



USAGE OF CBCT IN DIAGNOSTIC DILEMMA: A CASE REPORT

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ABSTRACT

Dentigerous cysts are a common type of odontogenic cysts that arise from the follicle surrounding an unerupted tooth. Although they are typically asymptomatic, they can cause tooth displacement, resorption, and even facial disfigurement in rare cases. In this case report, a 20-year-old male presented with a diffused swelling in the lower left cheek region that gradually increased in size over five days, along with pain and difficulty in mouth opening. A cone-beam computed tomography (CBCT) imaging was performed, revealing a well-circumscribed, unilocular radiolucent lesion consistent with a dentigerous cyst surrounding the crown of the impacted tooth 38. The therapeutic approach for dentigerous cysts varies depending on the cyst's dimensions and location, the patient's age, and the cyst's proximity to adjacent vital teeth. Conservative surgical approaches are preferred for younger patients, while cyst/tooth removal is the treatment of choice for older patients. In conclusion, proper interpretation of radiographic images is critical for diagnosing dentigerous cysts and developing appropriate management plans.

KEYWORDS

dentigerous cyst, third molar, eruption cyst

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Introduction:-

A dentigerous cyst is a form of odontogenic cyst that grows from the follicle that envelops the crown of an evolving or unerupted tooth. (1,2,3) After radicular cysts, it is the second-most prevalent odontogenic cyst, accounting for about 20% of all jaw cysts. Dentigerous cysts (DCs) seem to be usually asymptomatic and thus are discovered by possibility during a radiological examination (4,5) However, it can cause adjacent tooth displacement or resorption, and in rare cases, it can expand enough to lead to facial disfigurement or pathological fractures. A dentigerous cyst is treated surgically by removing the cyst along with the associated tooth. (6,7) Dentigerous cysts were first described in the early 19th century, and its aetiology and pathogenesis was investigated in the early 20th century. Radiographic imaging became an important diagnostic tool in the 1950s and 1960s, and dentigerous cysts are now a well-recognized and common type of odontogenic cyst that are managed with surgical excision. (8,9) On radiographic examination, the dentigerous cyst appears to be an extensively circumscribed radiolucent lesion enclosing the crown of an unerupted or impacted tooth. The cyst could be unilocular or multilocular, depending on the size and degree of the involved tooth. The radiolucent lesion is circular or ovoid in shape, with a smooth and well-defined border. The cyst can cause tooth displacement or root resorption. In some cases, the cyst can grow large enough to perforate the cortical bone, and the surrounding soft tissue may show signs of swelling or inflammation. (9,10) A dentigerous cyst's radiographic findings are critical in its diagnosis, and proper interpretation of the radiographic images is critical in developing an appropriate management plan.

Case report:-

A 20-year-old male patient presented to the dental OPD with the chief complaint of swelling in the lower left cheek region for the past 5 days, which was large and has progressed to the present size. Initially, there was no pain. Later, he developed pain in the lower left cheek region that was insidious in onset, gradually progressive, continuous in

nature, throbbing type, aggravated by chewing, and relieved by taking rest. H/o difficulty in mouth opening. Extraoral examination, on inspection there is a diffused swelling in the left lower cheek region (Fig.2), roughly measuring 3x3cm and extending anteriorly from the corner of the mouth, towards the left ramus of the mandible, and superiorly 3cm from the ala of the nose, inferiorly towards the left lower border of the mandible. On Palpation, firm in consistency, non-tender, ovoid in shape. Intraoral examination reveals the presence of swelling in the distal aspect of the lower left 1st premolar region to the retromolar trigone. Based on the clinical findings, the patient was diagnosed with submasseteric space infection. OPG reveals horizontal impaction of 38 with well defined radiolucency in the left mandibular ramus. Cone-beam computed tomography (CBCT) imaging was performed to evaluate the suspected cystic lesion. The CBCT imaging revealed a well-circumscribed, unilocular radiolucent lesion measuring approximately 11.6 mm bucco-lingually 17.4 mm mesio-distally (Fig.4), the cystic lesion is present within the pathway of the inferior alveolar canal, surrounding the whole length of 38 (Fig.5) Superio-inferiorly the lesion measures 13mm (Fig.6). Based on the location of mandible and the tooth affected being the third molar (Fig.7) and the above findings suggesting a dentigerous cyst. The adjacent teeth showed no signs of root resorption or displacement

