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Paranasal Sinus Mucoceles at Kamenge University Hospital Center: A Report of 3 Cases Outline

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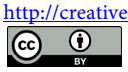

Abstract

Mucoceles are benign sinus tumors that are caused by an obstruction in the sinus ostium. We report 3cases managed at the University Hospital of Kamenge, where treatment was surgical via an endoscopic approach. This surgery was performed for the first time at this center.

Subject Areas

Otorhinolaryngology

Keywords

Paranasal Sinus Mucoceles, Benign Cystic Pseudotumor

1. Introduction

A sinonasal mucocele is a benign cystic pseudotumor, lined by respiratory epithelium and filled with mucus, developing from a paranasal sinus and capable of expansion [1].

The mucocele develops at the expense of the paranasal sinus mucosa, most often the frontal and ethmoid sinuses. The clinical presentation is usually latent, and signs vary depending on the tumor's location, with an expansive and destructive tendency toward the sinus bony walls, potentially extending intra-orbitally or cerebrally.

Several factors have been identified as potentially contributing to the development of a paranasal sinus mucocele, including traumatic, inflammatory, or tumoral

conditions.

Diagnosis is primarily radiological, using a CT scan.

Treatment is exclusively surgical and consists of wide marsupialization of the cyst via an endoscopic approach or an external approach, depending on its location.

Our objective is to study the clinical, therapeutic, and evolutionary aspects of this pathology.

2. Patients and Methods

This is a descriptive retrospective study of patients with mucoceles treated and followed in the ENT department of Kamenge University Hospital Center over two years, from 2023 to 2024.

The three cases detailed here represent the complete series of mucoceles surgically managed by us during this time. Our inclusion criteria required both a radiological and histological diagnosis of a paranasal sinus mucocele and treatment via an endoscopic surgical approach.

Data was collected based on the patients' medical records.

This case report was conducted in compliance with the institutional ethical guidelines of the Kamenge University Hospital Center. Consent was obtained from each patient for the use and publication of their clinical data and images, ensuring anonymity.

3. Observations (Case Reports)

Our series includes 3 cases (see Table 1).

Table 1. Key patients' data into a table (age, sex, sinus involved, symptoms, follow-up).

Cases	Age (Years)	Sex	Sinus location	Primary symptoms	Follow-up
1	23	F	Fronto-ethmoidal (Right)	Nasal obstruction	6 months
2	35	F	Ethmoid (Left)	Inner canthal mass (Aesthetic concern)	8 months
3	38	F	Ethmoid (Left)	Recurrent nasal obstruction	6 months

Case 1: A 23-year-old female patient who presented with nasal obstruction evolving over 6 months, with no other particular medical history. Examination noted a small edema of the right inner canthus and congestion of the nasal cavity mucosa. A CT scan of the facial skeleton revealed a right fronto-ethmoidal mucocele, which was categorized as Type II according to the Har-El G. classification [2]. This type signifies extension beyond the sinus boundaries, typically involving bone erosion (*lysis*) or extra-sinus spread along with complete opacification of the sinus by the mass (Figure 1 and Figure 2). Treatment consisted of a middle meatal antrostomy followed by marsupialization of the cyst. The postoperative course was simple. A postoperative check was performed 6 months after surgery, which showed no abnormalities.

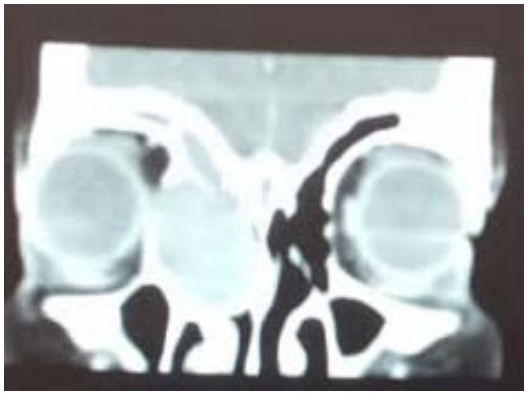

Figure 1. Coronal CT scan showing a right frontoethmoidal mucocele.

