



Case Series

Treatment and evaluation of recurrence for antrochoanal polyps by endoscopic large middle meatal antrostomy, clinical case series of 25 patients



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ABSTRACT

INTRODUCTION: The Endoscopic approach for complete removal of antrochoanal polyp is considered a safe and effective procedure with the best control of the attachments of antrochoanal polyps.

The mains of our study are to review the clinical features and evaluate the recurrence in the patients affected by antrochoanal polyps (ACPs) and surgically treated by endoscopic middle meatal antrostomy. **METHODS:** The present research is a retrospective study. it includes the clinical data of subjects affected by ACPs, and referred to ENT Department, Face and Neck Surgery, Hospital 20 August 1953, between January 2016 and January 2019.

RESULTS: All patients have been treated surgically with endoscopic middle meatal antrostomy under general anesthesia. Recurrence occurred in 3 cases (12%), in these three recurrent cases, the site of attachment originated from the lateral wall.

CONCLUSION: FESS was the first-choice treatment for APCs in the present series; our recurrence rate was encouraged for the practice of the endonasal endoscopic approach. A focus on the detection of the exact origin of the polyp and the resection of the periostium on the point of attachment considered the key to prevent recurrence.

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1. Introduction

Palfyn first described the antrochoanal polyp in the context of nasopharyngeal polyps in 1753, however, the site of origin in the sinus mucosa at the maxillary sinus wall was identified by Killian in 1906 [1].

The antrochoanal polyp (ACP) is a mass of soft tissue from the maxillary antrum, emerging from the ostium and extending to the choana through the nasal cavity [2].

The treatment of antrochoanal polyp is mainly surgical. the endonasal endoscopic approach has become more and more the treatment of choice with the advent of endonasal instrumentation, allowing simple and effective avulsion of ACP with less morbidity [3–5]. An endoscopic large middle meatal antrostomy using

angled endoscopes with focus on the detection of the exact origin considered the key to prevent recurrence [3].

The objective of the present study is to evaluate the recurrence rate of endoscopic middle meatotomy in the treatment of ACP. As for the secondary objectives, we evaluated the clinical outcomes in our patients. This work is reported by following the surgical case report (SCARE) guidelines [6].

2. Methods

2.1. Study design

This was a retrospective study (case series) of 25 patients known to have in few cases lower turbinate hypertrophy, deviated nasal septum, and rhinitis with antrochoanal polyp managed at our hospital 20 August 1953 specialist hospital, which is a tertiary hospital and referral center between January 2016 and January 2019. All patients' conditions were optimized prior to surgery with intranasal cortico-therapy associated with saline irrigations. The surgeries were performed by an ENT Professor.

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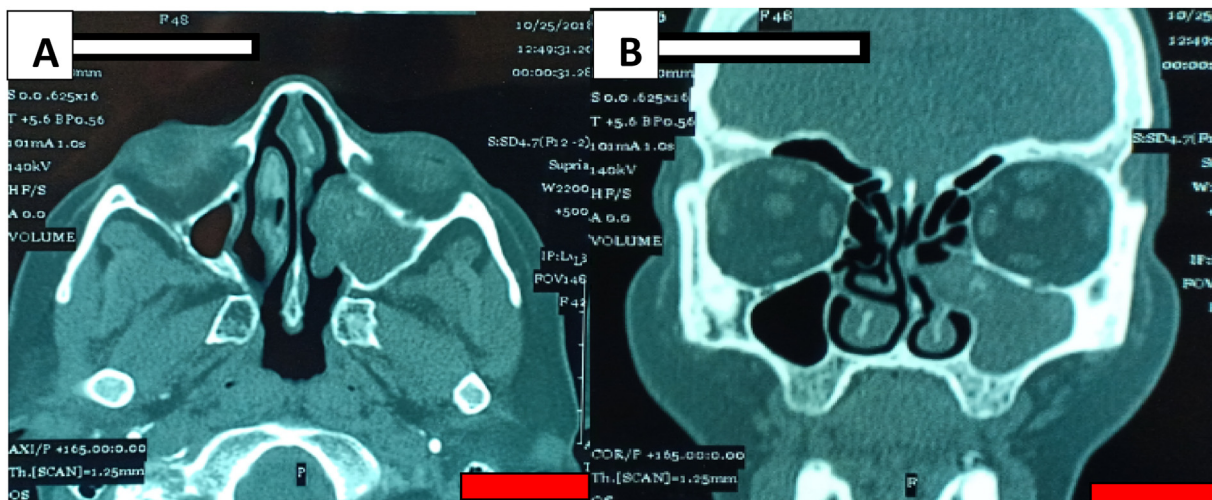


Fig. 1. Ct scan axial (A) and coronal (B) view, showing an antrochoanal polyp without extension to the choana.

