

Antrochoanal polyps: Report of 94 Cases and Review the Literature

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ABSTRACT

OBJECTIVE: The aim of this study was to evaluate the management of antrochoanal polyps (ACPs) with functional endoscopic sinus surgery and review literatures.

METHODS: We retrospectively studied the clinical presentations and operative records of 94 patients with ACPs treated surgically in the period of September 1999 to March 2008 (about 9 years). Age, gender, side, Clinical symptoms, duration of follow up, associated rhinological findings, forms of surgical treatment, postoperative complications and recurrence rate were reviewed.

RESULTS: Total records of 94 patients [mean (\pm SD) age of 26.5 ± 12.8 years, 55 males (58.5%) and 39 females (41.5%)] were studied. Postoperative follow-up duration ranged from 8 to 68 months. The most common clinical symptom was nasal obstruction (100%) and Rhinorrhoea (57.4%). The origins and sites of the pedicle in the maxillary sinus were mostly present in medial wall in 32 patients. Recurrence rate in our study was of 5.3% (5 cases) after 10 months postoperatively. For the revision surgery, endoscopic resection was combined with Caldwell-Luc procedure. **Conclusion:** The antrochoanal polyp happens predominantly in children and young adults of both male and female patients. Endoscopic sinus surgery is an effective, safe and reliable method with major advantage for the treatment of antrochoanal polyps.

KEYWORDS: Antrochoanal polyp, Endoscopic surgery, recurrence, origin, follow-up

sinus. The most common presenting symptoms are nasal obstruction (especially during the expiratory phase) and rhinorrhoea.⁵⁻⁷ ACP typically appear as smooth yellowish or bluish intranasal masses that arise from the antral mucosa and usually pass into the nasal cavity.⁸

Two components of ACP are defined. The solid component grows through the sinus ostium into the nasal cavity towards the choana while cystic component lies in the maxillary sinus. The solid component of the ACP can be large enough to fill the nasopharynx.⁹ Berg reported that in all their 15 patients (100%) the antral portions were cystic whereas it was cystic in about 25% of patients according to Kamel.¹⁰ The attachment of the pedicle inside the sinus varies. The commonly mentioned sites of origin are the anteroinferior and medial wall, the region of inner maxillary ostium and posterior fontanelle. Lee and Huang,² found that the most common site of origin was the posterior wall (92%). Nasal endoscopy and computed tomography (CT) with axial and coronal cuts represent the golden standard in the diagnosis of ACP. Various surgical techniques have been used to remove ACP, of which Functional endoscopic sinus surgery (FESS) presents a reliable and effective treatment.¹¹

The purpose of this study was to compare the results obtained from 94 consecutive cases of antrochoanal polyps, endoscopically treated from September 1999 to March 2008 with those reported in the literature, with particular regard to the clinical presentation, surgical technique, the clinical outcomes and complications.

PATIENTS AND METHODS

Study design and population: We retrospectively studied the clinical presentations and operative records of patients with ACPs treated surgically in the period of September 1999 to March 2008 at the Department of Otolaryngology, Ahvaz Jundishapur University of medical science. This study was approved by the Ethics in Student Research Committee of Medical School. All the patients were operated with FESS using 30 and 70 degree rigid endoscopes.

DATA COLLECTION: The information about patients include age, gender, side, clinical symptoms, duration of follow-up, associated rhinologic findings, surgical treatment, postoperative complications and recurrence rate were reviewed and recorded in the prepared forms.

STATISTICAL ANALYSIS: The data analyzed and

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INTRODUCTION

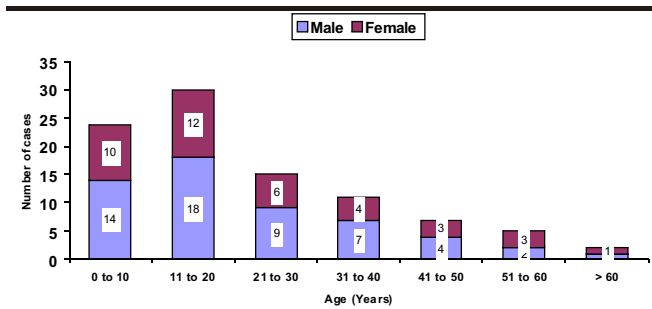
The antrochoanal polyp (ACP), or Gustav Killian's Polyp is an infrequent, benign, usually solitary nasal polyp, arises from the maxillary sinus to reach the ipsilateral choana.¹ It has a peculiar pear-shaped form it affect mainly children and young adults and more common in male than in female.^{1,2} Studies show that antrochoanal polyp accounts for 3%-6% of all nasal polyps that affect the general population.² Cook et al. found a higher incidence of ACPs 10.4%.³ Cook et al show that the rate of antrochoanal polyp in children was increase to 33%.⁴ One of the most controversial aspects is the site of origin and its pathogenesis in the maxillary

