

Management of inflammatory dentigerous cysts in children: report of two cases

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Abstract

Inflammatory dentigerous cysts are usually associated with a carious or non-vital primary tooth. Consequently they are found in children with a mixed dentition. This report describes two cases of inflammatory dentigerous cysts associated with the lower second premolars. Both cases were treated by marsupialisation of the cysts that eventually led to the spontaneous eruption of the premolars.

Introduction

Odontogenic cysts in children are rare with only 1% of the radicular cysts and 9% of the dentigerous cysts occurring in the first decade of life.¹ Dentigerous cysts are developmental in origin and are usually associated with impacted teeth or teeth that erupt late. Inflammatory dentigerous cysts are associated with the roots of carious or non-vital primary teeth and the crowns of unerupted permanent successors. Consequently, they can only be found in the mixed dentition. A possible pathogenesis of these cysts is periapical inflammation from a non-vital deciduous tooth spreading to involve the follicle of the unerupted permanent successor tooth. The inflammatory exudate causes the reduced enamel epithelium to separate from the enamel leading to the formation of a dentigerous cyst.² Several authors²⁻⁴ have reported cases of dentigerous cysts associated with an infected predecessor tooth. The following two case reports show the successful management of two such cases referred from general dental practice.

Keywords

Dentigerous cysts, Children, Inflammatory, Treatment

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Case report 1

A healthy 7-year old boy was referred to the Dental Department of St Luke's Hospital, Malta in May 2005 following extraction of a carious lower right second deciduous molar (85) in General Dental Practice. A hard swelling in the lower right buccal sulcus in the premolar region did not subside even following antibiotics and was still present one week after the extraction. A panoramic radiograph (Figure 1) showed a large unilocular radiolucent lesion surrounding the crown of the lower right second premolar with displacement of the lower right premolar crowns towards the lower border of the mandible. Marsupialisation of the cyst was carried out under local anaesthesia, and a specimen was sent for histological examination. The patient was provided with an acrylic plate with a plug and was instructed to irrigate the cyst cavity with a chlorhexidine mouthwash. The histology report was that of a radicular cyst. The patient was reviewed every month to reduce the depth of the acrylic plug. Radiologic examination showed the cyst to be reducing in size and by August 2005, a panoramic radiograph showed the lower right premolars to be migrating occlusally. In October 2005, the cyst opening had closed completely and it was decided to re-open the cyst cavity. This was carried out under local anaesthesia and cold curing acrylic was used to build-up the plug on the lower plate. Two months later, radiologic examination showed that the cyst cavity was decompressing and the lower right premolars were erupting into position (Figure 2). By January 2007 the lower right premolars were clinically visible and by July 2007 they were fully erupted. The patient is still being reviewed at the orthodontic clinic of Mater Dei Hospital, waiting for the permanent dentition to be established.

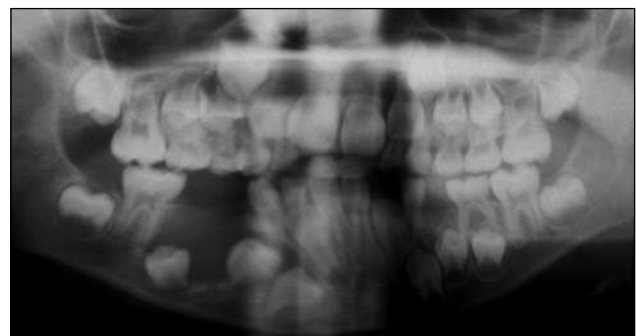


Figure 1: Inflammatory dentigerous cyst involving the mandibular right second premolar.



Figure 2: Inflammatory dentigerous cyst decompressing and lower right premolars erupting into the dental arch.

Case report 2

In November 2006, a healthy 10-year old boy presented at the Dental Department with a firm swelling associated with a grossly decayed lower left second deciduous molar. The lower left first deciduous molar and the lower right deciduous molars had been previously extracted. A panoramic radiograph (Figure 3) revealed a well defined unilocular radiolucency embedding the crown of the lower left second premolar which was displaced apically. The carious lower left second deciduous molar was extracted and cyst marsupialisation was carried out under general anaesthesia. The cavity was packed with Bipp gauze during the first two weeks post-operation. The patient was then provided with a removable lower space maintainer with an acrylic plug in the cyst region to maintain the opening of the cyst patent. The patient was instructed to rinse with a chlorhexidine mouthwash and was reviewed every two weeks to reduce the height of the plug. The lower left premolars erupted spontaneously as the cyst decompressed. By May 2007 the lower left first premolar had started to erupt and the lower left second premolar was clinically visible by July 2007. The acrylic plug was removed completely but the patient was instructed to keep on wearing the lower space maintainer to prevent mesial tilting of the lower first molars. In April 2008, a panoramic radiograph (Figure 4) showed that the radiolucent lesion in the lower left premolar region had resolved completely. The lower left second premolar was however impacted beneath the contact point of the lower left first molar. The patient also had a developing Class III malocclusion and impacted upper second premolars and was therefore referred for orthodontic treatment. He is still being followed up at the orthodontic clinic of Mater Dei Hospital.



