

## Orthodontic assisted tooth eruption in a dentigerous cyst: a case report

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*In an orthodontic practice, it is common to deal with impacted teeth, which are one of the most difficult situations dealt with by dentists. This case report describes the surgical and orthodontic management of the impacted teeth in a large dentigerous cyst. In the initial stage of treatment, the cyst was marsupialized over 7 months. After decompression of the cyst, spontaneous eruptions of the impacted tooth were noticed. Then, they were orthodontically brought into the proper occlusion.*

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### INTRODUCTION

The treatment of impacted teeth is a challenge to an orthodontist. A dentigerous cyst can complicate the already difficult challenge of bringing an impacted tooth into the arch. Several articles have been published describing techniques and approaches for managing impacted teeth. However, there are limited case reports in the literature concerning the impaction of teeth associated with dentigerous cysts.<sup>1-4</sup> In most of the literature it is not clear about the outcome of impacted teeth associated with dentigerous cyst.<sup>1,2</sup> It was assumed that the teeth were extracted as the cyst was excised. Thus, teeth associated with dentigerous cyst are more often than not extracted along with enucleation of cyst. However if the position of the associated tooth is favorable, a more conservative approach can be taken by using marsupialization and later assisting

the tooth eruption to a normal occlusion.<sup>3,5</sup> This saves a tooth in occlusion and prevents a young patient from psychological and mental trauma because of the loss of tooth. In this case report, large dentigerous cyst was marsupialized and the severely displaced and impacted teeth were orthodontically brought into proper occlusion.

### CASE REPORT

#### Step 1. Patient evaluation

A 13 year old boy presented with chief complaints of swelling in the lower left vestibule for 6 weeks, tingling and numbness in the lower lip since 2 weeks and irregularity of front teeth. The clinical examination showed a well-balanced facial profile, a mixed stage of dentition, multiple teeth with amalgam restoration, class I molar relation with mild anterior crowding and 5mm overbite. A firm and painless swelling was present in the lower left vestibule of mouth extending from left lateral incisor to left permanent first molar. Teeth adjacent to the swelling (deciduous canine and molars) were mobile. Regional lymph nodes were palpable. Panoramic view and lateral cephalogram were advised.

#### Step 2. Diagnosis

Panoramic radiograph revealed a well-circumscribed radiolucent lesion with a well-defined radiopaque margin on the left side body of the mandible (Figure 1). The lower left permanent canine and premolars were severely displaced and impacted. The corresponding deciduous teeth were still present with almost complete root resorption. The tentative diagnosis of a dentigerous cyst involving three permanent teeth was made. Other possibilities included a differential diagnosis of an inflammatory cyst, a keratocyst and a cystic ameloblastoma.

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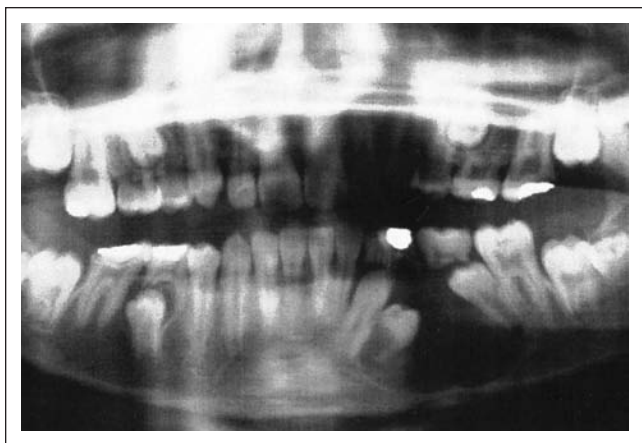


Figure 1. Pre-treatment panoramic view showing a well-circumscribed radiolucent lesion on the left side body of the mandible with displaced and impacted permanent canine and premolars.

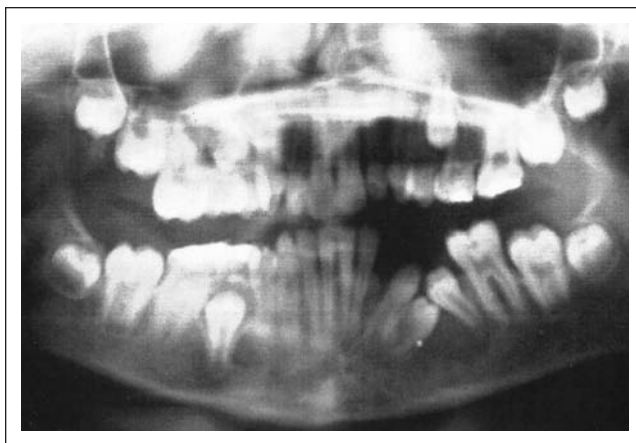


Figure 2. Follow-up panoramic view showing eruption of second premolar and canine into a normal position and filling of the cyst cavity with bone tissue.

