

DENTIGEROUS CYST IN A 10 YEAR OLD- A CASE REPORT AND REVIEW OF LITERATURE

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ABSTRACT

Among the non-inflammatory odontogenic cysts, the dentigerous cyst stands out as the most prevalent, often associated with impacted teeth. Comprising remnants of the tooth-forming organ, these cysts are typically discovered incidentally through routine radiographic exams in childhood, being asymptomatic at that stage. However, they can silently grow to substantial sizes, causing bone expansion and facial swelling. This case report details a successful marsupialization treatment for a 10-year-old male patient diagnosed with a dentigerous cyst, with the use of a removable acrylic obturator to maintain a clear channel.

KEYWORDS: Dentigerous Cyst, Marsupialization, Surgery.

INTRODUCTION

These odontogenic cysts are generally classified as inflammatory or developmental. Most common however the occurrence rate of cysts in pediatric age group is relatively low.^[1] Incidence of pediatric jaw cysts to be 63.2% predominated by developmental origin while remaining 33.6% were inflammatory origin Dentigerous cysts (DCs) are the most prevalent developmental odontogenic cysts that occur in middle-aged individuals.^[1]

A dentigerous cyst is a cyst that develops around an unerupted tooth's crown. When fluid collects in the layers of diminished enamel epithelium or between the epithelium and the crown of an unerupted tooth, it causes a cavity. A missing tooth or teeth, as well as a possible hard swelling, are discovered during the clinical examination, which might result in facial asymmetry. There is usually no pain or discomfort for the patient. About 4% of individuals with at least one unerupted tooth have a dentigerous cyst.^[2] Dentigerous cysts around supernumerary teeth account for about 5% of all dentigerous cysts, most developing around a mesiodens in the anterior maxilla.^[2]

CASE REPORT

A 10-year-old male child reported to the Department of Oral Maxillofacial Surgery with a chief complaint of swelling over the right middle third of the face since one

month. The swelling had a slow and progressive enlargement until the time of presentation, as noted by the patient's bystander. There was no history of trauma. The patient did not report any episodes of pain or discharge from the swelling site.



Fig. 1: Preoperative photograph showing swelling on the right maxillary region.

Clinical finding

Patient had no relevant past or present medical history. On Extra oral examination revealed a facial asymmetry with an extraoral swelling present in the right side of the face. The swelling was diffuse, smooth in surface dome shaped measuring about 3 cm × 2.5 cm. swelling extended, Superioinferiorly right infraorbital region to the right upper lip and mediolaterally from ala of the nose

to 1 cm anterior to tragus. Overlying skin was pinchable with no rise in local temperature. On palpation, the swelling was firm in consistency, nontender with no pulsations. The existence of any pathology in the lymph nodes was ruled out during the examination.

On Intraoral examination, the patient had a maximal interincisal opening of 35 mm. There was a missing teeth 12 and 13 with an intraoral swelling present in the labial aspect of alveolar mucosa in relation to 12 to 13. Vestibular obliteration present extending from 11 to 54 region. There is no visible prominences seen on the palatal region. On palpation, it was nontender, firm in consistency extending mesiodistally from 11 to 54 region; superiorly obliteration of labial sulcus to 0.5cm from the gingival margin. On basis of history and clinical findings, findings a provisional diagnosis of Dentigerous cyst.

Investigations

To validate the type and extent of the cystic lesion, a radiographic examination was performed. The Occlusal radiograph showed a well defined radiolucency in relation to 52. The panoramic radiograph revealed a large, well defined unilocular radiolucent lesion surrounded by radiopaque sclerotic borders in the right anterior maxillary region, extended from the radicular portion 11 to radicular portion of 54 region. Tooth bud of 13 present within the radiolucent area and there is no evident of presence of tooth bud 12. Routine hematological investigations revealed normal values.



Fig. 2: Previous radiograph taken in the region of 52 by the department Paedodontics.



Fig. 3: Occlusal radiograph revealed well defined radiolucency in relation to 52.



Fig. 4: OPG showing welldefined radiolucency surrounded by radiopaque border in relation to 12 region and no evident of permanent tooth bud 12.

Surgical procedure

Patient was prepared and draped under general anesthesia. Local anesthesia With 1:2000000 adrenaline Considering the factors such as age, site, it was planned to treat the lesion with marsupialization procedure. Under Local anesthesia, crevicular incision was placed extending from distal aspect of 11 to medial aspect of 54. Extraction of 53 was done. Full thickness mucoperiosteal flap was raised. As bone overlying cyst region was thinned out, the incision was extended through bone and cystic lining into cystic cavity. The cystic lining and contents are then submitted for histological examination. Irrigation of the cystic cavity was done. The remaining cystic lining is sutured with the edge of the oral mucosa by interrupted sutures. The cavity is then packed with a one inch width ribbon gauze, which may be impregnated with bismuth iodoform paraffin paste (BIPP). Packs are generally secured by sutures. The pack is left inside for 7–14 days.



Fig. 5: Surgical procedure of cystic lesion.

Histopathologic examination

A cystic lining and connective tissue capsule were discovered on histopathologic investigation. Nonkeratinized 2-4 layers of flattened epithelial cells made up the epithelial lining. The junction between epithelial and connective tissue was flattened. Dense collagen fibres made up the fibrous connective tissue wall, which revealed islands of odontogenic epithelial resting, chronic inflammatory cells, primarily plasma

cells, and lymphocytes. All of the signs suggestive of a dentigerous cyst.

