

TRANSNASAL ENDOSCOPIC PRELACRIMAL RECESS APPROACH IN A SURGICAL TREATMENT OF ANTROCHOANAL POLYP

By

Ahmed M. Khalefa, Ahmed S. Gad, Abd El-Rahman Sheta Abd El-Rahman

Otorhinolaryngology, Faculty of Medicine, Al-Azhar University, Cairo

E-Mail: boody_sheta2015@yahoo.com

ABSTRACT

Background: Antrochoanal polyps (ACPs) are benign polypoid lesions arising from the mucosa of the maxillary sinus, through the maxillary sinus ostium with extension into the choana. They represent approximately 4–6% of all nasal polyps in the general population. Antrochoanal polyps are almost always unilateral, although there are few cases of bilateral ACPs in the literature.

Objective: To assess the effectiveness of endoscopic transnasal prelacrimal recess approach (ETPRA) in preventing the recurrence of antrochoanal polyps and evaluate the outcomes and possible complications of prelacrimal recess approach for treatment of antrochoanal polyps.

Patient and Methods: forty patients with antrochoanal polyp underwent surgery with a transnasal endoscopic prelacrimal recess approach. The approach was evaluated for the ability to visualise the origin of the polyp in the maxillary cavity, complications and recurrence of the polyp.

Results: Transnasal prelacrimal recess approach was successful in 80% of the patients (32/40), 80% of patients (32/40) did not encounter epiphora postoperatively, 85% of them (34/40) had no epistaxis, 90% of them (36/40) had no cheek edema. None of them had nasal obstruction, nasal stenosis or adhesions, All of them had the flap healed, and all of them had the inferior turbinate preserved. During the follow-up period (1 year) no recurrence had developed.

Conclusion: Prelacrimal recess approach is a safe procedure which allows for complete removal of the antral part of the antrochoanal polyps to prevent recurrence without major complications.

Keywords: Prelacrimal recess approach, antrochoanal polyp.

INTRODUCTION

Antrochoanal polyps (ACPs) are benign polypoid lesions arising from the maxillary antrum and they extend into the choana. ACPs usually have two components and these are the cystic and solid polypoid parts (*Balikci, 2013*).

They occur more commonly in children and young adults, and they are almost always unilateral. The etiopathogenesis of ACPs is not clear.

Nasal obstruction and nasal discharge are the most common presenting symptoms. Nasal endoscopy and CT are the main diagnostic techniques (*Yaman et al., 2010*).

The treatment in ACPs is essentially surgical, simple polypectomy and a Caldwell Luc procedure were the previously preferred methods for surgically treating ACPs. In recent years, functional endoscopic sinus surgery

(FESS) became the more preferred surgical technique (*Rosenthal et al., 2016*).

Endoscopic sinus surgery with middle meatal antrostomy has become the most popular approach in ACP treatment. This approach, a minimal invasive and effective method, provides complete removal with negligible complications (*Eladl and Elmorsy, 2011*).

However, endoscopic sinus surgery alone may not be sufficient because of the inaccessibility to the stalk of the polyp in the maxillary sinus wall and narrow intranasal structures (nasal cavity, ostia, and middle meatus). The recurrence rate with simple polypectomy is high. To prevent recurrence of ACP, the maxillary stalk of the polyp should be removed (*Freund et al., 2012*).

The transnasal prelacrimal recess approach is a novel surgical technique for the treatment of sinonasal tumors. This approach provides a wide and clear surgical view and allows easy access to the maxillary antrum to resect tumor and adjacent structures together, and therefore minimizes recurrence (*He et al., 2014*).

Prelacrimal recess is a concavity in the medial, anterosuperior part of the maxillary sinus. It is located in front of the eminence of the lacrimal passages on the medial wall of maxillary sinus (*Al Ayadi, Mohammed A., et al., 2015*).

Transnasal prelacrimal recess approach allowed complete resection of the antral part of the antrochoanal polyp tissue without traditional open surgical procedures (*Comoglu et al., 2016*).

PATIENTS AND METHODS

This was a prospective study conducted on forty patients presented to Al-Azhar University Hospitals (Al-Hussien & Sayed Galal) in outpatient clinic was diagnosed to have antrochoanal polyp.

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Inclusion criteria:

1. Patients aged above 6 year old.
2. Primary & recurrent antrochoanal polyp.

Exclusion criteria:

1. Patients aged below 6 years.
2. Patients with uncontrolled systemic diseases or coagulopathy.
3. Patients with sinonasal polyposis.

Preoperatively, all patients were subjected to:

1. Full history taking.
2. Complete otorhinolaryngeal examination including nasal endoscopy.
3. Computed tomography scan for nose and paranasal sinuses coronal and axial views.
4. Routine laboratory investigations including blood sugar, complete blood count, coagulation profile, renal and liver function tests.

