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Radicular Cyst Masquerading as a Periapical Abscess: A Case Report

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ABSTRACT

Background: Most of the inflammatory odontogenic cysts are radicular cysts, which are usually found incidentally on radiographs unless they are secondary infections and are often linked to non-vital teeth.

Introduction: After pulpal necrosis from trauma or caries, these cysts usually develop as a result of persistent periapical inflammation. Larger lesions can cause swelling, pain, or discharge, but they are typically asymptomatic. Two patients with anterior maxillary radicular cysts who both had a history of trauma are the subject of this case study. The diagnosis was made based on aspiration, radiographic results, and clinical evaluation. Apicectomy, surgical enucleation, root canal therapy, and the application of platelet-rich fibrin (PRF) to aid in healing were all part of the management.

Conclusion: In conclusion, these cases demonstrate how important it becomes to thoroughly evaluate patients with dental trauma both clinically and radiographically. A customized endodontic and surgical treatment plan combined with early diagnosis can may assure the lesion's full healing while avoiding complications. This includes PRF facilitates tissue regeneration and healing. In order to effectively manage radicular cysts and maintain both function and aesthetics, a multidisciplinary approach is still essential.

Keywords: *CBCT(Cone beam computed tomography) , radicular cyst, periapical abscess, enucleation, apicoectomy, PRF(Platelet rich fibrin)*

1. INTRODUCTION

The most common odontogenic cyst is the radicular cyst, which accounts for 52% to 68% of cystic lesions.[1] Radicular cysts develop as a result of pulpal necrosis caused by dental caries or trauma, leading to periapical inflammation.[1] This persistent inflammation triggers the proliferation of epithelial cell rests of Malassez in the periodontal ligament, eventually resulting in the formation of a cystic cavity. The radicular cysts involve the apices non-vital teeth, usually are often asymptomatic and accidently found in routine dental radiographs unless they become secondarily infected or attain a significant size, causing swelling or discomfort.[2] Prompt identification and proper surgical treatment are vital to prevent from complications such as bone loss and pathological fractures. The M:F ratio is 1.6:1 from 4-12 years of age.[4] The mandible is more affected than maxilla with anterior teeth being most commonly affected in maxilla.[3,4]

2. CASE REPORTS

Case 1

A 24- year-old male patient reported to the department of Oral and Maxillofacial Surgery, with a chief complaint of pain in the anterior maxillary region since 1 month associated with pus discharge since 3 days. His pain was gradual on onset which aggravated while biting and relieved after analgesics. The lesion was associated with pus discharge respectively. He gave history of a fall while riding a motorcycle 2 years back. No deleterious habit and medical history were associated. On further examination, tender on percussion was present with 11, 12. On radiographic examination, an ill-defined periapical radiolucency of 2.4 x 7.4mm was noted in 12 region. On aspiration, 2ml blood-tinged straw-coloured fluid was aspirated. Cytological examination confirmed diagnosis of radicular cyst. After 1 week of root canal treatment, surgical treatment was initiated by placing a crevicular incision from 13-24 region followed by full thickness mucoperiosteal trapezoidal flap reflection. A bony window was created and the cystic lining was enucleated followed by apicectomy of 11,12. The cystic cavity was curettage and a platelet rich fibrin membrane was placed followed by closure of flap with sling sutures.

Case 2

An 11-year-old female patient reported to the department, with a chief complaint of mobile tooth in anterior front tooth region since 1 week, associated with pain. The pain was sudden in onset, throbbing type, aggrevated on biting and relieved on its own. The patient gives a history of falling from staircase 1 week ago. There was no relevant medical history. On examination, Ellis Class 2 fracture was noted in 11, 21,and the teeth were Grade III mobile. On inspection the vesicular region wrt 21 was reddish and on palpation, tenderness was present. The OPG was taken, wherein an ill-defined radiolucency was appreciated in the periapical region of 21. The lesion was approximately 2 x 1.5 mm in diameter. The initial treatment was started with root canal of teeth immediately and after 2 days of completion of root canal treatment, the process of apicectomy was done. A full thickness mucoperiosteal trapezoidal flap was reflected from 13-23 region, and a bony window was created approximately 1.2 x 1.5 cm in the periapical region of 21. The apicectomy was performed and sealed with PRF membrane, followed by placement of sling sutures.

