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Timely Eruption Guidance Of Premolars Displaced Due To Cystic Lesions.- A Case Report

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Abstract: *Radicular cyst arising from primary teeth are rare . Caries is the most frequent aetiological factor of radicular cyst in the primary dentition. This paper presents the case reports of patients with radicular cyst associated with primary molars and after surgical intervention the underlying permanent mandibular premolars erupt in the oral cavity.*

Keywords: *radicular cyst, primary molars, enucleation , premolar*

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I. Introduction

The term, 'cyst' is derived from the Greek word, 'Kystis', meaning, 'sac or bladder'. Cyst is defined as a pathological cavity that is usually lined by epithelium and which has a centrifugal, expansive mode of growth. Radicular cyst is generally defined as fluid-filled cavity arising from epithelial residues (rests of Malassez) in the periodontal ligament as a consequence of inflammation, usually following the death of dental pulp[1].

Deep dental caries or dental trauma causing pulp injuries or pulp necrosis is the related etiology..According to Bernardi, et al. , pulp necrosis, colonization and proliferation of microorganisms within the root canal system, release of bacteria toxins and inflammatory mediators into the periapical region and a combination of factors involving epithelial-stromal interaction is the mechanism to develop radicular cyst. The periradicular inflammation leads to proliferation of epithelial cell rests[2] . The apex of the affected tooth is most commonly involved by the resulting cyst . Comprising about 52.3% to 68% of all cysts affecting the mandible, they are the most common of all jaw cysts [3] . In the primary dentition radicular cysts are considered to be rare , comprising only 0.5-3,3% of the total number of radicular cysts in both the primary and permanent dentitions[4] . In the fourth and fifth decades male preponderance occurs essentially. Females are less likely to neglect their teeth hence the lower frequency in females, which has also been reported by other workers [3] **.**

When it is small the lesion is not clinically detectable but most often is discovered as incidental finding on radiographic examination [5] . Via a routine radiography a radicular cyst can be found but the definite diagnosis can only be made by histopathologic examination. They appear as round or pear-shaped unilocular radiolucent lesions in the periapical region and are bordered by a thin rim of cortical bone, radiographically. a similar radiographic appearanceis seen between radicular cysts and periapical granulomas ; however, radicular cysts are less common and often larger [2] . Clinically in maxilla it exhibits as a buccal or palatal enlargement, whereas it is usually the buccal and rarely lingual in mandible. The enlargement is bony hard at first,; but as the size increases of the cyst, the bony covering becomes very thin and the swelling then exhibits springiness and becomes flucluant when the cyst has completely eroded the bone[1] . In children cyst formation may cause bony expansion and resorption, delayed eruption, malposition, enamel defects or damaging of the developing permanent successors[6] .

One of the most suitable treatment options for these cases is complete enucleation of the cyst with extraction of the associated primary teeth and preservation of the permanent teeth[6] .

II. Case Report

1. CASE 1

A 9 year old boy reported with the chief complaint of pain and swelling in the lower right back teeth since 1 week . The patient's dental history indicated that 85 received conventional pulpectomy treatment one year before[figure 1]. Clinical examination revealed a diffuse non tender bony hard swelling on the right side of the body of the mandible with buccal cortical plate expansion. A well defined periapical radiolucency involving tooth bud of 45 was seen in the panoramic radiograph [figure 2.] . Clinical and radiographic examination were suggestive of radicular cyst associated with 85. Extraction of 85 and 84 was done and the cyst was enucleated[figure 3 ,4] followed by the placement of an acrylic obturator to maintain a patent surgical opening and prevent food accumulation [figure 5]. Iodoform pack was given to reduce postoperative pain and infection. The histopathologic examination confirmed our provisional diagnosis of a radicular cyst. After duration of 8 months , it was noted that underlying 45 erupted into its normal position in the oral cavity, and a new bone formation was found in cystic lesion space [figure 6].

Figure 1. Preoperative Intraoral picture

Figure 2.OPG showing Periapical radiolucency in associated with tooth 85

Figure 3. Enucleation of the cyst done

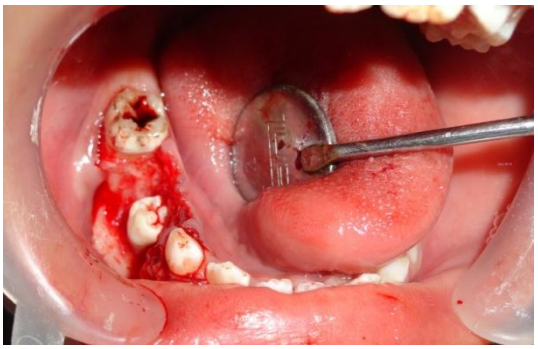

Figure 4.

