



Enucleation with Immediate Tooth Replantation of a Dentigerous Cyst. A Case Report

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Authors' contributions

This work was carried out in collaboration among all authors. The case was managed by authors SAB and NI while the histopathological work completed by author EU. Author SAB wrote the draft while the literature search was managed by authors BF, NI and SAB. Authors NI and EU designed the figures, while all authors contributed to the correction of the draft. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Dentigerous cysts are the most common type of developmental odontogenic cysts arising from the crowns of impacted, embedded, or unerupted teeth. Surgery is commonly recommended for its elimination in view of the damaging effects. Several treatment modalities are available based on some defined guidelines.

A 9 year old boy with a diagnosis of dentigerous cyst involving left mandibular canine is presented. Cyst enucleation was carried out, involved tooth extracted, replanted and loosely splinted. One year follow up shows fully erupted, firm, non-discoloured and vital lower left canine and surrounding teeth, with radiographic evidence of significant resolution of radiolucency.

Cyst enucleation, extraction of involved tooth and immediate replantation should be considered a treatment modality in children. It has the advantage of single surgical approach intervention, reduced hospital appointment, early tooth eruption and physiological restoration of bone.

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1. INTRODUCTION

Dentigerous cyst, which literarily means 'tooth bearing' cyst, [1] was first coined by Jaffe in 1853 [2]. Dentigerous cyst (DC) is a disembryogenetic lesion [3]. These cysts are the most common type of developmental odontogenic cysts arising from the crowns of impacted, embedded, or unerupted teeth [3,4]. They constitute the second most common cystic lesion of the jaws, after radicular cysts [5].

In view of the many damaging sequelae, dentigerous cysts must be surgically eliminated [6]. Management of this lesion has been extensively discussed in the literature. Methods employed for elimination have included decompression, marsupialisation, and enucleation [7,8]. Others include enucleation with orthodontic traction of involved tooth, [9] as well as enucleation with immediate tooth replantation, [3] which has been scantily reported. The varying size and age of presentation as well as the growing need to preserve involved structures makes the treatment modalities inconclusive. This report is therefore being added to the literature to contribute to the body of knowledge on the management.

2. CASE PRESENTATION

A 9 year old male student, presented to the maxillofacial unit in Feb, 2013, with a year history of painless swelling affecting the lower left jaw.

Examination revealed a labiobuccal mandibular swelling that extended from tooth No 32 to 36 (Fig. 1). The overlying mucosa was normal and the swelling was non tender and fluctuant in consistency. Teeth present in the lower left arch were 31,32,74,35 and 36 while 33 and 34 were missing. Tooth no 74 was slightly mobile (grade 1). The teeth present on the contralateral lower right arch were Nos41, 42,43,44,45 and 46. A straw coloured aspirate was obtained from the slightly fluctuant swelling. Orthopantomographic study revealed a unilocular radiolucency with an embedded open apex canine tooth that was displaced inferomedially (Fig. 2). It shows that tooth Nos 34 and 35 were displaced distally by the expansile swelling while 42 and 41 were rotated to the left. No evidence of root resorption was observed. A clinical diagnosis of a dentigerous cyst was made.



Fig. 1. Left mandibular swelling, missing lower left canine and associated teeth displacement

Under endotracheal intubation, four days after presentation, a 3-sided mucoperiosteal flap, extending from tooth no 43 to 36, was raised to expose the lesion (Fig. 3). The mobile lower left deciduous first molar was extracted in the process. An expanded paper thin swelling, breached in some areas, became instantly obvious with an inferomedially displaced, open apex, lower left canine. The cystic lining was gently and meticulously enucleated. The impacted tooth was then carefully extracted paying special attention to the root surface. It was then loosely splinted to tooth No 32 with a 0.5 mm soft stainless steel wire which was tied in a figure of '8' version (Fig. 4). Following resorbable sutures and achievement of haemostasis, a vacuum drain was put in place; wound closed with a 3-0 non- interdental suturing. The patient was then placed on broad spectrum antibiotics and analgesics. Patient recorded an uneventful postoperative healing, discharged on the 3rd day and sutures were removed on the seventh day. Histopathological examination confirmed the diagnosis of a dentigerous cyst (Figs. 5,6).

Review of the patient, 7 months later shows a fully erupted, firm and non-discoloured lower left canine tooth. Tooth nos 33 and 34 were also observed to have erupted fully (Fig. 7). OPG shows significant resolution of radiolucency and fully erupted teeth Nos 33, 34 and 35 (Fig. 8). A vitality test carried out on lower left canine out one year post-surgery was positive.



Fig. 2. An OPG showing a unilocular radiolucency, embedded canine, displaced teeth but no root resorption