Figure 3: Cystic lesion involving the lower left second premolar. The roots of the grossly carious lower left second deciduous molar were in contact with the cyst wall.

Discussion

There have been 20 reported cases of dentigerous cysts in Maltese children in approximately the first decade of life from 1961 till 2006. They are more common in boys and more likely to occur in the lower jaw (unpublished data compiled by Prof. G. E. Camilleri). Both cases described here were associated with the lower second premolar teeth and both patients were males. The radiographic appearance of the cystic lesion in both cases was that of a unilocular, well defined radiolucency enclosing the crown of the second premolar tooth suggesting the diagnosis of a dentigerous cyst. However, since dentigerous cysts are usually associated with impacted teeth or teeth that erupt late, the radiographic signs, in both cases, did not support the diagnosis of a developmental dentigerous cyst. In the first case presented here, there was still no root formation of the second premolar and therefore it was unlikely that tooth eruption had started. In the second case, although root formation had started, there was nothing to suggest that the second premolar might have been impacted. Therefore it was unlikely that the pathogenesis of both cystic lesions was that of a dentigerous cyst which is developmental in origin. On the other hand, there appeared to be a definite correlation between the cystic lesion and periapical pathology from the overlying carious predecessor tooth especially in the second case where the roots of the carious deciduous second molar could be seen touching the cyst wall. This suggested that the cystic lesions were inflammatory dentigerous cysts. A specimen was sent for histological examination in the first case only and although the histopathological report came back as a radicular cyst it is histologically very difficult to distinguish between inflammatory dentigerous cysts and radicular cysts² and radicular cysts associated with deciduous teeth are very rare.⁵ Unfortunately a specimen was not sent for histology in the second case. Therefore, a diagnosis of the cystic lesion in this case was not possible. However it is worth noting that a biopsy should always be taken to exclude odontogenic tumours and other cystic lesions such as the odontogenic keratocyst. These lesions may present in a similar way but would necessitate more aggressive treatment.

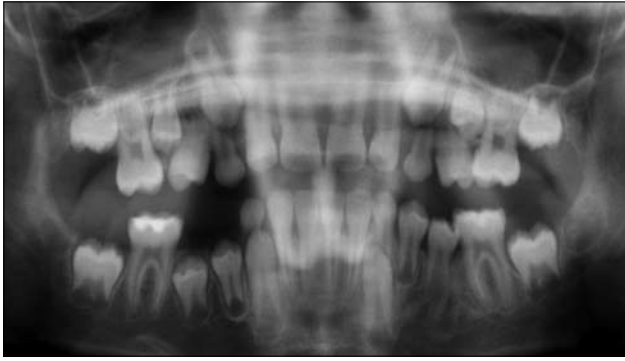


Figure 4: Lower left first and second premolars fully erupted

Dentigerous cysts in adults are usually treated by surgical enucleation and extraction of the associated tooth affected by the cyst. In the case of small cysts, enucleation and preservation of the involved tooth is sometimes advocated in younger patients. Larger cysts are initially reduced in size by marsupialization followed by surgical enucleation at a later stage.⁶ A more conservative approach has been used in our two cases of inflammatory dentigerous cysts because of the young age of the patients. Following the removal of the carious deciduous teeth, decompression of the cysts was carried out and the opening was then kept patent with the use of an acrylic plug to allow the cyst to shrink and at the same time allow bone regeneration to occur. This eventually resulted in the spontaneous eruption of the premolars in both cases and has prevented the loss of any permanent teeth or damage to any of the adjacent structures.

The above two cases highlight the importance of preventive measures and proper management of carious deciduous teeth to avoid these complications. Regular follow-up of the deciduous dentition is of the utmost importance because an inflammatory dentigerous cyst can attain a considerable size before the patient becomes aware of it, this usually being asymptomatic. Simple management of inflammatory dentigerous cysts usually results in a satisfactory outcome without loss of teeth. The prognosis is much better in children because of the greater eruptive potential of teeth with open apices and the greater regenerative potential of young bone.

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