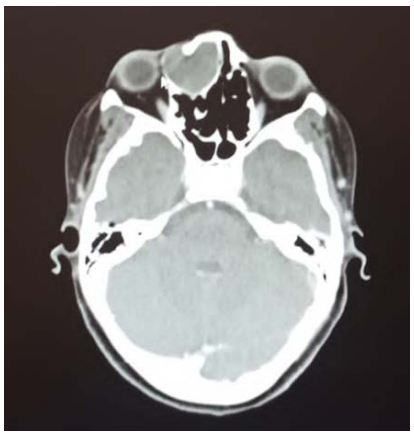

Figure 2. Axial CT scan showing the frontoethmoidal mucocele.

Case 2: A 35-year-old female patient who presented with a right inner canthal mass progressively evolving over 5 years. She had neither rhinological nor ophthalmological signs. Physical examination noted a right inner canthal mass displacing the right eyeball (**Figure 3**). Endoscopy noted bulging of the ethmoid bulla, with normal-looking nasal mucosa. A CT scan of the facial skeleton was performed and showed a pseudocystic lesion developing at the expense of the left ethmoid cells with a mass effect on the ipsilateral orbit and adjacent bone lysis, consistent with a mucocele. The mucocele's location is summarized in **Figure 4**. The procedure consisted of marsupialization of the cyst via a wide opening of the ethmoid bulla and drainage of the whitish mucous fluid. A postoperative view is shown in **Figure 5**. The postoperative course was simple.

A final check was performed 8 months after surgery, confirming no sign of recurrence.

Case 3: A 38-year-old female patient who presented with recurrent left nasal obstruction for 4 months, with no surgical history. Examination of the nasal cavities noted nasal congestion. A CT scan of the facial skeleton was requested and showed a left ethmoidal mucocele. Management consisted of opening the overlying mucosa and marsupialization of the mucocele. The postoperative course was simple. The patient was followed up for 6 months, with no abnormalities noted.

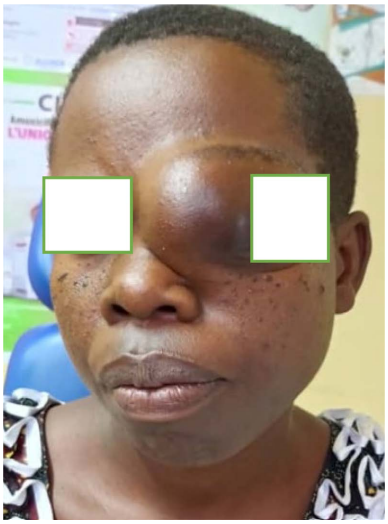

Figure 3. Clinical presentation of a left ethmoidal mucocele.

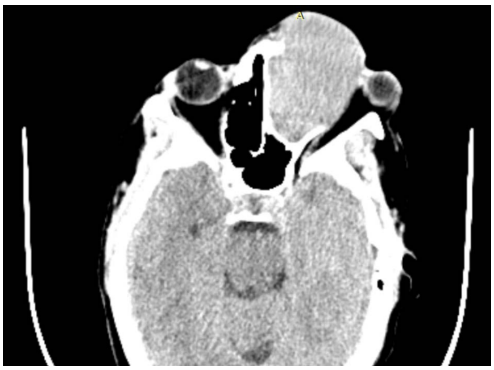

Figure 4. Axial CT scan: Mucocele arising from the left ethmoidal cells with mass effect on the ipsilateral orbital contents and adjacent bone lysis.

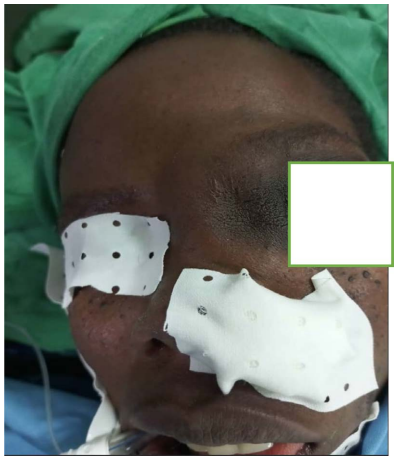

Figure 5. Postoperative view.

