Unilateral Benign Choanal Polyp: Review of 51 Patients

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Introduction: Choanal polyps are a benign pathology arising in the sinusal mucosa and entering the nasal fossa heading for the choana. It is a unilateral condition mainly affecting young people. It must be surgically removed, with exeresis of both the nasal and the sinusal lesions.
Material and method: A retrospective review has been made of 51 patients treated for choanal polyp at our centre. They were diagnosed through physical examination, nasal endoscopy, nasosinusal CT, and histological examination of biopsy from the mass in selected cases.
Results: The choanal polyps originated in the maxillary sinus in 46 cases, in the ethmoidal sinus of 5 patients, and only 1 in the sphenoid sinus. Antrochoanal and ethmoidochoanal polyps were simultaneously found in 1 patient. Unilateral nasal obstruction was the main clinical presentation in our series. Nasal discharge, epistaxis, and snoring were other initial clinical findings. Eighty-five per cent (39/46) of antrochoanal polyps (ACP) emerged into the nasal fossa through Giraldés's accessory orifice, and 15% (7/46) through the natural ostium of the sinus. The origin in the maxillary sinus was adequately documented in 18 cases. The endoscopic approach was used in 46 patients. Other options employed were the Caldwell-Luc approach and a combination of limited antrostomy and endoscopic nasal surgery; these were among the first cases seen and therefore the oldest. Two of them relapsed and were treated again with an endoscopic nasosinusal approach.
Conclusions: Endoscopic nasosinusal surgery is a safe and effective option and represents the approach of choice for the treatment of this pathology.

Key words: Nasal polyp. Choanal. Maxillary. Ethmoid. Sphenoid. CT. Endoscopic surgery. Paranasal sinuses.

Pólipo coanal unilateral benigno: revisión de 51 pacientes

Introducción: El pólipo coanal es una lesión benigna que nace en la mucosa sinusal y se desplaza hacia la fosa nasal en dirección a la coana. Es una enfermedad unilateral que afecta principalmente a pacientes jóvenes. Su tratamiento es quirúrgico, y se debe extirpar tanto la lesión endonasal como la endosinusal.
Material y método: Se realizó una revisión de 51 pacientes afectados de pólipo coanal tratados en nuestro centro. Su diagnóstico se llevó a cabo mediante exploración clínica, endoscopia nasal, tomografía computarizada nasosinusal y, eventualmente, un estudio histológico de la masa polipoide.
Resultados: La localización lesional endosinusal fue en 46 casos maxilar; en 5 casos, etmoidal, y un caso, esfenoidal. Un paciente presentó 2 pólipos coanales de forma simultánea, uno de tipo antrocoanal y otro etmoidocoanal. En la serie el síntoma principal de consulta fue la obstrucción nasal unilateral. Otros síntomas de presentación fueron rinorrea, epistaxis y roncopatía. El 85 % (39/46) de los pólipos antrocoanales emergían a la fosa nasal por un orificio accesorio de Giraldés, mientras que el 15 % (7/46), por el ostium natural del seno. La zona de implantación en el seno maxilar se documentó adecuadamente en 18 pacientes. El tratamiento quirúrgico utilizado fue la cirugía endoscópica nasosinusal en 46 casos. Otras opciones empleadas fueron el abordaje tipo Caldwell-Luc y la vía combinada antral y endonasal bajo control endoscópico, que se corresponden a los primeros casos tratados y, por tanto, a los más antiguos. Se apreciaron dos recidivas que fueron tratadas con éxito con cirugía endoscópica nasosinusal.
Conclusiones: El abordaje por cirugía endoscópica nasosinusal es una opción segura y eficaz; constituye la maniobra de elección en su tratamiento.

Palabras clave: Pólipo nasal. Coanal. Maxilar. Etmoides. Esfenoides. TC. Cirugía endoscópica. Senos paranasales.

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INTRODUCTION

The antrochoanal polyp was described by Killian in 1906, though Palfyn was the author who described the first case termed a nasopharyngeal polyp in 1753.[1] Macroscopically, it consists of a polypoid mass that lacks nerve endings, and is basically composed of 2 well-differentiated segments, a cystic part located in the maxillary sinus, and another more solid one that occupies the nasal fossa and is directed towards the choana.