Figure 5. Obturator was placed

Figure 6.Tooth 45 erupted into its normal position

CASE 2

A 10 year old female patient reported with a chief complaint of extraoral swelling on the right lower back region of the jaw since 2 months. A well defined non tender hard bony swelling was noticed on the left side of the body of the mandible with a grossly decayed 85 and buccal cortical plate expansion [figure 2]. OPG revealed a single well defined periapical radiolucency involving tooth bud of 45 [figure3]. Based on history, clinical and radiographic examination , a provisional diagnosis of radicular cyst associated with 85 was made. Conservative treatment was planned to save 45 tooth bud , treatment plan included extraction of 85 followed by

marsupialization under local anaesthesia[figure 4] . A tissue specimen was sent for the histological examination which confirmed our provisional diagnosis of a radicular cyst. Lingual arch space maintainer was given to maintain space for the premolar. At 8 months recall it was observed that 45 was erupting labially so an attachment was placed on buccal surface of 45 and tied to the lingual arch to guide its eruption in normal position [figure 5,6].

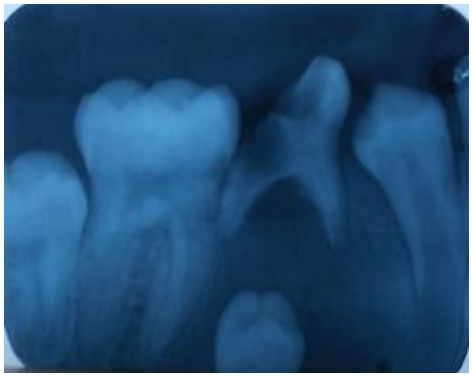

Figure 1. IOPA showing carious tooth 85

Figure 2. Preoperative picture showing grossly

Figure 3. OPG showing tooth 85 with periapical radiolucecy

Figure 4. Enucleation of the cyst done

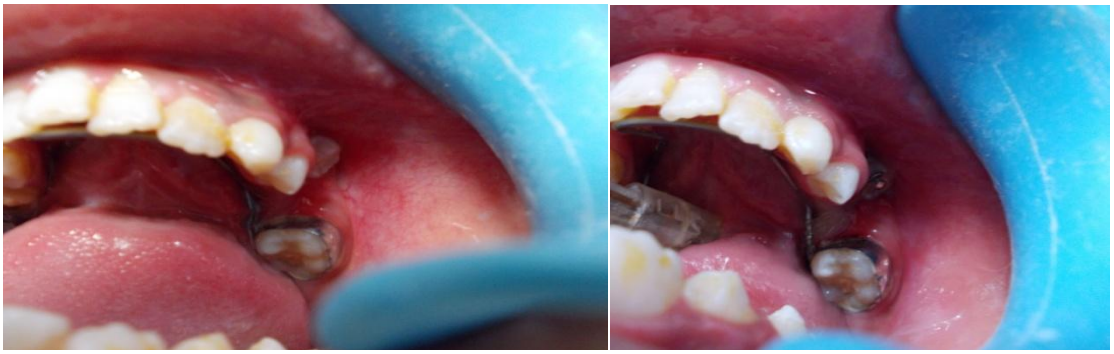

Figure 5. lingual arch space maintainer was given to maintain space for erupting tooth 45

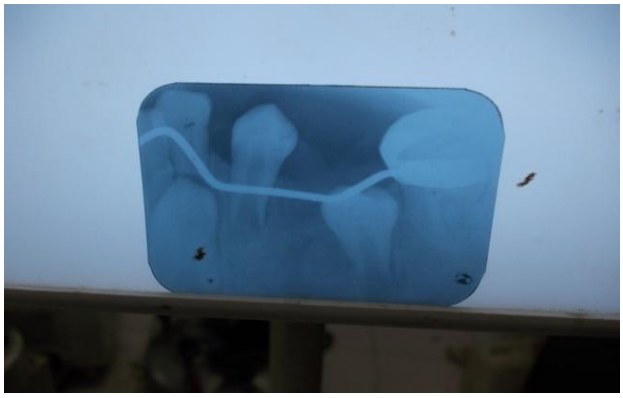

Figure 7. IOPA showing lingual arch space maintainer

III. Discussion

Odontogenic and non-odontogenic cysts of the jaws can exhibit a biologically aggressive course and sometimes difficult to diagnose. Developing from the epithelial deposits in the periodontal space or following pulpal necrosis radicular cysts are utmost collective inflammatory cysts[5] .

