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Research Article

Prelacrimal Approach in Antrochoanal Polyp

Candelaria Serrano, Maria Pilar Mighera, Micaela Redivo and Carlos S Ruggeri*

Rhinology and Skull Base Section, Otolaryngology Department, Hospital Italiano de, Buenos Aires

***Corresponding Author:** Carlos S Ruggeri, Rhinology and Skull Base Section, Otolaryngology Department, Hospital Italiano de, Buenos Aires.

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Abstract

Introduction: The antrochoanal polyp originates in the maxillary sinus and from there it can extend to the nasal cavity and rhinopharynx. It is difficult to identify through images, prior to surgery the implantation site in the maxillary sinus and sometimes even in the surgery.

This is important to be able to resect the implantation of the polyp and reduce the recurrences.

Different endonasal approaches have been described.

Objective: To determine if the endonasal prelacrimal approach with endoscopes was effective in resecting antrochoanal polyps and reducing recurrences.

Design: Descriptive and prospective.

Methods: Patients treated for antrochoanal polyps using an endonasal prelacrimal approach with endoscopes between September 2021 and March 2024 were include.

The endonasal prelacrimal approach with endoscopes was considered effective when it alone or combined with a medial maxillary antrostomy allowed complete exposure of the maxillary sinus and enabled complete resection of the antrochoanal polyp.

Results: Eight patients were operated. The prelacrimal approach was used alone in four patients, while in the other four, it was combined with a medial maxillary antrostomy.

No recurrences were detected in endoscopic follow-ups during the follow-up period.

Conclusions: The endonasal pre-lacrimal approach to the maxillary sinus is a suitable surgical technique for exposing the anterior and anterolateral sectors of the maxilla. Alone or combined with a medial antrostomy, it allows visualization of all walls of the maxillary sinus and complete resection of antrochoanal polyps, including their site of implantation. It is a safe technique with few complications and provides a high rate of complete resection in cases of antrochoanal polyps

Keywords: Prelacrimal Approach; Maxillary; Endonasal; Endoscopic Surgery; Antrochoanal Polyp

Introduction

The antrochoanal polyp is an inflammatory lesion originating from the maxillary sinus that extends into the nasal cavity through the accessory or natural ostium, causing nasal obstruction. It most commonly presents unilaterally, though there are descriptions of bilateral antrochoanal polyps. Its pathophysiology is not well understood, but it is associated with the presence of neutrophils, with elevated levels of interleukins and other neutrophil-related markers detected, representing an inflammation with an endotype 1.

The treatment is surgical, with endonasal approach using endoscopes being the technique of choice. The key point in the surgery is identifying the site of polyp implantation in the maxillary sinus to perform a more aggressive resection at that site and avoid recurrences.

Anterior or anterolateral implantation is more difficult to visualize through a medial maxillary antrostomy and may require additional access via an inferior meatal window, a mega-antrostomy, a minimal anterior maxillary sinusotomy, or a transcanine puncture.

The prelacrimal approach represents an option to adequately expose the anterolateral sectors of the maxilla and resect the anterolateral implantation of antrochoanal polyps.

Objective

To determine if the endonasal prelacrimal approach with endoscopes was effective in resecting antrochoanal polyps and reducing recurrences.

Design

Descriptive and prospective.

Material and Methods

Patients treated for antrochoanal polyps using an endonasal prelacrimal approach with endoscopes between September 2021 and March 2024 at the Otolaryngology Department of Hospital Italiano de Buenos Aires were included.

Prospectively collected data included: Sex, age, whether the approach was solely prelacrimal or combined with a medial maxillary antrostomy, site of polyp implantation in the maxilla, complications, follow-up time, and recurrences.

Patients were evaluated with nasal endoscopy and facial CT scans without contrast. In some cases, an MRI of the facial mass with contrast was requested.

Histopathological examination of the surgical specimen confirmed the diagnosis of inflammatory polyp.

Surgeries were performed under general anesthesia in an outpatient setting when the surgical risk was ASA 1 or 2, or with 24 hours of hospitalization when the surgical risk was ASA greater. 4mm endoscopes with 0 and 30-degree angles and conventional instruments for endoscopic sinonasal surgery were used.