2.2. Study criteria

Inclusion criteria were patients diagnosed with ACP and surgically treated with endoscopic endonasal approach by middle meatal antrostomy.

Patients treated with combined approach years and with incomplete clinical data were excluded from this study.

2.3. Data collection

A database was created using the surgical records of the patients.

The following data were recorded for each patient: age, sex, medical history, symptoms, endoscopic and radiological data (side of the lesion), operative technique, recurrence, the length of time between surgery and recurrence.

2.4. Setting

Data were collected on forms, and were computerized and analyzed using IBM SPSS Statistical Software: Release 25. Continuous variables are presented as the mean (± standard deviation) and categorical variables are presented as counts.

2.5. Registration and ethics

All subjects or their parents were informed about the retrospective nature of the study and provided their consent prior to surgery. According to Moroccan laws. We did not seek approval from the ethics committees of the service as it is a retrospective study based on chart analysis. No human or animal experiments were involved in our study. This is a case series that does not require a research registry.

3. Results

We included 25 patients with antrochoanal polyps in our study, 14 (56%) women and 11 (44%) men, with ages varying between 9 and 60 years (mean age = 27.92 years).

The most common preoperative complaints were nasal obstruction, followed by rhinorrhea. The duration between the onset of symptoms and referral to the hospital varied from 1 month to 1 year. The major symptoms reported by the patients are summarized in [Table 1](#).

Table 1

Percentage of preoperative symptoms in patients with antrochoanal polyp.

	Numbers	Percentage (%)
Nasal obstruction	22	88
Rhinorrhea	13	52
Snoring	4	16
Anosmia	6	24
Epistaxis	8	32
Headache	1	4

All of our patients have benefited from an endoscopic examination, using angled 0° scope. It is paramount in determining the extent, Location of mass, and associated endoscopic anomaly. All patients underwent also nasal computed tomography (CT).

Endoscopic and radiological analysis of our patients showed unilateral antrochoanal polyps in all cases, 18 (72%) on the left side, and 7 (28%) on the right side.

In evaluating the co-morbidities and associated pathology, we observed that 4 (16%) cases had lower turbinate hypertrophy, 8 (32%) cases had deviated nasal septum and 1 case had rhinitis.

Radiologically, 22 cases confirmed features of a unilateral soft-tissue mass emerging from a single maxillary antrum and extending into the nasal cavity and choana, and 3 cases without extension into the choana ([Fig. 1](#)).

All patients underwent surgical management performed by an ENT professor via only an endoscopic endonasal approach with the removal of the ACP en bloc ([Fig. 2](#)) under general anesthesia.

After the use of topical decongestion of the nose with cottonoids soaked in XYLOCAINE NAPHAZOLINE 5%. Using a 0-degree endoscope, we performed uncinectomy then we identified the maxillary sinus ostium and we enlarged it by removing the posterior fontanelle to the palatine bone for better control of the site origin of ACP.

The next step consisted of debriding the periosteum on the point of attachment of ACP by using an angled endoscope (45°–70°–120°). Before finishing, the middle turbinate has been medialized to prevent synechiae formation between the middle turbinate and lateral nasal wall. And if diffuse nasal mucosal trauma has occurred during surgery, nasal packing was inserted for 48 h. Postoperative consisted of antibiotic therapy for one week after surgery, intranasal cortico-therapy associated with saline irrigations. We did not observe any postoperative complication in our case series.

