

Decompression of a Large Mandibular Radicular Cyst Secondary to Dental Trauma: A Case Report

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Case Report

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Abstract

The radicular cyst is the most common odontogenic cyst. It originates from epithelial remnants of the periodontal ligament as a result of inflammation that is generally a consequence of pulp necrosis. The present report describes the management of a large radicular cyst of the mandible in a young patient. The treatment comprised endodontic treatment of the teeth involved followed by decompression. After 8 months of follow-up, this technique allowed rapid healing of the lesion as well as the beginning of ossification.

Keywords: Decompression; Radicular cyst; traumatism.

Introduction

Radicular cysts are the most common inflammatory odontogenic cysts of tooth bearing areas of the jaws [1]. They originate from an epithelial rest of Malassez in periodontal ligaments secondary to inflammation [2]. The progression of the cyst is initiated by pulpal necrosis followed by periapical inflammatory reaction; however, they may also be found on the lateral aspects of the roots in relation to accessory root canals. In most of the cases, the lesion is discovered as an incidental finding during radiographic examination [3].

The growth of cystic lesions in the jaw can cause damage to adjacent vital structures such as the mandibular nerve and maxillary sinuses. They also can cause facial asymmetry, dental displacements and pathological fractures. To avoid this, various treatments have been described for handling the jaw cysts [4] such as endodontic treatment, extraction of the offending tooth, enucleation with primary closure, marsupialization or decompression [5].

The aim of the present study is to present a clinical case report of a large radicular cyst of the mandible treated with decompression and pulp therapy of the associated teeth.

Case Report

The patient, a 14-year-old Moroccan boy, was referred to the Department of Pediatric Dentistry of the Dental University Hospital of Rabat for inspection of a painless swelling of the left side of the mandible, which was first noticed, by his parents, 2 months previously. His medical history was unremarkable. During the clinical interview, the parents reported an incident of trauma to the site at the age of ten. Extraoral examination

revealed hard firm swelling present near the lower border of the mandible but no other notable physical abnormalities. Intraoral examination revealed otherwise a poor oral hygiene and a generalized gingivitis. Physical examination showed swelling of firm consistency causing, localized in the anterolateral left area of the mandible, bulging of the cortical bone. The oral soft tissues were within normal limits, and inferior alveolar nerve function was intact. The lower permanent left lateral incisor and canine were non vital. Radiographic examination showed a large rounded unilocular radiolucent lesion, 60 x 35 mm in diameter, extending from the mandibular right first premolar to the mandibular left first premolar displacing the teeth. A closer examination of the radiograph revealed that the border of the lesions was smooth and well defined (figure 1).



Figure 1: Panoramic imaging: Radiolucent lesions of the mandible well defined with smooth border.

From these findings, the case could be diagnosed as radicular cyst, median cyst of the mandible, ameloblastoma or keratocyst. Histopathological examination of the aspiration biopsy showed a cystic lesion, and presumptive diagnosis of a radicular cyst.

The option was for a conservative management comprising the endodontic treatment of the non vital tooth followed by decompression of the cystic lesion in a subsequent session. After infiltration anesthesia, an excision of the overlying mucosa and opening of an appropriate-sized window (approximately 2cm) was made between the root eminences of the left mandibular lateral incisor and canine. An aspirative biopsy was made. Lavage with sterile saline was accomplished. Cavity was kept open by suturing in place a small drainage tube. The decompression tube was not implanted where it will interfere with the occlusion or lips mimic (figure 2).

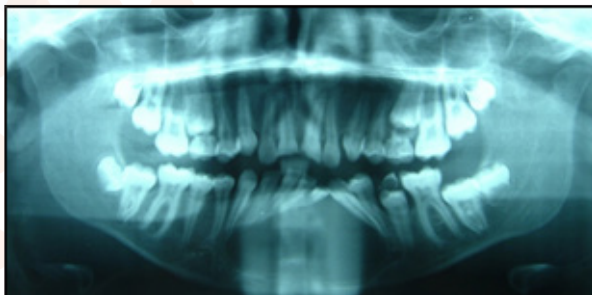


Figure 2: Intraoral view: Decompression tube.