Its emergence towards the nasal fossa is verified through the natural drainage orifice of the maxillary sinus or ostium, or through Giraldes's accessory orifice.

The most important group of choanal polyps is the antrochoanal type, but ethmoid-choanal polyps and sphenoid-choanal polyps must not be ignored, despite their lower incidence. They originate both in the sinus cavity and prolapse towards the choana with a narrowing zone that corresponds to the sinus ostium.[2,3]

Choanal polyps mainly present in children and young adults[4] as a unilateral mass with symptoms corresponding to an endonasal neoformation where the nasal obstruction predominates (Figure 1). It may give way to other symptoms, such as mucopurulent rhinorrhea, spontaneous expulsion of the polyp, upper airway dyspnoea or dysphagia secondary to the extension of the polyp from the cavum to the oropharynx (Figure 2), snoring in extreme cases simulating obstructive sleep apnoea syndrome, and rarely, epistaxis.

Its bilateral appearance has been described.[5-7] There do not appear to be significant differences between genders, though some analyses have found a predominance in men.[7,8]

The image study can be done with computerized tomography (CT) and/or magnetic resonance (MR). In the CT, a solid well-delimited mass appears emerging from the maxillary, ethmoid and sphenoid sinuses, and approaching the choana (Figure 3). In MR, its presentation generates a hypointense signal in T1, while a higher intensity signal appears in T2. Following intravenous injection of gadoline, uptake is visible in the peripheral cystic intrasinus zone, while the choanal and nasal segments appear as hyperintense images.[9]

There is unanimity with respect to choice of treatment: surgical resection of the nasal polypoid segment as well as the intrasinus cyst. Endoscopic nasosinusal surgery for the treatment of the antral part of the antrochoanal polyps was introduced at the beginning of the 1990s.[10] Previously simple polypectomy was used, eventually associated with a Caldwell-Luc-type antral gingivolabial approach. With the Caldwell-Luc-type surgery one could proceed to eliminate only the cystic segment, while many other authors favoured the complete elimination of the lesion and all the endosinus mucosa, a procedure associated with a certain morbidity[6]. Other authors[11,12] defend a combined approach at the expense of a middle meatotomy and a very limited antrostomy through the fossa canina with a minimal gingivolabial incision. Others recommend a middle and lower double meatotomy with the purpose of guaranteeing that no lesions remain in the sinus cavity.

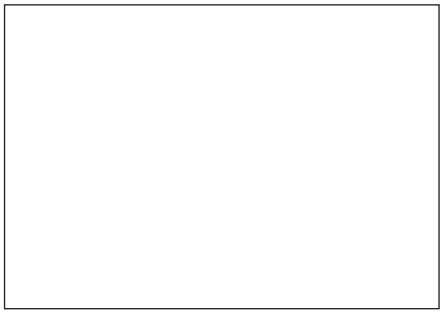

Figure 1. Endoscopic image of an antrochoanal polyp in the right nostril.

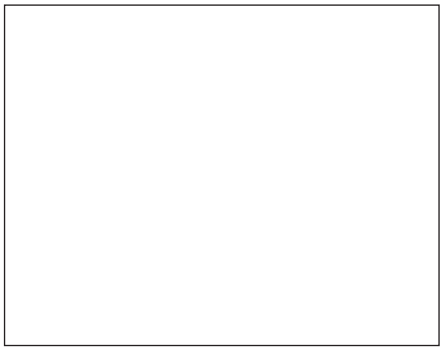

Figure. 2 Appearance of a choanal polyp in the oropharyn .

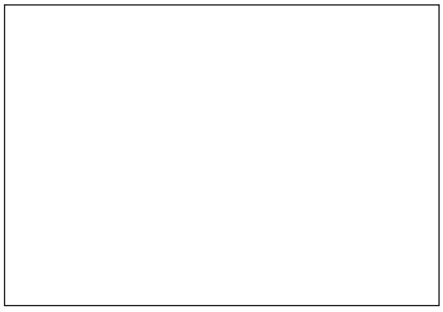

Figura 3. oronal computerized tomography of the sinuses. omplete opacification is noted in the right ma illary sinus.

The goal of the present study was a retrospective analysis of the diagnostic experience and the treatment of this condition at our centre.

MATERIAL AND METHOD

This study is based on an analysis of the experience of the otorhinolaryngology department at our centre in the period between January 1990 and January, 2007.

