

Management of a Large Dentigerous Cyst with Enucleation and Packing Open with BIPP in 9-year-old Child: A Case Report

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ABSTRACT

Dentigerous cyst is also known as follicular cyst. It is an odontogenic cyst of developmental origin. The dentigerous cyst involves impacted, embedded or submerged tooth by expansion of its follicle. The normal follicular space is mostly 3-4 mm but with dentigerous cyst it can be 5 mm or more. These are second most commonly occurring odontogenic cysts and literature shows occurrence of 24% among true cysts of jaw. It is most commonly associated with mandibular 3rd molar followed by maxillary canine and third molar. Radiographically occurring as unilocular radiolucency around an impacted tooth. In our case the cyst was a large dentigerous cyst occurring in 9-year-old child having mixed dentition. Complete enucleation of the cystic lesion and packing open with bismuth iodoform paraffin paste (BIPP) was done. BIPP dressing was changed at regular intervals and more than 60% of bone formation was complete in around 5 months which was evident on the radiograph.

Conclusion: Methods employed for elimination include enucleation, decompression marsupialization but the treatment modality also depends upon age, existing dentition, location and size of the lesion.

Keywords: Deciduous teeth, Dentigerous cyst, Enucleation, Impacted.

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INTRODUCTION

A dentigerous cyst or follicular cyst was first described by Paget in 1863. It is the second most occurring odontogenic cyst after radicular cyst. A dentigerous cyst encloses the crown of an impacted tooth, most commonly the mandibular posterior region. Other than mandibular third molars, relatively frequent sites in decreasing order are maxillary canine, maxillary third molar, and mandibular second premolar.¹ Dentigerous cysts account for 14–24% of all odontogenic cysts. Most commonly occurring in the 20s and 30s, they can also be found in children and adolescents in the mixed dentition period. Only 9% of dentigerous cyst occurs in the first decade of life. There are two varieties of cysts that are reported to be developmental and inflammatory.^{2,3} These cysts are commonly asymptomatic until inflammation sets in. Pain, swelling, tooth mobility, and tooth displacement may occur when the cyst reaches a considerable size.⁴

CASE DESCRIPTION

A 9-year-old boy was reported to the dental clinic with a chief complaint of pain and swelling in the right angle region of the mandible for 4 months. On examination, extraoral swelling was present that was hard and mildly tender with significant facial asymmetry. Clinically the swelling was approximately 4 × 5 cm with no signs of inflammation on the overlying skin.

Intraorally, the vestibule was obliterated, extending from the retromolar region to the first permanent molar. Cone-beam computed tomography revealed a well-defined radiolucency extending from the distal aspect of the unerupted second molar to the anterior border of the ramus of the mandible and inferior to

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the inferior border of the mandible. The radiolucency was unilocular and distinct margins with a tooth bud pushed posteroinferiorly towards the ramus of the mandible. Axial and coronal sections showed buccal cortical expansion with no perforation and a very thin inferior border of the mandible, approximately 5–8 mm (Figs 1 to 4).

Fluid aspiration showed a straw-colored fluid giving a presumptive diagnosis of a dentigerous cyst. A thorough medical examination was carried out to rule out any possibility of a syndrome complex. With informed consent, the treatment plan