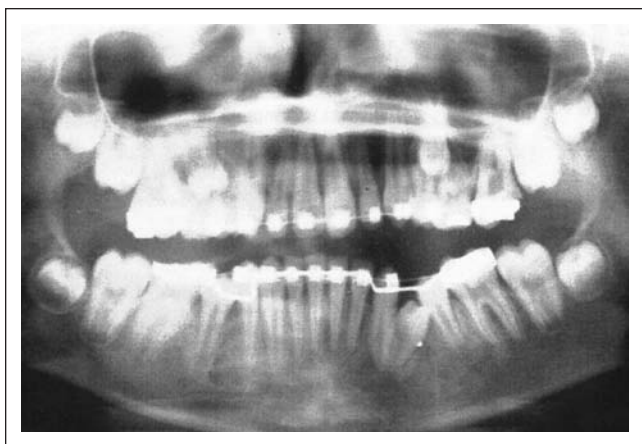


Figure 3. Follow-up panoramic view showing spontaneous eruption of first premolar.

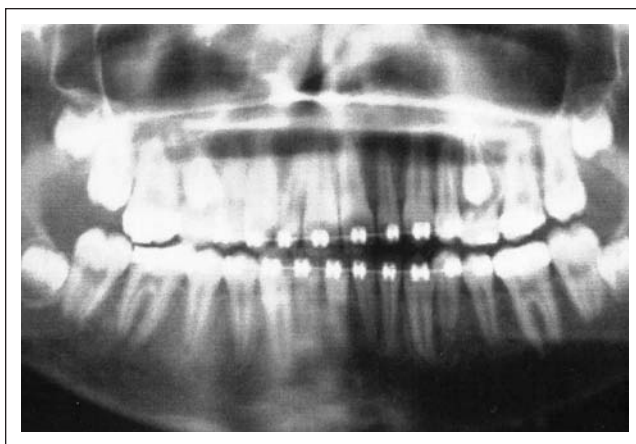


Figure 4. Follow-up panoramic view showing normal alignment of all the impacted teeth.

### Step 3. Treatment plan

The objectives of treatment were resolution of the radiolucent lesion, to retain all permanent teeth, to observe for spontaneous eruption of the impacted teeth and to institute an interceptive phase of orthodontic treatment so that mesial movement of the molars could be prevented. Thus marsupialization of cyst was planned.

### Step 4. Treatment progress

Three deciduous teeth, namely; canine, first and second molars were extracted under local anesthesia, and the sockets were used to establish communication (opening) between the cyst and the oral cavity. The cyst was deroofed and the lining was sutured to adjacent oral mucosa so as to establish a communication of cyst to oral cavity. The material of the cyst roof was sent for histopathological examination and it confirmed the clinical diagnosis of dentigerous cyst. (Biopsy report: Specimen sent as cystic lining from lower left deciduous molar region shows features consistent with dentigerous cyst. There is no evidence of dysplastic change in

this biopsy.) A gauze pack with petroleum jelly was inserted into the cyst cavity and secured with a suture. After one week of surgery, the gauze pack was removed and a lower alginate impression was made. The impression was poured with stone plaster and in that dental cast; a removable acrylic plate with an extension was made. This acrylic extension was used as an acrylic plug to maintain cystic opening. The patient was instructed to wear the retainer continuously (including meal times) and to remove it only during the cleansing of the wound. The patient was instructed to clean the wound with distilled water in a syringe after each meal. The acrylic extension was trimmed regularly at monthly intervals to avoid contact with the erupting teeth and the newly forming tissue at the base of the cyst cavity. Paresthesia of the lower lip was disappeared after 4 months of marsupialization.

