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Dentigerous Cyst in Children (Management and Rehabilitation): A Case Report

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Abstract: ***Dentigerous cyst is the cyst which encircles the crown of an unerupted tooth. Dentigerous cysts usually present as aasymptomatic swelling, found when a non-erupted tooth is investigated or accidentally from panoramicradiographs. It is the second most commonly encountered odontogenic cyst in the oral and maxillofacial region. Frequently it is associated with third molars followed by maxillary canines. Lower premolars are also frequent sites. We reported A 5 years old boy patient came to Oral Surgery Department Hasan Sadikin Hospital Bandung with the swelling at left lower jaw since 6 month ago. From the clinical examination and radiography finding, the patient was diagnosed with dentigerous cyst at 75-36 region and was treated by enucleation biopsy for removal cyst and extraction of teeth 75-36 under general anesthesia. After 3 months, investigation showed there was no recurrence of the cyst and the patient has no complaint. Dentigerous cyst occurs in association with an unerupted tooth, most commonly, mandibular third molars.Other common associations are with maxillary third molars, maxillary canines, and mandibular second premolars. Although these cysts occur more frequently during second and third decades of life, they also can be found in children and adolescents in the mixed dentition stage. Treatment modalities range from enucleation to marsupialization, which may be influenced by the age of the patient, severity of impaction, and root form of associated tooth/teeth. The prognosis of some cysts is very good, rarely recurrence after cyst removal as a whole. The frequency of neoplastic occurrence of this transformation is low. Intraosseous growth of mucous cell on the boundary area of dentigerous cyst can cause mucoepidermoid carcinoma***.

Keywords: dentigerous cyst, enucleation, children

1. Introduction

Cystic lesions of the jaws are common pathologic lesions. A cyst is defined as a pathological cavity, which may or may not be lined by epithelium, and contains liquid, semisolid or gaseous contents.A cyst is also defined as an epithelial-lined pathologic cavity. Cystic lesions of the jaws are divided into odontogenic cysts and non-odontogenic cystic lesions. Cyst of the maxilla, mandible, and peri oral regions vary markedly in histogenesis, incidence, behavior, and treatment.[1,2,3,4]

Dentigerous or follicular cysts account for approximately one sixth of dental cysts. They are a fluid-filled expansion of the dental follicle and are attached to the crown of the tooth at the cemento-enamel junction. As the cyst expands it prevents the eruption of thetooth and may even displace the tooth into the jaw. The most commonly involved teeth are reported to be the mandibular third molar and maxillary canine. [1,2,5,6,7] Dentigerous cysts are more common in men than women and usually these cysts present as an asymptomatic swelling, found when non-eruption of a toothis investigated or incidentally with panoramic surveyradiographs. Infection is uncommon, but it may present as a dentoalveolar or facial absces.[1,2,3]

Dentigerous cystoccurs in association with anunerupted tooth, most commonly, mandibular third molars. Other common associations are with maxillary third molars, maxillary canines, and mandibular second premolars. They may also occur around supernumerary teeth and in association with odontomas; however, they are only rarely associated with primary teeth.[2,5]Although dentigerous cysts occur over a wide age range, they are most commonly seen in 10- to 30-yearolds. There is a slight male predilection, and their prevalence appears to be higher in whites than in blacks. Many dentigerous cysts are small asymptomatic lesions that are discovered serendipitously on routine radiographs, although some may grow to considerable size, causing bony expansion that is usually painless until secondary infection occurs. [1,2,4] This is most frequently seen in the second and third decades as a radiolucency associated with impacted teeth, usually the mandibular third molars (77% of cases), maxillary third molars (11% cases), and maxillary canines (5% of cases), although any other teeth may be involved such as the premolars and supernumerary teeth; 3% of cases are multiple, especially around multiple impacted third molars.[5,6,7,8]

It presents as a well-demarcated unilocular radiolucency that may be around the crown of the tooth (central location, the most common), on the side of the tooth (lateral location), or completely around the tooth (circumferential location); some may appear multiloculated on plain radiographs because of protruding bony septa from the walls, but true multiloculation should raise suspicion for odontogenic neoplasms or nonodontogenic lesions.[1,2,8,9]

