

## Case Report

## A Conservative treatment approach in the management of radicular cyst associated with primary mandibular molars: A case report

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### ABSTRACT

Radicular cysts are the most common cystic lesions occurring in the jaws arising from the inflammatory activation of cell rests of malassez. They may arise from infected primary molars. Radiographically they appear either as unilocular or multilocular radiolucency delineated by a radiopaque border. Treatment includes extraction of the tooth or endodontic therapy of necrotic pulp followed by enucleation of the cyst. Here we report a case of a nine year old boy who visited the outpatient department with a chief complaint of swelling and pain in lower right region of jaw. On the basis of history, clinical examination and radiographic investigations, a diagnosis of radicular cyst was made. In our case a conservative treatment approach of only extraction was considered keeping in mind that, in children there is a high propensity for healing and formation of bone.

**Key words:** conservative treatment, primary molar, radicular cyst

Radicular cysts are the most common cystic lesions occurring in the jaws. However, those arising from primary teeth are rare in occurrence with a prevalence of 0.5% [1]. Souza et al, in a study of paediatric oral lesions showed that out of 27% of all cystic lesions, 4.8% were radicular cysts [2]. In another study of cystic lesions of jaw in children frequency of radicular cyst was a 13.3 % [3]. Low frequency of radicular cyst associated with primary molar reported in literature may be underestimated. This might be because radicular cyst in primary dentition is often neglected or not diagnosed. In children, radicular cysts are generally seen in first decade and in the early second decade of life. Girls have higher incidence of radicular cysts than boys. Mandibular primary molars are the most commonly affected teeth [4, 5, 6].

Radiographically, radicular cyst is characterized by a round or oval, unilocular or multilocular, well-circumscribed radiolucency delineated by a radiopaque

line, attached to the root of a tooth. Radicular cysts may result in expansion of cortical plate and cause displacement of developing permanent tooth bud [3]. Usually, treatment of cystic lesions consists of extraction or endodontic therapy of necrotic tooth followed by enucleation or marsupialisation [7]. Here we present a case of a young boy with radicular cyst of primary mandibular molar who was managed with conservative approach.

### CASE REPORT

A nine-year old boy reported to the outpatient department of Pediatric and Preventive Dentistry with a chief complaint of painful swelling in lower right back region of jaw since three months. Intraoral examination revealed clinical discoloration and caries with pulpal necrosis with 84 and 85, a pulp vitality testing was done by means of cold test to confirm the same. On soft tissue examination a well-defined oval swelling was seen with respect to 83, 84 and 85. The swelling was approximately 2x3 cm in

diameter, reddish pink in colour and had a smooth surface (Figure 1). On palpation, the swelling was tender, fluctuant, compressible, with obliteration of buccal vestibular space in the region of 83, 84 and 85.

Orthopantomograph (OPG) showed a well-defined radiolucent unilocular area in relation to apex of 84 and 85 (Figure 2). Cone beam computed tomography (CBCT) was done for the three-dimensional evaluation of the lesion. CBCT imaging showed a lesion associated with carious 84

and 85. The highest diameter was 16.3 mm (Figure 3). There was expansion of buccal cortical plate. A light-yellow coloured liquid was collected by aspiration and sent for cytopathological examination. Cytopathological reports showed presence of abundant cholesterol crystals indicative of a cystic lesion. A provisional diagnosis of radicular cyst in association with 84 and 85 was made. A conservative treatment approach with extraction of 84 and 85 was decided.



**Figure 1, 2, 3: Preoperative clinical photograph, preoperative orthopantomography, cone beam computed tomography of the site.**



**Figure 4, 5, 6: Administration of local anaesthesia with 2% lignocaine 1:80,000 adrenaline using inferior alveolar nerve block, extracted teeth, immediate post extraction site.**

