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Clinical Approaches In The Management Of Dentigerous Cysts: A Case Review

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Abstract:
The dentigerous cyst is the second most common odontogenic cyst in the oral cavity. Dentigerous cysts are most commonly observed in the second and third decades of life, demonstrating a male predominance with a reported male-to-female ratio of 3:2. The prevalence rates ranging from 0.8% to 3.6%. In rare case dentigerous cysts occur in early twenties.
Here we present an interesting case of dentigerous cyst in a13year old paediatric male patient involving unerupted permanent mandibular right second molar and its treatment of choice. Surgical marsupialization was the treatment of choice for conservative treatment as it prevents the risk of fracture, injury to vital structures and preserve the unerupted tooth. Prolonged follow-up confirmed satisfactory resolution of the osseous defect.

Keywords: *Marsupialization, Dentigerous cyst in young adult, orthodontic extraction, unerupted tooth, conservative approach for Dentigerous cyst.*

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I. Introduction:

Dentigerous cyst can be defined as an odontogenic cyst that surrounds the crown of an impacted tooth caused by fluid accumulation b/w the reduced enamel epithelium and the enamel surface resulting in the cyst in which the crown is located within the lumen. 10% impacted teeth can from a dentigerous cyst. They always show male predilection rate and mostly found in mandibular region in 2nd and 3rd decade of life. Most dentigerous cyst are solitary in nature. Bilateral and mandible cysts are mostly associated with cleidocranial dysplasia, maroteaux – lamy syndrome. [1]

Clinically, a dentigerous cyst is asymptomatic unless it is infected [2]. Dentigerous cyst might turn into an aggressive lesion which may result in expansion of bone with subsequent facial asymmetry, extreme displacement of teeth, severe root resorption of adjacent teeth.[1]

Radiographically, dentigerous cyst appear as well – demarcated, unilocular radiolucency locate around the crown of the impacted tooth. Dentigerous cyst is completely radiolucent except for the crown of the involved tooth.[3]

From radiography, three radiological variations may be observed i.e. central, lateral and circumferential.[4] Here we represent a circumferential dentigerous cyst as the follicle expands in such a manner that the entire tooth appears to be enveloped by the cyst.

Total removal of the cystic lining or enucleation procedure might present complication like nerve injuries, post – operative infection and pathological mandibular fractures. Therefore, marsupialization is the most conservative surgical approach for the management of dentigerous cyst.[5]

The aim of this article was to present the benefits of marsupialization procedure over enucleation in a young child patient and combined orthodontic – surgical techniques may help to promote cyst related tooth eruption.

II. Case Presentation:

A 13-year-old male patient was referred from a sub-divisional hospital to the Department of Dentistry at [Medical College and Hospital] in July 2024. The patient presented to the department with a chief complaint of swelling in the lower right posterior mandibular region of one month's duration. No associated systemic illness was reported at the time of presentation.

The lesion exhibited a sudden onset and gradually increased in size over the course of one month. Initially the swelling was very small sized but later progressed to the present size of 2.5 x 3 cm. There was no history of trauma to the lower mandibular region. The patient did not exhibit any comparable swellings on the face or other regions of the body. There were no complain of bleeding of discharge from the swelling region.

Extraoral examination: revealed a bony, hard swelling approx. (2.5x 3 cm) in size present over the right lower 3rd of the face extending towards the body of mandible in right side. Tenderness present with rise in temperature over that region.

Intraoral examination: revealed that a hard, smooth bulged swelling present from lower right 1st molar extending up to distal side of right lower 2nd molar region along the buccal vestibule. Vestibular obliteration present. There were missing of lower right 2nd permanent molar. The rest of the oral cavity was normal.

Radiographic investigation: The panoramic radiograph revealed an unilocular radiolucency present surrounding the crown of impacted 47 and extend up to the distal root of 46. the cystic lining surrounds the distal root of 46, and the root resorption process was started. Grade 1 mobility was present. The lesion was causing smooth cortical expansion on the above mention region. [figure 1]

Fig 1 – Shows unilocular radiolucency present surrounding the crown of 47 extended up to distal root of 46.

Differential Diagnosis:

From radiographic investigation and clinical characteristics, differential diagnosis was ruled out which included dentigerous cyst, unicystic ameloblastoma, radicular cyst, ameloblastic fibroma.

Diagnostic Aspiration

On the day of examination, a diagnostic aspiration was done with 10ml syringe under LA. On aspiration, a straw-coloured fluid mixed with blood was obtained, suggestive of cystic lesion. [fig 2]

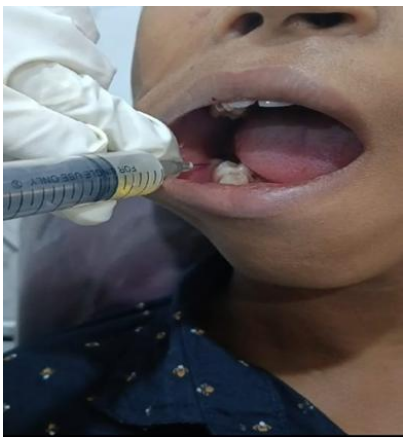


Fig 2 – on aspiration with 10ml syringe straw – coloured fluid mixed with blood is obtained.