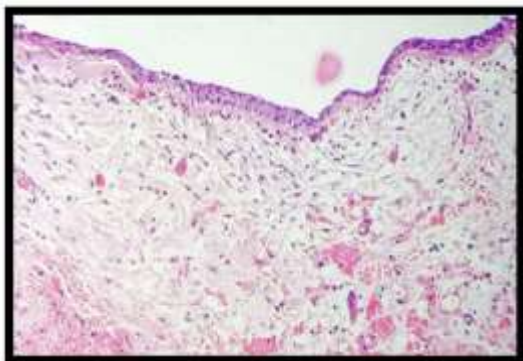


Fig. 6: Histopathological image showing cystic lining and dense collagen fibres.

Follow-up

Patient was discharged on same day and advised regular follow-up (2 weeks interval). An obturator was designed to prevent the contamination of the cystic cavity and preserve the patency of the cyst orifice. Radiographs were obtained and examined at regular intervals. When compared to the preoperative scans and radiographs, radiographic follow-up demonstrated sufficient bone filling and improved bone density from the periphery to the centre of the defect.



Fig. 7: Postoperative image.



Fig. 8: Acrylic obturator designed to preserve the patency of the cyst orifice.



Fig. 9: Acrylic obturator prevent the contamination of the cystic cavity.



Fig. 10: Review after one month.

DISCUSSION

Dentigerous cysts (Follicular cysts) occur over a wide age range with a peak frequency in the second to fourth decades and are the second most common odontogenic cysts after radicular cysts, which accounts for around a quarter of all genuine cysts in the jaws.^[3] The dentigerous cyst forms around an unerupted tooth when fluid accumulates between the reduced enamel epithelium and the enamel or between layers of reduced enamel epithelium.^[3] The increased hydrostatic pressure of the pooling fluid separates the follicle from the crown, with or without reduced enamel epithelium with time; capillary permeability is altered which allowing more protein to get through than the pure transudate's low concentration. Glycosaminoglycons is present in the fluids and the walls of dentigerous cysts. Glycosaminoglycons released from the cyst walls and diffuse into the cyst fluid, which is thought to play an important role in expansile cyst growth by increasing the osmolarity of the cyst fluid and hence raising the internal hydrostatic pressure of the cyst.^[4]

The epicenter of a dentigerous cyst is found just above the crown of the involved tooth, which usually is mandibular or maxillary third molar or the maxillary canine, the teeth most commonly affected. Radiographically, the dentigerous cyst typically shows a unilocular radiolucent area that is linked with the crown of an unerupted tooth. The radiolucency generally has a well defined and often sclerotic border, but an infected

cyst may show ill defined borders.^[5] The cyst to crown relationship show several radiographic variations.^[5] In Central variety, which is the most common, the cyst surrounds the crown or the tooth and the crown projects in to the cyst. The lateral variety is normally seen with mesioangular impacted mandibular that are partially erupted. The cyst grows laterally along the root surface and partially surrounds the crown. Circumferential variety exhibits extension along the mesial and distal roots of the unerupted tooth. This cyst attaches at the cemento-enamel junction, which is a key diagnostic feature.^[6]

In the circumferential variant, the cyst encircles the crown and expand to some distance along the root so that a significant portion of the root appears to lie within the cyst. A third molar may be shifted to the mandible's lower border or higher up into the ascending ramus on rare occasions. Maxillary anterior teeth may be displaced into the floor of the nose, other maxillary teeth can be moved through the maxillary sinus to the floor of the orbit. A large cyst may be seen along the mesial root of the unerupted molar in this lateral variant.⁷ For the lesion to be considered dentigerous cyst some investigators believe that the radiolucent space surrounding the tooth crown should be at least 3 to 4 mm in diameter. It is evident that vital cyst tissue in culture releases a potent bone-resorbing factor that is predominantly a mixture of prostaglandins E2 and E3.

The usual treatment for a dentigerous cyst is careful enucleation/marsupialization of the cyst together with a removal of the unerupted tooth. If the eruption of the affected tooth is thought to be possible, the tooth may be left in place after the cyst wall is partially removed. Large dentigerous cyst also may be treated by marsupialization which permits decompression of the cyst, with resulting reduction in the size of the bone defect. The cyst can then be excised at a later with a less extensive surgical procedure.^[8]

Marsupialization is a surgical treatment that lowers intracystic pressure and causes the cyst to diminish over time. This procedure creates an opening in the cystic wall to drain the contents of the cyst, and occasionally the cyst wall is sutured to the oral mucosa. With or without orthodontic traction, this technique has the advantage of stimulating the eruption of the cyst-associated tooth. The disadvantages of marsupialization, on the other hand, include the lengthy postoperative treatment period and the inconvenience of maintaining the wound open.^[9]

Several relatively serious potential complications exists such as

The development of an ameloblastoma, the development of epidermoid carcinoma, the development of a mucoepidermoid carcinoma, basically a malignant salivary gland tumor, and the disposition for neoplastic epithelial proliferation, in the form of an ameloblastoma

is for more pronounced in the dentigerous cyst than in the other odontogenic cysts. The mural ameloblastoma is a nodular thickening of the cyst wall caused by the growth of such a tumour, but it is rarely visible clinically. The existence of epithelial islands sprouting or budding and projecting from the lining epithelium has been asserted as evidence of neoplastic transformation, however this has not been proven. The development of epidermoid carcinoma from the lining epithelium of the dentigerous cyst also has been reported.^[10]

CONCLUSION

In this case report, projects the positive impact of a simplified surgical procedure marsupialization for a dentigerous cyst in the mixed dentition phase. In such instances, competent decision-making in selecting the best therapeutic strategy is crucial to the overall prognosis of the therapy. We had considered every possible technique in this case, taking into account factors such as the patient's age, gender, location, size, and financial position. When a growing jaw suffers a massive lesion, selecting a treatment modality becomes critical.

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