



## Destructive Giant Maxillary Sinus Mucocele: A Case Report

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### Abstract

*Mucocele of the paranasal sinuses are locally aggressive, cystic, benign lesions. They mainly occur in the frontal or anterior ethmoidal sinuses, and more rarely in the maxillary sinus. Chronic sinus inflammation, trauma, previous surgery and allergic disease are common causes of paranasal mucoceles. Giant mucoceles of the maxillary sinus causing bone destruction are extremely rare in patients with no history of sinonasal surgery. Mucoceles can erode the surrounding walls of the sinus and must therefore be differentiated from malignancies. Treatment of maxillary sinus mucoceles is surgical, Caldwell-Luc being the traditional method. We describe a case of a giant maxillary sinus mucocele with complete obstruction of the right nasal cavity. There were no known etiological factors, and the lesion was treated with endoscopic sinus surgery. The clinical features and radiological aspects of this entity are discussed in the light of the current literature.*

**Keywords:** Giant mucocele, maxillary sinus, nasal obstruction

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## **Introduction**

Mucocoeles are slow-growing, locally aggressive, cystic lesions located in the paranasal sinuses [1,2]. Maxillary sinus mucocoeles represent 2.7-10% of all mucocoeles [1-3]. The cyst wall consists of false multilayer flat or cuboidal epithelium<sup>3</sup>. Although they are benign, they have the potential to cause bone damage and to spread to neighboring structures [1-3]. Paranasal sinus mucocoeles most commonly arise from the frontal and ethmoid sinuses. Giant maxillary sinus mucocoeles leading to bone destruction are rare in individuals who have not previously undergone sinonasal surgery [2-4]. These lesions, which expand progressively, may extend to neighboring anatomical structures by causing destruction in the bone wall [1,2]. Symptoms are mainly associated with the pressure exerted on surrounding tissue by this growing and expanding mass [3]. The most important diagnostic tools are computerized tomography and magnetic resonance imaging [3], while treatment of maxillary sinus mucocoeles is surgical [2]. This case report describes a giant maxillary sinus mucocoele destructing the medial wall of the maxillary sinus, completely obstructing the right nasal cavity and causing the nasal septum to deviate to the left.

## **Case Report**

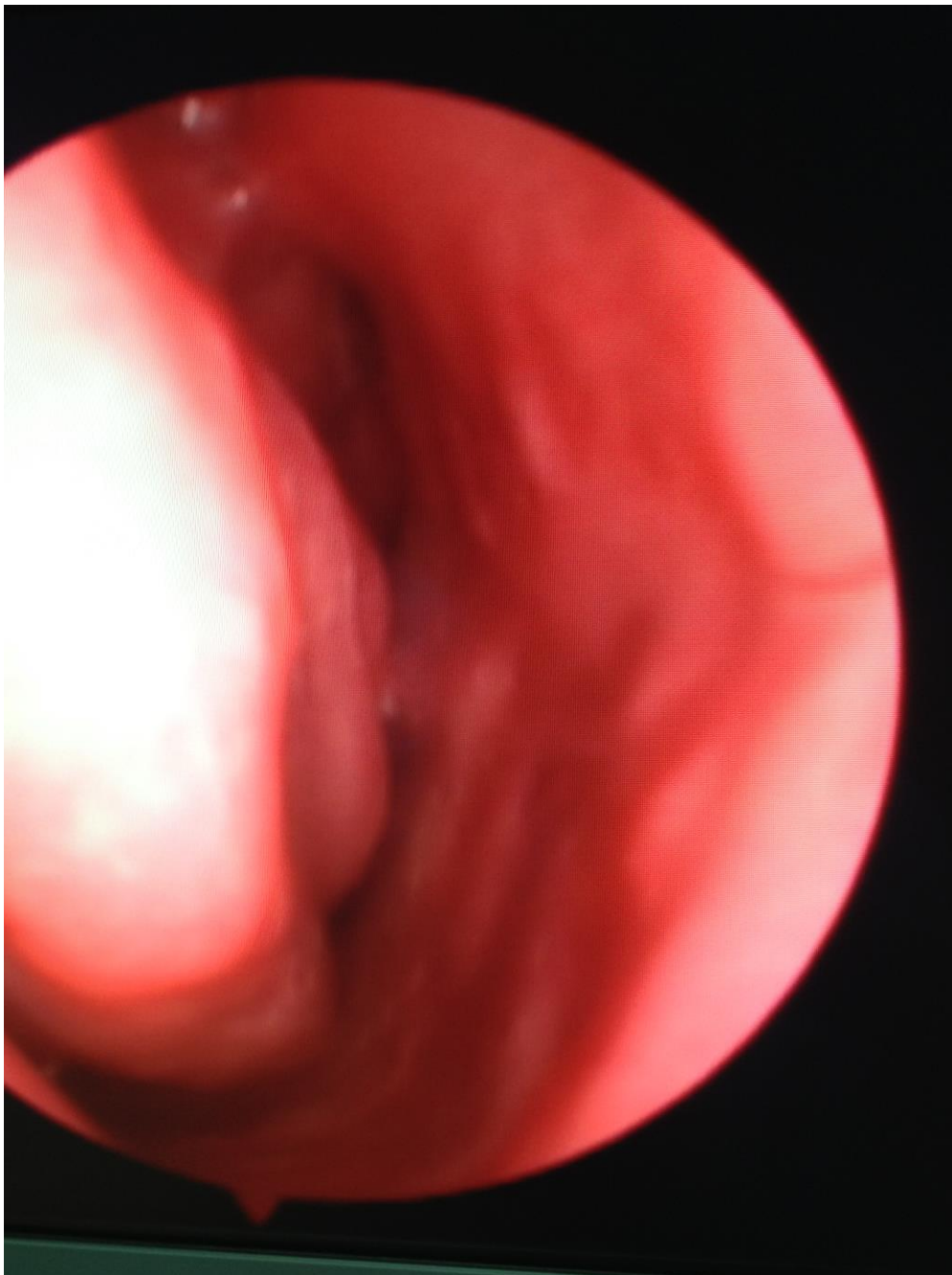
A 34-year-old man presented with obstruction and inability to breathe through the right nostril. There was no previous history of nasal or sinus surgery or trauma. The patient had no history of acute or chronic sinusitis or allergy. Clinical examination revealed complete obliteration of the right nasal cavity and destruction of the right maxillary sinus wall, while the septum was diverted to the left under the effect of the mass. Maxillary sinus malignancy was suspected, and paranasal magnetic resonance imaging was performed. This revealed a giant right maxillary sinus mucocoele expanding from the maxillary sinus medial wall (Figure 1, 2). Endoscopic sinus surgery was performed, and the cyst was excised together with the wall. The maxillary sinus medial wall was then placed back in position (Figure 3). No recurrence was observed at 8-month follow-up.



