left nasal cavity and left maxillary sinus and 28 patient (70%) no pathology could be seen (Within normal limit).



Post-operative complications (Epiphora and crusting): at 3weeks and 3 months.

Epiphora: 8patient (20%) had at 3weeks but 4 patient had epiphora at 3month of post operative period.

Crusting: At 3 weeks no patients had crusting but at 3 months only 4 patient (10%) had .

DISCUSSION

Lin yh et al(2020)¹¹, treatment outcome of endoscopic prelacrimal approach of total 21 patients taken. Where mean age was - 51.7 ± 14.5 .

In our study- total 40 patients taken and the mean age was- 37.2250 ± 12.8452 .

Kamel b. sammer et al(2020)¹², prelacrimal versus canine fossa approach for anterior maxillary sinus lesions total 40 patients taken 20(PLRA) (gr1) +20(CFA)(gr2) . **in gr-1 :In post operative period** 5% bleeding was seen at 1 week,5% epiphora at 1week, 1months 2 months and 6 months and 40% crusting seen at 1 week.

In our study during post operative period at 3 weeks there was no epistaxis, no crusting ,epiphora present in 20% but at 3 months 10% epistaxis, 10% epiphora and 10% crusting.

Ismael f. wael et al (2019)¹³, endoscopic prelacrimal recess approach for antrochoanal polyp. total 32 patients taken, 16(EMMA)+16(ETPRA), mean follow up at 28.4 months.

In 16(etpra) group –In pre operative period most common symptom nasal obstruction present in 100 % and in post operative period lacrimation was found in 6.25% patients and bleeding in 6.25%.

In our study in pre operative period most common symptom was nasal obstruction (100%). And in post operative period, epiphora was 20% at 3weeks and 10% at 3months, epistaxis was 10% at 3 months.

Yu qian qian et al (2018)¹⁴, out of 71 patients- 20 in PLRA group.

recurrence rate in PLRA group 5%. [at 3 to 10 years post-operative].

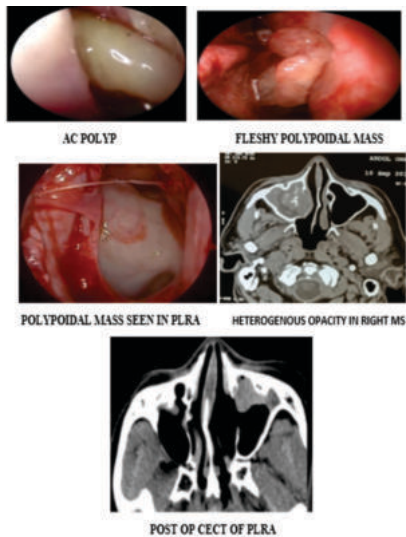
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In our study - on the basis of DNE & CECT findings- recurrence rate 30% (12 patients) at 3 months [post-operative]. [in covid situation –more cases of fungal (mucor) rhinosinusitis]

CONCLUSION

In our study on the basis of symptoms in pre operative period we found that nasal obstruction was present in 100% patients, nasal discharge in 80% patients, 20% patients had epistaxis and 20% had post nasal drip. In post operative period during follow up at 3weeks no symptoms could be seen but at 3 months 20% patient had nasal obstruction , 10% patients had epistaxis and 10% patients had nasal discharge. In post operative period at 3 weeks complications like epiphora was present in 20% patients and at 3 months epiphora was present in 10% patients and 10% patient had crusting .On the basis of DNE and CECT in 70% patients no pathology could be seen in post operative period , so recurrence rate is 30% based on DNE and CECT[in covid situation more cases of fungal (mucor) rhinosinusitis]

ANNEXURE



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