The endonasal surgical technique involved placing a cotton ball soaked in lidocaine and adrenaline diluted to 1/100,000 in the nasal cavity, without infiltrating the lateral nasal wall. A Colorado tip cautery was used at an intensity of 15 in cutting and coagulation mode to make an incision at the level of the head of the inferior turbinate at its anterior insertion on the lateral nasal wall from the nasal floor to the top of the inferior turbinate, reaching the bone.

The medial maxillary wall was then dissected with a suction rasp in a subperiosteal plane from the frontal process of the maxilla (piriform aperture) backward (approximately 1.5 cm), displacing the inferior turbinate and nasolacrimal duct medially in its anterior sector.

The bone of the medial wall of the maxilla was exposed in the inferior meatus, and a maxillary antrostomy was performed behind the frontal process of the maxilla, which was preserved.

An osteotomy was performed using a chisel and hammer, and if necessary, it was extended with Blackesley or Kerrison forceps.

In some patients, it was combined with a medial maxillary antrostomy to improve exposure of the posterior-lateral-superior sectors of the sinus.

The prelacrimal window allowed for adequate exposure of the anterior, lateral, anterosuperior, and anteroinferior walls of the maxilla and resection of antrochoanal polyps by identifying the implantation site. At that site, the resection was extended using curettes and forceps.

The polyp, freed from its implantation site, was resected by pulling with a Blackesley forceps from the nasal cavity through the natural or accessory ostium, medial maxillary antrostomy, and/or prelacrimal access.

At the end of the surgery, the head of the inferior turbinate was sutured to the lateral nasal wall with one or two Vicryl 3/0 sutures. In cases of associated septoplasty, a silicone splint was placed to prevent synechiae and was removed 10 days later in the office. No nasal packing was used (Figure 1).

The endonasal prelacrimal approach with endoscopes was considered effective when it alone or combined with a medial maxillary antrostomy allowed complete exposure of the maxillary sinus and enabled complete resection of the antrochoanal polyp.

