

Case Report

Unilateral Maxillary Sinus Mucocele; Case Report and Review of Literature

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ABSTRACT

Paranasal sinus mucoceles are benign, locally expansile cyst-like masses that are lined by respiratory epithelium. Less than 1% of these involve the maxillary sinus. We

report the case of a 15-year-old female with a maxillary sinus mucocele who had undergone endoscopic left side antrochoanal polyp removal four times.

KEY WORDS: antrochoanal polyp, mucocele

INTRODUCTION

Paranasal sinus mucoceles are benign, locally expansile cyst-like masses that are filled with mucus and lined with respiratory epithelium^[1]. The majority are located in the frontal sinus (60%) followed by the ethmoid sinus (30%) and maxillary sinus (10%). They are rarely localized to the sphenoid sinus^[2]. The traditional treatment is excision or marsupialization. However, endoscopic intranasal approach has been recently introduced^[3]. The aim of this case report is to discuss the role of endoscopic approach in complex maxillary sinus mucocele.

CASE REPORT

A 15-year-old female, with complaints of intermittent bilateral nasal obstruction and rhinorrhea of one year duration, presented with complete nasal obstruction since the past three weeks. There was no history of epistaxis. Patient was a known case of recurrent left antrochoanal polyp for which she was operated for the first time at the age of nine years (2001).

At the age of eleven she was operated twice (four months apart) for a recurrent left antrochoanal polyp by simple intra nasal excision. One year later (2003) recurrence occurred on the same side and this was removed by endoscopic sinus surgery. No complications were reported with these surgeries. Her past medical history was otherwise unremarkable. She was not on any medications.

Histopathology reports of specimens from the initial three surgeries showed inflammatory polyps.

Examination of her right nasal cavity was unremarkable. Her left nasal cavity was completely filled with soft nontender mass that did not bleed on touch with an extension that completely occupied the nasopharynx. This was confirmed by a flexible naso-endoscope passed through the right nasal cavity. Examination of the oropharynx, ears and neck was normal.

Previous radiological records were not available. Preoperative computerized tomography (axial, coronal) revealed a homogenous opacity in the left maxillary sinus with the mass extending backward to the nasopharynx (Fig. 1 & Fig. 2). Part of the medial wall of the maxillary sinus was absent, which could most probably be due to previous surgeries rather than the pressure effect of the mucocele. The other sinuses were unremarkable.

Surgical decompression and marsupialization of the mucocele cavity through an endoscopic approach were carried out in this case. Clear yellowish fluid was aspirated from the mass. The mass in the nasal cavity was then excised completely with microdebrider and left maxillary sinus cleaned of any remnant. Histopathology following this endoscopic sinus surgery showed inflammatory polyp with cystic lesion in maxillary sinus (mucocele). The patient had regular follow-up for one year and no evidence of recurrence was noted by diagnostic endoscopy. CT scan after three months showed bilateral clear sinuses including

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Fig. 1: Axial CT showing mass in the left nasal cavity extending backward to the nasopharynx

the left maxillary sinus with the same defect in the medial wall.

DISCUSSION

The term mucocele was introduced by Rollet in 1896 and Onodi gave the first histological description in 1901. Paranasal mucoceles are most frequently found in the frontal and ethmoid sinuses. Their incidence in the maxillary sinus is less common, having been reported in only 3 to 10% of cases^[2]. In a cohort of 118 mucoceles of the paranasal sinuses, less than 1% involved the maxillary sinus^[3]. In one series, mucoceles were bilateral in 4% of cases^[4]. Fifty percent of patients with mucoceles have a history of prior infection, 25% have a history of trauma and 10% have a prior allergic history^[2]. In a series of 16 patients with maxillary mucoceles, a previous history of surgery or injury to maxillary sinus was obtained in 12 cases. Most had done Caldwell-Luc procedure. Symptoms appeared 10 years postoperatively^[1,5]. In some cases, there is histological evidence of an increase in the number of secretory cells in the lining membrane; hypersecretion of mucus may be a contributory factor^[6]. One postulated mechanism of formation of maxillary sinus mucocele is the formation of fibrotic bands which separate the anterior wall and posterior walls, thus interfering with normal drainage^[1]. Mucoceles that develop following Caldwell-Luc operations are thought to form as a result of entrapped sinus mucosa in the line of the anterior antrostomy^[7]. Mucoceles in the pediatric population are rare, with a few and isolated cases published, with a mean age of 10 year, the youngest being 12 months old^[8,9]. An underlying pathology usually exist, and should be investigated. Cystic fibrosis was found in previously published cases^[10,11]. The symptoms of mucoceles are related to their expansion and subsequent pressure on and obstruction of surrounding anatomic



Fig. 2: Coronal CT showing opacity in the left maxillary sinus

structures. Frontal and ethmoid mucoceles are often associated with headaches and sometimes with visual disturbances. Maxillary sinus mucoceles are more typically associated with symptoms of nasal obstruction, although visual disturbances have been reported^[12]. Medial expansion of the wall of the maxillary sinus into the nasal cavity displaces the inferior turbinate and causes nasal obstruction. Superior expansion of the antrum into the inferior orbit can cause displacement of the orbital contents and visual changes. Downward displacement into the area of the alveolus can even cause loosening of teeth^[13]. Although mucoceles are benign, they can cause significant pathology as a result of their effects on surrounding vital structures of the orbit and skull base. In addition, local symptoms of sinusitis, nasal obstruction, and anosmia can occur^[6]. The typical radiographic appearance of mucoceles is a fully opacified sinus with evidence of rounded or ovoid expansion and bone erosion^[7]. CT in the axial and direct coronal planes is the optimum method of showing the bone expansion that occurs in mucocele formation. The bony outline becomes more rounded as the bone remodels in response to growing pressure within the sinus cavity^[14]. Magnetic resonance imaging is best reserved for mucocele formation secondary to sino-nasal tumors, because in these patients only the lining membrane of the mucocele will enhance after intravenous contrast^[14].

Treatment of paranasal sinus mucoceles, including complex ones, is managed endoscopically. Treatment has traditionally involved excision or marsupialization *via* an external approach. More recently, an endoscopic intranasal approach has been advocated^[13]. External approaches include the Lynch incision, the bicoronal incision for frontal sinus mucoceles and the gingivobuccal incision (Caldwell-Luc) for maxillary sinus mucoceles^[12]. The lining of the mucocele should not be removed

as it forms an ideal lining for the cavity^[15]. Laterally placed maxillary mucoceles are not always accessible through a simple middle meatus antrostomy. In these cases, a combined approach (endonasal and gingivobuccal approach) is sometimes required^[12]. FEES offers a conservative, minimally invasive treatment of paranasal sinus mucoceles, thus avoiding the inconveniences of different external approaches such as recurrence, postoperative morbidity and longer hospitalization^[12].

CONCLUSION

Paranasal sinus mucocele in maxillary sinuses are still rare. In our case the cause was the previous multiple surgical trauma. Even though the patient had not undergone Caldwell-Luc surgery in the past, incomplete removal of the diseased mucosa and inadequate widening of the ostium during previous surgeries could have provoked recurrence of the polyp. Imaging with CT-scan and MRI allow the physician to rule out other lesions and meningoceles. Endoscopic endonasal surgery is now the gold standard for the treatment of paranasal sinus mucocele.

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