**Fig.1: pre-op frontal view**



Fig.2:pre-op profile view



Fig.3: OPG

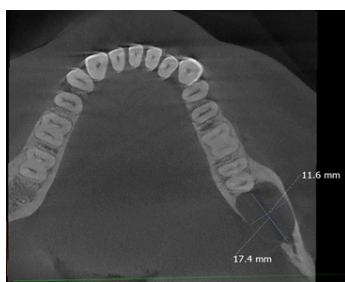


Fig.4: CBCT: Axial View



Fig. 5: CBCT : Sagittal View

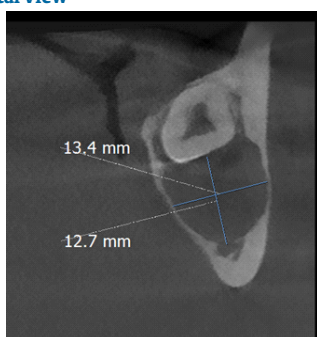


Fig 6: CBCT : Coronal view



Fig.7: 3D Reconstruction of CBCT image



Fig.8: post-op frontal view



Fig.9: post-op profile view

Discussion:-

A follicular cyst is also referred to as a dentigerous cyst. A form of odontogenic cyst that grows over time. When radiographs are obtained to investigate a problem, an unintentional discovery is often made.(11,12,13)

An impacted or embedded tooth within a follicular cyst can cause the follicular space to enlarge beyond the normal range of 3-4 mm, indicating the presence of a follicular cyst.(14,15) A dentigerous cyst is a well-defined radiolucent lesion with sclerotic margins that is associated with the crown of an unerupted tooth and can be of two types depending on its origin. These cysts can be inflammatory or non-inflammatory, the mandible is more commonly affected than the maxilla, with a 10:1.7 ratio, especially during the mixed dentition period in the second decade of life.(16,17,)

The cyst location in the presented case is consistent with the literature concerning DCs, which are most commonly observed in the mandible (70%).(18,19,) The existing literature also indicates a slight male predilection, with the radicular cyst ranking second in prevalence. When looking specifically at children, however, there is some variation.(18,19) Most DCs are developmental in nature, commonly seen in the second and subsequent decades, and are linked to third molars as well as maxillary canines. Several treatment options are proposed for the removal of DCs, with the ultimate goal of treatment being the complete removal of pathology and preservation of dentition with minimal surgical intervention.(19,20)

The therapeutic approach is determined by the cyst's dimensions and location, as well as the cystic epithelial lining's integrity, the patient's age, the cyst's proximity to adjacent vital teeth, and its relationship with anatomical structures.(20,21) Children have a much greater and faster bone regeneration capacity than adults, and immature teeth have a greater eruptive capacity.(21,22) For function and aesthetic value, a conservative surgical approach is preferred over cyst/tooth removal, which is the treatment for many developmental DCs located in the third molar and maxillary canine regions of older patients.(23,24)

The risks associated with radiation dose must be balanced against the therapeutic significance in each patient, and medical investigations should be ordered only when there is a decent possibility of a favourable patient outcome.(24,25) When comparing the dose of radiation of Cone Beam Computed Tomography (CBCT) to traditional radiography techniques, this consideration is extremely crucial. While it is frequently advised to review three-dimensional images prior to beginning treatment, it is uncertain whether the benefit to the patient

is greater than the risk.(26,27) In some cases, determining the effectiveness of CBCT is simpler than in others. In the case of a single radicular cyst, for instance, two periapical views may be sufficient prior to root-end surgery.(27,28)

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In this case, based on the location of the cyst and the affected teeth, the clinician decided to nucleate and preserve the affected permanent tooth. As mentioned in the literature, this treatment method was the best option to save the affected tooth in this case.

Conclusion:-

In conclusion, dentigerous cysts are relatively common benign odontogenic cysts that usually occur in young adults. Our case report highlights the significance of a detailed clinical assessment as well as radiographic evaluation to attain a definitive diagnosis. Early detection and management of dentigerous cysts are essential to prevent complications such as tooth displacement, root resorption, and pathological fractures. Treatment typically consists of surgical enucleation or marsupialization, with long-term follow-up necessary to monitor for recurrence. Dental practitioners should remain vigilant for any signs or symptoms of dentigerous cysts to ensure timely intervention and prevent potential complications.

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