



Cysta Radicularis Magna Maxillae: A Case Report and 5-Year Follow-Up

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Abstract

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BACKGROUND: An odontogenic cyst is a pathological, epithelial-lined cavity containing fluid or semi-fluid which arises from the epithelial remnants of tooth formation. These cysts may become increasingly obvious clinically as they increase in size, initially creating a bony hard swelling. As this gradually and slowly enlarges, the bony covering becomes increasingly thin, which clinically may be demonstrated on palpation. Management of jaw cysts as a pathology requires a serious and thorough approach, and it begins at the first examination of the patient. The most important starting point is to analyze and find out the cause of the change, the duration of development, and the presence or absence of clinical symptoms. The use of 3D CBCT analysis of the jawbones provides an answer for the modality of surgical treatment, the proximity to certain anatomical structures, and the way to resolve postoperative bone defects.

CASE PRESENTATION: Twenty-three-year-old male, came with swelling on the left anterior side of the face, and above tooth 22. The swelling began 7 days earlier, and the patient had no other medical conditions and diseases. The radiographic examination shows radiopaque mass between and above the root of tooth 22 in the anterior maxilla, confluent with other large radiopaque mass to the other teeth of this zone. A radical surgical approach was considered for cyst removal, and bone regeneration techniques for replenishment of the bony defect.

CONCLUSION: A radical surgical approach is the only treatment in most cases of large radicular cysts. It should be noted that the preoperative 3D analysis is also a key factor that dictates this radical approach. Bone augmentation techniques are a reliable and predictable method for filling in bone defects, and should always be combined and included in this treatment.

Introduction

An odontogenic cyst is a pathological, epithelial-lined cavity containing fluid or semi-fluid which arises from the epithelial remnants of tooth formation. The 1992 World Health Organization (WHO) classification of odontogenic cysts is widely recognized, and categorizes them as developmental or inflammatory in nature. Odontogenic cysts are often asymptomatic, and therefore, may expand to a large size before any clinical signs are noted, and as such, their presence is often an incidental finding on radiographic examination [1], [2]. These cysts may become increasingly obvious clinically as they increase in size, initially creating a bony hard swelling. As this gradually and slowly enlarges, the bony covering becomes increasingly thin, which clinically may be demonstrated on palpation [3]. As the lesion expands beyond its bony confines, it then becomes a fluctuant swelling [4]. The slow expansion of the cyst usually causes displacement of related structures, such as the inferior alveolar bundle in the mandible or the maxillary sinus. When altered sensation occurs, it can be an indication of infection or more aggressive pathology [5]. Management of jaw cysts as a pathology requires a

serious and thorough approach, and it begins at the first examination of the patient. The most important starting point is to analyze and find out the cause of the change, the duration of development, and the presence or absence of clinical symptoms [6], [7]. For this purpose, the clinical and radiological examination of the patient is equally important. The use of 3D CBCT analysis of the jawbones provides an answer for the modality of surgical treatment, the proximity to certain anatomical structures, and the way to resolve postoperative bone defects [8], [9].

Most odontogenic cysts are treated by either enucleation or marsupialization. Enucleation involves the complete removal of the cyst, and is the treatment of choice as it enables primary closure and also allows the whole lining to be examined pathologically. However, incomplete removal of the lining may lead to recurrence. Incomplete removal often occurs when the cyst has perforated through the alveolar cortex, and the cyst lining is adherent to the adjacent soft tissues. Alternatively, marsupialization can be undertaken. This technique involves the creation of a surgical window in the wall of the cyst, decompressing the cyst and allowing the removal of any cyst content. Then, the cyst lining is sutured to the surrounding mucosa, thus

maintaining the opening into the cyst. The opening can also be maintained with packing material or a prosthetic bung. This obviously requires a healthy patient who would be able to maintain hygiene. This decompression facilitates a reduction in the size of the cyst, and so, at a later date, enucleation can be carried out. This would be indicated if enucleation would risk damaging the surrounding structures, if there was a risk of pathological fracture of the jaw, or if the involved tooth is to be maintained [10]. It may also be indicated if the patient was not medically fit enough for a general anesthetic, which may be necessary for the management of large cystic lesions [11].

Materials and Method

Twenty-three-year-old male, came to the clinic due to swelling on the left anterior side of the face, and above tooth 22. The swelling began 7 days earlier, and the patient had no other medical conditions and diseases. Extraoral examination revealed facial edema on the left side of the face, stretching from anguli oris to margo infraorbitalis; it was fluctuant on palpation without signs of extraoral drainage. Regional lymphadenopathy was present. Intraoral examination revealed edema (abscessus) in the upper fornix above teeth 22 and 21; sinus tract was evident above the apex of tooth 21. There was pain on vertical and horizontal percussion.

Vitality test was performed on teeth 21 and 22, and showed no signs of vitality of the teeth.

The radiographic examination shows radiopaque mass between and above the roots of teeth 21 and 22, with no root resorption. Lamina dura of teeth 22 and 21 is destroyed. Osteosclerotic ring limits the lesion at 22, from condensed bone of the maxilla (Figure 1).



