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Conservative Management of a Radicular Cyst Associated with Primary Maxillary Molar – A Case Report

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Abstract:
Even though radicular cysts associated with permanent teeth are the most common among the jaw cysts, those associated with primary teeth are reported rare. Enucleation of the cyst is considered a preferred mode of treatment except for large radicular cysts in the developing dentition, where the preservation of permanent tooth buds is vital. This is a case report of a large radicular cyst associated with a primary maxillary molar which was successfully treated by marsupialization and decompression.
Key Words*: Radicular cyst; Marsupialization; Decompression.*

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I. Introduction

Odontogenic cysts associated with the periradicular area of deciduous molars usually present with swelling, pain, retained deciduous teeth or discharge of pus. Of them the most common presentation are the buccal cortical plate expansion and displacement of permanent tooth germs. These cysts can either be inflammatory dentigerous cysts of the corresponding premolar or they can be radicular cysts of the deciduous molars.[1] These cysts can cause displacement of permanent tooth germs, eruption disorders, or can even lead to partial destruction of bone.[2]

A radicular cyst originates from the inflammatory activation of remnants of Epithelial Cell Rests of Malassez in the periodontal ligament.[3] They are the most common among the jaw cysts, (7 to 54% of all the cysts in permanent dentition), whereas radicular cysts of primary dentition are extremely rare (0.5 to 3.3%), which might be accounted to the natural course of exfoliation of deciduous teeth.[4] The most important etiological factor for this disease is dental caries.[5]

As radicular cysts mimic dentigerous cysts clinically, radiographically and histologically, those associated with primary teeth pose a diagnostic challenge. In radiographs, radicular cysts appear as a round or oval unilocular radiolucency in the periradicular area of the causal teeth, with a radiopaque sclerotic margin, which may be blurred in massive cysts. The distinction between the two is essential to prevent unwarranted extraction of permanent tooth germs.[6]

II. Case report

A 7-year-old female child reported to the OPD of Government Dental college, Thiruvananthapuram with the chief complaint of swelling in the upper part of left cheek since the past 2 weeks. Extra oral examination revealed a diffuse, non-tender bony hard swelling measuring approximately 2x3 cms in size, over the left zygomatic region (Fig.1). Intraoral examination revealed chronic irreversible pulpitis of 64, carious pulpal exposure of 65 and pathologic mobility of 64, 65. A firm swelling with expansion of the buccal cortical plate in relation to 64, 65 was also palpable.

Fig. 1 Pre-operative

Panoramic radiograph revealed a well-defined radiolucency which measured about 3x5 cms in size, around the furcation and periradicular area of 64 which extended to apices of 63 to 65 and displaced the tooth buds of 23,24 and 25 (Fig.8). The radiographs were suggestive of an expansile cystic lesion. From the history, clinical and radiographic presentation, a provisional diagnosis of radicular cyst was made. On aspiration, a light yellow colored liquid was obtained which was sent for histopathologic examination. The histopathologic report confirmed the provisional diagnosis. After the necessary investigations, marsupialization of the cyst was carried out under local anaesthesia, leaving an open window in the buccal cortical plate in relation to 64, 65 (Fig.2). Extractions of 64 and 65 were also carried out (Fig.3). An iodoform pack was placed in the cystic space, to reduce the postoperative discomfort.

Fig. 2 After marsupialization

Fig. 3 After extraction

An impression of the surgical site was made with putty impression material designed in the form of a plug along the entire length of the cystic space. This was then fabricated in acrylic as an acrylic plug or obturator that extended along the whole length of the lesion through the buccal window. This facilitated the decompression of the cyst by maintaining the patency of the window (Fig.4 and Fig.5). Patient was instructed the use of chlorhexidine mouth rinse, frequent irrigation of the cavity using needleless syringe and to maintain meticulous oral hygiene. On subsequent visits, the extension of the acrylic plug was reduced gradually.

Fig. 4 Acrylic plug

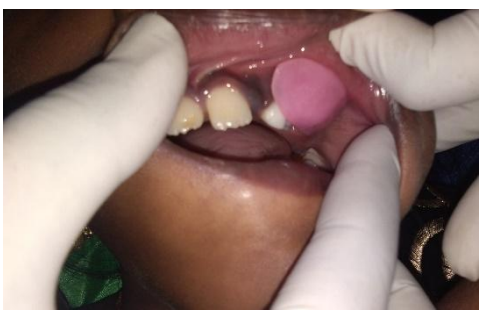

Fig. 5 Insertion of plug

As the lesion continued to heal and new bone started to form in the cystic space, the use of acrylic plug was discontinued. Complete healing of the cystic lesion and closure of the marsupialized cyst opening was achieved by 4 months (Fig.6, Fig.7). A postoperative panoramic radiograph after 6 months revealed formation

of new bone and bony trabeculae replacing the expansile cystic lesion and regained positions of the tooth buds of 23,24,25 (Fig.9). The patient is under periodic review and her occlusal development is being continuously monitored.