presented as number and percentage using SPSS 16.0.

RESULTS

The record of total 94 patients with ACP who underwent surgical treatment at our hospitals was reviewed. The mean (\pm SD) age of patients was 26.5 ± 12.8 years (range, 5-67 years), there were 55 males (58.5%) and 39 females (41.5%), thus a male preponderance was seen. The disorder was observed mostly in the age group less than 20-year (Figure 1).

Figure 1: The age distribution of patients based on the gender variable



No recurrence was detected in 89 patients who underwent FESS over the course of their follow-ups which ranged from 18 to 65 months average 36 months. Recurrence rate in our study was seen in 5 cases (5.3%) after 10 months postoperatively three cases in children group and two in adult group. The recurrence was found on the roof and lateral wall of the maxillary sinus after 10 months' follow-up.

All surgical specimens were sent to our pathology department and the specimens were confirmed to be benign inflammatory polyps (Figure 2C) The origins and sites of the pedicle in the maxillary sinus walls were assessed intraoperatively as follows: medial wall (32 patients); lateral wall (8 patients); posterior wall (7 patients); superior wall (3 patients); and margin of the ostium (2 patients). In the remaining 42 cases due to severe involvement of maxillary sinus walls, it was difficult to

precisely assess the origin of ACP.

The most common clinical symptom was nasal obstruction in 100% of the cases (Figure 2A and 2B). Rhinorrhoea (57.4%), epistaxis (5.3%), postnasal drip (27.6%), and snoring (19.1%) were also noted (Table 1). Twelve patients (12.7%) had a pharyngeal mass that was visible without retraction of the uvula during oral examination. Our standard FESS procedure for ACP was total excision of all components of ACP, uncinectomy and middle meatal antrostomy. The rationale of uncinectomy and middle antrostomy was to connect the accessory ostia with the natural ostium. No ACP in this study originated from the anterior wall of the maxillary sinus (Table 2). No major complications occurred.

Figure 2: A, CT scan showing the choanal involvement of the left nasal fossa by a right antrochoanal polyp The CT scans (coronal cuts) showed left-sided ACP in a 41-year-old male; B, The ACP resulted in ipsilateral maxillary sinusitis due to obliteration of the maxillary sinus ostium; C, Complete Specimen of antrochoanal polyp for pathologic evaluation

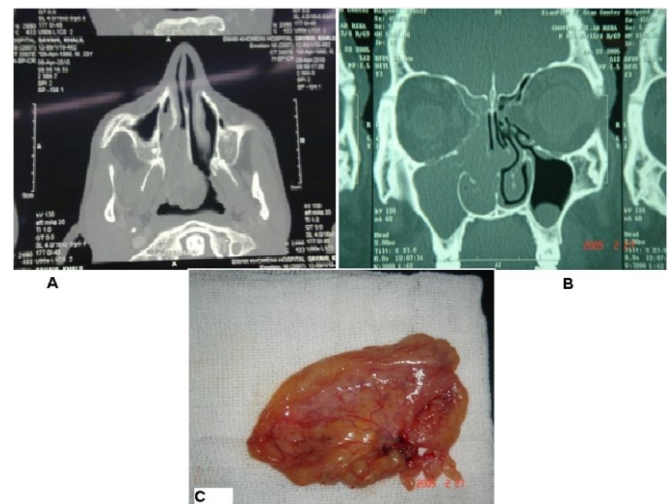


Table 1 : Preoperative symptoms in antrochoanal polyps included available literatures