Postoperative care and follow up:

Nasal pack is removed after one day. Postoperatively all patients received oral antibiotics for 7 days, alkaline nasal wash for at least one month. All patients were subjected to Complete Otorhinolaryngeal

examination after 1 week of surgery and then every week for one month then every month for one year. Postoperative follow up is done for one year including nasal endoscopy and CT scan.

Statistical analysis:

Recorded data were analyzed using the statistical package for social sciences, version 20.0 (SPSS Inc., Chicago, Illinois, USA). Quantitative data were expressed as mean± standard deviation (SD) and range. Qualitative data were expressed as

frequency and percentage. The following tests were done:

- Independent-samples t-test of significance was used when comparing between two means.
- Paired sample t-test of significance was used when comparing between related samples.
- Chi-square (x2) test of significance was used in order to compare proportions between qualitative parameters.

RESULTS

This study included 40 patients with antrochoanal polyps presented to Al-Azhar university Hospitals outpatient clinic, to evaluate the benefits and possible complications of prelacrimal recess approach for treatment of antrochoanal polyps.

Patients’ ages ranged from 6 years to 55 years with a mean age ±SD was 24.1±10.4 years.

No statistically significant difference according to demographic data (Table 1).

Table (1): Patients’ characteristics

Characters	Frequency (40)	Percent (100%)
Gender		
male	14	35%
female	26	65%
Affected side		
left	28	70%
right	12	30%
Associated pathology		
deviated septum to the same side	8	20%

No statistically significant difference according to clinical presentation (Table 2).

Table (2): Clinical presentation of patients under the study

Symptoms	Frequency (40)	Percent (100%)
Nasal obstruction(unilateral)	40	100%
Rhinorrhea (unilateral)	40	100%
Snoring	32	80%
Headache	28	70%

The duration of operations ranged from 40 minutes to 60 minutes.

The mean time ±SD = 50.5± 6.4.

Middle meatal antrostomy succeeded to remove the polyp completely in 20% of cases and in 80% of cases, residual tissue of the polyp was found inside the

maxillary cavity and the prelacrima recess approach succeeded to remove it completely (**Table 3**).

Table (3): Findings during the operation of patients under the study

Signs	Frequency (40)	Percent (100%)
Site of protrusion of the polyp		
natural ostium	30	75%
accessory ostia	10	25%
Origin in the maxillary sinus		
Posterior wall	20	50%
Inferior wall	12	30%
Lateral wall	8	20%

During the early postoperative follow up period, 8 patients (20%) had temporary epiphora that resolved within 10 days without treatment and all patients had

crustations which all fall after one month with the use of alkaline nasal wash.

No patient developed recurrence during the follow up period which was for one year (**Table 4**).

Table (4): Post-operative complications

Items	Frequency (40)	Percent (100%)
Epiphora (temporary)	8	20%
Nasal obstruction	0	0%
Epistaxis	6	15%
cheek edema (temporary)	4	10%
Healing of the flap		
Healed	40	100%
Nasal stenosis	0	0%
Adhesion	0	0%

DISCUSSION

The treatment of antrochoanal polyps (ACPs) is essentially surgical. The Caldwell-Luc operation has been practiced for nearly 100 years. The Caldwell-Luc approach offers good exposure and ensures complete removal of the polyp and the associated antral mucosa. However, the Caldwell-Luc procedure may have possible side effects including cheek anaesthesia, cheek swelling and carries risks to the developing teeth in children (*El-Sharkawy, 2013*).

Endoscopic sinus surgery with middle meatal antrostomy has become the most popular approach in ACP treatment. This approach, a minimal invasive and effective method and provides complete removal with negligible complications (*Eladl and Elmorsy et al., 2011*).

However, endoscopic sinus surgery alone may not be sufficient because of the inaccessibility to the stalk of the polyp in the maxillary sinus wall and narrow intranasal structures (as nasal cavity, ostia, and middle meatus). To prevent recurrence of ACP, the maxillary stalk of

the polyp should be removed (*Freund et al., 2012*).

Some authors used endoscopic sinus surgery combined to other approaches as transcanine and mini Caldwell-Luc to prevent recurrence as these combined approaches allow better visualization of the maxillary sinus and accordingly complete removal of the antral part of the polyp. However, this combined approach cannot avoid the previously mentioned complications of the traditional open techniques (*Atighechi et al., 2010*).

The prelacrimal recess approach is a surgical technique for the treatment of sinonasal tumors. This approach provides a wide and clear surgical view and allows easy access to the maxillary antrum to resect tumor and adjacent structures together, and therefore minimizes recurrence (*Zhou et al., 2013*).

This study was developed to evaluate the outcomes and possible complications of prelacrimal recess approach for treatment of primary antrochoanal polyps.

In our study middle meatal antrostomy succeeded to completely remove the antral portion of the polyps from 20% of cases. In 80% of cases residual part of the polyp was found in the maxillary sinus after middle meatal antrostomy. The prelacrimal recess approach allowed good visualization of the maxillary sinus with complete removal of the antral part of these polyps. 50% of the polyps were found originating from the posterior wall of the maxillary sinus, 30% from inferior wall and 20% from lateral wall.

