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Giant Radicular Cyst Involving the Maxillary Sinus

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Abstract

The most prevalent cystic lesions in the jaws are radicular cysts. They are made up of epithelial remains that multiply after pulp necrosis due to inflammation. Radicular cysts rarely grow to substantial sizes, while typically being tiny and asymptomatic. When localized, they are treated with root canal treatment; when large, they are treated with surgical procedures.

A 28-year-old systemically healthy male patient was admitted to our clinic due to extraoral swelling in the right maxillary posterior region. Radiographic examination revealed a well-defined lesion localized in the right maxillary region, extending into the nasal cavity and orbital floor, including the maxillary sinus. The lesion, in which cyst fluid was observed as a result of aspiration biopsy, was enucleated under general anesthesia and an excisional biopsy was performed. The biopsy confirmed the preliminary diagnosis of the radicular cyst.

Radicular cysts seen in the maxillary region may resorb adjacent anatomical structures and develop into the sinus. Such lesions should be diagnosed before they reach large sizes and the causative teeth should be treated.

Keyword: Radicular cyst, enucleation, maxillary sinüs

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INTRODUCTION

In the jaws, radicular cysts are the most prevalent cystic lesions. They constitute 52%-68% of all cysts seen in the jaws (1,2). They are thought to occur due to the inflammatory proliferation of Malessez epithelial cell residues in the apical region of a tooth with necrotic pulp (3,4). They can also be seen lateral to the roots in relation to accessory root canals. They are more common in the incisor-canine region of the maxilla. They are more likely to occur in the third decade and in males (5,6).

Radicular cysts usually cause no symptoms and are small in size. However, they can rarely reach large sizes. They can cause mobility, displacement, and root resorption in adjacent teeth (4,7). On radiographs, they are observed as a radiopaque, circumscribed round or oval radiolucency that is continuous with the lamina dura of the relevant tooth in the apical region of the necrotic tooth. When localized, root canal treatment; when they reach large sizes, they are treated with surgical techniques such as marsupialization, enucleation, or decompression (4,8). In this case report, surgical treatment of a large radicular cyst involving the maxillary sinus is presented.

CASE REPORT

A 28-year-old male patient applied to Oral and Maxillofacial Surgery Clinic due to extraoral swelling in the right maxillary posterior region. It was obtained that the patient had no systemic disease in his medical history; however, he had previously undergone an operation in the otorhinolaryngology department. Radiographic examination revealed a well-defined lesion in the right maxillary region, measuring approximately 44x34x40 mm in dimension, occupying most of the right maxillary sinus and extending into part of the nasal cavity. The lesion was associated with the expansion of both buccal and palatal cortical plates and resorption of the roots of adjacent teeth (Figure 1).

Figure 1. A. Panoramic radiograph; B. Axial, C. Coronal, and D. Sagittal CBCT views showing a large, well-defined expansile lesion in the right maxillary region.

Cyst fluid was observed in the aspiration biopsy performed for preliminary diagnosis. It was planned to enucleate the mass under general anesthesia. After providing general anesthesia with endotracheal intubation, local infiltrative anesthesia was applied to the right maxillary anterior and posterior regions. Following the sulcular incision extending from tooth 17 to

tooth 22, relaxing vertical incisions were made from the distal of tooth 17 and mesial of tooth 22, and a full-thickness mucoperiosteal flap was raised. The cyst wall perforating the buccal bone was dissected from the surrounding bone and the lesion was enucleated. (Figures 2,3). The sharp bone edges were smoothed and the flap was closed primarily. As a result of the biopsy, fibrotic-walled tissue, and benign osseous tissues were observed in the subepithelial area lined with nonkeratinized stratified squamous epithelium, hemorrhage, and lymphoplasmacytic infiltration (Figure 4). The preliminary diagnosis of a radicular cyst was confirmed. No complications were observed during the 10 months follow-up period.