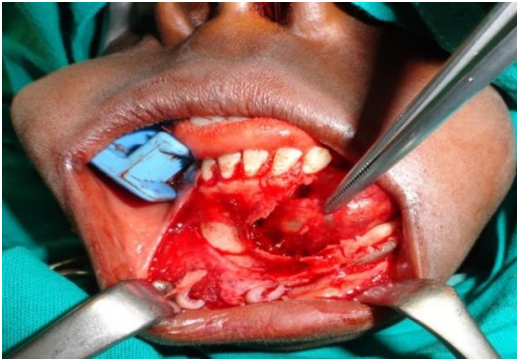


Fig. 3. Cyst Enucleation with exposed lower left canine



Fig. 4. Extracted canine being splinted with 0.5 mm soft stainless steel wire

3. DISCUSSION

Clinical diagnosis of a dentigerous cyst is relatively simple in children, judging from the classical presentation of an embedded tooth within the cystic cavity, as observed in the case

under consideration. However, it has to be differentiated from a more aggressive unicystic ameloblastoma (UA) that was first described in 1977 by Robinson and Martinez [10]. Ameloblastoma is rare before the age of 10 years, as only 2% incidence was reported in a collection of 1036 cases by Small and Waldron [11]. According to Bhutia O et al. [12] in a case report of UA, stated that even though it is difficult to distinguish dentigerous cysts from UA, presence of lingual cortical plate expansion, cystic fluid on aspiration and presence of root resorption of teeth in panoramic radiograph assisted in making the preoperative diagnosis of UA over the dentigerous cyst without incisional biopsy. In the present case, the swelling presented no lingual plate expansion and no root resorption on panoramic view. The diagnosis of dentigerous cyst was later confirmed histologically after surgery.

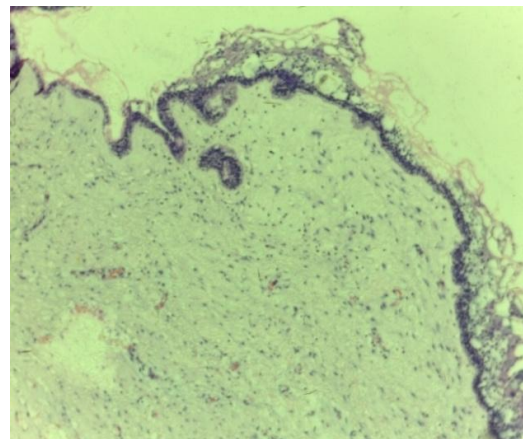


Fig. 5. The lesion consists of loosely arranged fibrous connective tissue wall

Surgery is commonly recommended for dentigerous cysts because they often block eruption of teeth, become large, displace teeth, destroy bone, encroach on vital structures (i.e. encompass or displace the alveolar nerve, shrink the maxillary sinus) and occasionally even lead to pathologic fracture [7,8]. Several modalities of treatment are possible based on criteria such as patient age, cyst site, cyst size, involvement of vital structures by the cyst, and the strategic significance of the impacted tooth involved [6]. Significance of the associated impacted tooth should be considered before deciding on a treatment modality. An upper or lower canine tooth has enough merits with regard to aesthetics and occlusion to warrant its retention; while an impacted third molar tooth could easily be

extracted with cyst enucleation [6]. Cyst decompression in children with dentigerous cysts has been discussed [13-15]. The cysts were opened to the oral cavity and stents (a rubber tube, removable devices, or gauze packing) were used to keep the opening patent to permit shrinkage of the cyst while enucleation takes place at a later date with a less extensive and safer surgical procedure. This could be followed by spontaneous eruption or orthodontic extrusion [6,9].

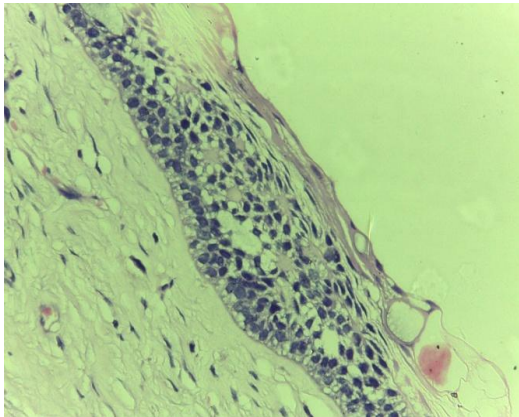


Fig. 6. The cyst wall is lined by non keratinizing stratified squamous cell epithelium

While presenting a case report of extraction of tooth involved in a cyst with immediate replantation, it was suggested that it could be a treatment modality in selected cases [3]. The case under consideration is a 9 year old boy with a dentigerous cyst, which apart from the psychological discomfort of facial swelling, has resulted in displacement of adjacent teeth and is capable of compressing the inferior alveolar nerve. In addition lower canine is very important to the aesthetics and occlusion for the boy, which makes its retention very necessary. Immediate replantation of the extracted tooth limits surgical intervention and hospital visits to the barest minimum when compared with enucleation with orthodontic traction. In addition the degree and pattern of impaction may not be amenable to orthodontic treatment. Compared with decompression with later enucleation, it eliminates the stress of oral toileting. However decompression with later enucleation still remains the only option in a large cyst involving tooth (teeth) buds.

Review of the patient seven months post-surgery revealed a significant resolution of radiolucency

and tremendous improvement in teeth alignment; no sign of recurrence. This is similar to an earlier report where it was stated that bone formation occurred in the defects of all reviewed cysts, within 6–12 months regardless of treatment modality and none of the cases required bone grafting [6].



Fig. 7. A fully erupted and firm lower left canine, 7 months post surgery



Fig. 8. An OPG 7 months post-surgery showing significant bone formation and straightening of displaced teeth

4. CONCLUSION

In conclusion, dentigerous cyst must be differentiated clinically and histologically from Unicystic ameloblastoma in children. Extraction of involved tooth in the cyst with immediate implantation should be considered a treatment modality. It has the advantage of single surgical approach intervention, reduced hospital appointment, early tooth eruption and physiological restoration of bone. However open tooth apex is an important consideration for a

successful outcome and rigid splinting must be avoided.

CONSENT

All authors declare that written informed consent was obtained from the patient's parents for publication of this case report and accompanying images.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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