Table 2
The origin of the ACP according to different studies.

studies	Mehmet Kelles et al. [17]	Aydin Ö et al. [18]	Corrado Bozzo et al. [19]	Our study
Maxillary site of onset				
Posterior wall	73.9%	19%		52%
Lateral wall	34.7%	5%	56%	8%
Inferior wall	43.7%	8%	17%	
Medial wall	6.5%			
Superior wall		5%		
Anterior wall	0%	8%		
Posteromedial wall		38%		
Posterolateral wall				40%
Anteromedial wall		8%		
Posterosuperior wall		3%		
Inferolateral wall		3%		
Uncertain			26%	



Fig. 2. Photograph showing polyp removed endoscopically.

In all cases, the polyp emerged from the middle meatus. The origins of the ACPs' attachment in the maxillary sinus was visualized by angled endoscope, they were as follows: posterior walls (3 patients), posterior and lateral walls (10patients), posterior wall (7 patients), lateral wall (2 patients).

Histological examination of the surgical specimen was obtained in all cases to confirm the diagnosis.

The recurrence rate in our study was 12% (3 cases). The diagnosis was made after 24, 36, and 72 months respectively of follow-up. In these three recurrent cases, the site of attachment originated from the lateral wall.

4. Discussion

Antrochoanal polyps are solitary soft tissue masses; it emerged from the maxillary sinus antrum, passing through the maxillary sinus ostium into the middle meatus, with extension into the nasopharynx and the oropharynx, without causing deformation or bone destruction [2]. Previous studies have demonstrated that antrochoanal polyp is more frequent in males than in females (with a sex ratio of 1.7:1), and there is a slight predominance for the compromise of the left maxillary sinus [4]. In our series, sex was slightly more dominant for women with a sex ratio of 0.56.

The etiology is still not fully understood. However, the study of Frosini et al., suggested that ACP happened from the association of an antral cyst and a closed maxillary ostium secondary to an anatomical deformity, such as a turbinate alteration or a deviated nasal septum [5]. We noted the presence of lower turbinate hypertrophy and deviated nasal septum as associated pathologies in our series in 12 cases operated for ACP, with no recurrence.

In addition, allergy and chronic rhinosinusitis have both been involved. The patients with ACPs in the study of Lee and Huang [7] determinate that 65% of cases had associated chronic sinusitis. Nevertheless, many other studies have found no association between them like our study [8,9].

Clinically, Patients usually have nasal obstruction. In pediatric, it is frequent to see oral breathing and sleep disorders. In adults, headaches and nighttime snoring may also be presented [10].

The diagnosis of ACPs consists of clinical and radiological assessment. Nasal endoscopy is very important in the clinical setting; CT scans usually show a soft tissue mass occupying the maxillary antrum, extending through the natural or accessory maxillary ostium into the nasal cavity, without bone erosion.

A CT scan is, in most cases, sufficient to identify the base of the polyp; however, the presence of another sinonasal abnormality may hinder proper identification of the site. MRI shows T1 hypointense and T2 enhanced signals [4]. In the interest is to eliminate differential diagnoses such as hemangioma, inverted papilloma, angiofibroma, or adenocarcinoma [11,12].

There is no medical treatment for ACPs and the only recognized approach is surgical excision. Endoscopic is the approach of choice in our study.

Endoscopic middle meatal antrostomy by endonasal approach consists of resection of the nasal part of the polyp and its cystic antral part with its attachment to the maxillary wall via the middle meatus [13]. The lower part of the uncinat process is excised and then the maxillary ostium enlarged. Angled Endoscopes (45°–70°–120°) are used to correctly identify the site of ACP and the removal of the mucosal portion covering the periostium on the point of origin of ACP. The antral portion of ACP should be removed, together with the base of its origin [3,14].

This functional endoscopic sinus surgery (FESS) is accepted currently as the gold standard treatment for ACP removal [5].

The recent literature seems to support the hypothesis that recurrences could be prevented by the correct identification of the origin of the polyps [15]. Moreover, the restoration of maxillary ventilation achieved through the antrostomy could play a role in preventing new ostio-meatal complex disorders such as ostial stenosis [15,16].

Most studies have identified the origin of the antrochoanal polyp using the endoscopic approach with a middle meatotomy, the following (Table 2) shows the origin of ACP according to different studies and in comparison, to ours [17–19].