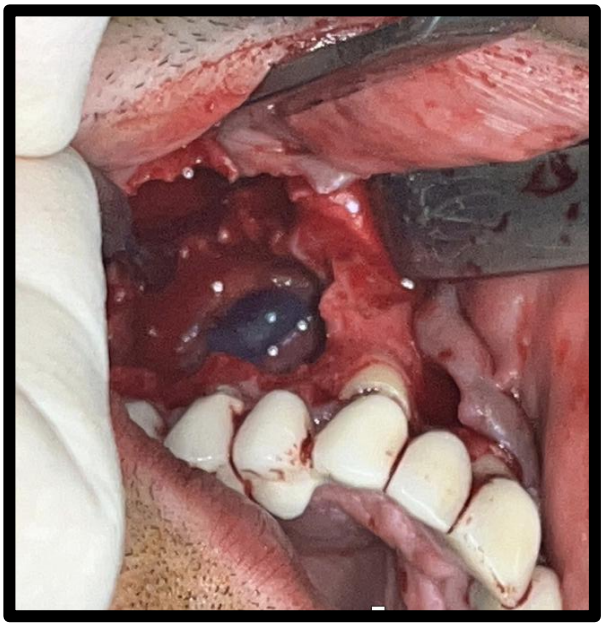

Figure 2. Image of the cyst cavity after enucleation

Figure 3. Specimen obtained after enucleation

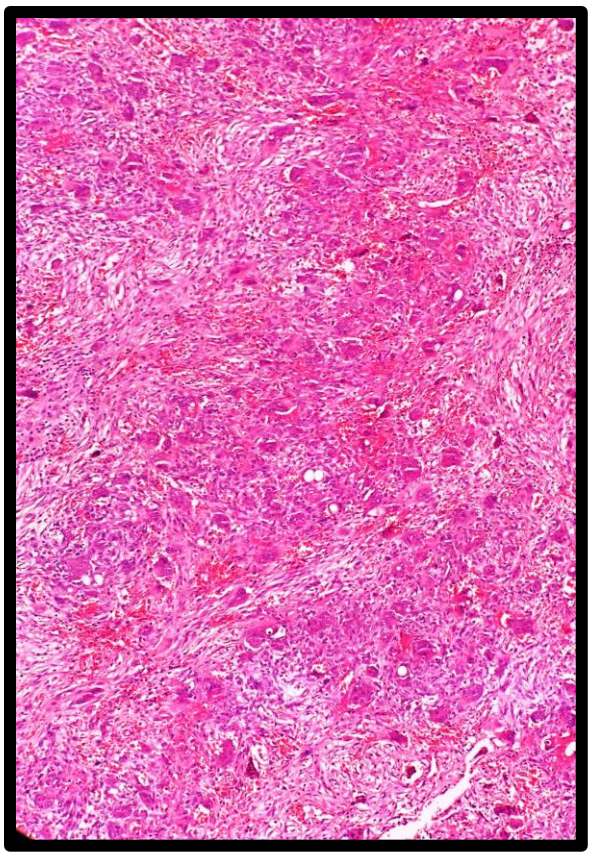

Figure 4. Histological image of the specimen obtained as a result of excisional biopsy at x200 magnification

DISCUSSION

In the oral and maxillofacial area, odontogenic cysts are common lesions. The cyst epithelium

originates from the tissues involved in tooth formation. They are examined in two main groups: inflammatory and developmental cysts. The most common inflammatory cysts are radicular cysts, which are formed as a result of the proliferation of epithelial remnants due to inflammation caused by pulp necrosis (9,10).

Radicular cysts are often discovered incidentally on radiographs without any obvious symptoms. They are usually painless unless infected. Although they tend to grow and expand slowly, they can reach significant sizes if not diagnosed and treated in time (1,11). Invasion of odontogenic cysts into the maxillary sinus depends on their proximity to the sinus and the type of lesion has no effect. Infected cysts spread to areas where the bone is weak, such as the sinus or nasal cavity. They do not cause any asymmetry unless the sinuses are filled. (4,7). In our case, the radicular cyst progressed asymptomatically and extended into the nasal cavity, involving the maxillary sinus.

Radicular cysts are radiographically present as unilocular radiolucent images with sclerotic borders related to the apex of the affected tooth. They are distinguished from follicular spaces by having a diameter of at least 1 cm. Lesions such as dentigerous cyst, odontogenic keratocyst, Pindborg's tumor, ameloblastoma, cementoma, and odontogenic fibroma can have similar radiographic characteristics to radicular cysts. Histopathological evaluation is usually required for the diagnosis of such lesions. While panoramic radiographs are inadequate, especially when cysts are large, computed tomography (CT) scans provide superior detail and allow visualization of the size and extension of the cyst. When radicular cysts extend to the maxillary sinus, mucoceles, pseudocysts, and retention cysts are also included in the differential diagnosis of the radicular cysts (5,12). In our case, radiographic evaluation was performed via cone beam computed tomography (CBCT), and the preliminary diagnosis was confirmed by histopathological examination.

In the treatment of radicular cysts, endodontic treatment or surgical treatments such as enucleation and marsupialization are applied. While endodontic treatment usually provides healing in cysts, when the lesion reaches large sizes, endodontic treatment is not sufficient, and surgical treatment is required (2,13). In our case, the cystic lesion, which reached large dimensions enucleation treatment was applied.

There are few cases of radicular cysts invading the maxillary sinus in the literature similar to our case Sagit et al. (7) reported a large radicular cyst located in the right maxillary sinus and caused destruction of the anterior wall of the maxilla in a patient presenting with extraoral swelling and nasal obstruction. The mass covered with calcified tissue was treated with an endoscopic approach. Pekiner et al. (12) reported a radicular cyst covering a large part of the right maxillary sinus in a patient who

applied bilateral swelling that does not cause pain in the anterior palatinal region and treated it with surgical enucleation under general anesthesia. Köse et al. (4) reported a giant radicular cyst extending into the bilateral maxillary sinus and nasal cavity. CBCT evaluation revealed that the lesion covered the entire left maxillary sinus and a large part of the inferior nasal cavity and extended into the right maxillary sinus. The cyst was enucleated under general anesthesia and apical resection of the relevant teeth was performed.

CONCLUSION

As a result, radicular cysts seen in the maxillary region may resorb adjacent anatomical structures and develop into the maxillary sinus. Such lesions should be diagnosed before they reach large sizes and the causative teeth should be treated.

Ethics Committee Approval: Ethics Committee Approval: The presented study is qualitative and consent was obtained by giving information about the study by one-toone interviews with the subjects who agreed to participate. The study was carried out by paying attention to the Declaration of Helsinki

Peer-review: Externally peer-reviewed

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Conflict of Interest: The author declared no conflict of interest.

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