In between 30th and 50th year of age frequently in men radicular cyst commonly occurs in maxillary anterior region. Three definite phases encompasses the pathogenesis of radicular cyst; phase of Initiation, cyst formation and the enlargement. Initially bony rigid swelling of these radicular cyst are usually seen , but as they proliferate in magnitude, the covering bone may develop extremely slender not withstanding sub-periosteal bone deposition. Decisively, the enlargement exhibit "springiness" or egg shell crackling with advanced bone resorption,. Permanently non-vitality and discoloration could be expressed by the concomitant teeth. Typically no root resorption is displayed by the associated root; there may be even resorption of root apices. While cyst are integral, brown or straw colored fluid could occupy the cyst spaces, the cyst fluid may have shimmering gold appearance when light pass through it. Non-keratinized stratified squamous epithelium lines all radicular cysts completely or in the fragment .The lining may be, intermittent in quantity and vary in depth from one to 50 cell strata. The preponderance is between six and 20 cell stratum thick. The epithelial linings could be thriving and arcading with a severe connected inflammatory progression or is sluggish and moderately methodical with a certain mark of differentiation. In the thriving epithelial linings comprising largely of polymorphonuclear leukocytes the inflammatory cell penetrates. Whereas adjoining fibrous capsule is penetrated principally by enduring inflammatory cells[5] .

SHEAR found that only 0.5%. radicular cysts originated from pritnary teclh.in a documented survey of 1300. From 1898 to 1983 in an extensive review of the literature, LusTMANN & SHHAR found only 28 cases and added 23 of their own. Other studies iticlude 6 reported cases by HILL and 17 reported by GRUNDY el al . A series of 31 cases was reported by MYERS et al . After pulp therapy 12 cases were reported by SAVAGE et al., suggested that for rapid growth of the cysts the medication used for pulp therapy was responsible[4] .

Radicular cysts originating frotn pritnary teeth and those originating frotn permanent teeth hasseveral differences. The mandibular primnary teeth are affected more frequently than the maxillary teeth, in contrast to a maxillary predominance in the permanent dentition . Different etiologic factors may explain the difference in site distribution of radicular cysts in the pritnary and pertnanent dentitions. Caries is the most frequent etiologic factor in the primary dentition, , and the mandibular molars are the most frequently affected teeth. Trauma, caries and old silicate restorations result in high frequency of radicular cyst in the pertnanent maxillary incisors. Most cysts associated with primary molars are located in the interradicular area and around the roots, whereas cysts related to permanent molars are usually located adjacent to the apex. This tnay be explained by the fact that the roots of primary molars are short and sometimes partially resorbed roots and the existence of accessory canals. Thus, the term periradicular cyst in pritnary molars is more appropriate than periapical or radicular cyst[4] .As these cysts are are usually diagnosed during routine radiographs they are asymptomatic till secondarily infected. The patient's future dental development could be hampered due to the sequelae of an untreated or undiagnosed radicular cyst. Following consequences :swelling, tenderness, tooth mobility, and a bluish tinge caused by buccal expansion of the cortical plates may be present in a patient with an untreated radicular cyst. Furthermore,displacement of the successor tooth or, even more unforgiving, the loss of its vitality may result[3] .

Presenting 32 children with radicular cysts a study by Mass, et al., reported that all cysts were related to primary molars. Swelling and pain were the clinical feature of most of the patients[2] . In a case series reported by Grundy, Adkins and Savage5 stated that there was an antigentic and humoral and cell mediated response when radicular cysts associated with deciduous teeth were treated endodontically with materials containing formocresol in combination with tissue proteins. As they propernsity for bone regeneration is higher in children, healing of the postsurgical osseous defects is always higher[7] .

The surgical approach to cystic lesions of the jaws is either marsupialization or enucleation. Depending on the size and localization of the lesion, the bone integrity of the cystic wall and its proximity to vital structures the treatment of choice is made[1] **.**

Associated with primary molar Radicular cyst can be mistaken for dentigerous cyst arising from permanent successor. To avoid extraction of permanent successor differential diagnosis is vital. Comprehensive assessment of clinical, radiographic, and histopathology examination and surgical findings can aid in this process. Wood RE et al. (1988) enumerated the clinical and radiographic signs that help in differentiation between the two have .The following features can help in confirming the diagnosis of radicular cyst[8].

• There should be evidence of carious/traumatized/ endodontically treated tooth
• Loss of lamina dura around the roots of the suspected tooth
• Follicular space around the permanent successor is intact and clearly visible[8].

The most suitable treatment option is complete enucleation of the cyst and preservation of the permanent successor teeth . A more conservative treatment technique is marsupialization of the cystic lesion and using a

resin appliance with projection for decompressing the lesion . Patients' and parents' cooperation is needed for success of treatment[6] .

In this report treatment plan for both the cases was different. In case 1 at the time of extraction of tooth 85 two-third of the root of tooth 45 was formed , after tooth 85 extraction , cyst was enucleated and after 8months premolar erupted in its normal position. In Case 2 ,one-third of the root of tooth 45 was formed and after extraction of tooth 85 , tooth 45 erupted bucally for which additional attachment and lingual arch space maintainer was placed to guide it into normal position. Both cases had a common purpose to allow the premolar to erupt in its normal position and perform its physiological function.

In this case report of radicular cyst , complete enucleation of the cyst ,extraction of the primary molars and preservation of permanent successor was done. Bone regeneration and faster healing of the post surgical osseous defects was seen.

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