Fifty-one patients affected with a unilateral benign nasal polyp were retrospectively analyzed. The following data were analyzed: age, gender, main symptom leading to consultation, previous nasosinusal pathology of interest, involvement of the paranasal sinus, implantation zone in the maxillary sinus, fossa implicated, orifice with the pedicle of the polyp emerging, concordance-discordance of the imaging study, clinical symptoms and endoscopic examination, surgical treatment performed, recurrence incidence, the time elapsing from the surgical treatment up

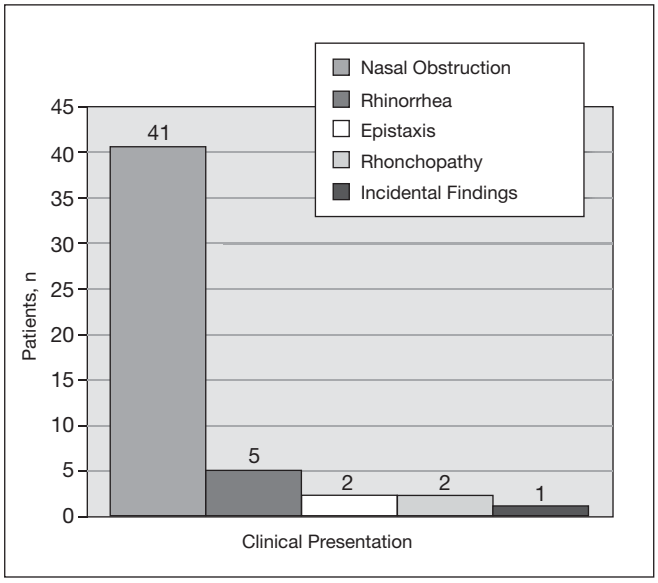

Figure 4. Distribution of the initial clinical manifestations.

to the diagnosis of an eventual recurrence, the treatment performed upon recurrence, and current status.

With respect to the main symptom, 5 forms of clinical presentation were noted in our patients: nasal obstruction, rhinorrhea, epistaxis, nocturnal rhonchopathy, and incidental findings.

In the area of prior nasosinusal history of interest, 3 large categories stood out: inflammatory bilateral nasosinusal polyposis, rhinitis (without further classification), chronic non-polypoid rhinosinusitis.

The analysis checked whether the antrochoanal polyps presented the emergence of the pedicle through the natural sinus ostium or through Giraldes's accessory orifice. The natural sinus ostium is defined as the interruption found in the anterosuperior angle of the internal nasosinus wall, medially covered by the concave part of the unciform apophysis, in an elliptical form not visible with a 0º optic. Any other communication with the maxillary sinus that does not fulfil these characteristics is deemed an accessory orifice, meaning basically the drainage orifices located somewhat lower and further back.

It was intended to determine if the radiological study was in accordance with the certain diagnosis of the disease. The diagnostic orientation in our centre is based on the endoscopic finding of a unilateral polypoid mass coming from the middle, ethmoid, or sphenoid meatus directed towards the choana. Its morphological aspect is firm, mobile, non-ulcerated, and non-friable. In all cases a CT scan was performed where said mass was noted with an occupation of the sinus affected, without bone alterations. Lastly, upon diagnostic doubts, whether from inconclusive endoscopic or radiological images, or in patients of advanced age, a biopsy was performed with the purpose of confirming whether there was inflamed tissue.

With respect to the surgical treatment, 3 therapeutic options were performed: Caldwell-Luc antrostomy, external combined approach (limited antrostomy type through the fossa canina associated with endonasal surgery), and, lastly, endoscopic nasosinusal surgery, the treatment of choice for this condition at our centre. This consists of a middle meatotomy plus polypectomy with extirpation of the antral segment as well as the nasal segments, anterior ethmoidectomy with polypectomy in the case of a sphenoid-choanal polyp.

RESULTS

Fifty-one patients were analyzed, with an age range of 7-76 years. The mean age at diagnosis was 32.6 years, while the median age was 25. By gender, 57% were men (22/51) and 43% women (29/51).

In 80% of the cases (41/51) the principal symptom was unilateral nasal obstruction; 10% (5/51) had rhinorrhea; 4% (2/51) epistaxis; another 4% (2/51) consulted for rhonchopathy; and in the remaining 2% (1/51) it was an incidental finding from a radiological examination (CT) motivated by another cause (Figure 4).

