

CASE REPORT

Maxillary sinus mucocele as an unusual complication of orthognathic surgery: Case report

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ABSTRACT

Maxillary sinus mucocele as an unusual complication of orthognathic surgery: Case report

Mucoceles of the paranasal sinuses are benign cystic formations lined by epithelium which show local enlargement with mucus collection. These lesions are usually seen in the frontal sinus, rarely in the ethmoid and maxillary sinus. It is believed to develop after the obstruction of the sinus ostium due to chronic sinusitis, polyps, bone tumours, previous trauma and allergic rhinitis. Maxillary sinus mucoceles are rarely seen after surgical operations and has harmful effects on neighboring structures. In this case report, we present a maxillary sinus mucocele which was developed after orthognathic surgery with its surgical treatment and postoperative follow-up.

KEYWORDS

Maxillary sinus mucocele, orthognathic surgery, ostium

ÖZ

Ortognatik cerrahi ameliyatının nadir görülen bir komplikasyonu olarak maksiller sinüs mukoseli: Olgu raporu

Paranasal sinüs mukoselleri iyi huylu, bölgesel genişleme gösteren, mukusla dolu ve çevresi epitelle çevrili oluşumlardır. Bu lezyonlar genellikle frontal sinüste, nadiren de etmoid ve maksiller sinüste görülürler. Maksiler sinüs mukosellerinin kronik sinüzit, polip, kemik tümörleri, geçirilmiş travma hikayesi ve alerjik rinit sebebiyle sinüs ostiumunun tıkanmasından sonra geliştiği düşünülmektedir. Cerrahi ameliyatlardan sonra maksiller sinüs mukosellerine nadiren rastlanır ve komşu yapılar üzerinde zararlı etkileri vardır. Bu olgu sunumunda ortognatik cerrahi sonrası gelişen maksiller sinüs mukoselinin cerrahi tedavisi ve ameliyat sonrası takibi ele alınmaktadır.

ANAHTAR KELİMELEER

Maksiller sinüs mukoseli, ortognatik cerrahi; ostium

Paranasal sinus cysts are divided into three category according to pathogenesis; retention cyst, antral pseudocyst and mucocele.¹ A mucocele is a mucus-filled cystic mass which enlarges slowly caused after the blockage of the sinus.² Paranasal sinus mucoceles are usually observed in frontal sinuses and rarely seen in ethmoid and maxillary sinuses.³ Maxillary sinus mucocele (MSM) is a benign cyst formation which arises inside of the sinuses, lined by epithelium including mucus. It is believed to develop after the obstruction of the sinus ostium due to chronic sinusitis, polyps, bone tumours, previous trauma, allergic rhinitis and postsurgical injury. As the mucus continues to accumulate inside of the mucocele, the lesions expands progressively, resulting in destruction and remodeling of the neighboring bone walls.⁴⁻⁶ Finally, expanded mucocele may lead to nasal congestion, facial asymmetry and dental problems. Bone destruction created by mucocele is not seen frequently. Mostly, it

is usually easy for the mucocele to spread over the anterior and medial walls of the maxillary sinus with bone erosion. However, in some rare cases the mucocele may affect the the orbit, skull base or neighboring soft tissues of the face.^{7,8}

In the literature, there are few cases that reports the formation of MSM after orthognathic surgery.⁹ In this case report, we present a MSM, destructed the adjacent maxillary alveolar bone, which was developed after Le Fort I surgery.

CASE PRESENTATION

A 29-year-old male, showing no systemic pathology, undergone to an orthognathic surgery (Le Fort I and bilateral sagital split osteotomy) for the correction of skeletal class 3 deformity in another hospital. Four years after surgery, patient complained swelling and pain around his right periorbital area and admitted to

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same department. Patient underwent a second surgery and miniplates were removed from the maxilla under general anesthesia. After surgery, the patient recovered and discharged from hospital uneventfully.