Treatment is by removal of the causative tooth andenucleation of the cyst lining and the cavity is managed as described for radicular cysts. In those with very large cysts who are infirm, marsupialization may be the treatment of choice. If the tooth is to be retained for orthodontic reasons, it may also be advantageous to marsupialize the cyst.[3,11,14,15]

2. Case Report

A 5 years old boy patient was brought his parent came to Oral Surgery Department Hasan Sadikin Hospital Bandung with the swelling at left lower jaw and left cheek. From anamnesis the patient complaint swelling since 6 month ago and got bigger **(Figure 1).** From the intraoral examination in 75-36 region we found swelling with 2x2x1 cm in size, hard consistency, fluctuation (-), crepitation (+), localized (+), pain on palpation (-)**(Figure 2).** From extraoral examination we found swelling with 3x3x1 cm in size, hard consistency, fluctuation (-), crepitation (+), localized (+), pain on palpation (-).

Figure 1, 2: Extra oral and Intra oral profile images

Laboratory examination was performed with complete blood count PT APTT and result within normal limit. Chest x-ray within normal limit.

Panoramic radiography **(Figure 3)** was taken for radiological examination, and it revealed the presence unilocular radiolucencycystic lesion in 75-36 with sclerotic border associated with the mandibular left first molar crown. After the clinical and radiological examination, we diagnosed this patient with dentigerous cyst and surgical enucleation of the cyst and extraction under general anesthesia.

Figure 3: Panoramic images

Primary mandibular left first molar, second premolar tooth and left second molar decidui was extracted before the disclosing of the cyst cavity by opening a flap**(Figure 4)**. After the opening process, the cyst cavity was identified **(Figure 5)**, and the contents of the cyst were removed **(Figure 6).** The flap was sutured for closing woun primarily with vicryl 4.0. The specimen was prepared and sent for histopathological examination. Histopathological view showed nonkeratinizing stratified squamous epithelium and confirmed the diagnosis of dentigerous cyst.

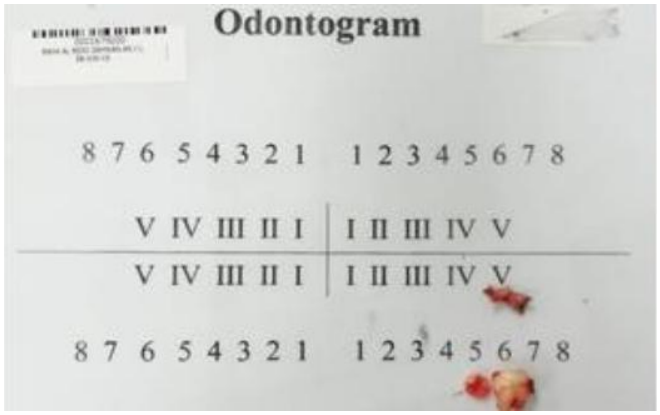

Figure 4, 5, 6: Intraoperative finding

1 week after operation patient control at Oral and maxillofacial surgery department General Hospital Hasan Sadikin. From extra oral examination we found the swelling was decreased. From intraoral examination after suture

removal showed good healing **(Figure 7)**. Procedure impression for obturator was made.

Figure 7: 1 week after operation

2 month after operation patient control again at Oral and maxillofacial surgery department. From extra oral examination there was little swelling and intraoral examination there was obturator and showed good repair of soft tissue. **(Figure 8).** From panoramic radiography showed good bone healing at left lower first molar region **(Figure 9)**.

