

Case Report

A brief overview of common cystic lesions of jaw bones with emphasis on their management: A case series

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ABSTRACT:

Introduction: An abnormal benign fluid filled cavity occurring in the jaw bones which may either involve hard or soft tissues and may result in displacement and resorption of surrounding structures like bone and teeth. Odontogenic cysts occurring in the jaws are subdivided into odontogenic, fissural and bone cysts; which are treated by different methods accordingly. **Material and methods:** Most common cystic lesions of jaw bones are dentigerous cyst, radicular cyst and residual cyst. All different forms of these odontogenic cysts are investigated differently as per their diagnostic clinical features. Most common investigations performed are aspiration biopsy, incisional biopsy, panoramic radiograph, intraoral periapical radiograph, cone beam computed tomography. Treatment strategy commonly followed is either by conservative management which is considered to be non-invasive mode of treatment for these lesions or aggressive surgical management like enucleation or marsupialization depending mostly upon the age, cyst size and site. **Results:** Different types of investigations are performed both histological as well as radiological which help in proper definitive diagnosis of these type of lesions and further help in deciding the treatment protocol to be followed. **Conclusion:** Odontogenic cysts are benign lesions, several factors or evaluation criteria may help decide desirable treatment option as indicated keeping in mind the functional, cosmetic and psychological effect following definitive treatment consequences in young and adult patients.

Key words: Odontogenic cyst, Enucleation, Marsupialization, Apicectomy.

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INTRODUCTION

A cyst is a space occupying lesion commonly seen within the jaw bones and has an outer wall of fibrous connective tissue with an inner epithelial lining that surrounds the central cystic cavity (cyst lumen). Most of the cystic lesions are lined by stratified squamous epithelium; some by epithelium other than stratified squamous and traumatic bone cyst has no epithelial lining. Radiographs play an important role in confirmation of diagnosis, determining the size of the lesion, approximation to the vital structures present in that particular region of the jaw and the relationship to adjacent hard and soft tissues. For intra-bony lesions it is mandatory to perform aspiration biopsy prior to

open incisional biopsy to confirm if there is any vascular malformation and the aspirate itself is a mode of investigation which helps in diagnosis. Open incisional biopsy specimen provides major diagnostic histological criteria which helps to establish a definitive diagnosis of these lesions.¹

The British Standards Institution, defines a cyst as ‘an abnormal cavity within a tissue, the contents of which may be fluid or semi-fluid, but not pus, at least at the onset’, and conventionally the benign cystic lesions occurring in the jaws are subdivided into odontogenic, fissural and bone cysts.²

COMMON ODONTOGENIC CYSTS

Dentigerous cyst

Dentigerous cyst is the most common type of odontogenic cysts and is associated with crown of unerupted tooth and comprises of more than 24% of the jaw cysts. The cyst is most commonly seen involving the crown of impacted mandibular third molar, followed by maxillary canines, mandibular premolars, rarely supernumerary teeth and central incisors.³ Dentigerous cysts are discovered on routine radiographic examination when films are taken to determine the reason for failure of a tooth to erupt. So these cysts are always associated with fully formed crown of unerupted tooth (Figure 1).

On radiographic examination these lesions usually appear unilocular and radiolucent.⁴ Due to pressure of an enlarging cyst, the unerupted tooth can be pushed away from its direction of eruption (Figure 2). Dentigerous cyst is attached to the cemento-enamel junction (cervix) of an impacted tooth and results from proliferation of reduced enamel epithelium after the enamel formation. There is fluid accumulation between the fully formed tooth crown and the reduced

enamel epithelium. The dental follicle may expand around the impacted tooth in three variations as circumferential, lateral and coronal. It is considered as a developmental abnormality arising from the reduced enamel epithelium around the crown of an unerupted tooth and it rarely involves unerupted deciduous teeth.⁵

The best method of treatment is enucleation, or, failing that, marsupialization. Although many variations of these methods have been described, the principles summarized by Fickling remain as “Treat the patient, treat the cyst, and preserve adjacent structures”.⁶ These cysts can be enucleated together with the involved tooth in adults, as the possibility of tooth eruption is low. For large cyst marsupialization along with extraction of tooth is the desirable treatment. In children, an attempt could be made to save the tooth; the cyst lining is separated from the neck of the tooth with a scalpel. The tooth may erupt into occlusion as the defect heals with normal bone or orthodontic forces may be used to bring the tooth into occlusion.⁷



Figure 1: Intra oral view with clinically missing 48.



