Case Report / Olgu Sunumu

Progressive swelling and radiopaque mass in maxillary sinus: formation of stone

Maksiller sinüste progresif şişlik ve radyoopak kitle: Taş oluşumu

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Although radiopaque lesions located in the maxillary sinus are rare, differential diagnosis should include a number of pathologies. Formation of stone, namely "antrolith" in the paranasal sinuses is a very rare phenomenon and it should be considered in the differential diagnosis, as it is usually located in the maxillary sinus. In this article, we present a 47-year-old male case with unilateral chronic sinusitis for a long time and calcification in maxillary sinus in the light of clinical/radiographic findings of the lesion and treatment strategy.

Key Words: Antrolith; maxillary sinus; radiopaque lesion.

Maksiller sinüste izlenen radyoopak kitleler yaygın olmamakla birlikte, ayırıcı tanıda birçok patolojinin dikkate alınması gerekmektedir. Paranazal sinüslerde antrolit olarak adlandırılan taş oluşumu oldukça nadir bir olgu olup, çoğunluğu maksiller sinüste görüldüğünden, ayırıcı tanıda akılda tutulmalıdır. Bu makalede uzun süredir tek taraflı kronik sinüzit yakınması olan ve maksiller sinüste kalsifikasyon izlenen 47 yaşındaki erkek hasta, lezyonun klinik, radyolojik bulguları ve tedavi stratejisi ışığında sunuldu.

Anahtar Sözcükler: Antrolit; maksiller sinüs; radyoopak kitle.

Radiopaque lesions in the maxillary sinus are unusual and the differential diagnosis should include a number of pathologies such as bacterial, fungal infections, cysts or benign and malignant tumors.[1] The presence of radiopaque mass in combination of the bone margins suggests malignant tumor or *aspergillosis*. One of the distinct entities based on radiologic appearance is the rhinolith and hydatid cyst.[2,3] In this article we present a 47-year-old male with longstanding unilateral chronic sinusitis and a crumbly cheese-like substance and calcification in the maxillary sinus treated by surgical removal of the lesion diagnosed as bacterial infection.

CASE REPORT

A 47-year-old male was referred to our clinic with a complaint of nasal stuffiness, obstruction, discharge, chronic infection and intraoral drainage on the left side of the maxilla. Past medical history was unremarkable and there was no unknown allergic disease. On extraoral examination, there was a slight swelling on the left side of the face and no sensory disturbance. The past dental history revealed that the right upper first molar

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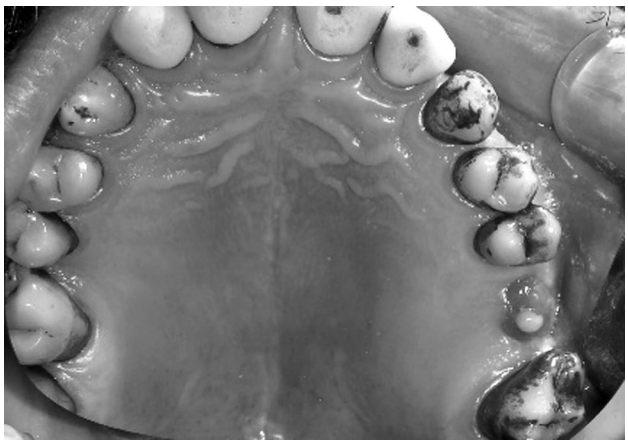

Figure 1. *Oroantral fistula with drainage located between the right upper second premolar and second molar.*

was extracted 15 years ago and since then the patient had the recurring intraoral drainage in the extracted site and progressive left-sided facial swelling. On intraoral examination, an oroantral fistula with drainage was seen between the right upper second premolar and second molar. The mucosa-surrounding fistula was hyperemic and aspiration was positive (Figure 1). Panoramic radiograph showed a

Figure 3. *Computed tomography showed a hypodense calcified solid lesion located in the left maxillary sinus extending to the left side of the nasal cavity obliterating most of the left nasal cavity and blocking the nasal ostium.*

Figure 2. *Preoperative panoramic view of patient.*

radiopaque mass surrounded by a radiolucent lesion extending from the extracted socket at the left upper first molar to the lateral nasal wall and inferior borders of the orbital wall with irregular borders and increased density at its center. The left maxillary sinus was filled by the lesion and no displacements of left upper second premolar and second molar roots were seen (Figure 2). Computed tomography (CT) revealed a hypodense calcified solid lesion located in the left maxillary sinus extending to the left side of the nasal cavity but not attached to the sinus wall and free of osseous insertions. The lesion obliterated most of the left nasal cavity and blocked the nasal ostium (Figure 3). The antibiotics (Cefuroxime Sodium, 250 mg 2 times daily), antihistamine (Cetirizine HCL, 10 mg daily), anti-inflammatory (naproxen sodium, 550 mg 2 times daily) and nasal decongestant (Xylometazoline HCL sprays, 3 times into each nostril, stopped after 5 days) were prescribed