Blood Investigation:

For doing further needful procedure, a routine blood investigation was advised. All routine blood investigation were done and were within normal limit.

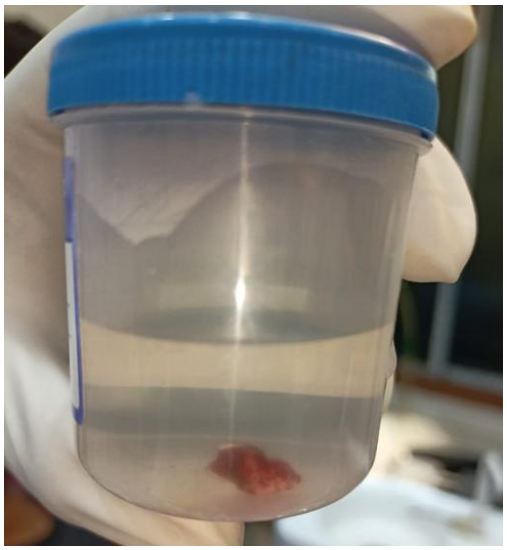
Surgical procedure:

Preoperatively, the patient rinsed with 0.2% chlorhexidine mouthwash. Then local anaesthesia had been given to the operating site. A mucoperiosteal flap was reflected by a crevicular incision. The cystic lining was unroofed by an incision. The cystic fluid was evacuated, followed by copious irrigation with normal saline. Extraction of 46 was done and pressure pack given to achieve primary haemostasis at the extraction site.

The impacted tooth was inspected and the margin of the cystic lining was sutured to the adjacent gingival margin. A pack of gauge soaked with bismath iodoform paraffin paste (BIPP) was applied inside the cavity. The length of the BIPP on the day of surgery was 27 cm. [fig – 3]

[Fig 3 – on the operative day, BIPP pack was applied inside the cavity.]

Post operative medication was given for 5days and pt was given 0.2 % CHX mouthwash to use every 12hrs for 7days. The tissue section approx. size (6 mm x 8 mm) was sent to the department of pathology in medical college and hospital for histopathology evaluation. [fig -4]



[Fig 4 – Tissue section was taken from the site]

The patient came on the third and seventh day after the operation for follow up . No change in the sensation in the lower lip was noticed . On the 7th day, the sutures was removed and the BIPP pack had changed with smaller gauze length – 22 cm. Before placing the new pack the cavity was irrigated with Betadine and normal saline . Packing had been replaced regularly every 15 days . [fig -5]
The biopsy result confirmed the differential diagnosis which was Dentigerous cyst.

[Fig 5 – Postoperative follow up]

In every 15th days interval , we replaced the BIPP pack and after 4th months follow up the radiograph shows the spontaneous bone regeneration procedure has achieved adequately. [fig – 6]

Fig 6 – After 4th months follow up opg shows spontaneous bone regeneration

Then our final goal within the treatment plan was orthodontic repositioning of the impacted lower right 2nd molar.

For this a closed eruption technique under LA was performed by which we give a crevicular incision w.r.t 47 and then elevating the flap we were exposing the tooth and immediately an orthodontic mini MBT bracket was bonded to it for commencing mesialising and uprighting of the impacted molar the orthodontic MBT mini brackets were bonded to 43, 44,45 .[fig – 7]

Fig 7 – Closed eruption technique , MBT mini bracket was bonded on it.

After 7days we use 17" x 25" HANT wire with a loop placed on 43, 44, 45 but during the wire placement it was difficult to attach the wire w.r.t 47 . Then the bracket placed on 47 was removed and the molar bond was cemented on 47 with GIC. Now the 17" x 25" wire was placed w.r.t 43, 44,45,47. [fig -8]