With respect to nasosinusal history, 4 patients (7.8%) had presented non-polypoid chronic rhinosinusitis, 2 (3.9%) presented rhinitis, and one other (1.9%) had inflammatory bilateral nasosinusal polyposis; 4 patients (7.8%) had presented a benign unilateral choanal polyp diagnosed and treated outside our centre.

Of these lesions, 88% (46/52) originated in the maxillary sinus; 10 (5/52) in the ethmoidal sinus; and 2% (1/52) in the sphenoid sinus. One patient presented 2 choanal polyps simultaneously; 1 antrochoanal; and the other ethmoid-choanal. We analyzed 52 unilateral choanal polyps of which 46 (88%) were diagnosed as antrochoanal polyp; 5 (10%), ethmoid-choanal polyp; and 1 (2%) as sphenoid-choanal polyp.

In the 46 antrochoanal polyps, the pedicle exit was observed to be through the natural orifice of the maxillary sinuses in 7 cases (15.2%), while it was through an accessory orifice in 39 cases (84.8%). Its intrasinusal implantation zone in the maxillary localization could be correctly documented in 18 patients. Seven originated in the anteromedial wall of the sinus, 4 in the posterior wall of the sinus, and 4 from the roof, 2 originated in the lower wall, and in 1 case in the lateral wall of the maxillary sinus.

The CT image was in accordance with the diagnosis of a choanal polyp in 49 patients (96.1%). Only in 2 cases (3.9%) was the image indicative of another nasosinusal involvement; however, this was discarded on nasal endoscopic examination, and/or biopsy of the lesion.

All 51 patients were subjected to surgical treatment, with a single exception due to associated morbidity rendering a surgical procedure inadvisable due to serious anaesthetic risk. No complications arose in the surgery or post-operative period in any case. The type of surgical treatment used was the endonasal endoscopic approach in 46 cases (92.2%), a Caldwell-Luc approach in 2 patients (3.9%), and a combined antral and endonasal approach under endoscopic control in 2 patients (3.9%).

Two patients (3.9%) presented recurrence. In both cases, the polyp originated in the antromedial wall of the maxillary

sinus and they had previously been treated with endoscopic surgery.

The first patient presented recurrence 77 months after surgery. He was treated with a new endoscopic approach and discharged free from disease after a 2-year follow-up. The second patient had the first recurrence at 22 months after the initial surgery and further endoscopic surgery was performed. In later follow-up visits, the appearance of the condition was detected 47 months after the second surgery. The third and final time, an endoscopic approach was used and the patient did not experience recurrence of the polyp.

The 50 patients treated had complete remission of their condition over a mean follow-up of 2 years with a minimum of 1 year.

DISCUSSION

Benign unilateral polyp is a condition that primarily affects young adults and children. Larsen et al[13] performed a prospective study on the incidence of unilateral choanal polyps, noting that the average age of diagnosis was 27 years. Our median age was 32 years and the mean 25.

There does not appear to have been a predominance of sexes in the appearance of the choanal polyp,[14] though some analyses have found a greater frequency in men.[7,8] In our series, 57% (29/51) were men and 43% (22/51) women (male to female ratio 1.3:1).

Its aetiology continues to be unknown, as the participation of various aetiopathogenic and inflammatory theories have been unable to be demonstrated clearly in this pathological process.[9,15]

No previous nasosinusal inflammatory affection was present in 85% (43/51), and only 8% (4/51) had had chronic rhinosinusitis, 5% (3/51) presented rhinitis, while 2% (1/51) had bilateral inflammatory nasosinusal polyposis.

In our series, 39 cases of the 46 antrochoanal polyps (84.8%) emerged in the nasal fossa through an accessory orifice, with the natural orifice only shown in 7 cases (15.2%). Stammberger et al[16] emphasized that the antrochoanal polyps abandoned the maxillary sinus towards the fossa by an accessory orifice in 70% of cases.