Parent and child were explained about the procedure and an informed parental consent was obtained from the parent. Inferior alveolar nerve block was delivered with 2% lignocaine and 1:80,000 adrenaline (Figure 4). Subjective and objective evaluation of anaesthesia was done. Separation of gingival margins of 84 and 85 was done with periosteal elevator followed by extraction. During extraction, care was taken to prevent harm to the permanent successors by applying minimum apical pressure (Figure 5). The primary molars were in close relation to developing permanent premolars, so curettage

was not done. The extraction site was irrigated with betadine solution because of its proven styptic and anti-inflammatory properties [8]. Compression pack with cotton was given. Immediate post extraction site showed hemostasis (Figure 6). Parent and child were advised to follow post extraction instructions. Patient was also advised to maintain adequate oral hygiene. Post-operative clinical evaluation was done after 1 week, 1 month, 6 months and 12 months interval. One-week evaluation showed good healing of the extraction site with absence of clinical symptoms. One-month evaluation showed absence of swelling and clinical symptoms. Six-month evaluation

showed normal eruption of 44 and 45. Intraoral periapical radiograph revealed continued root development of 44, 45 and healing of radiolucent lesion (Figure 7). Twelve-

month evaluation revealed further eruption of 44, 45 (Figure 8). OPG showed complete resolution of cystic lesion with bone regeneration (Figure 9).



**Figures 7, 8, 9: Intraoral periapical radiograph at 6 months follow up, clinical photograph at one year follow up, post-operative orthopantomograph at one year follow up.**

## DISCUSSION

Radicular cysts are odontogenic cysts derived from the inflammatory activation of cell rests of malassez [9]. Pulpal infection or necrosis act as stimulant for this inflammatory activation. Most cysts associated with primary molars are in the inter-radicular area, whereas cysts related to permanent molars are usually located adjacent to the apex [1]. The common signs of radicular cysts are expansion of the buccal cortical plate, well-defined radiolucency, thin reactive cortex and displacement of permanent successor teeth [10]. In the present case, a diagnosis of radicular cyst was made based on clinical signs, radiographic investigations and cytopathological reports.

Treatment of cystic lesions usually include enucleation or marsupialisation. Enucleation of cystic lesion involves complete removal of cyst. Large cystic lesions often encroach on the apices of adjacent vital teeth, other anatomic structures, such as the mandibular canal, floor of the nasal cavity and palatal vault. Surgical enucleation of these large lesions may create certain undesirable complications that could compromise the vitality of adjacent teeth and seriously jeopardize their osseous support or result in nerve damage [11]. According to Neaverth et al, marsupialization involves unroofing the outer wall of a cyst by surgical incision. This helps in establishing a permanent opening by suturing the remaining cyst wall to the mucosal surface around the periphery of the opening. This procedure relieves the intra cystic pressure and externalizes the cyst. This procedure provides advantage of being a less invasive approach

resulting in minimum harm to adjacent vital structures. However, it has certain disadvantages like difficulty in maintenance of oral hygiene, unavailability of specimen for histopathological investigation and periodic recall of the patient to assess the healing of lesion.[12]

However, in this case a more conservative approach was attempted with extraction of 84, 85 and regular follow up was done to check for the healing of cystic lesion. The cause of cystic lesion in this case can be attributed to necrotic primary mandibular molars. Clinical signs like discoloration and cold test confirmed non vitality of the primary mandibular molars. These molars were clinically non restorable. On radiographic investigations, roots of 84 and 85 had more than two third of root resorption. So, extraction of 84 and 85 was decided. This treatment approach was selected as removal of the aggressive agent (cariou 84, 85) can provide favourable environment for healing of cystic lesions [13]. The basal cells of radicular cyst are not capable of self-proliferation without stimulation by external signals such as inflammatory mediators and proinflammatory cytokines. In the absence of stimulating factors, the immune system promotes repair and healing of these lesions [14]. Also in children, healing of the osseous defects is always good and have high propensity for bone regeneration [6].

Saatchi suggested that surgical removal of periapical lesion of pulpal origin is not mandatory and that, irrespective of the size of the lesion, every effort should be made to treat such lesions by conservative means. As the periapical tissues have the potential to heal, the first approach towards treatment of periapical lesions should be

directed only towards the removal of causative factors [15]. According to a systematic review by Torabinejad on outcomes of nonsurgical retreatment and endodontic surgery for permanent teeth, nonsurgical retreatment had significantly better outcome at 4-6 year follow up [16].

## CONCLUSION

This case report proposes the use of conservative treatment approach involving extraction of the necrotic primary teeth combined with regular follow-up instead of a surgical procedure for treating radicular cyst associated with primary teeth. Such treatment is minimally invasive and involves less danger of damaging the developing permanent tooth germ. It is psychologically less traumatic and is more acceptable to the patients and their parents/guardians than enucleation. However, more cases treated with this approach should be observed to determine whether this method is always applicable. Furthermore, postoperative follow-up examinations are also important to evaluate the eruption of successive permanent teeth. Therefore, complete co-operation of the patients and their parents/guardians is needed.

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