Figure 8: 2 month after operation

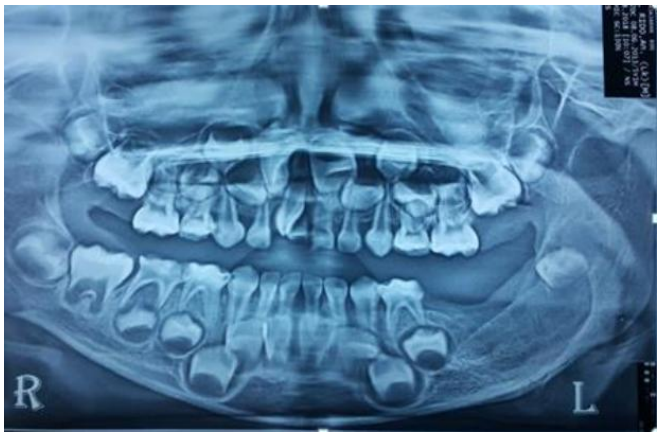

Figure 9: Panoramic images 2 month postoperation

3. Discussion

Dentigerous cysts is the second most commonly encountered odontogenic cyst in the oral and maxillofacial region. Frequently it is associated with third molars followed by

maxillarycanines. Lower premolars are also frequent sites. Dentigerous cysts most commonly occur in the in the ages of twenties or thirties.[10,11,12,13] However, the frequency in children is relatively low, and 4–9% of these cysts occur in the first 10 years after birth.[10,11] In the present case, the cyst was associated with the mandibular first permanent molar tooth crown in a 5-year-old child.

Two types of dentigerous cysts are reported in the literature: Developmental and inflammatory types. The developmental type of these cysts is the most common type, which surrounds the crown of an unerupted tooth by the fluid accumulation between the layers of the enamel organ.[8,9,10] Rarely, the dentigerous cyst develops as a result of periapical inflammation from a nonvital primary tooth. The spread of periapical inflammation may affect the germ of the permanent tooth and may induce the formation of the cyst. Therefore, the inflammatory dentigerous cyst is usually associated with the roots of a nonvital primary tooth[8,9,10] According to these definitions, the presence of overlying nonvital necrotic primary mandibular first molar tooth increases the possibility of being an inflammatory type of the dentigerous cyst in the present case.

The dentigerous cyst is potentially capable of becoming an aggressive lesion. Expansion of the bone, facial asymmetry, extreme displacement of teeth, severe root resorption of adjacent teeth and pain are all possible sequelae of continuous enlargement of the cyst. Potential complications are development of ameloblastoma, epidermoid carcinoma or a mucoepidermoid carcinoma.[11,12,14,15]

Odontogenic keratocyst, unicystic ameloblastoma, central giant cell granuloma, and a large radicular cyst must be considered in the differential diagnosis of a dentigerous cyst. Radiograph alone cannot differentiate the above-mentioned lesions, so a histopathological examination should be performe[1,2,5,6]Additionally, the epithelial cells lining the lumen of the dentigerous cyst possess an unusual ability to undergo metaplastic transition. Untreated dentigerous cysts rarely develop into an odontogenic tumor or a malignancy like squamous cell carcinoma[4,8,9] Therefore, the early diagnosis and treatment of a dentigerous cyst lesion creates an importance for the prevention of the occurrence of more destructive lesions.

Though the usual treatment for a dentigerous cyst is careful enucleation of the cyst together with the removal of unerupted tooth, if eruption of the unerupted tooth is considered feasible, the tooth may be left in place after partial removal of the cyst wall.[11,12,14,15]

The factors such as the size and location of the cystic lesion can change the treatment option. The available options for the treatment of these lesions in children include total enucleation of the cyst with primary closure or marsupialization. Marsupialization of the cyst is the treatment of choice which gives a chance to the unerupted tooth to erupt in large cysts; however, this technique creates notable disadvantages. To illustrate, the two-stage surgical procedure may result an intolerable procedure for a child and lifting behind a pathological tissue[8,9,14,15]Enucleation with primary closure was the treatment choice in our case as the cyst was small, and the displacement of the unerupted permanent tooth was severe.

4. Conclusion

The prognosis of some cysts is very good, rarely recurrence after cyst removal as a whole. The frequency of neoplastic occurrence of this transformation is low. Intraosseous growth of mucous cell on the boundary area of dentigerous cyst can cause mucoepidermoid carcinoma. Although dentigerous cyst lesions are rare in the first decade of life, they can form in young children. For this reason, the true treatment choice with the early clinical diagnosis of these lesions may increase the rate of success. A long-term follow-up is important for the diagnosis of the recurrence as well.

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