Figure 2: OPG showing full extent of lesion surrounding the crown of impacted inverted 48.

Presentation of a case of dentigerous cyst



Figure 3: Preoperative extraoral frontal and inferior view of chin showing swelling below left chin region.



Figure 4: Intraoral view showing displaced teeth 32, 31 and missing 33.

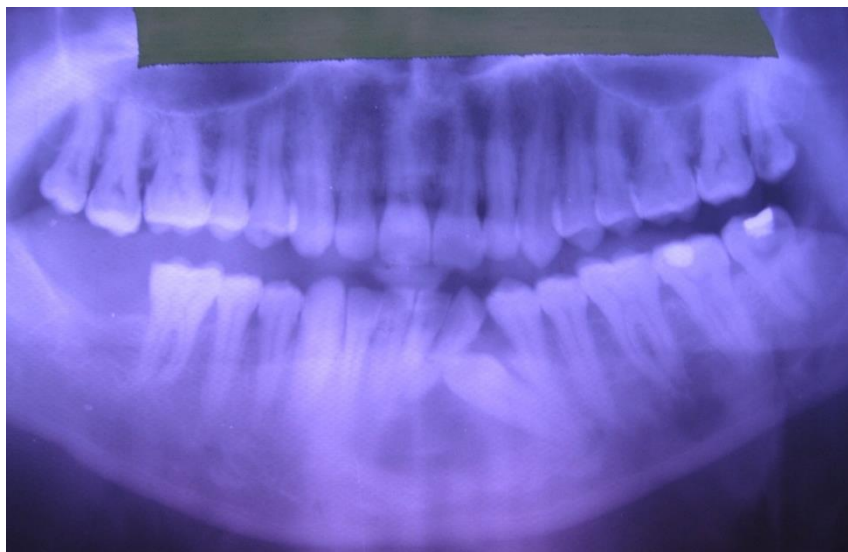


Figure 5: Panoramic radiograph showing impacted 33, displacement of teeth 34, 32, 31, 41 and a radiolucent area is seen in symphysis region arising on mesial aspect of impacted tooth 33.



Figure 6: Intraoperative view showing raised flap and presence of cystic lesion below the impacted tooth 33.

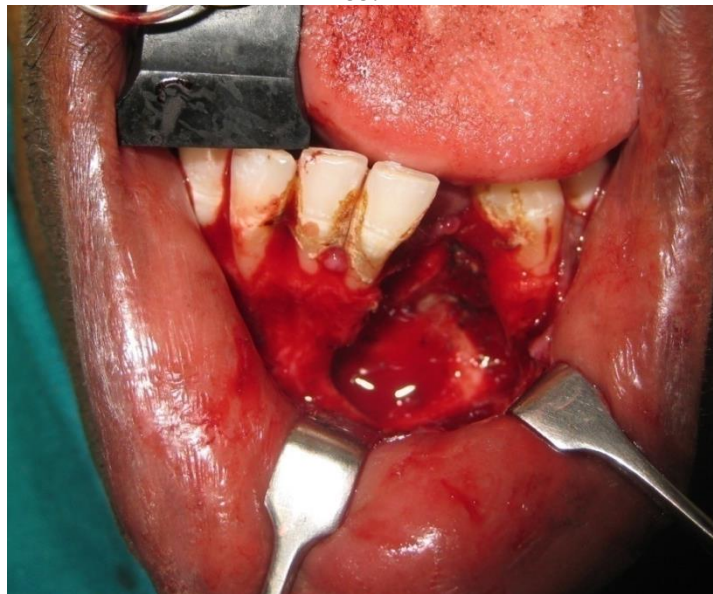


Figure 7: Enucleated cyst cavity in view and tooth 33 extracted.