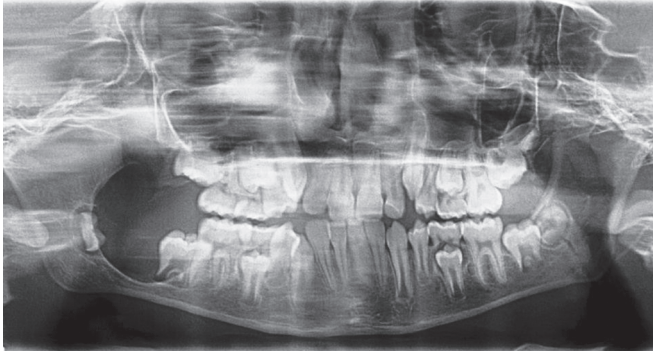


Fig. 1: Preoperative OPG showing unilocular radiolucency

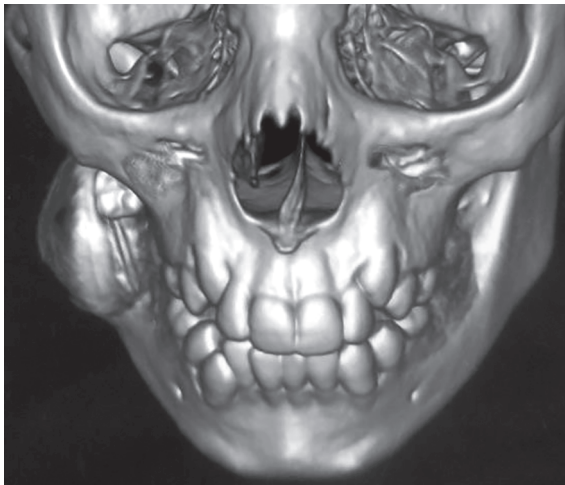


Fig. 2: 3D reconstruction view showing expanded buccal cortex

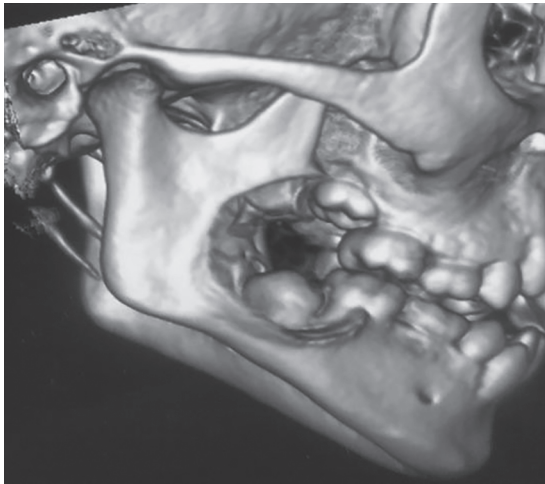


Fig. 3: 3D reconstruction view showing extent of dentigerous cyst extension

was decided complete enucleation and packing open with bismuth iodoform paraffin paste (BIPP) under general anesthesia.

Under general anesthesia, the clavicular incision was given from the first molar extending until the anterior border of the ramus of the mandible. A full-thickness mucoperiosteal flap was raised to expose the expanded cortex. The complete cystic lining was removed with the extraction of the third molar tooth bud and permanent second molar. The cystic cavity was flushed with saline

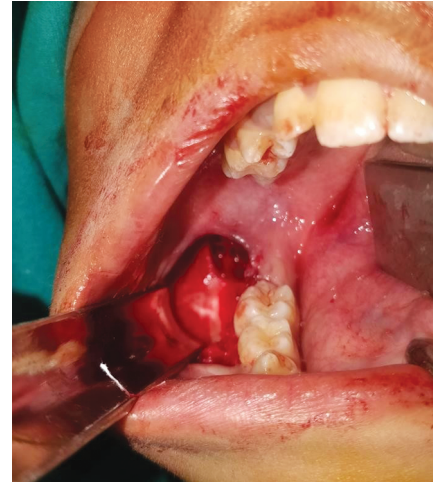


Fig. 4: Complete enucleation of the cystic lesion

and betadine and packed with BIPP impregnated in ribbon gauze. The BIPP dressing was changed every week for the next 2 months. Radiographically bone formation was evident by the end of 3rd month. In the 6th month intraoral wound healed uneventfully, and radiographically complete bone formation was evident. No postoperative complications were noted in the healing phase (Figs 5 to 7).

DISCUSSION

The term dentigerous cyst was coined by Paget in 1908, contributing approximately 24% of all odontogenic cysts with a slight male predilection.⁵ It is one of the most commonly developing odontogenic cysts developing around the crown of an unerupted or impacted tooth attached to its cement-enamel junction. Most frequently occur in the 20s, 30s, and 40s, but these lesions have also been reported in mixed dentition and 1st decade of life. Approximately 9% of dentigerous cyst occurs in the 1st decade of life, according to shear, while according to Subramaniyam, 4% of these lesions can occur in 1st decade of life.⁶ Dentigerous cysts are developmental in origin, but some might have inflammatory pathogenesis. It is formed by the accumulation of fluid between the layers of reduced enamel epithelium or enamel and enamel epithelium. Due to obstruction of venous outflow and inducement of serum transudation across the capillary wall as a result of compression of tooth follicle by erupting tooth.⁷ Dentigerous cysts can be of two types inflammatory and noninflammatory. The inflammatory develops due to inflammation of a non-vital deciduous tooth, whereas developing or noninflammatory develops due to pressure exerted by the erupting follicle.⁸ If the follicular space is greater than 2.5 mm, it is suggestive of fluid accumulation, and if >4 mm, it is considered a cystic lesion.⁹