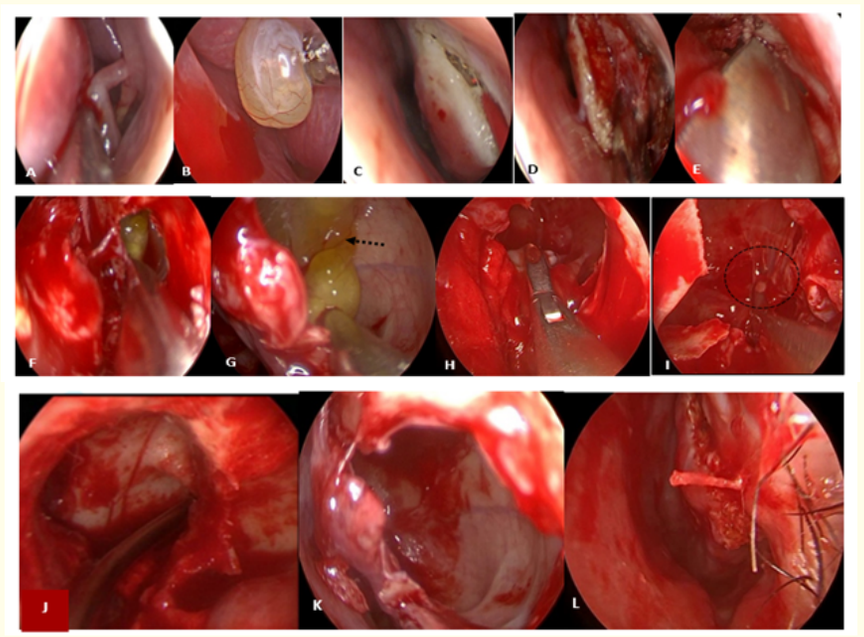

Figure 1: Prelacrimal approach to the maxillary sinus for antrochoanal polyp: endonasal view with endoscopes.
A: Antrochoanal polyp emerging through the maxillary ostium into the nasal cavity, B: Antrochoanal polyp exiting through the accessory ostium, C: Incision at the head of the inferior turbinate at its anterior insertion with Colorado tip, D: Dissection with suction rasp of the mucoperiosteum of the medial wall of the maxilla, E: Prelacrimal osteotomy with chisel at the level of the medial wall of the maxilla, F: Prelacrimal bone window, through which the polyp inside the sinus is observed, G: Identification of the anterolateral insertion of the polyp (arrow), H: Resection with forceps of the sinus portion of the antrochoanal polyp, I: Extension of the resection at the anterolateral implantation site of the polyp (dotted circle), J and K: View of the maxilla after resecting the polyp, L: Suturing with absorbable material of the anterior incision.

Results

Eight patients were operated on, four women and four men. The youngest was 17 years old and the oldest 63, with an average age of 38.75 years. Five polyps originated in the left maxilla and three in the right.

The prelacrimal approach was used alone in four patients, while in the other four, it was combined with a medial maxillary antrostomy.

The site of implantation of the antrochoanal polyp was the anterolateral wall of the maxillary sinus in three cases, anterior in two, and lateral in one. In two cases, the site of implantation could not be identified due to the extensive maxillary cystic component.

One of the operated patients was a recurrence from a previous endonasal surgery through a medial antrostomy performed years earlier at another center.

One patient experienced transient epiphora as a complication, which resolved spontaneously in 2 months.

No recurrences were detected in endoscopic follow-ups during the follow-up period (Table 1).

Discussion

Antrochoanal polyps can occur at any age, but they are more common in young adults or children. There is no effective medical treatment described in the literature for antrochoanal polyps. Surgery is the only treatment, and the surgical techniques used have shifted towards less invasive procedures via endonasal approaches, recognizing the importance of identifying the site of implantation of the polyp in the maxilla to achieve complete resection and reduce recurrences.

Medial antrostomy or mega-medial maxillary antrostomy are the most commonly used endonasal approaches, allowing adequate

Sex	Age	PLA	PLA+MA	Implantation site in maxillary	Complications	Follow-up/recurrence time
F	17		Yes	Anterior wall		22 months without recurrence
M	58		Yes	Anterior wall		33 months without recurrence
M	47	Yes		Could not be determined		33 months without recurrence
F	17	Yes		Could not be determined		20 months without recurrence
M	29		Yes	Anterolateral wall		21 months without recurrence
F	63	Yes		Anterolateral wall	transient epiphora for two months	18 months without recurrence
F	50		Yes	Lateral wall		14 months without recurrence
M	29	Yes		Anterolateral wall		6 months without recurrence

Table 1: Patients with antrochoanal polyps treated via an endonasal approach with endoscopes through a prelacrimal access (PLA: prelacrimal approach, PLA+MA: prelacrimal approach + medial antrostomy).

visualization of the posterior and superior walls. Visualization of the anterior and lateral sectors of the sinus is often incomplete, especially in well-pneumatized maxillae.

In a study of 94 antrochoanal polyps treated with endonasal surgery using endoscopes through a medial antrostomy, it was found that most polyps were implanted in the medial wall of the maxilla (32/94), followed by the lateral wall (8/94), posterior wall (7/94), superior wall (3/94), and around the ostium (2/94). In 42 patients, the origin of the polyp in the maxillary sinus could not be identified due to its extensive nature. In another study of 82 patients, a more frequent implantation was reported in the inferior wall (26/82), followed by the anterior wall (10/82), lateral wall (8/82), and posterior wall (4/82). The site was not located in 34 cases.

In our study, anterior or anterolateral implantation of the polyp predominated (5/8). The recurrence rate reported in a study of 94 antrochoanal polyps treated via endonasal surgery through a medial antrostomy was 5.3% (5 patients) at 10 months of follow-up.