Patient consulted to our clinic with a history of extraoral swelling and pain in upper left molar region and left nasal area two years after the second operation. Patient also complained a pus formation in his upper left molar area intraorally. In the panoramic radiography a radiolucent lesion arising from upper left canine to molar region connected with left maxillary sinus was detected (Figure 1). A dental volumetric computerized tomography (DVCT) scan of maxillary sinus confirmed the existence of lesion and destruction of the buccal alveolar bone (Figure 2). Incisional biopsy was performed under local anesthesia and the histopathological result was compatible with sinus mucocele.

Endodontic root canal treatment was performed to upper left lateral and second premolar tooth which were devital. Because the aggressive pattern of this lesion we decided to remove it under general anesthesia. After the anesthesia, vertical and sulcular incisions were made between left lateral incisor and third molar, full-thickness flap was elevated. Defect area of alveolar vestibular bone due to mucocele was enlarged by using round burr. 2x2 cm connection was observed between alveolar defect and left maxillary sinus. The lesion was removed completely and curreted. The communication between the defect and maxillary sinus was covered by 20x30 collagen membrane (Osteobil evaluation fine 20x30 mm). Vestibular alveolar defect also was covered another 20x30 collagen membrane (Osteobil evaluation fine 20x30 mm) and the mucoperiosteal flap was sutured with 3.0 silk suture (Ruschel surgical silk suture 22 mm-3/8). Six months after surgery, the patient was totally recovered and did not present any clinical or radiographic symptom in postoperative follow-up visits (Figure 3).



Figure 1.

Panoramic radiograph shows ill-defined inferior border of maxillary sinus (black arrows)

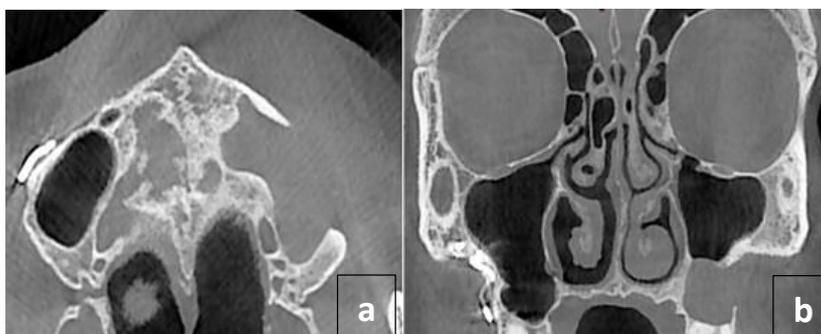


Figure 2.

Destruction of the buccal alveolar bone can be seen in DVCT images of the patient before surgery (a:axial section, b:coronal section)

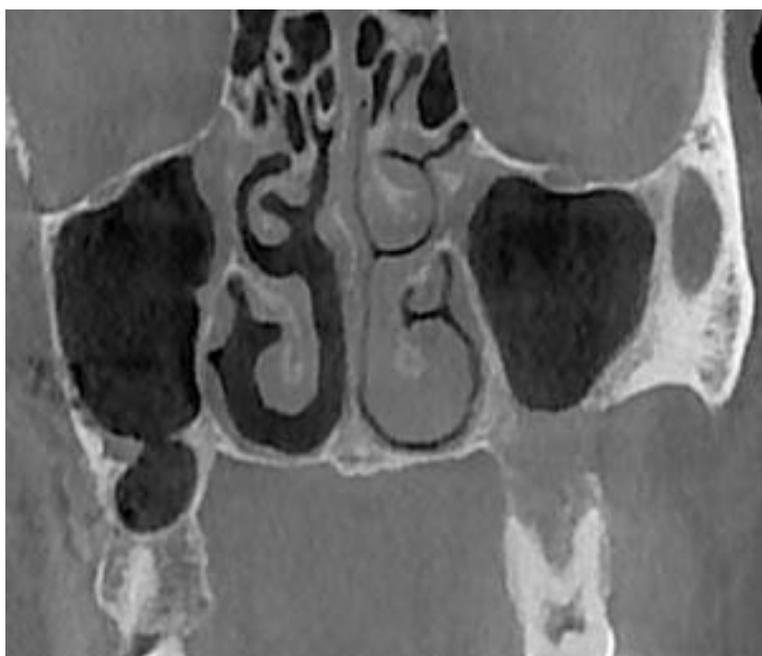


Figure 3.