Symptoms	Franche G (n =29)	Hong SK (n = 28)	Balwant SG (n =18)	(Present study) (n = 94)
Nasal obstruction	83%	100%	94.4%	100%
epistaxis	7%	0	33.3%	5.3%
Snoring	31%	-	22.2%	19.1%
Oral Breathing	38%	-	33%	25.5%
Postnasal drip	4%	-	27.8%	27.6%
Headache	7%	-	11.1%	7.4%
Rhinorrhea	17%	67%	44.4%	57.4%
Lump in throat	-	-	11.1%	9.5%
Hyposmia	-	-	16.7%	20.2%

Table 2 Site of onset of antrochoanal polyp in Maxillary Sinus

Site of onset	Anju Koushai 2004 (n =20)	Ta-Jen Lee 2006 (n =26)	Corrado Bozzo 2007 (n =23)	Present study (n =94)
Lateral wall	7	5	13	8
Medial wall	2	3	0	32
Superior wall	2	-	-	3
Anterior wall	0	-	0	0
margin of the ostium	1	0	0	2
Posterior wall	-	18	-	7
Inferior wall			4	0
Uncertain	8	0	6	42

DISCUSSION

Palfyn first described a polyp in a female patient filling the nasopharynx. He believed that this polyp arose from the choana. Almost a century ago, Gustav Killian demonstrated that this polyp arose from the maxillary sinus antrum. Three years after Killian, Brown Kelly, observing a frequent association between antral cyst and the presence of a wide accessory ostium, demonstrated a correlation between these conditions.

Such a polyp usually occurs in isolation and is seen mainly in patients younger than 40 years of age.¹²⁻¹⁴ Unilateral nasal obstructions were the most common symptom in our study. In Balwant et al,¹⁴ studied 17 cases (94%), in Guilherme et al,¹⁵ reported 24 cases (82%). Orvidas et al,¹⁶ noted nasal obstruction (100%) in their 25 patients with ACP. Venkalachalam et al,¹⁷ reported two cases of ACP with obstructive sleep apnoea treated with endoscopic approach, repeat sleep study 4 weeks after surgery revealed reversal of the disturbed sleep patterns. CT scan of paranasal sinus reveals a unilateral hypoattenuating mass occupying the maxillary sinus and extending through the middle meatus into the nasal cavity; it may also extend posteriorly toward the choana.¹³ Magnetic resonance imaging (MRI) shows hypointense T1, and enhanced T2 signals. When intravenous gadolinium is administered, the cystic part of the polyp is enhanced in the peripheral area.¹⁸ The differential diagnosis of an ipsilateral nasal mass should include juvenile nasopharyngeal angiofibroma, nasal glioma, encephalocele, mucocele, retention cyst, enlarged adenoids, inverted papilloma, lymphoma, Wegener granulomatosis, rhabdomyosarcoma or nasopharyngeal malignancies. Usually it is difficult to identify the origin of the polyps in most cases using CT scan, while the origin in ACPs can be assessed by endoscopic methods intraoperatively.¹²

ato and Nakashima advocate removal of the antral portion via an inferior antrostomy window. No recurrence was noted in their 10 patients after a follow-up of 10 to 46 months.¹⁹ El-Guindy and Mansour recommend the transcanine approach combined with conventional

endoscopic surgery for complete removal of ACP.¹³ Hong et al suggest a similar approach but using powered instrumentation. They reported an improvement rate of 96.4% (27/28 patients). All the patients were treated with FESS.⁴ Our standard FESS procedure for ACP was total excision of all components of ACP, uncinectomy and middle meatal antrostomy. Our approach is similar to the technique suggested by Hong et al, but we do not routinely use the Caldwell-Luc approach. Careful history taking, evaluation with endoscope, and radiographic examinations are helpful in treatment planning in these patients. Regardless of the type of surgery used, the most important point for surgical treatment of ACP is the total removal of all ACP components. Identifying and removing the origin of the polyp in the maxillary sinus together with the main bulk of the polyp, are cornerstones to successful treatment of ACP.⁴ Hence, insufficient surgery results in recurrence and recurrence rate is especially high if the pedicle of the ACP is not completely removed. Recurrence rate in our study was of 5.3% (5 cases) after 10 months postoperatively. For the revision surgery, endoscopic resection was combined with Caldwell-Luc procedure.