4. Discussion and Literature Review

Sinonasal mucocele is a rare expansive formation filled with mucoid secretions, generally aseptic, secondary to intra-sinus retention due to ostium blockage. This

obstruction is often of inflammatory origin, or related to a tumor, post-traumatic, post-surgical, or post-radiation cicatricial phenomena [3] [4].

Despite their benign nature, these tumors have a powerful bone lytic potential on the sinus walls and can progressively extend toward neighboring structures, especially the brain and the orbit [5].

Bone lysis could be explained by the mechanical mechanism of mucocele expansion on the bone, or by chronic inflammation responsible for the release of certain chemical mediators (prostaglandins, cytokines, and collagenases), which in turn stimulate osteolysis [6].

Their location is most often in the fronto-ethmoidal complex [7] [8], but other locations are also possible [5] [9].

In our series, all patients were adults: one case had a fronto-ethmoidal location, and another's location was in the ethmoidal cells.

Clinical signs generally have a delayed onset, which can explain certain fortuitous radiological discoveries. They vary depending on the mucocele's location and size. Symptoms can be ophthalmological, rhinological, neurological, or aesthetic.

In our series, one of our patients had nasal obstruction, another presented for an aesthetic concern, and the last was a fortuitous radiological discovery.

Preoperative nasal endoscopy is necessary to evaluate the surgical modalities and rule out associated pathology. In our series, all patients benefited from nasal endoscopy; an inflammatory mucosa was found in one case, a bulging of the ethmoid bulla in another, and in the last one, it was unremarkable.

A CT scan of the sinonasal cavities (with reconstruction in the three spatial planes) is the first-line imaging examination when a sinonasal mucocele is suspected. It allows for specifying its location, extension, possible associated anomalies, anatomical variations, and probable etiologies. The mucocele appears on the scanner as a generally isodense, homogeneous, and expansive sinonasal opacity [10] [11].

MRI is not indispensable for diagnosing a mucocele if the CT scan is unequivocal. It may be indicated in cases of extra-sinus extension to explore the meninges, orbits, brain, and vascular structures. It may also be necessary when there is a diagnostic doubt between a mucocele and another inflammatory or tumoral lesion [10] [12] [13].

The treatment for sinonasal mucoceles is exclusively surgical, and in recent years, endonasal surgery has been favored. It consists of the marsupialization of the mucocele and aspiration of the mucocele content. It is therefore unnecessary, and even dangerous, to completely remove the mucocele's mucosal lining, especially near a bone dehiscence with mucosal adherence to the dura mater, due to the risk of cerebrospinal fluid leak and meningitis [14] [15].

In our series, all our patients benefited from marsupialization of the cyst via an endonasal approach in accordance with the literature. Several series have been published showing the effectiveness of endonasal endoscopic surgery for mucoceles [14] [16].

Postoperative follow-up was conducted, and no recurrence was noted.

It is essential to recognize the inherent methodological constraints of this report. Chief among these is the extremely limited sample size (n = 3), which naturally prevents any broad generalization of our clinical observations. Furthermore, since this is a single-center, retrospective study, there is a possibility of selection bias. Addressing these limitations will require future multicenter reports involving significantly larger case series to enhance the current understanding and management protocols for mucoceles.

5. Conclusions

Sinonasal mucocele is a benign cystic tumor with expansive and destructive potential toward neighboring structures. Its clinical presentation is variable depending on the tumor's location, and diagnosis is made by a CT scan of the facial skeleton.

Current treatment involves endonasal surgery via marsupialization of the cyst, supplemented or not by an external surgical approach depending on the mucocele's location.

Conflicts of Interest

The authors declare no conflicts of interest.

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