

Frontal Sinus Mucocele with Orbital Extension: A Case Report

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Abstract

Case Report

Mucocele of the paranasal sinuses represent a rare pathology corresponding to benign pseudo cystic tumors. It is caused either by chronic inflammation, allergy, post-surgical lesion, trauma, fibrous dysplasia or tumor lesion. The diagnosis of a mucocele is based on the history, physical examination, and radiologic findings. Treatment is surgical and when the compression caused by the mucocele compromises the functional prognosis, urgent management is required. We report the case of a 45-year-old patient who presented with a mucocele of the frontal sinus with orbital extension.

Keywords: Paranasal sinus mucocele, Benign pseudocystic tumor, Mucus-filled cyst, Sinus ostium obstruction, Allergy.

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INTRODUCTION

Mucocele is a benign, pseudo cystic, mucous-secreting lesion; it derives from the obliteration of sinus ostium, leads to distension and erosion of the sinus walls; that can be whether congenital or acquired (allergic rhinitis, posttraumatic, post-inflammatory, infective) [1]. The frontal sinuses are the most affected by mucocele, accounting for 60% of cases, followed by the ethmoid and sphenoid sinuses. Involvement of the maxillary sinuses is extremely rare [2, 3]. Clinical presentation of the mucoceles varies from asymptomatic to incapacitating headache and visual disturbance. Proptosis (83%) and diplopia (45%) are the most common complaints [4].

The radiological diagnosis and the pre-operative surgical planning are based on CT scan, that shows the extension of the bone erosion, and on the MRI that is useful for the evaluation of the soft tissue's displacement. Treatment of mucoceles is achieved by

craniotomy or functional endoscopic sinus surgery. Sinus obliteration may or may not accompany these surgical techniques [5, 6]. We report the case of a 45-year-old man with a large frontal mucocele with orbito palpebral extension operated externally.

CASE REPORT

A man aged 45 years was presented to the department of oral and maxillofacial surgery, with the chief complaint of left frontal tumefaction for 1 year and which gradually evolves without locoregional inflammatory signs. A general physical examination of the patient found that the general condition was good, conscious, and with normal vital signs. The clinical examination reveals a reinit frontal mass; there were no complaints of fever, nausea, vomiting, seizures or loss of consciousness. There was no history of the same illness in the family. The patient had no history of trauma. Furthermore, the clinical examination is without abnormality. (Figure 1)



Figure 1: photo of the patient face and ¾.

The computed tomography examination, performed in axial and frontal sections, shows a cystic formation occupying the frontal sinus well defined, with regular contours, without modification after injection of contrast product, pushing outwards the residual ocular structures (oculomotor muscles). The lesion had eroded the anterior and posterior walls of the sinus. The Mass

was isointense on T1 and hyper intense on T2 in MRI scans (figure 2).

No pathology was detected in bilateral light, and cornea reflexes and visual field examination was normal. The patient was finally diagnosed with a frontal sinus mucocele and planned an elective craniotomy to evacuate the mucocele.

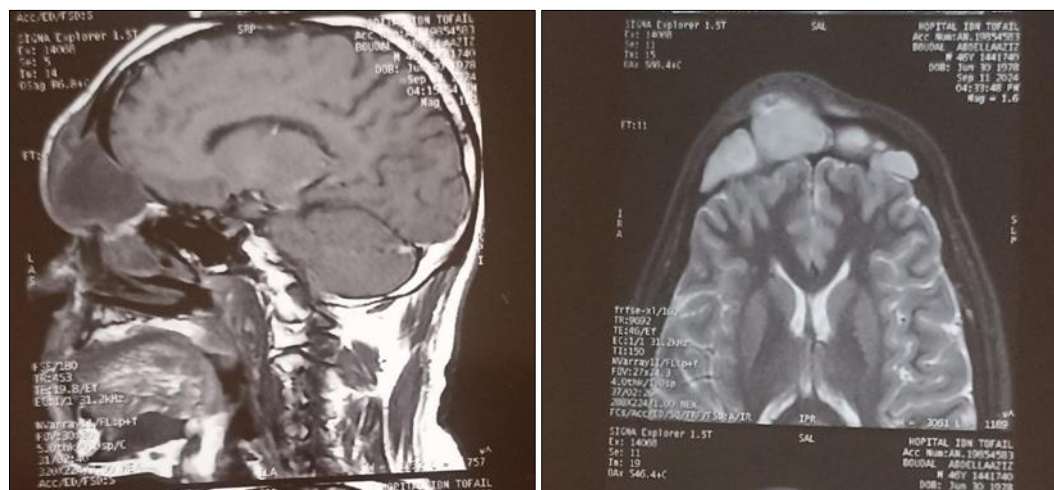


Figure 2: Coronal orbital MRI scan showing a frontoethmoidal mucocele with orbital extension

We performed a bi coronal skin incision and a frontal craniotomy in order to obtain a wider explosion of the lesion and to obliterate the sinus cavity easier. The lesion was resected, the fluid drained; the sample was sent to the laboratory for histopathological and microbial culture examination (figure 3). After removal of the lesion, a dural Lambeau was used to cover dural defect.

The mucosa of the frontal sinus and nasofrontal duct were curetted so, the nasofrontal duct was packed with fibrin glue. A pericranial–galeal flap was used to obliterate dead space. The skull defect was reconstructed with iliac crest bone graft (figure 4). A drain was left in place for 3 days. The bone grafts were shaped and fixed to the residual frontal walls by microplates (figure 6).