After 7 months of marsupialization, eruption of canine was noticed and patient advised to discontinue the use of acrylic plate. Radiograph at this stage showed that second premolar was erupting into a

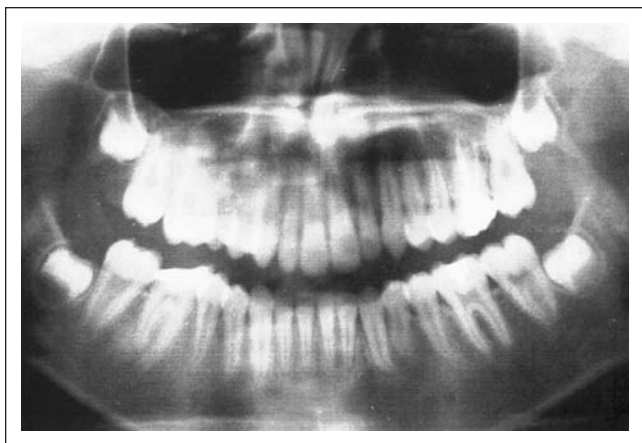


Figure 5. Post-treatment panoramic view showing filling of cystic cavity with normal trabecular bone and normal alignment of canine and premolars.

normal position with increased radiopacity of cyst showing new bone formation (Figure 2).

However, the angulation of first premolar was abnormal and far away from the arch. To prevent mesial movement of first molar a lingual arch (LA) was cemented. Few weeks after, second premolar eruption was noticed. A spontaneous and abnormal path of eruption of first premolar was still present after about 11 months of marsupialization (Figure 3).

Then, standard edgewise brackets were used for full arch bonding and banding, and all impacted teeth were aligned to the normal position (Figure 4).

After properly finishing the occlusion, fixed orthodontic appliance was removed and upper and lower Begg's retainer was delivered. A total of 21 months were taken to complete the treatment including the filling of cystic cavity with normal trabecular bone and alignment of left mandibular canine and premolars (Figure 5).

## DISCUSSION

The nature of the causative tooth influence the type of surgical treatment required for the dentigerous cyst. If the cyst is associated with a supernumerary or wisdom tooth, complete enucleation of the cyst along with extraction of tooth may be the first treatment choice. However, when preservation of the displaced teeth is desirable, and in a young patient where the lesion is isolated, then marsupialization is the treatment of choice.<sup>6,7</sup> The degree of tooth displacement should be considered when planning treatment, but

the potential for spontaneous resolution of tooth malpositions associated with dentigerous cysts has previously been reported.<sup>8</sup> The opening between a cyst and the oral cavity must be maintained artificially to prevent spontaneous closure. In the present case reported here, the opening of the cyst was maintained for approximately 7 months to allow the infill of the cyst cavity with newly formed bone. The opening on the crest favored the filling of the cavity from below in an upward direction thus allowing the eruption of the related permanent teeth into their respective position. Marsupialization requires an opening at the lowest point of the cyst cavity, which is not feasible in the mandible and again a lateral opening in the vestibule could drive the permanent teeth toward ectopic eruption<sup>9</sup>. Thus, during surgery an opening was created on the crest of alveolus.

This case showed that the potential for healing was remarkable with spontaneous relocation of displaced teeth, provided the cyst was opened into the oral cavity at the center of the crest. The treatment was quite simple, safe, and atraumatic. However, close supervision was required by the operators during treatment. Thus a proper and logical treatment planning can save the patient from a psychological and mental trauma.

## REFERENCES

1. Mani NJ. Dentigerous cyst in relation with an impacted maxillary canine (report of a case). *News Bull Indian Dent Assoc* 3: 9-10, 1972.
2. Mehrotra MC. Dentigerous cyst associated with maxillary lateral incisor and canine. Case report. *J Indian Dent Assoc* 42: 17-18, 1970.
3. Martin-Peretz D, Varela-Morales M. Conservative treatment of dentigerous cysts in children: A report of 4 cases. *J Oral Maxillofac Surg* 59: 331-334, 2001.
4. Clauser C, Zuccati G, Barone R, Villano A. Simplified surgical-orthodontic treatment of a dentigerous cyst. *J Clin Ortho* 28: 03-106, 1994.
5. Takagi S, Koyama S. Guided eruption of an impacted second premolar associated with a dentigerous cyst in the maxillary sinus of a 6-year-old child. *J Oral Maxillofac Surg* 56: 237-239, 1998.
6. Magnusson B, Koch G, Poulsen S. *Pedodontics: a systematic approach*, 1st ed., Munksgaard, Copenhagen, p. 290, 1981.
7. Antonio-Moro JM, Puente M. Surgical-orthodontic treatment of an impacted canine with a dentigerous cyst. *J Clin Ortho* 35: 491-493, 2001.
8. Sain D, Hollis WA, Togrye AR. Correction of a superiorly displaced impacted canine due to a large dentigerous cyst. *Am J Ortho Dentofac Ortho* 102: 270-276, 1992.
9. Archer WH. *Oral and Maxillofacial Surgery*, 5th ed., W.B. Saunders Co., Philadelphia, pp. 524-705, 1975.