Fig 1: CBCT report showing the cystic lesion of 7.2 x 4.3mm in diameter

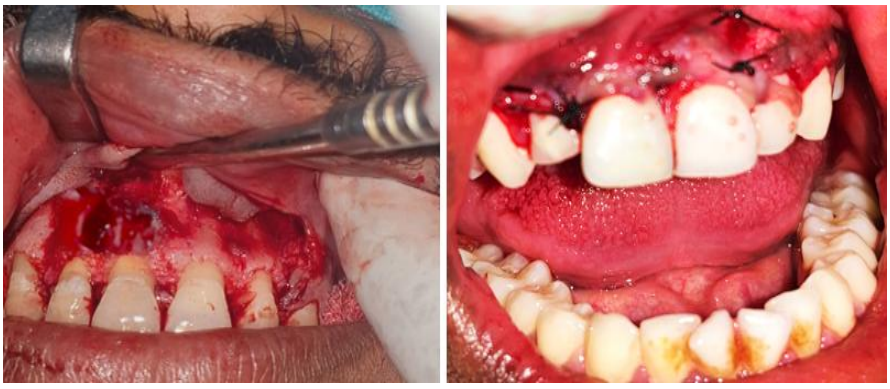

Fig 2: Creation of bony window and after suture placement

Fig 3: Intraoperative photo of creation of bony window and placement of PRF membrane

3. DISCUSSION

The most common inflammatory odontogenic cyst of the oral cavity is the radicular cyst. It is also known as periapical cyst or apical periodontal cyst. They are often associated with maxillary anterior teeth as compared to mandibular teeth, mainly affecting males than females (1.4:1) from 20-60 years of age [5].The radicular cyst occurs due to the proliferation of epithelium caused by inflammation from the necrosis of the tooth pulp and usually affects the apical region of a non-vital tooth.(3) Toxins exit at the apex of the tooth, leading to periapical inflammation. This inflammation stimulates the epithelial rests of Malassez, which are found in the apical periodontal ligament, resulting in the formation of a periapical granuloma, which may be infected or sterile.(3)

The size of radicular cyst is usually <1cm but if larger it might show buccal or lingual cortical plate expansion and can thin the bone around the tooth. The cyst increases its size by various mechanisms, namely osmosis, local fibrinolysis and continued epithelial proliferation(6). As it enlarges, springiness or egg-shell crackling can be felt on palpation[3,5]. Although they are asymptomatic and discovered only on dental radiographs, unless secondarily infected(7) and may be associated with intraoral or extraoral sinus tracts or swelling.

On aspiration, straw coloured fluid or blood-tinged straw-coloured fluid can be noted[5].

The apical periodontal cysts exhibit a thin, radiopaque line around the periphery of the radiolucent area, and this indicates a reaction of the bone to the slowly expanding mass. Either the radiographic size nor the presence of radiopaque lamina helps in the typing of periapical lesion. Cone beam computed tomography may provide a more accurate diagnosis than biopsy in differentiating cyst from granuloma[8].

The treatment of radicular cysts varies from conservative; Root canal treatment to surgical interventions like enucleation and marsupialization[10]. The best approach depends on factors like the cyst's size, location, and impact on surrounding structures. Non-surgical endodontic therapy is the first line of treatment for radicular cysts, especially when the cyst is small and localized[11]. The infected pulp is removed, the root canal is cleaned and removed, and then filled to prevent further infection. For the larger cysts, decompression may be used to reduce the pressure and size of the cyst before or instead of surgery[10,11]. This involves creating a small opening in the cyst with acrylic tubes, Luer syringes, polyethylene tubes, nasopharyngeal airways, or nasal cannula or intravenous tubes to drain its contents[6].

Surgical treatment for radicular cyst is enucleation and marsupialization. Enucleation involves surgically removing the entire cyst and any associated tissue. It's a common approach for removal of cysts[12]. Marsupialization involves creating a surgical opening into the cyst and suturing the edges of the cyst to the surrounding tissue, forming a pouch. This allows for continuous drainage and reduces the size of the cyst. It is often used for large cysts, especially in children, to minimize surgical trauma[11,12].

4. CONCLUSION

The most common inflammatory odontogenic cysts are radicular cysts, which usually form as a result of persistent periapical inflammation after pulpal necrosis. In order to avoid consequences such cortical bone growth, resorption, and pathological fractures, prompt identification and proper treatments are essential, even though the condition is frequently asymptomatic and incidentally found on routine radiographs. The size, location, and possible effects on nearby structures of the cyst should all be taken into consideration when choosing a treatment plan, which may include conservative root canal therapy or surgical techniques like enucleation or marsupialization. The case study illustrates how well endodontic and surgical management work together to remove the lesion completely, preserve the surrounding tissues, and encourage the best possible healing. For radicular cysts to be successfully managed, early diagnosis and interdisciplinary care are essential.

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