

Case Report

Premature Eruption of a Central Incisor Caused by a Dentigerous Cyst: Management and Two Years Follow Up

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Abstract: Dentigerous cysts are developmental cavities that emerge between reduced enamel epithelium and the crown of an un-erupted tooth. They can be widely developed which can disturb the dental eruptive process. A 6-year-old girl consulted the clinic for a premature eruption of tooth 11 caused by a dentigerous cyst. A surgical cyst enucleation was performed and a contention was made to maintain the tooth 11 on the arch. The clinical and radiological follow-up for 2 years showed a favorable evolution of the root of the central incisor with a normal bone density of the cystic site.

Keywords: dentigerous cyst, incisor, tooth eruption, child, early medical intervention

INTRODUCTION

A dentigerous cyst is a developmental cavity surrounded by a lined epithelium that encloses the crown of an unerupted tooth at the cemento-enamel junction [1]. It is the most commonly encountered oral and maxillofacial pathology in pediatric population with 9.4%, followed by fibrous hyperplasia with 8.4% [2].

Their frequency in the general population has been estimated at 1.44 cyst for every 100 unerupted teeth. Although it may involve any tooth, the mandibular third molars are the most commonly affected [3].

CASE REPORT

A 6-year-old girl was admitted with her parents at the Department of Pediatric dentistry (Dental Clinic of Monastir – Tunisia) with a complaint of an “anterior tooth malposition”, without pain or any other associated symptoms.

The patient did not present any syndrome or systemic disease and no history of trauma. She was cooperative and responded favorably to behavior management techniques.

Extra oral examination did not reveal any facial asymmetry. Oral clinical examination revealed that the patient was in mixed dentition stage with poor oral hygiene. Carious lesions were detected in all

primary teeth. The second lower left primary molar (75) was missed due to decay and only a root fragment was left on the second lower right primary molar (85).

The upper right central incisor was the only permanent tooth in the arches, it showed degree 2 of mobility and it was in cross bite with teeth 81 and 82 (Fig. 1).



Fig-1: Intra oral/Preoperative-view

In the anterior buccal region of the maxilla, a discreet tumefaction with indistinct limits was observed. It was not discovered by the parents. This swelling was extended from the midline to the right maxillary primary canine and it had a hard consistency on palpation. Orthopantomographic (OPG), peri apical and anterior occlusal radiographs were made (fig. 2, 3 and 4).



Fig-2: peri apical radiograph

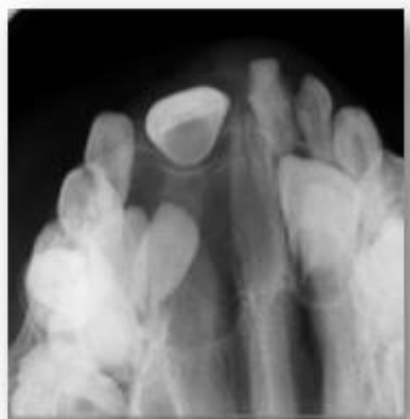


Fig-3: Anterior maxillary occlusal radiograph



Fig-4: orthopantomographic showing an extensive radiolucency area involving the crown of a supernumerary tooth, with teeth: 13,12,21 and 22 displaced in a laterocranial direction

INVESTIGATIONS:

Periapical and anterior occlusal radiographs findings concluded the presence of a large unilocular radiolucency surrounding an impacted supernumerary tooth and extending from tooth 53 to the bud of tooth 21. Eruption of tooth 11 without root was also noticed.

OPG confirmed periapical radiograph findings but failed to add further information. A CBCT was indicated in order to precisely evaluate the extent of the lesion and damage to adjacent structures, thus contributing to the surgical planning and treatment of the case. It showed a hypodense lesion associated to a supernumerary tooth.

In The axial, coronal and sagittal slices, (Fig. 5) the lesion was well circumscribed; measuring approximately 20.17mm×20.92mm×15.45 mm causing destruction of the buccal cortical (Fig. 6).



Fig-5: CBCT image showing the cystic lesion involving the crown of the supernumerary tooth in axial (A), coronal (B) and sagittal (C) slices



Fig-6: Three-dimensional reconstruction showing the destruction of buccal cortical

The intra-lesion density was 25 hounsfield units (HU), indicating the presence of liquid inside. We noticed a damage of the maxillary sinus and nasal fossa. The displacement of tooth 21 and 22 in the distal direction was observed, while teeth 12 and 13 were dislocated both in buccal and distal directions. A primary diagnosis of premature eruption of tooth 11 caused by a cystic lesion was retained .