Suture was placed above and below the drain, and through the drain itself as well as through mucosa to stabilize it. The patient was instructed to irrigate through the lumen of the drain twice a day with sterile saline solution. A monthly recall control was recommended and a panoramic radiograph was done to follow the course of treatment. After 8 months, the radiographic control confirmed the success of the therapeutic approach with regression total of the lesion (figure 3).



Figure 3: Panoramic imaging: 8 months post op: Total regression of the lesion.

Discussion

Radicular cyst is one of the most common and significant types of cystic lesion affecting the jaw accounting about 52%–68% of all the incidences which affect the jaw. Actual prevalence

of cysts is only about 15% of all apical periodontitis lesions. Radicular cyst occurs more commonly between the third and fifth decades, with male predilection [3].

Trauma is one of the most frequent causes of pulp infection and necrosis in both primary and permanent teeth [6]. The importance of seeking treatment immediately after sustaining a traumatic injury as well as periodically controlling the injured region lies in avoiding or minimizing the occurrence of major sequelae. Trauma might cause important sequelae and therefore should not be overlooked in order to avoid major damage, such as the development of cystic lesions, as reported in this article.

Some of them grow slowly and lead to mobility, root resorption and displacement of teeth and once infected lead to pain and swelling and patients become aware of the problem. It is often said that radicular cysts are painless unless infected. The teeth associated with the cyst are always nonvital and may be discolored too [3]. In our case permanent left lateral incisor and canine were nonvital and displacement of teeth was seen.

The swelling is slowly enlarging and initially bony hard to palpate which later becomes rubbery and fluctuant. In the maxilla there may be buccal or palatal enlargement whereas in the mandible it is usually labial or buccal and only rarely lingual [3].

Radiographically, the radicular cyst appears as round or pear-shaped unilocular radiolucency at the apex of a non-vital tooth. The margin of a radicular cyst is radiopaque with hyperostotic borders, which continues with the lamina dura. However, in infected or rapidly enlarging cysts, the radiopaque margin may not be present [7].

Other odontogenic cysts like dentigerous cysts, odontogenic keratocysts and odontogenic tumours such as ameloblastoma, Pindborg tumour, odontogenic fibroma and cementoma may share the same radiological features as radicular cysts. Hence, histopathological evaluation is necessary most of the time to diagnose these types of giant lesions [2].

Several treatment options are available for a radicular cyst such as nonsurgical root canal therapy (endodontic treatment), extraction of the offending tooth if unrestorable, decompression, marsupialization, and enucleation [8]. Some case reports show complete healing with no subsequent enucleation. Others report a secondary surgery for enucleation of the residual cyst [9].

The most widely used and widely demonstrated treatment for the removal of small-sized odontogenic cysts of the jaw is the enucleation. The treatment of large odontogenic cyst is still controversial [10]. In this case, the decompression for radicular cyst seems to be an effective alternative treatment.

It is widely known that decompression is conservative treatment modality that involve an opening to reduce intracystic pressure and induce bony formation. This procedure provide good surgical access to lesions with low postoperative morbidity and low incidence of perioperative complications, help in maintaining pulp vitality of intracystic teeth, avoiding dental

extractions, preventing iatrogenic damage to adjacent noble structures, avoiding mandibular fractures and reducing the risk of recurrence [5, 11, 12]. Decompression devices (tubes) aim to maintain drainage of jaw pathological lesions and facilitate their repeated irrigations [11].

The risks of decompression are minimal, especially compared with the risk of damaging other vital structures with aggressive surgical enucleation. Otherwise, decompression does require a cooperative patient who will irrigate the cyst on a regular basis and will follow up regularly. Time duration of the decompression treatment is one of the disadvantages of this technique. In fact, this is one of the main causes of abandonment of the treatment by the patient because of loss of interest in proper irrigation treatment and attendance of periodic controls.

In an attempt to preserve the tooth associated with the cystic lesion and the bone, we treated our case with only decompression because the patient was very young and the cyst very large. This technique has been successfully performed and is indicated for growing children and adolescents as reported in this case. Children have a much greater capacity to regenerate.

Conclusion

Radicular cyst is commonly found in the jaws. The choice of treatment depends on factors such as extension of the lesion, its relation to the surrounding structures, clinical characteristics of the lesion, and systemic condition of the patient. Decompression, as treatment of cysts of the jaws proved to be effective. It reduced the size of lesions avoiding injury to adjacent structures. This case report illustrates the successful management of a mandibular radicular cyst by decompression.

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