The ACPs originate rarely from the anterior wall of the maxillary sinus. Most of the ACPs are multitudinous or broad-based. Lee and Huang reported that 92% of ACPs originate from the posterior wall of the maxillary sinus [7].

The aim of the endoscopic surgical approach is to complete polyp attachment removal (anterior, posterior, medial, lateral, inferior, or superior walls of the maxillary sinus) with minimal

Table 3
[19] summary of published case series of patients with ACPs managed with 'endoscopic sinus surgery'.

Year of the study	references	Origin	Patient ages	Total no. of case	Endoscopic cases	Recurrences of endoscopic cases (%)
1990	Kamel	Egypt	10–52	22	22	0
1993	Cook et al.	USA	<20–70	33	33	0
1993	Loury et al.	USA	31–45	5	5	25
1994	El-Guindy et al.	egypt	12–49	24	24	0
1998	Aktas et al.	turkey	14–30	16	11	36
1999	Lee et al.	S.Korea	5–41	62	57	8
2007	Bozzo et al.	Italy	10–53	23	23	8.7
2007	Franche et al.	Brazil	7–75	29	29	6.9
2007	Busaba et al.	USA	28–55	6	6	50
2008	Ozer et al.	Turkey	9–51	42	15	20
2009	Frosini et al.	Italy	5–81	200	172	0
2009	Atighechi et al.	Iran	10–71	40	19	21
2012	Balikci et al.	Turkey	10–63	34	31	6.5
2012	Nikakhlagh et al.	Iran	5–67	94	94	5.3

interruption of normal sinus physiology. in this way, the introduction of angled endoscopes (45°, 70°, and 120°), curved shaver blades (60°, 90°, and 120°) in the surgical armamentarium and a large anrostomy, can guarantee a proper control of the site origin and allow a complete resection of the polyp [16,17].

The recurrence rate of ACP during the endoscopic approach with mean meatotomy varies between 0–36% found in several studies (Table 3) [1].

ACP recurrence rate in our study was 12% (3 cases), was lower than patient's recurrence rate in different study. We found this approach to be effective and we believe that the positive result of our procedure is due to our large middle meatal anrostomy, which is sufficient to control the site origin of ACP with the help of angled endoscopes.

The Recurrence is likely due to regrowth of some missed remaining polypoid lesion within the maxillary sinus, if the whole polyp cannot be excised endoscopically, a combined approach (FESS plus Caldwell–Luc) is recommended, to minimize-it [20].

Atighechi et al. performed FESS with a mini-Caldwell approach in their patients and reported minimal recurrences and a low complication rate [21].

Functional Endoscopic sinus surgery is the approach of choice with the advantages of reduced operating time and hospital stay, and reduced morbidity [1].

5. Conclusion

The antrochoanal polyp is a frequent benign pathology in children and young adults. Recurrence poses a problem of revision surgery, hence the need for better control of the mucosal attachment site of the polyp at the maxillary sinus walls.

The endoscopic endonasal approach represents the optimal approach enabling closer and more direct visualization of the anatomy, and avoiding morbidity, confirmed by the absence of complications in many studies.

Endonasal endoscopic large middle meatal anrostomy, aided by the development of endoscopic naso-sinus instrumentation could provide safe and effective approaches, allows the best control of the site origin of the ACP, and minimize the chance of recurrence. Our recurrence rate was minimal it occurred in 3 cases (12%) among a series of 25 cases operated only by endonasal endoscopic approach. This technique has shown a low recurrence rate, it will be interesting to compare it with a combined approach.

Declaration of Competing Interest

The authors declare that they have no competing interests.

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Ethical approval

I certify that this kind of manuscript does not require ethical approval by the Ethical Committee of our institution.

Consent

Written informed consent was obtained from the patients for publication of this case series and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Yassir Hammouda: Corresponding author, writing the paper.
Berrada Omar: writing the paper.
Youssef Oukessou: study concept.
Sami Rouadi: study concept.
Reda Abada: correction of the paper.
Mohamed Roubal: study concept.
Mohamed Mahtar: correction of the paper.

Registration of research studies

This is a case series report that does not require a research registry.

Guarantor

Yassir Hammouda.

Provenance and peer review

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