Figure 4. *A defect located in buccal cortical bone caused by the lesion.*

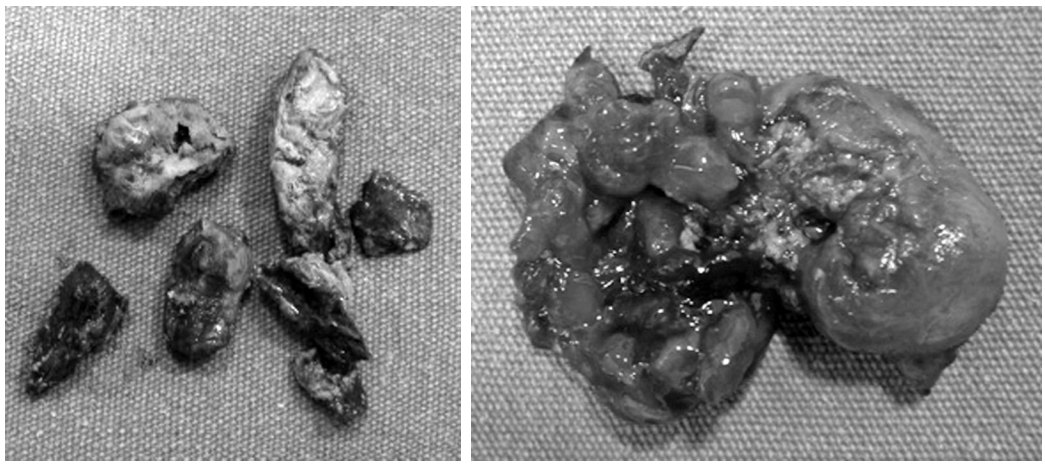

Figure 5. *Polypoid, calcifying mass and caseous necrosis.*

before surgery in order to control infection and drainage. Under deep sedation, the fistula area was excised and a mucoperiosteal flap was elevated from second premolar to second molar. The bony defect on the buccal cortical bone was used to access the sinus and remove the lesion (Figure 4). A polypoid, calcifying mass and caseous necrosis were carefully removed. The specimen was placed in formalin and send to pathology (Figure 5). The defect was closed by using buccal fat pad flaps (BFP) (Figure 6). Briefly the procedure consisted of a short horizontal incision (1-1.5 cm) through the periosteum of the buccal flap and a curved hemostat introduced in the third molar region cranially creating a submucosal tunnel to reach the buccal fat pad. After the BFP was mobilized intraorally by blunt dissection, gentle traction on the fat pad exposed the graft, the defect was then obliterated and the surrounding mucosa was sutured closely to avoid secondary constriction of the flap. The buccal mucoperiosteal flap was replaced in its original position without tension. Subsequently, the patient had an uneventful course (Figure 7, 8). Histopathologic examination showed active necrotizing chronic inflammation, dense bacterial and dystrophic calcification clusters, and calcium deposition around necrotic tissue (Figure 9, 10). There was no fungal hyphae

Figure 6. *The defect closed by using buccal fat pad flaps.*

Figure 7. *Final intraoral appearance.*

Figure 8. *Postoperative panoramic view of the patient.*

and spores in the specimen staining with periodic acid Schiff (PAS). The pathology report revealed the mass to be an antrolith.

DISCUSSION

Calcareous bodies within the nasal cavity and paranasal sinus are a rare but well-recognized phenomenon. Bowerman[1] introduced the term 'maxillary antrolith' (calculus within the maxillary antrum) to differentiate them from other nasal calculi described as rhinoliths. The occurrence of true antroliths is very rare and only a total of 30 cases have been reported in the literature up until 2005.[2] The main components of antroliths are calcium phosphate, calcium carbonate, organic matter, and water, and the size and consistency vary considerably. The lesion may be covered by a granulation tissue with a rich blood supply, and its color may diverge from black to gray or white.[2-4]

Although the pathogenesis of antroliths is not completely understood, the major factors are assumed to be long-standing infection, poor sinus drainage, and the presence of a foreign body.[2] It may originate from calcification of an endogenous or exogenous nidus within the maxillary sinus over a long time period. While endogenous lesions are labeled as true antroliths and may form around blood, mucus, pus, red blood cells, or white blood cells, the exogenous antroliths are defined as false lesions, and may develop around a foreign body such as a tooth, tooth root, dental material, bead, button, paper, vegetable/bean pieces, snuff, and fruit seeds.[4-7] It is usually asymptomatic, but it may be associated with dull pain mimick sinusitis.[8] Facial pain, nasal obstruction, epistaxis, purulent or bloodstained discharge, foul-smelling postnasal drip, and oroantral fistula have also been stated as clinical features in symptomatic cases.[2]