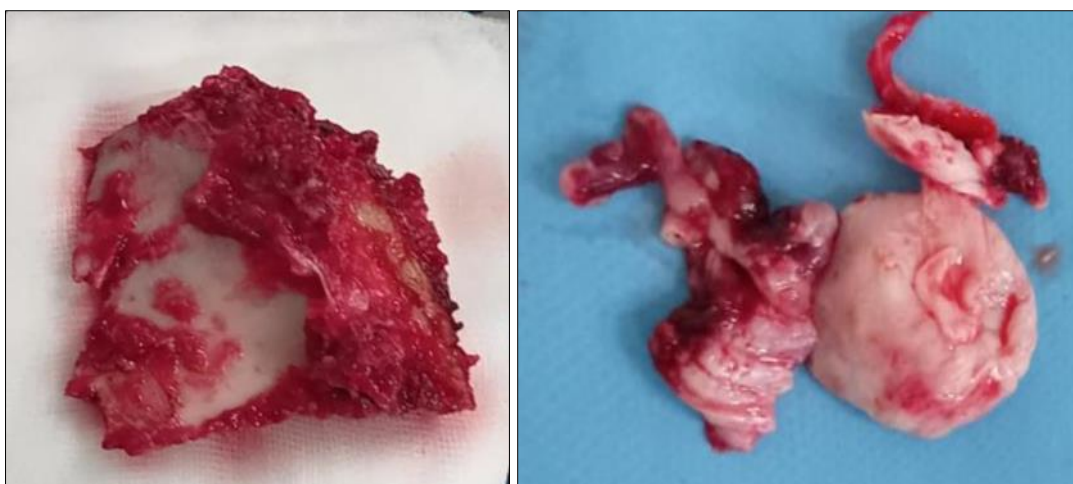


Figure 3: Surgical specimen

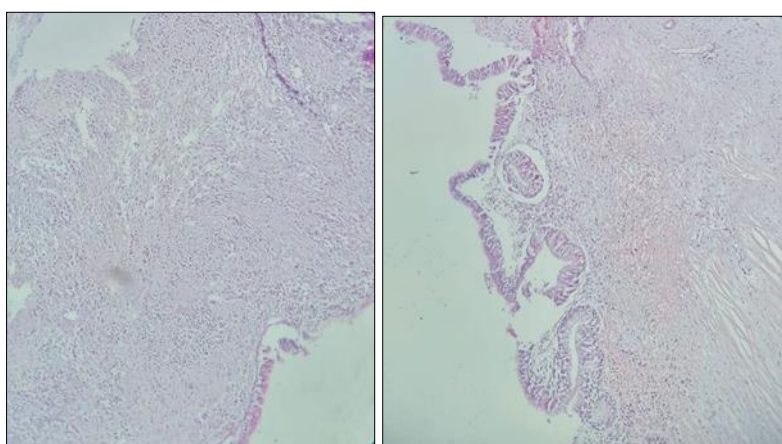


Figure 4: iliac crest bone graft

He had transient cerebrospinal fluid (CSF) rhinorrhea, that was managed conservatively with lumbar CSF drainage.

The histopathological examination came back in favor of a Cyst wall lined by respiratory epithelium with underlying fibro collagenous tissue and focal metaplasia with diffuse lympho-plasmocytic infiltration are noted on histopathology (figure 5).



Figure 5: histological aspect of the surgical specimen



Figure 6: Intra-operative photo of the patient

During six months of follow up controls, no finding of recurrence was found

DISCUSSION

Mucoceles are mucous-secreting expansive pseudo cystic formations, and capable of expansion by virtue of a dynamic process of bone resorption and new bone formation [7]. They result from obstruction of a sinus ostium and frequently are related to a previous condition as chronic sinusitis, trauma, surgery or expansible lesion. With continued secretion and accumulation mucus, the increasing pressure causes atrophy or erosion of the bone of the sinus, allowing the mucocele to expand in the path of less resistance. The most frequently affected sinuses are: the frontal sinus followed by the ethmoid sinus (more than 80%) and rarely the sphenoid or maxillary sinus [8-10].

The diagnosis of a mucocele is based on the history, physical examination, and radiologic findings. Computed tomography (CT) in the axial and coronal planes is the imaging method of choice for diagnosis, since it can delineate the extent of the lesion and its relationship to adjacent structures. There are three criteria for the CT diagnosis of a mucocele: homogeneous isodense mass, clearly defined margin, and irregular osteolysis around the mass. Magnetic resonance imaging (MRI) is an examination that helps in the definitive diagnosis, the lesion appears at the early stage in iso or hypointense in T1 weighting and in hypersignal in T2 weighting, and manifests itself by a hypersignal in T1 and T2 weightings with evolution towards chronicity, which is an identical aspect of a mucopyocele or a tumor lesion [11].

The treatment of mucoceles is surgical. Its goal is to drain the mucocele and ventilate the sinus involved

along with eradication of the mucocele with minimal morbidity and prevention of recurrences [12]. Surgical approaches are based on the size, location, and extent of the mucocele. For the therapeutic management of mucoceles it is systematically surgical. It calls for 2 approaches: external approaches, and endonasal approaches or endoscopic surgery. More recently, the guided endonasal route constitutes a new approach, by carrying out the drainage and marsupialization of the mucocelic pouch. The endonasal route cannot be used for large mucoceles with a bone defect.

CONCLUSION

Mucoceles are cystic lesions from mucous tissue of para nasal sinuses are an uncommon, rare clinical entity. The clinical presentation varies with their anatomical site. The onset of symptoms is usually insidious. Patients with frontoethmoidal mucoceles may develop frontal headache, facial asymmetry, or swelling, as well as ophthalmological manifestations.

The radiological diagnosis and the pre-operative surgical planning are based on CT scan, that shows the extension of the bone erosion, and on the MRI that is useful for the evaluation of the soft tissues' displacement.

Conflicts of Interest: The authors declare no conflict of interest.

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