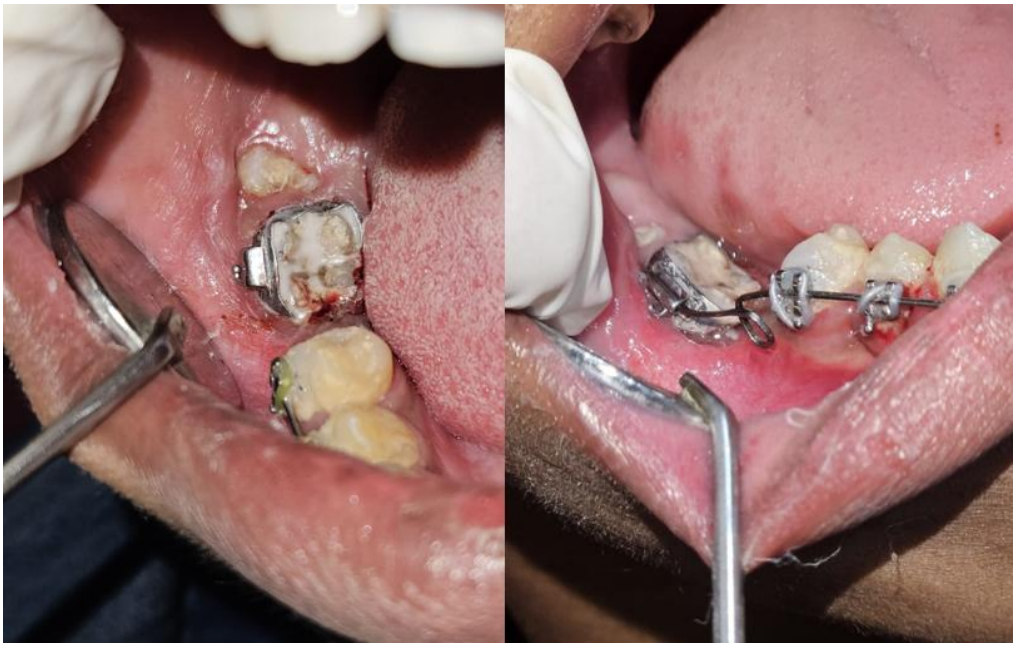


Fig 8 – Molar band placed on 47

After 1-month orthodontic repositioning of 47 [fig 9]

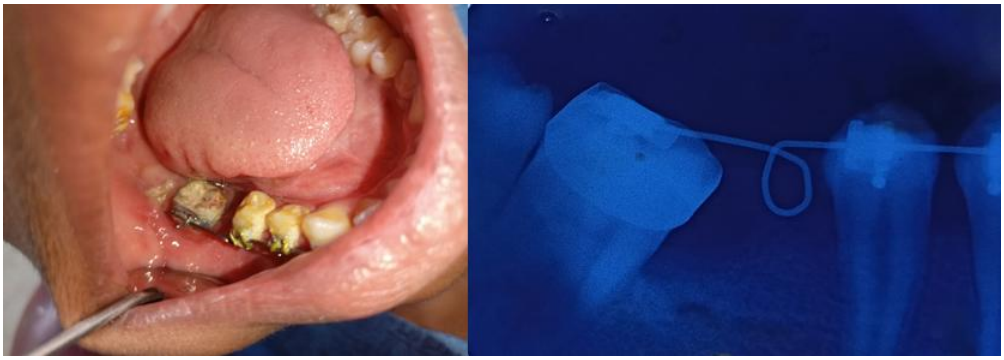


Fig 9 – After 1months of orthodontic repositioning of 47.

III. Discussion:

Dentigerous cysts were divided into developmental and inflammatory kinds by BEN & ATTINI in 1996. the majority of mandibular molars are affected by developmental dentigerous cysts which are caused by impacted mature teeth. The inflammatory type, on the other hand, affects a developing permanent tooth and is caused by an infected germ follicle of the permanent tooth. [6]

Considering the patient's age and presenting characteristics, the cyst was determined to be of developmental origin. Marsupialization was treatment of choice to allow the impacted permanent tooth to develop and erupt naturally. [7] When it comes to making a definitive diagnosis, a histologic examination is always the gold standard. Several treatment option for removing dentigerous cyst are suggested, with the goal of complete pathology elimination and dentition preservation with minimal surgical intervention. [8] Various treatment modalities include complete enucleation and marsupialization. The choice of treatment depends on various factors, such as age of the patient, location of the cysts, tooth position in relation to the cyst and the degree of axial inclination and root formation. [9]

Marsupialization or decompression refers to creating a surgical window in the wall of cyst, and evacuation of the cystic contents. This process decreases intra-cystic pressure and promotes shrinkage of the cyst and bone fill.[10] This method has fewer complications than enucleation regarding the preservation of important anatomical structures and developing permanent tooth germs. Children have greater capacity to regenerate the bony structure compared to adult, moreover teeth with open apices have a great eruptive potential. [11]

These factors are significant in case of large dentigerous cyst in children and presents a better prognosis for the teeth involved in the lesion.

IV. Conclusion:

The choice of treatment for dentigerous cyst is ruled out by various factors, such as age of patient, location and size of the cyst, tooth position in relation to the cyst, proximity to the vital structures and degree of axial inclination of the tooth and its root formation.

Marsupialization is the most acceptable surgical approach for conservative treatment modality of dentigerous cyst in young patients.

Consent:

Written informed consent was obtained from patient's guardian for his anonymized information to be published in this article.

FOOTNOTES
SOURCE OF SUPPORT – Nil
CONFLICT OF INTEREST – None

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