Coronal section of the patient 6 months after currettage of mucocele in DVCT image

DISCUSSION

Maxillary sinus mucoceles constitute less than 10% of paranasal sinus mucoceles.¹⁰ They usually occur after surgical operations, trauma, chronic sinusitis, allergic diseases, infections, previous radiotherapy or tumours. Recent studies shows that surgical trauma is the common predisposing factor with the rate of 55% to 66%.⁵⁻⁷ In literature it is reported that Le Fort I and Le Fort III osteotomies, posterior maxillary teeth extractions damaging maxillary sinus floor, Caldwell-Luc surgery may cause the development of mucocele.^{11,12} In the present case, Le Fort I osteotomy may be the reason of the formation of the maxillary mucocele.

Clinical symptoms of MSMs change depending on the extension area. Patients suffer from headaches and pain in affected sinus. MSM may enlarge upwards to the inferior orbital rim causing deviated eyeball, periorbital edema, proptosis or enophthalmus which may lead to visual impairment, downwards to alveolar bone and can even cause loosening of teeth. If the lesion extends medially, nasal obstruction and breathing difficulty may occur. Anterior enlargement of the mucocele to the cheek causes unilateral facial swelling, numbness and pain.^{5,7,8,13,14} Although it is known to occur extremely rare, the most feared complication of MCM is blindness. In the present case, patient admitted our department with symptoms of extraoral swelling and pain in upper left molar region and left nasal area extraorally and pus formation intraorally.

Although the diagnosis of mucocele is based on symptoms, radiography and surgical exploration, histologic confirmation is essential.¹⁵ Computerized tomography is gold standard for the radiologic diagnosis especially in the determination of extension of mucocele.¹⁴ On the other hand, Magnetic Resonance Imaging technique gives more information in differential diagnosis when distinguishing the lesion from other soft tissue tumors.¹³ The correct radiological interpretation is essential for the type of surgery to be performed.⁹ In this case report, examined DVCT scans for the evaluation of the borders of the lesion. Retention cysts, maxillary sinusitis, polyps, neoplastic lesions and odontogenic tumours was considered in differential diagnoses. Before surgery, we performed biopsy and the result was compatible with mucocele.

Caldwell-Luc procedure and functional endoscopic sinus surgery are surgical treatment options for maxillary sinus mucocele. Endoscopic surgery is a good choice for small lesions with low recurrence and complication rate. However, open surgical techniques are recommended for big lesions which spread out of sinus borders.^{5,11} Conventionally, the surgical management of MCM is complete excision of the lesion via Caldwell Luc technique. Nowadays,

endonasal endoscopic marsupialization technique is preferred because Caldwell-Luc operation causes substantial morbidity. Some authors suggest middle meatus antrostomy (MMA) while others prefer inferior meatus antrostomy (IMA) as functional endoscopic sinus surgery. Although the recurrence of the lesion after MMA is lower than IMA, it is difficult to deal with large lesions with MMA. On the other hand, IMA technique is a good choice for the treatment of large mucoceles but it gives more damage to the local anatomy. There are also reports in the literature that it is more advantageous to use these two techniques together.^{2,16-18} In present case report, we preferred Caldwell-Luc procedure in the treatment of MCM. Because previous infection of the lesion destructed the alveolar bone which gives us an entry way to maxillary sinus. Thus, there was no need to open a second surgical access route to reach the mucocele.

CONCLUSIONS

MSMs are seen after facial trauma or surgical operations due to damage of maxillary sinus which may lead to obstruction of the sinus outflow. Mucoceles may enlarge beyond the anatomic borders of sinus and has harmful effects on neighboring structures. It can be beneficial to remove the inflammatory soft tissues of maxillary sinus during Le Fort I surgery. On the other hand, MSMs may exist in the patient prior to surgery. Therefore, clinical and radiographic examinations of the patient are useful before orthognathic surgery.

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