Figure 1: Preoperative radiograph showing the unclear radiolucency in the frontal maxilla

Furthermore, there was radiopaque mass in the anterior maxilla, of unknown nature, at first thought to be bone artifact. Initially, we decided to do an incision and drainage above 22, because the first diagnosis was that radicular cyst was present above tooth 22.

While performing local infiltration anesthesia, the needle went too deep, and yellow fluid appeared

on aspiration. The needle took medial direction, far from the teeth primarily diagnosed with cyst. Hence, according to Panoramix, we did aspiration palatally on the other side (right). Yellow fluid appeared again (10ml syringe). The bone artifact was actually big bone confluent lesion that stretches from tooth 16 to 22. There were two possible approaches:

Radical approach with lesion removal, teeth extraction, and radical frontal maxillectomy, and conservative approach which meant apicoectomy on five teeth, lesion removal, and augmentation of the bone defect. Due to patient age, we decided that the best approach was conservative approach, even though it was more dangerous and unpredictable.



Figure 2: Preoperative, postendodontic radiograph

Surgical protocol

Preoperative treatment included incision and drainage of the abscess above tooth 22.

Endodontic treatment on teeth 13,12,11,21, and 22 was performed one day before the surgical treatment, and the teeth were permanently sealed (Figure 2). Antibiotic therapy (Tbl. Amoxiclav a 1000 mg), antiedematous therapy (Drag. Chymoral Forte), and painkiller therapy were prescribed preoperative. Under sedation and local anesthesia, Nowak Peter surgical incision was performed, and mucoperiosteal flap was elevated (Figures 3 and 4). Elevation of the flap exposed the vestibular aspect of the anterior maxilla, and the bony tissue was found to be completely destroyed, with an indistinct border to the soft tissue lesion. The soft tissue lesion was carefully detached from its bed, and



Figure 3: Incision and mucoperiosteal flap elevation in the 22 area

apicoectomy was performed on teeth 13, 12, 11, 21, and 22 (Figures 4-6). The site was irrigated with antibiotic solution, and later was augmented with spongy bone substitute (Bio-Oss Geistlich Switzerland) and

resorbable bilayer membrane (Bio-Gide Geistlich Switzerland) (Figures 7-9). Suturing was performed, and the patient was advised to continue with the antibiotic, antiedematous, and analgesic treatment (Figure 10). The material was sent to histopathologic examination, and the results showed that it was gigantic, confluent radicular cyst of dental origin, with no signs of malignant transformation.