This agrees with the results of the study of *Comoglu and Co-workers (2016)* where the transnasal prelacrimal recess

approach was successful in 83% of the patients and 17% of the polyps were excised using the middle meatal antrosyomy. The antral part of the antrochoanal polyps was found to be located anteromedially in 16.6%, 33.3% in anterolateral corner, 25% in lateral, and 16.6% in the posterior wall of the maxillary sinus of all polyps.

In our study only 20% of cases had temporary epiphora, 15% had epistaxis and 10% had cheek edema. None of them had nasal obstruction, nasal stenosis or adhesions. The flap healed completely in all patients and the inferior turbinate was preserved.

Comoglu and Co-workers (2016) revealed no cases encountered epiphora postoperatively. 25% of patients had synechiae formation between the lateral nasal wall and septum just superior to the inferior turbinate. One of them needed surgical treatment under local anaesthesia. They did not find any other complication with the prelacrimal approach.

Zhou and Co-workers (2013) found neither epiphora nor other postoperative complications. The mucosa healed well and inferior turbinate was preserved in all patients.

In our study, the prelacrimal recess approach was successful in complete removal of the antral part of the polyp without traditional open surgical techniques. No recurrence occurred to any of the patients during the follow up period which was for one year.

Zhou and Co-workers (2013) used the prelacrimal recess approach for their treatment, and no recurrence was seen in

95% of cases. The follow-up ranged from 7 to 60 months.

Comoglu and Co-workers (2016) on 12 patients with recurrent antrochoanal polyps, they found no recurrence during the follow up period that ranged from 8 to 21 months.

The limitations of our study were that: children were excluded from this study, although the incidence and recurrence higher in children. This was because safety of this novel approach and its effect on the maxillary sinus growth is not well researched.

Small sample size and short follow up periods were also limitations of this study. Better assessment of the approach safety and efficacy to prevent recurrence could be achieved by more studies with larger sample size and longer follow up periods.

Recurrent cases were excluded from this study which is better to be included in future studies.

Finally, the prelacrimal recess is not a constant landmark as it may be absent in some people so these approach cannot be generalized in all cases with antrochoanal polyps.

CONCLUSION

Endoscopic prelacrimal recess approach provides a better view of the antrum to remove antrochoanal polyp completely.

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إستخدام مأتى ما قبل التجويف الدمعي في العلاج الجراحي للسليلة المنعرية الغارية بواسطة منظار الأنف

احمد محمود خليفة، احمد سيد جاد، عبد الرحمن شتا عبد الرحمن

قسم الأذن والأنف والحنجرة، كلية طب الأزهر

خلفية البحث: السليلة المنعرية الغارية هي ورم سليلي حميد ينشأ من الغشاء المخاطي في الجيب الفكى العلوى، من خلال الفوهة الجيبية الفكية العلوية مع الأمتداد إلى فتحة الأنف الخلفية، وهي تمثل مايقرب من ٤-٦ ٪ من جميع الأورام الحميدة الأنفية في عموم السكان، كما أنها دائما من جانب واحد على الرغم من أن هناك حالات قليلة ثنائية الجنب.

الهدف: تقييم فعالية استخدام مأتى ما قبل التجويف الدمعي في العلاج الجراحي للسليلة المنعرية الغارية بواسطة منظار الأنف في منع تكرار السليلة المنعرية الغارية وتقييم النتائج والمضاعفات المحتملة لمأتى ما قبل التجويف الدمعي لعلاج السليلة المنعرية الغارية.

المرضى وطرق البحث: خضع ٤٠ مريضا يعانون من السليلة المنعرية الغارية، وتم استخدام مأتى ما قبل التجويف الدمعي بالمنظار. يتم تقييم النهج من أجل القدرة على تصور منشأ السليلة في تجويف الفك العلوي ، مضاعفات وتكرار السليلة.

نتائج البحث: نجحت طريقة مأتى ما قبل التجويف الدمعي عبر الأنف في ٨٠ ٪ من المرضى ، كما أن ٨٠ ٪ من المرضى لم يصادفوا ما بعد الجراحة، ٨٥ ٪ منهم لم يكن لديهم رعاف، ٩٠ ٪ منهم لم يكن لديهم تورم بالخد و لم يكن أي منهم يعاني من انسداد في الأنف أو تضيق في الأنف أو إلتصاقات، وتم الحفاظ على غضاريف الأنف السفلية لديهم. خلال فترة المتابعة (سنة)، و لم يحدث أي إرتجاع.

الإستنتاج: مأتى ما قبل التجويف الدمعي هو إجراء آمن يسمح بالإزالة الكاملة للجزء الغارى من السليلة المنعرية الغارية لمنع التكرار دون مضاعفات كبيرة.

كلمات البحث: مأتى ما قبل التجويف الدمعي، السليلة المنعرية الغارية.