It commonly presents as a unilateral polypoid mass in a patient with symptoms of a unilateral obstruction. In the nasosinusal CT examination opacification of the maxillary sinus is noted, occasionally ethmoid and sphenoid, with a hypointense mass that is laid out towards the nasal fossa through the middle meatus, or superior meatus if it is a sphenoid polyp, without involvement of the nasosinusal bone frame. We consider these findings pathognomic of this disease, together with a positive biopsy for inflammatory involvement. Analyzing the clinical-radiological concordance, it is emphasized that the CT image was in line with the diagnosis in 49 patients (96%), and only in 2 cases (4%) was the image indicative of another nasosinusal disease, while the endoscopic examination and/or histological study of the biopsy indicated a diagnosis in 100% of cases. For this reason, we do not consider other diagnostic tests necessary in the management of this condition.

Differential diagnosis of this unilateral nasal mass should consider other entities such as mucocele or mucopyocele, retention cyst, adenoid hypertrophy, turbinate hypertrophy, Tornwaldt's cyst, angiofibroma, olfactory neuroblastoma, haemangioma, lymphoma, Wegener's granulomatosis, rhabdomyosarcoma, or inverted papilloma.[9] For this reason, when faced with a unilateral nasal mass, its nasosinusal origin should be noted, vascular aetiology discarded, and a biopsy perform for histological study.

Its place of origin in the sinus is variable, generally it is in the anteromedial wall, the posterior zone of the sinus and the maxilloethmoid angle, or in the roof of the maxillary sinus.[7] Only in 18 cases could the sinusal origin be determined: 7 originated from the anteromedial wall, 4 from the posterior wall, and 4 from the roof, 2 from the inferior wall, and it originated in the lateral wall in only 1 patient.

The 2 patients treated with an antral approach represented very old cases in the series, and both had surgical recurrence following treatment at another centre.

Another 2 cases, treated through a combination of antrostomy and nasosinusal endoscopic control, were from the beginning of our experience with nasosinusal endoscopic surgery. The rest of the patients were treated through nasosinusal endoscopic surgery with exeresis of the nasal and sinusal portions of the polyp.

The classic treatment of this disease until the 1980s was exeresis through gingivolabial approach, radical surgery of the maxillary sinus or Caldwell-Luc.[18] Later, as it is a benign disease predominating in youth, more limited approaches were sought, such as simple polypectomy. The Caldwell-Luc technique is an approach that involves a manifest risk in children for correct dental development and adequate expansion, and pneumatization of the maxilla, in addition to other minor problems such as variable hypoanaesthesia or pain in the cheek bone, as well as more prolonged recovery times.[12,19] On the other hand, simple polypectomy involved a high recurrence rate due to the limited and incomplete exeresis of the antral part of the polyp.[20,21]

Currently, the treatment of choice is nasosinusal endoscopic surgery. The extraction of the antral portion in its totality can involve a certain difficulty, especially if its pedicle is situated in the anteromedial zone of the maxillary sinus. This has prompted the incorporation of antrostomy techniques through the fossa canina to improve visual control and extraction of the alveolar region of the antral segment of the polyp.[4,11,12,19] These techniques have been progressively abandoned due to the introduction of instruments adapted to reach this area by the endonasal route.

At our centre we perform nasosinusal endoscopic surgery with optics of 0º, 30º, 45º, and 70º; the last 2 are of large importance to locate the anteromedial and inferior portion of the sinus when performing middle meatotomy, without the need to perform antrostomy or other additional manoeuvres.

In our series 2 patients (3.8%) presented recurrence of the condition. In both cases, the base of the polyp was implanted in the anteromedial wall of the sinus, a region of difficult surgical access, as it requires material with a wide curvature, not always available. These 2 patients were treated, again, with nasosinusal endoscopic surgery.

The 5 patients who presented an ethmoid-choanal polyp were treated similarly, with anterior and/or posterior ethmoidectomy plus polypectomy. The only patient affected with a sphenoid-choanal polyp was treated with sphenoidotomy also associated with polypectomy. None of them had recurrence.

In conclusion, a choanal polyp is a benign condition predominantly affecting youths. Its diagnosis is based on endoscopic examination and nasosinusal CT together with a conclusive biopsy of benignity. The antrochoanal derives most frequently from the anteromedial wall of the maxillary sinus and emerges towards the nasal fossa by Giraldes's accessory orifice. Currently treatment with nasosinusal endoscopic surgery is a safe and effective surgery. This permits the control of the disease without the necessity of additional manoeuvres and with a very low recurrence rate.

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