CONCLUSION

The most important data emerging from this study was: 1) The ACP occurs predominantly in children and young adults of both male and female patients. 2) ACP should be suspected in any patient with unilateral nasal obstruction; 3) Functional endoscopic sinus surgery (FESS) represents the optimal approach in case of ACP. Due to the scarce morbidity and its relative safety; 4) we should focus on detecting the exact origin and extent of the ACP to prevent recurrence.

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REFERENCES

1. Basak S, Karaman CZ, Akdilli A, Metin KK.

- Surgical approaches to antrochoanal polyps in children. *Int J Pediatr Otorhinolaryngol.* 1998 Dec 15;46(3):197-205.
2. Lee TJ, Huang SF. Endoscopic sinus surgery for antrochoanal polyps in children. *Otolaryngol Head Neck Surg* 2006;135:688-92.
 3. Cook PR, Davis WE, McDonald R, McKinsey JP. Antrochoanal polyposis: A review of 33 cases. *Ear Nose Throat J* 1993;72:401-12.
 4. Hong SK, Min YG, Kim CN, Byun SW. Endoscopic removal of antral part of antrochoanal polyp by powered instrumentation. *Laryngoscope* 2001;111:1774-8.
 5. Corrado B, Renaud G, Francesco M, Francesco S, Louis C. Endoscopic treatment of antrochoanal polyps. *Eur Arch Otorhinolaryngol* 2007; 264:145-150.
 6. Yuca K, Bayram I, Kiroglu AF, Etlik O, Cankaya H, Sakin F, et al. Evaluation and treatment of antrochoanal polyps. *J Otolaryngol.* 2006 Dec;35(6):420-3.
 7. Ozer F, Ozer C, Cagici CA, Canbolat T, Yilmazer C, Akkuzu B. Surgical approaches for antrochoanal polyp: a comparative analysis. 2008;4(2):93-9.
 8. Ozcan C, Zeren H, Talas DU, Kucukoglu M, Gorur K. Antrochoanal polyp: a transmission electron and light microscopic study. *Eur Arch Otorhinolaryngol.* 2005 Jan; 262(1):55-60.
 9. Tosun F, Yetiser S, Akcam T, Ozkaptan Y. Sphenchoanal polyp: endoscopic surgery. *Int J Pediatr Otorhinolaryngol.* 2001 Apr 6; 58(1):87-90.
 10. Kamel R. Endoscopic transnasal surgery in antrochoanal polyps. *Arch Otolaryngol Head Neck Surg* 1990;116:841-3.]
 11. Anuj K, Lakshmi V, Singh PP. Antrochoanal polyp. Validating its Origin and Management by Endonasal Endoscopic Sinus Surgery. *Indian Journal of Otolaryngology and Head and Neck Surgery.* 2004; Vol 56; No4.
 12. Yaman H, Yilmaz S, Karali E, Guclu E, Ozturk O. Evaluation and management of antrochoanal polyps. *Clin Exp Otorhinolaryngol.* 2010 Jun;3(2):110-4.
 13. El-Guindy A, Mansour MH. The role of transcanine surgery in antrochoanal polyps. *J Laryngol Otol* 1994;108:1055-7.
 14. Balwant SG, Yeoh TL and Karis M. Antrochoanal Polyps: Clinical Presentation and the Role of Powered Endoscopic Polypectomy. *Asian J. of Surgery.* 2004 VOL 27(1): 22-5.
 15. Guilherme LSF, Eduardo HG, Andresa TB, Fernando H, Cátia SS, Person AS. Endoscopic Polypectomy with Middle Meatal Antrostomy for Antrochoanal Polyp Treatment. *Brazilian Journal OF Otorhinolaryngology* 2007. 73(5):689-92.
 16. Orvidas LJ, Beatty CW, Weaver AL. Antrochoanal polyps in children. *Am J Rhinol* 2001;15:321-5.
 17. Venkalachalam P, Gupta N, Suri JC, Gandotra SC. Antrochoanal polyp a cause of obstructive sleep apnoea in children. *Indian J Otolaryngol Head Neck Surg* 1998;50:923.
 18. Vuysere S, Hermans R, Marchal G. Sinochoanal polyp and its variant, the angiomatous polyp; MRI findings. *Eur Radiol* 2001;11:55-8.
 19. Sato K, Nakashima T. Endoscopic sinus surgery for chronic sinusitis with antrochoanal polyp. *Laryngoscope* 2000;110:15813.