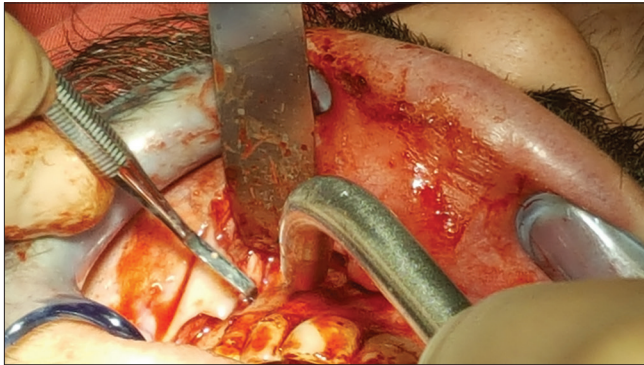


Figure 4: Cyst detachment



Figure 8: Bone Augmentation

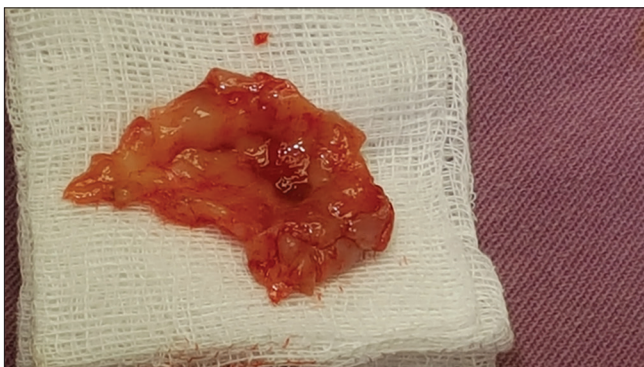


Figure 5: Histopathologic material



Figure 9: Augmented site

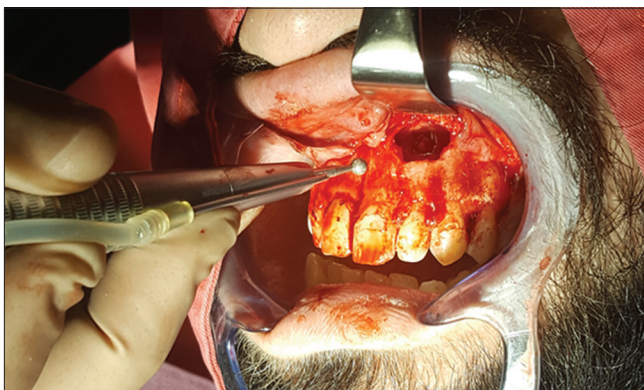


Figure 6: Apicoectomy

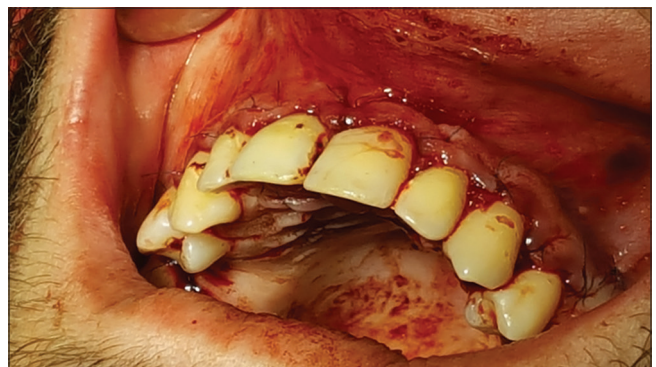


Figure 10: Suturing



Figure 7: Bone defect, in the frontal maxilla

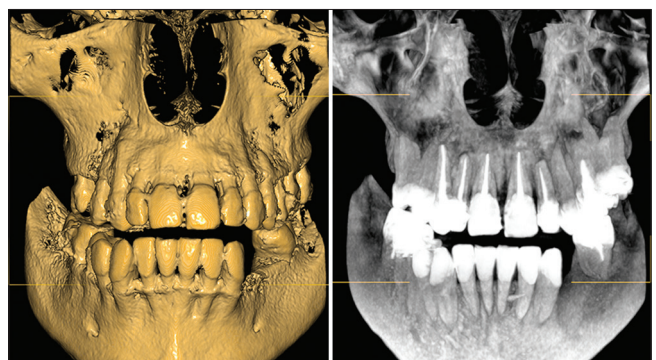


Figure 11: 5-year follow-up CBCT

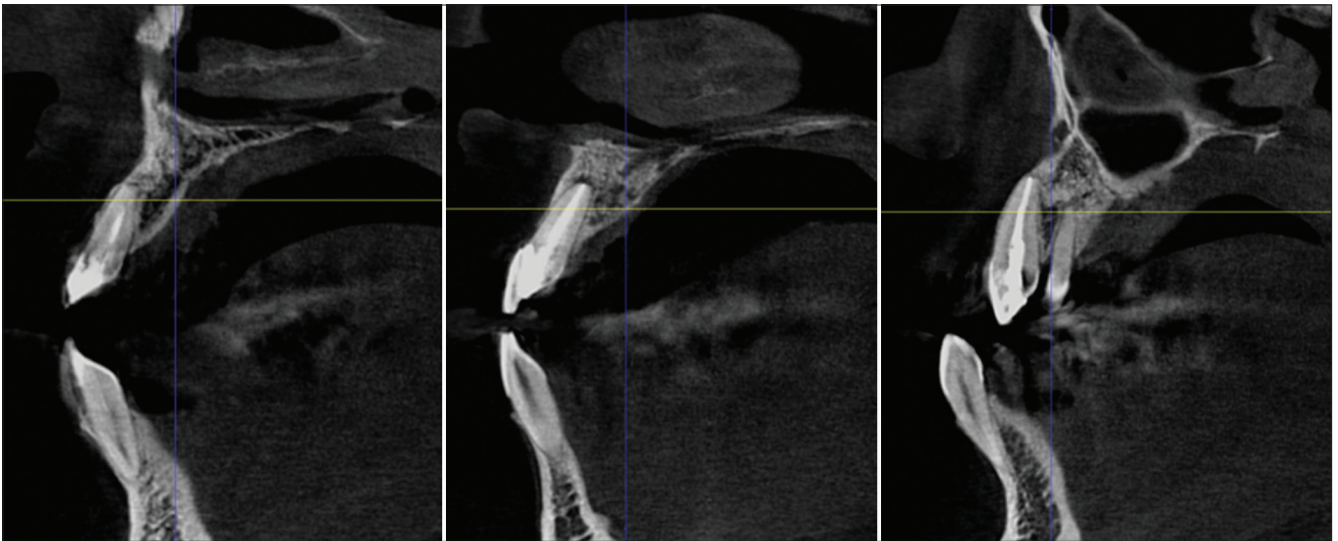


Figure 12: 5-year follow-up sagittal view CBCT

Results and Discussion

In the postoperative period, the patient had no major discomfort. Six months later, a control panoramic radiograph was taken, which showed that there is a formation of new bone tissue in the area of the anterior maxilla. Five years postoperative, the case was analyzed using 3D CBCT imaging. It was shown that there is a complete regeneration of the vestibular bone plate in the area of the frontal maxilla, without signs of exacerbation. The newly formed bone around the teeth was of good quality and density, indicating a good treatment prognosis over time (Figures 11 and 12).

Jaw bone cysts are pathological lesions that should be treated surgically by oral and maxillofacial surgeons, and poor differential diagnosis can cause harm to the patient. Histopathological analysis and etiology are important for establishing the treatment plan, and doctors of dental medicine and endodontists should be very careful, when diagnosing these kind of lesions, especially when they approach conservative treatment.

Bone augmentation procedures show successful bone substitution postoperative, more than cases where these procedures are not used at all.

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