In the radiographs, antroliths are observed as radiopaque masses in varying sizes and shapes with irregular borders, and they are occasionally accompanied by antral mucosal swelling, fluid, and polyps.[2,3] The differential diagnosis of antrolith includes displaced tooth fragments, calcified mucus retention cysts, displaced follicular cysts, condensing osteitis, rhinoliths, calcified polyps, mycoliths, odontomas, osteomas, cementomas, fibrous dysplasia, primary/metastatic carcinoma, osteogenic sarcoma, calcifying epithelial odontogenic tumor, and foreign bodies. The treatment of choice for large antroliths causing clinical complaints is surgical removal. Even though palatal perforation, bony destruction,

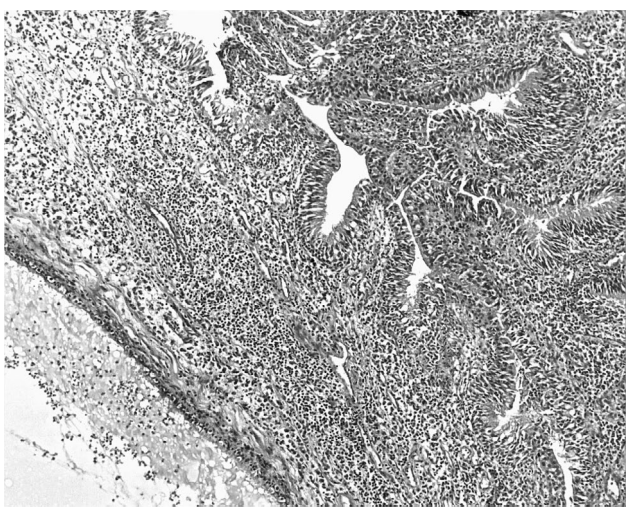

Figure 9. *Intensive inflammatory cellular infiltration (H-E x 100).*

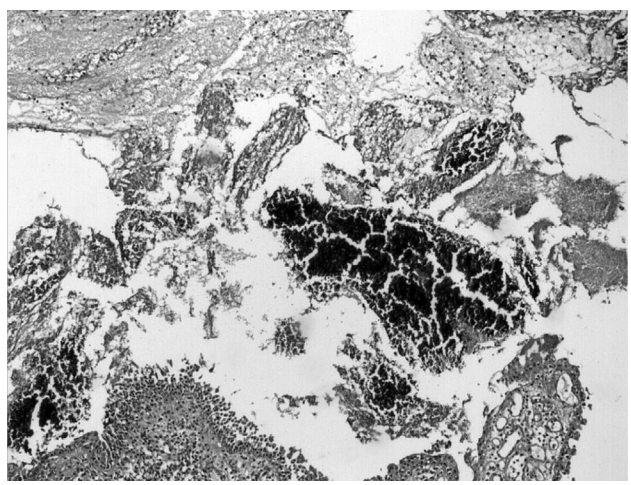

Figure 10. *The presence of inflammatory cells, dense bacterial and dystrophic calcification clusters, and calcium deposition around a necrotic tissue (H-E x 100).*

and mortality have been reported, reconstruction of sinonasal anatomy is rarely needed.[2,9,10]

Perforation of the maxillary sinus leading to formation of an oroantral fistula occurs in the course of removing teeth in the maxilla. When the alveolar bone surrounding the tooth is extremely thin and the majority of the tooth structure lies within the sinus, a traumatic routine extraction can cause a perforation. The close proximity between the roots of maxillary posterior teeth and the floor of the maxillary sinus may predispose to the establishment of an oroantral passage during conventional endodontic therapy or tooth extraction.[11] A number of patients describe a history of tooth extraction, three months to 21 years before consultation and seven cases have been reported of oroantral fistula with antrolith in the maxillary sinus.[2] In present case, the patient had tooth extraction in the left maxillary area 15 years ago and since then had intraoral drainage and progressive swelling with nasal stuffiness, obstruction and discharge.

The use of the BFP as a pedicled flap has so far been shown to be an easy, well-tolerated, and uncomplicated technique for oral reconstruction. The transferred BFP starts to epithelialize in a week and completes its epithelialization within six weeks. At that time, the graft is covered with healthy-looking oral mucosa. The rich blood supply of the BFP and its easy mobilizations and fewer complications make it an ideal flap. Furthermore, the BFP is located close to the defect to be covered diminishing the risk of infection.[11,12]

In conclusion, the present case had an antrolith with exogenous nidus and surgical removal was sufficient with an uneventful course when the nidus of maxillary sinus caused by *aspergillosis* was excluded. A radiopaque lesion located in maxillary sinus diagnosed as antrolith must be considered in patients with long-standing oroantral fistula and differentiated from other pathologies.

Declaration of conflicting interests

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