In these recurrences, the endonasal access through medial antrostomy was combined with an anterior sinusotomy. In another study, the recurrence rate was compared between patients treated with endoscopic surgery with medial antrostomy (49 patients) and another group treated with medial antrostomy and a window in the inferior meatus (33 patients). In the first group, the recurrence rate was 18.4%, while in the second group it was 3%.

The pre-lacrimal approach was described by Zhou in 2013. Simmen and collaborators mention that this approach may be difficult to perform when the distance between the frontal process of the maxilla and the lacrimal duct is less than 3 mm. Ashman and Wormald concluded that a reduced distance (<3 mm) between the frontal process of the maxilla and the lacrimal duct does not contraindicate the pre-lacrimal approach, as the lacrimal duct can be dissected and medialized to allow osteotomy in the anterior sector of the inferior meatus.

In our series, there were no patients with a distance of less than 3 mm between the frontal process of the maxilla and the lacrimal duct (the measurement was made on the lowest coronal cut of the facial CT scan where the lacrimal duct was observed coinciding with the insertion of the turbinate bone into the frontal process of the maxilla).

In the pre-lacrimal approaches we performed for other conditions with distances of less than 3 mm between the frontal process of the maxilla and the lacrimal duct, we were still able to access the maxilla by luxating the lacrimal duct medially (Figure 2).

One study concluded that the recurrence rate of antrochoanal polyps treated with a pre-lacrimal approach was lower than in patients who underwent medial antrostomy. Combining medial maxillary antrostomy with the lacrimal approach may be useful when, after performing the pre-lacrimal window, the site of implantation is not adequately identified. Others perform the medial maxillary antrostomy first and then, if necessary, the pre-lacrimal approach.

In our series, we did not observe recurrences using this approach alone or combined with a medial antrostomy. In Zhou's study, a 7% rate of paresthesia in the upper lip or nasal ala and a 5.6% rate of mild alar collapse were reported in 71 patients treated for inverted papillomas using a pre-lacrimal approach. It is impor-

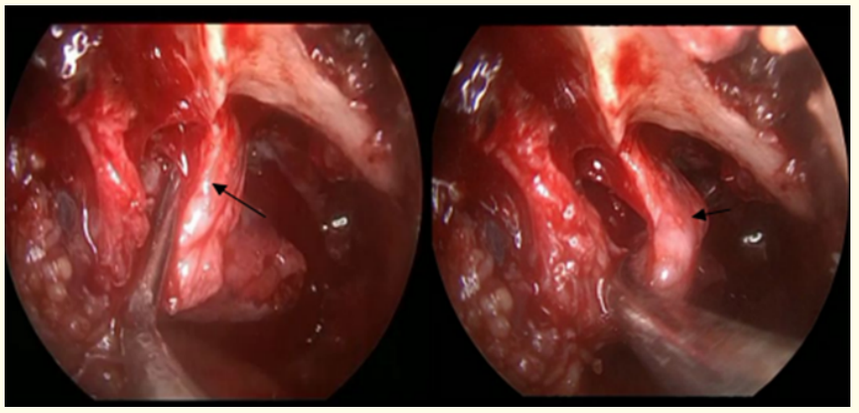

Figure 2: Endonasal view with endoscopes: dissection and luxation of the lacrimal duct to perform the pre-lacrimal maxillary osteotomy (arrows), when there is a small distance between the frontal process of the maxilla and the nasolacrimal duct.

tant to note that in 8 patients, a partial osteotomy of the frontal process of the maxilla at the piriform aperture was performed. In our approach, we decided not to perform the osteotomy on the frontal process of the maxilla. Instead, we accessed the maxilla from behind this structure and were able to adequately expose the anterolateral, anteroinferior, and anterosuperior regions with few complications [1-13].

Conclusion

The endonasal pre-lacrimal approach to the maxillary sinus is a suitable surgical technique for exposing the anterior and anterolateral sectors of the maxilla. Alone or combined with a medial antrostomy, it allows visualization of all walls of the maxillary sinus and complete resection of antrochoanal polyps, including their site of implantation. It is a safe technique with few complications and provides a high rate of complete resection in cases of antrochoanal polyps.

All authors participated in the conception, writing and review of the study.

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