Figure 8: Flap sutured with 4-0 silk.

RADICULAR CYST AND RESIDUAL CYST

Radicular cyst or periapical cyst occurs in a carious tooth or due to any trauma or periodontal disease which may lead to necrosis of the pulp cavity and may spread to the tooth apex forming periapical granuloma or periapical abscess. The latter may subsequently give rise to a radicular cyst. Radicular cysts arise from epithelial cell rests of the periodontal ligament, which are stimulated by the inflammatory products. Most radicular cysts develop slowly and generally do not become very large cavities. Most often, radicular cysts are asymptomatic. Patients do not experience pain unless acute inflammatory exacerbation is present.⁸ The affected tooth does not respond to electrical pulp testing and is non-vital. Tooth mobility may occur in large cysts. Radiographically, the radicular cyst generally appears as round or ovoid radiolucent area surrounded by a radiopaque margin which extends from the lamina dura of the involved tooth. In infected

or rapidly enlarging cysts, the radiopaque margin may not be present. Root resorption is not often seen but it may occur. Treatment options include periapical surgery (cystic enucleation and apicoectomy), tooth extraction and endodontic treatment.⁹ Many clinicians are of the opinion that a great majority of radicular cysts heal after conventional root-canal therapy. However, some authors advise that small cyst (<3 cm) are usually enucleated, whereas large cysts (>3 cm) are often marsupialized.¹⁰

Residual cysts are periapical cysts retained in the jaw after surgical removal of a non-vital tooth. Residual cysts are common and have similar clinical and radiological features as radicular cysts. However, there is always a missing tooth (Figure 9). Most residual cysts are less than 1 cm in size. Occasionally, enlarging cysts may cause displacement of the adjacent teeth and bone expansion.¹⁰

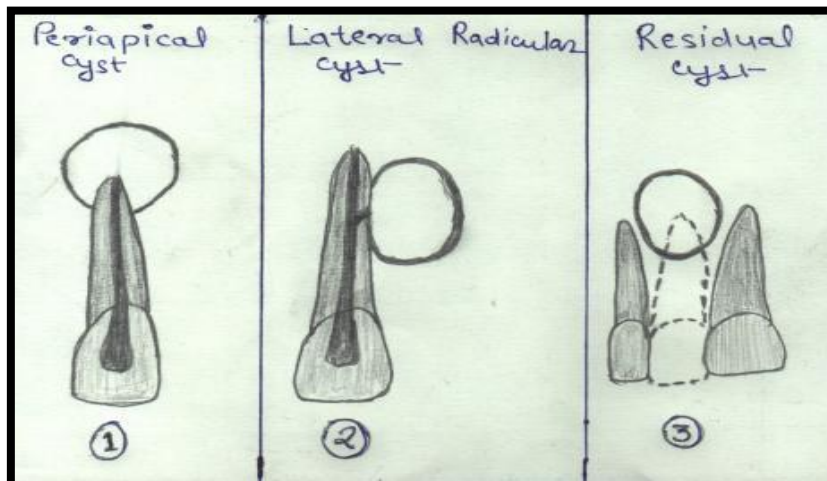


Figure 9: Diagram shows radicular cyst associated with endodontically treated tooth or a carious tooth (1 & 2) and a residual cyst associated with a missing tooth (3).

Presentation of a case of periapical/radicular cyst



Figure 10: Occlusal radiograph showing a periapical cyst associated with anterior mandibular teeth.



Figure 11: Intraoperative view shows raised flap and presence of cystic lesion.



Figure 12: Intraoperative view of enucleated cyst cavity and apicectomy of teeth 31, 32, 41.



Figure 13: Flap sutured with 3-0 silk.