TREATMENT RENDERED

Surgery was executed under local anesthesia. An intrasulcular incision was made from tooth 11 up to

tooth 54, followed by mesial and distal discharge incision in order to allow proper access to the surgical site. A mucoperiosteal flap was carefully raised providing good access. The cyst was exposed without any bone removal needed. The content was liquid. It was emptied first and then was excised completely with the supernumerary tooth leaving a large residual cavity (fig. 7).



Fig-7: (A) Intraoral perioperative view. (B) Extracted tooth and excised cystic tissue

After cyst enucleation, it was noted that mobility of tooth 11 was important. It was decided to keep the tooth and modify its position to buccal position. After suturing, the incisor (11) was maintained with temporary splints (fig. 8).



Fig-8: Intraoral postoperative view with the new position of tooth 11

The anatomopathological examination of removed tissue revealed a dentigerous cyst.

OUTCOME AND FOLLOW-UP

Clinical and radiographic follow-up for two years was conducted and has shown an uneventful healing (Fig. 9). The splint was removed after 6 months,

when mobility has decreased. Tooth 11 was followed up with periapical radiograph every 3 months; it showed normal root edification with a stable clinical

state, physiological mobility has been found with a good correction of the cross bite. Cold test was also positive.



Fig-9: Clinical and radiographic follow-up for two years; (A: After 3 months. B: After 18 months C: after 24 months)

DISCUSSION

Dentigerous cyst is very common in children. It is generally diagnosed during the first and second decade of life. In a recent study, Zhang *et al* [4] evaluated 2,082 cases of dentigerous cyst and found that the mandibular third molars, followed by the maxillary canines, were the most affected teeth by the disease.

However, in our case, the involved tooth was a maxillary supernumerary tooth, which is very uncommon. In other cases, dentigerous cyst was related especially with mesiodens [5, 6] and odontomas [7].

Dentigerous cysts cause a variety of problems such as swelling due to bone expansion, impaction of the involved tooth, displacement of adjacent teeth and structure. The displacement of teeth is generally noted in benign tumor [8].

Treatment for dentigerous cyst ranges from marsupialisation to enucleation. The treatment of choice is enucleation.

In children, marsupialization is more commonly used when compared with enucleation treatment because it is surgically less invasive and preserves the successor teeth [9].

In our case, we cannot realize marsupialization, because dentigerous cyst is associated with unerupted supernumerary tooth that can affect and

disturb germs of lateral incisor, canine and premolars. So, it was obligatory to extract it.

After enucleation, we did not use bone substitutes to fill the tissue deficit. In fact, it is true that these substitutes give a better radiological contrast, but this does not prove in any case a healing of the surgical site [10]. In addition, children have greater regenerative potential than adults, providing faster and better healing.

In his study, Iatrou [11] did not use any grafts, even in the case of the most extensive cystic lesions. This surgical approach contrasts with the approach of Bodner who used the technique of marsupialization in the majority of cases as well as bone grafts in 22% of cases.

A review of the literature did not reveal a similar case of premature eruption of a tooth with only a crown caused by a dentigerous cyst.

In order to preserve tooth 11 a modification of its crown position from lingual situation to the buccal's one was done to correct the cross bite and minimize occlusal trauma, the procedure was easy due to tooth mobility.

Bite guard could be used for contention but the risk of tooth loss was very possible during dental impression. For the contention, we have chosen fixed

contention using bonded splints stretched between tooth 53 and tooth 63.

This case was also unique owing to the success in maintaining the central incisor despite its premature eruption and position correction in per operator.

Also, after two years of follow up, we have obtained a normal and physiological evolution of the root without dilaceration which proves the delicacy of our surgical act without touching or damaging root cells. Until the last check, vitality tests were all positive: No symptoms on axial and transversal percussion with a physiological mobility, cold test was also positive.

Furthermore, the tooth 11 root was more developed than the tooth 21 one. This was shown on the last follow-up periapical x-ray. In fact, this resulted in its early emergence and function. Thus, odontoblasts were stimulated to produce dentin.

In conclusion, this paper showed that, more particularly for children, there is no systematic approach or rule for management of cysts. Practitioners should adapt their treatment plan to the proper clinical case taking in account several points such as age of patient, his cooperative degree.

Dentist must be aware of the importance to give to parents about clear and thorough information about the clinical case, the diagnosis, the management procedure and the prognosis. This approach is needed not only to reassure parents but also for practitioner forensic protection.

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