

Dentigerous Cyst: Management in Mixed Dentition

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ABSTRACT

Background Dentigerous cysts are the second most commonly occurring odontogenic lesions associated with crown of an unerupted or impacted tooth. Treatment modalities include complete Enucleation to marsupialization but this may be influenced by age of patient, severity of impaction, and root form of the impacted tooth. This case report mainly influences on Enucleation and packing open with BIPP. A 13 year old boy reported to the department of oral and maxillofacial surgery in Eklavya Dental College and Hospital with a chief complaint of mild pain and swelling in left body region of mandible since 6 months. Extra orally firm hard swelling was palpable in left body region of mandible. Clinically there was obliteration of vestibule in left mandibular region from left lower canine till first molar. All permanent teeth were present except for second premolar. A root piece of deciduous molar was also present. Enucleation and packing open with BIPP was decided under local anesthesia. Complete cystic lining along with the impacted second premolar was enucleated and cystic cavity was packed with gelfoam for homeostasis for next 7 weeks. After 5 weeks primary closure was done. After 4 months bone formation was evident in radiograph. Complete healing of the surgical site along with bone formation occurred over a period of 7 months without any post operative complications. Through clinical and radiographic diagnosis is required to successfully treat the underlying lesion, but major factors like age of the patient, existing dentition, size and location of the cyst and status of the offending tooth should also be considered.

Keywords: Cystic lining, Dentigerous cysts, Enucleation, Root piece.

INTRODUCTION

Dentigerous cysts are the second most commonly occurring odontogenic lesions associated with crown of an unerupted or impacted tooth. They account for about 14-20% of the mandibular cyst and 15.2 – 33.7% of all odontogenic cysts with slight male predilection¹. The frequency of dentigerous cyst has been calculated as 1.44 in every 100 unerupted teeth. Dentigerous cyst mostly occurs in 2 or 3 decade of life but can also occur in mixed dentition phase also. Most frequently they are found around the crown of impacted mandibular third molars followed by maxillary canines and third molars. These odontogenic cysts

have also been reported to occur with premolars and incisors but rarely^{2, 3}. Involvement of mandibular premolars occurs most commonly at an age of 0 to 9 years and maxillary canine at an age of 10 to 19 years⁴. Treatment modalities include complete Enucleation to marsupialization but this may be influenced by age of patient, severity of impaction, and root form of the impacted tooth. This case report mainly influences on Enucleation and packing open with BIPP.

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CASE REPORT

A 13-year-old boy reported to the department of oral and maxillofacial surgery in ekalvya dental college and hospital with a chief complaint of mild pain and swelling in left body region of mandible since 6 months. Extra orally firm hard swelling was palpable in left body region of mandible. Clinically there obliteration of vestibule in left mandibular region from left lower canine till first molar. All permanent teeth were present except for second premolar. A root piece of deciduous molar was also present. (Figure 1)



Fig 1: Specimen.

OPG revealed a well defined unilocular radiolucency with sclerotic margin starting from distal aspect of the canine and till permanent first molar and inferiorly till the lower border of the mandible with impacted second premolar pushed to the lower border of mandible. For more specific details cone beam computed tomography was done. CBCT revealed impacted second premolar surrounded by well defined radiolucency. First premolar distally tilted with incomplete root formation and root piece of deciduous molar. The radiolucency extended from canine till the mesial root of first permanent molar. Coronal and axial section showed buccal cortical expansion the second premolar was horizontal position pushed towards the lower border of mandible. Inferior alveolar canal was pushed more inferiorly and, mental foramen transported below the apex of the canine.

A complete systemic examination and history was done to rule out any possibility of syndrome however the patient was otherwise fine without any

significant systemic finding. On aspiration revealed straw colored which provided us with presumptive diagnosis of dentigerous cyst and ruled out possibility of any odontogenic tumor.

Enucleation and packing open with BIPP was decided under local anesthesia. The treatment started with the root canal of canine and first mandibular molar. With inform consent and under local anesthesia (lignocaine 2% with 1:80,000 adrenaline) a clavicular incision was given from lateral incisor to 2nd molar with an anterior release. Full thickness mucoperiosteal flap was raised to expose the expanded buccal cortex. First mandibular premolar was extracted along with root piece of deciduous molar. Complete cystic lining along with the impacted second premolar was enucleated and cystic cavity was packed with gelfoam for homeostasis. After complete homeostasis the gelfoam was removed and cavity was packed with BIPP impregnated gauze. A small opening was left to retrieve dressing. This BIPP gauze was changed after every 5 days for the next 7 weeks. After 5 weeks primary closure was done.

After 4 months bone formation was evident in radiograph. Complete healing of the surgical site along with bone formation occurred over a period of 7 months without any post operative complications. (Figure 2-6)

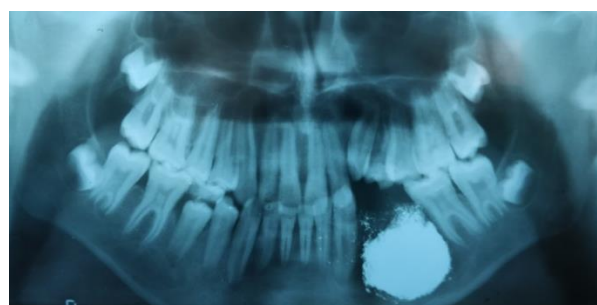


Fig 2: First dressing with iodoform.