Presentation of a case of residual cyst



Figure 14: Intraoral view showing absence of tooth 21.

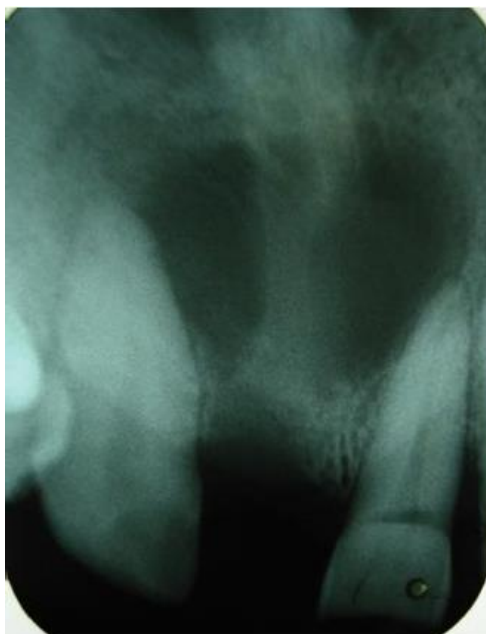


Figure 15: Intraoral periapical radiograph showing a residual cyst associated with anterior maxillary teeth 11 and 21.



Figure 16: Intraoperative view shows raised flap and presence of cystic lesion.



Figure 17: Intraoperative view shows enucleated cyst cavity.



Figure 18: Flap sutured with 4-0 silk.

DISCUSSION

It should be borne in mind that radiographic findings are not diagnostic features for dentigerous cysts because odontogenic keratocysts, unilocular ameloblastomas, and many other odontogenic and non-odontogenic tumours have radiographic features essentially identical to those of a dentigerous cyst. These are ruled out after negative biopsy and histological examination. Thus, in large dentigerous cysts an incisional biopsy from an accessible site is done to rule out other lesions which mandate separate, more aggressive treatment protocol.

Cyst size and site, patient age, the dentition involved, and involvement of vital structures is criteria to be considered and used to dictate the treatment modality indicated in each case. Surgery is commonly recommended for dentigerous cysts because they often block eruption of teeth, become large, displace teeth, destroy bone, encroach on vital structures (i.e. displace the alveolar nerve, shrink the maxillary sinus) and occasionally even lead to pathologic fracture.¹¹ Cyst enucleation and extraction of the

impacted tooth is indicated if impacted tooth is deemed useless or lacked space for eruption. Cyst enucleation without extracting the impacted tooth is indicated in young patients 10-16 years of age.¹²

Decompression of the cyst with maintenance of surgical access is carried out if an extensive cyst of the mandibular body and angle that impinges on the inferior alveolar nerve and tooth buds. The vitality of adjacent teeth would needlessly be placed at risk if curettage is performed. Excision of the cyst is performed after shrinkage several months latter without damaging these vital structures. Both enucleation and decompression of dentigerous cysts in young patients allows for alleviation of cyst pressure to permit the retained teeth to erupt normally if root formation is incomplete. Otherwise teeth are aided via orthodontics. Bone formation occurs in defects within 6–12 months and is quick in young patients.¹³

The radicular (periapical) cyst is the most common cyst of the jaw and is most often seen in patients between 30 to 50 years old and is not painful. Radicular cysts and periapical granulomas have a

similar radiographic appearance, although radicular cysts are less common and often larger. Treatment consists of enucleation of the cyst lining coupled with apicoectomy and retrograde surgical endodontic treatment by obturation by the opening of pulp canal. Extraction of tooth or root fragment may be required.¹⁴

CONCLUSION

Since dentigerous cysts are benign lesions, we feel that several factors or evaluation criteria may help dictate which treatment option is indicated keeping in mind the functional, cosmetic and psychological effect following definitive treatment consequences in young and adult patients.

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Conflict of Interest: None declared.

Ethics statement: Ethical clearance and informed consent was taken.

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