**Figure 1.** Coronal plane MR image



**Figure 2.** Axial plane MR image



**Figure 3.** Postoperative endoscopic image

## Discussion

Mucocele of the paranasal sinus is a mucoid filled-mass arising following obstruction of the sinus ostium and drainage pattern. The mucocele enlarges gradually. Erosion and remodeling of the surrounding bone occurs due to production of mucus in the mass [1,3]. Mucoceles are most commonly found in the frontal sinus (65% of cases) or the anterior part

of the ethmoid sinus (30% of cases) [5]. The maxillary sinus is a less common location, representing only 2.7-10% of cases [1-3]. Causes of maxillary sinus mucocoeles include chronic infection, allergic sinonasal disease, trauma and previous surgery, while no cause is identified in some cases. Mucocoele of the maxillary sinus has usually been reported following Caldwell-Luc maxillary sinusectomy in Japan [1,6]. Mucocoeles that develop following Caldwell-Luc surgery are considered to result from removal of the sinus mucosa in chronic sinusitis [7]. Mucocoeles of the maxillary sinus are quite rare in individuals who have not previously undergone sinonasal surgery [2-4]. Our patient had no history of any trauma, allergy, sinusitis or surgery.

The symptoms may vary depending on whether the mucocoele develops within or outside the bony walls of the maxillary sinus. No signs of mucocoele in the sinus may be seen for a long time [8]. The symptoms are related to pressure on and obstruction of surrounding anatomical structures as a result of mucocoele expansion. Antral mucocoeles are usually reported in the form of painless bulging of the cheek. Expansion of the medial wall of the maxillary sinus displaces the inferior turbinate and leads to nasal obstruction [9]. Expansion of the superior wall of the maxillary sinus into the inferior orbital cavity may cause displacement of the orbital contents and vision changes. Expansion downward into the area of the alveolus may result in tooth loosening [6]. Our case involved expansion on the medial wall of the maxillary sinus, complete obstruction of the right nasal cavity and inability to breathe through the right nostril.

The most important diagnostic tools are computerized tomography and magnetic resonance imaging. At computerized tomography mucocoele appears as a homogeneous, isodense lesion with no contrast enhancement, unless infected [3]. Smooth margins of bone erosions are seen in the sinus walls with no infiltration of the surrounding soft tissues. In contrast, a malignant mass is likely to be irregular in shape and bone erosions or destructions of the sinus walls have irregular margins, together with infiltration of the surrounding soft tissues. Magnetic resonance imaging is best reserved for mucocoele formation distinct from sinonasal tumors in which the lining membrane of the mucocoele is enhanced after intravenous contrast [3,4]. When expansion and bone destruction are identified, benign and malignant lesions of the paranasal sinuses should be considered at differential diagnosis of the mucocoele. Benign lesions include neurofibroma, dermoid, epidermoid and cementifying fibroma, angiofibroma,

inverted papilloma and cylindrinoma. Malignant lesions include adenoid cystic carcinoma, plasmocytoma, rhabdomyosarcoma, lymphoma, schwannoma and dental tumors. In the absence of expansion and bone erosion, pathologies such as retention cysts, chronic sinusitis, antrchoanal polyp and polyposis of the paranasal cavities should be considered [3,6]. In our case, maxillary sinus malignity was suspected, and paranasal magnetic resonance imaging was performed. This revealed a giant right maxillary sinus mucocoele expanding from the maxillary sinus medial wall and completely obstructing the right nasal cavity.

The treatment of maxillary sinus mucocoele is surgical [2]. The traditional treatment of mucocoele involves an open approach consisting of Caldwell-Luc sinusotomy, an inferior nasoantral window and removal of the mucocoele lining [1]. However, the preferred surgical technique has changed with the development of endoscopic surgery in recent years. A natural ostium for recreating normal physiological drainage of the maxillary sinus is provided with endoscopic treatment [7]. Endoscopic surgery is an effective and rapid means of treating mucocoele and one which causes minimal morbidity [7,10]. In our case, endoscopic sinus surgery was performed, and the cyst was excised together with the wall. The maxillary sinus medial wall was then placed back in position. No recurrence was observed at 8-month follow-up.

In conclusion, isolated maxillary sinus mucocoele is a rare pathology. When bone destruction and expansion occur, it can be confused with malignant diseases. Endoscopic sinus surgery should be preferred for treatment of mucocoele of the maxillary sinus, since this is effective, reliable and causes minimal morbidity. Maxillary sinus mucocoele may very rarely manifest with nasal obstruction and respiratory difficulty alone.

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