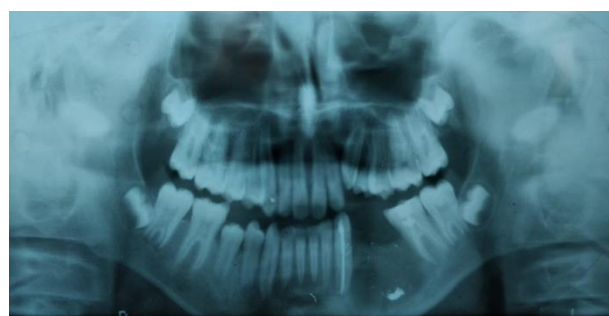


Fig 3: 1st month follow up.



Fig 4: 3rd month follow up.

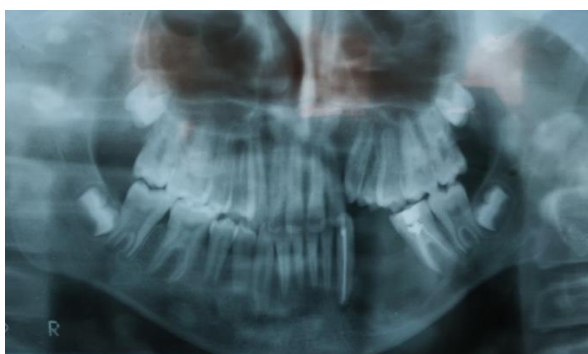


Fig 5: 6th month follow up.



Fig 6: Intraoral healing after 1 month.

DISCUSSION

Dentigerous cysts are the commonest developmental odontogenic cysts accounting approximately 20-14% of all epithelial lined jaw cysts⁵. Clinically dentigerous presents as an asymptomatic lesion until secondarily infected, mostly occurring in 2 and 3 decades of life with a slight male predilection. Radiographically seen as a

well defined radiolucent lesion with demarcated sclerotic margin associated with a crown of an unerupted tooth. Normally the follicular space in radiograph is about 3-4 mm but more than 5 mm of follicular space might be suggestive of dentigerous cyst^{6, 7}. Dentigerous cyst occurs mostly in mandibular third molars, other teeth commonly involved are in following in decreasing order maxillary canines, mandibular second premolar, maxillary third molars, mandibular third molars, mandibular first premolar, maxillary second premolar and mandibular canine^{8, 9}.

Dentigerous cyst are of two types first one is non inflammatory which surrounds the crown of an unerupted tooth at the cement enamel junction clearly developmental in origin. The pathogenesis regarding the non inflammatory types is accumulation of fluid between the reduced enamel epithelium and enamel or between the layers of enamel organ¹⁰. The inflammatory type of dentigerous cyst mostly occurs in mixed dentition period in 1 and 2nd decades of life. They arise by the spread of inflammation from the non vital deciduous tooth¹¹. Erica et al stated a possible hypothesis regarding the hypothesis of inflammatory dentigerous cyst, it is a spread of periapical inflammation from the non vital deciduous tooth spreading to the permanent successor tooth. Inflammatory exudates like cytokines cause the reduced enamel epithelium to separate from the enamel leading to the cyst formation^{12, 13}. As in our case non vital deciduous molar was present which led to the formation of dentigerous cyst with the displacement of premolar towards the lower border of mandible.

Two basic treatment modalities are there for the treatment first is complete Enucleation and second is marsupialization but the choice of treatment depends on a lot of factors like age of the patient, location of the cyst along with the offending tooth, degree and axial inclination of the offending tooth, root formation and existing dentition of the patient¹⁴. In present case report we chose to completely enucleate the cyst along with extraction of second premolar and as the patient was young we intended to place BIPP and promote healing by secondary intention. Mandibular first premolar and decayed deciduous tooth was extracted as per the patient's demands and preferences. The cystic cavity was packed with impregnated BIPP. This

dressings were changed after every 5th day for the next 7 weeks and primary bone formation was radiographically visible in 5th week of follow up.

BIPP stands for bismuth iodoform paraffin paste; it is a bright yellow paste of subnitrate 250mg/g, iodoform 500mg/g and liquid paraffin 250mg/g. This paste is impregnated in ribbon gauze and left in the cavity till healing or graft is taken. Bismuth releases dilute nitric acid on hydrolysis which is responsible for its antibacterial and antiseptic property with a half life of 5 days¹⁵. Iodoform another component of BIPP, it is also called triiodomethane. It is a crystalline yellow solid belongs to the organic halogen compounds and used as an antiseptic ingredient in certain medication. It has non irritant to the oral tissues with antiseptic and disinfectant property. It is widely used in dentistry for the treatment of dry socket and dressing material in large cystic cavities. As presented in our case after complete Enucleation BIPP dressing provided complete aseptic environment and promoted healing by secondary intention¹⁶.

CONCLUSION

Dentigerous cysts are the commonest odontogenic cyst after radicular cyst. Our case was a rare as the cyst was of inflammatory in nature and associated with mandibular second premolar. Through clinical and radiographic diagnosis is required to successfully treat the underlying lesion, but major factors like age of the patient, existing dentition, size and location of the cyst and status of the offending tooth should also be considered.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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