Histologically the developmental or noninflammatory variety shows reduced enamel epithelium which is non-keratinized and without rete pegs, whereas the inflammatory shows the presence of hyperplastic keratinized stratified squamous epithelium mimicking radicular cyst.^{10,11} Dentigerous cyst has the potential to become an aggressive lesion causing facial asymmetry, cortical expansion, displacement of teeth, and root resorption.¹² Radiographically, dentigerous cysts can be of three types central, lateral, and circumferential radiolucency surrounding the crown of an impacted or unerupted tooth with sclerotic margins.¹² The basic treatment modalities



Fig. 5: Enucleated cyst with 1st & 2nd molar

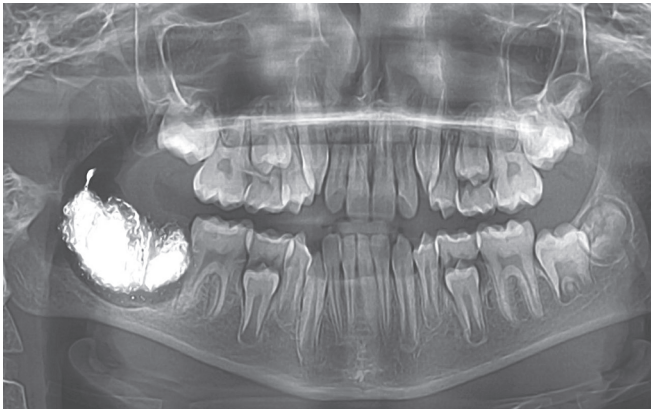


Fig. 6: 1st BIPP dressing

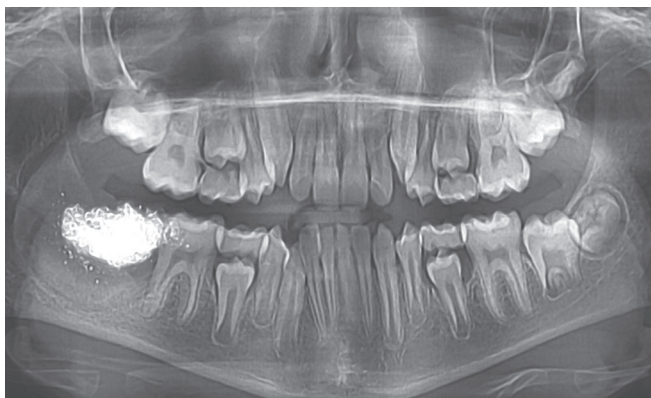


Fig. 7: Bone formation after 5 months

for the treatment of dentigerous cysts are enucleation and marsupialization, but the choice of treatment depends upon certain factors like age of the patient, type of dentition, location of cyst along with offending tooth, inclination, and position of impacted tooth and root formation.¹³

In our case, we did complete enucleation of the cyst along with the extraction of the mandibular second and third molar involved in the lesion, followed by open packing with a BIPP pack. It consists of 250 mg/gm of subnitrate, iodoform 500 mg/gm, and liquid paraffin 250 mg/gm. This paste is impregnated in ribbon gauze and placed in the cystic cavity. Bismuth releases dilute nitric acid on hydrolysis, which is responsible for antibacterial and antiseptic properties with a half-life of 5 days. Iodoform is a yellow crystalline solid called triiodomethane and belongs to the halogen compounds used as an antiseptic and disinfectant.

As presented in our case, after complete enucleation of the lesion, BIPP dressing provided a completely aseptic environment and promoted secondary healing.^{14,15}

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