Fig. 6 Review after 4 months

Fig. 7 Post-operative

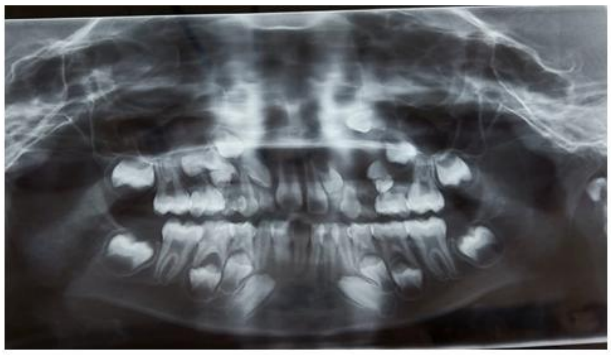

Fig. 8 Pre-operative radiograph

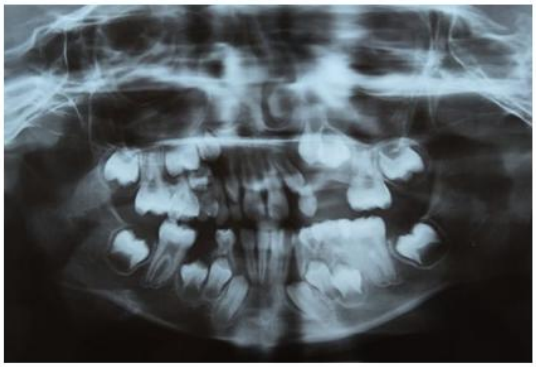

Fig. 9 Post-operative radiograph

III. Discussion

Radicular cyst, also known as periapical cyst, is usually associated with a carious, non-vital, discolored or fractured tooth.[7] Highest incidence of radicular cyst arising from primary teeth are seen during 7–8 years of age and predominantly among male children.[8] The most commonly affected primary teeth are mandibular molars (67%) followed by maxillary molars (17%) and anterior teeth.[9]

Most radiolucencies related to deciduous teeth tend to resolve soon after the extraction of the offending tooth and are generally not submitted for histopathological examination. Others tend to drain through sinus tract or the marginal gingiva, thus causing less severe symptoms, which may remain untreated.[10] Hence the overall reported incidence of radicular cyst in primary dentition is found to be low.[3]

The primary etiological factor for the disease is considered to be dental caries. Pulp therapeutic agents such as formocresol along with tissue protein may also induce antigenic stimulation of periradicular tissue resulting in rapid growth, cortical plate expansion and radicular cysts in some cases.[11]

The most common clinical and radiographic features associated with radicular cyst in children are buccal cortical plate expansion, well defined unilocular radiolucency, thin reactive cortex, and displacement of succedaneous teeth.[3] Usually radicular cysts are unilocular, but Narsapur S A et al. reported an unusual bilocular radiographic appearance along with expansion of lingual cortex.[12]

Other odontogenic lesions that tend to mimic radicular cyst are periapical granuloma and dentigerous cyst.[13] Radicular cyst associated with primary molar can be mistaken for dentigerous cyst arising from permanent successor. Careful evaluation of the various differential diagnoses and comprehensive assessment of clinical, radiographic, histopathological and surgical findings are mandatory to avoid undue extraction of permanent successor teeth.[6] In differentiation from a dentigerous cyst, it is important to confirm whether the position of the permanent tooth germ is retained or displaced.[13] According to Wood RE et al., the following features can help in confirming the diagnosis of a radicular cyst.[6]

- Presence of carious or traumatized or endodontically treated teeth
- Loss of lamina dura in the offending tooth in radiograph
- An intact and clearly visible follicular space around the permanent successor teeth

Pressure exerted by large radicular cysts can cause displacement of the developing tooth buds and can even lead to impaction of permanent successor teeth.[14]

Enucleation is the treatment of choice for small cysts in mixed dentition stage. For large cysts in close proximity to vital structures, marsupialization followed by decompression of the lesion is the recommended treatment modality.[15] In adults, following marsupialization, the time required for radicular cyst to reduce to their half size is approximately 6 months.[16] Children have high propensity for bone regeneration. Faster healing of the postsurgical osseous defects can be expected in them.[3] Spontaneous alignments of the permanent teeth are likely even if their initial positions are not favorable.[17]

In the present case, through marsupialization, an opening was made on the outer wall of the cyst and decompression of the lesion was carried out by means of an acrylic plug. Once the liquid contents got released, cystic lining contracted due to the presence of myofibroblasts in their walls, followed by in growth of endosteal bone.[18] Despite being a large cystic lesion, complete healing was observed with preservation of permanent tooth buds at the end of four months.

Unwavering patient compliance is needed to keep the cystic cavity clean with frequent irrigation and regular follow up visits are necessary to adjust the size of the acrylic plug and to ensure the cystic cavity is uniformly filling up and healing.[19]

IV. Conclusion

Even though rare in occurrence, treating large radicular cysts associated with primary molars can be quite challenging. Marsupialization followed by decompression is a minimally invasive approach that has lower morbidity, preserves the permanent tooth buds and other vital structures and ultimately provides normal bone contour. Hence this method can be preferred in cases of large radicular cysts especially in the mixed dentition period.

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