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Case Report

Dentigerous Cyst in Anterior Maxilla: A Case Report

[1]Vishwannath Hiremath, [2]Sanjay B Nyamati, [3]Sangeeta J Nair, [4]Sindhu B U

[1]Owner & Senior Consultant (Oral & Maxillofacial surgeon), Dr Hiremath Hospital, Vijayanagar: #79, CHBS Layout, Nagarbhavi Main Road, Near BDA Complex, Vijayanagar, Bengaluru, India;
[2]Senior Consultant, MDS (Oral Medicine & Radiology) Dr Hiremath Hospital, Vijayanagar, Bengaluru, India;
[3]MDS, Prosthodontist, Dr Hiremath Hospital, Vijayanagar, Bengaluru, India;
[4]MDS, Periodontist, Dr Hiremath Hospital, Vijayanagar, Bengaluru, India

ABSTRACT:
A dentigerous cyst associated with an impacted maxillary canine is reported in a 15-year-old male presenting with swelling and pain in the canine region. Clinical and radiographic evaluation revealed a well-defined, unilocular radiolucency enveloping the crown of the unerupted canine, projecting into the nasal cavity abutting the inferior turbinate and caused erosion of the alveolar process of maxilla and medial wall of the maxillary sinus. The lesion was managed via complete surgical enucleation under general anesthesia, with removal of the impacted canine. Histopathology confirmed non-keratinized stratified squamous epithelial lining consistent with a dentigerous cyst. Postoperative recovery was uneventful, and follow-up at 6 months demonstrated satisfactory bone regeneration. This case underscores the importance of early diagnosis and definitive surgical treatment in preventing complications and ensuring favorable outcomes in such odontogenic cysts.

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Corresponding Author: Vishwannath Hiremath, Owner & Senior Consultant (Oral & Maxillofacial surgeon), Dr Hiremath Hospital, Vijayanagar: #79, CHBS Layout, Nagarbhavi Main Road, Near BDA Complex, Vijayanagar, Bengaluru, India

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INTRODUCTION

The dentigerous cysts were described by Paget in 1863. They are most frequently found in individuals in the age group between 20 and 40 and generally appear during tooth development in young patients. The mandibular third molar and maxillary canine are most frequently involved by that lesion. Such cysts remain initially completely asymptomatic unless when infected and can be discovered only on routine radiographic examination. This cyst encloses the crown of an unerupted tooth and is attached to the Cementoenamel junction. These cysts may be classified into two major types based on etiology and stage of development. The first type is formed due to the degeneration of stellate reticulum cells in the early stages and is often associated with enamel hypoplasia. The other type is formed due to fluid accumulation between the reduced enamel epithelium (REE) and the completed crown. This is not associated with enamel hypoplasia. In addition to the developmental origin, some biomolecular factors can trigger this type of cyst.

The dentigerous cyst can produce asymmetries, nerve alterations by compression, move teeth and even become malignant ameloblastoma, mucoepidermoid, or epidermoid carcinoma. Radiographs show a unilocular radiolucent lesion with well-defined sclerotic margins that is associated with the crown of an unerupted tooth. Radicular resorption of teeth in the region of the lesion is common. The criteria for selecting the treatment modality is based on the age, size, location, and stage of root development, the position of the involved tooth and relation of the lesion to the adjacent tooth and vital structure. Since the cyst may increase in size, the indicated treatment is surgical removal of the lesion and involved teeth, or decompression to salvage the involved teeth, but the standard treatment for a dentigerous cyst involves surgical enucleation and extraction of the cyst-associated impacted or unerupted tooth. Thus, in the large dentigerous cysts, an incisional biopsy from an

accessible site has to be done to rule out other lesions that mandate separate, more aggressive treatment protocols. Cysts <3 mm in diameter can be treated by primary excision. However, larger lesions require enucleation or marsupialization for easier surgical management. Enucleation is defined as a complete removal of the cystic lining with healing by primary closure while marsupialization is the conversion of the cyst into a porch. The Cald–Well Luc approach may be used when the cyst involves the maxillary sinus. This case report aims to detail the enucleation of a maxillary dentigerous cyst in the patient.

CASE REPORT

A 15-year-old male patient affected with a firm swelling on right side of the face and complaint of pain after chewing food in the right upper jaw, presented for treatment at Dr Hiremath Hospital, Vijayanagar, Bengaluru (Fig.1). Extraoral examination revealed swelling on the right side with deviation of the nasal septum. On clinical examination, obliteration of his nasolabial fold and labial vestibular sulcus with respect to canine region was noted. An over-retained deciduous canine was also seen on the right side (Fig. 2). On radiographic examination, an expansile lytic lesion was noted involving the alveolar process of the maxilla on the right-side projecting into the maxillary sinus (Fig.3-5). The crown of an impacted canine was seen in the cystic cavity. Enucleation of the cyst was planned under General anaesthesia after obtaining written informed consent. A full-thickness mucoperiosteal flap was raised from 15 to 21. The cyst was exposed, the canine located and extracted surgically (Fig. 6). The cystic lining was also enucleated in toto (Fig.7). The lesion measured around 3.7×4.4×3.2 cm. Hemostasis was achieved. The cystic cavity was irrigated with saline and betadine, then packed open using 110 mm ribbon gauze impregnated with bismuth iodoform paraffin paste (BIPP). The BIPP dressing was changed weekly over a two-month period, with the length of ribbon gauze reduced by 10 mm at each change. Radiographically, bone was evident by the end of 3rd month. The procedure resulted in over 60% bone formation within five months, demonstrating effective healing without complications (Fig.8)

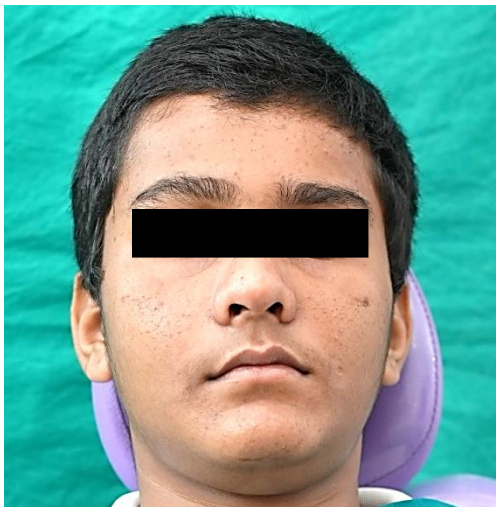

Fig. 1 Extraoral swelling on the right side

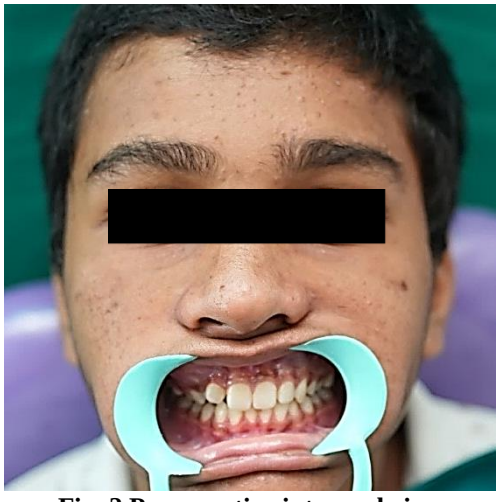

Fig. 2 Preoperative intraoral view

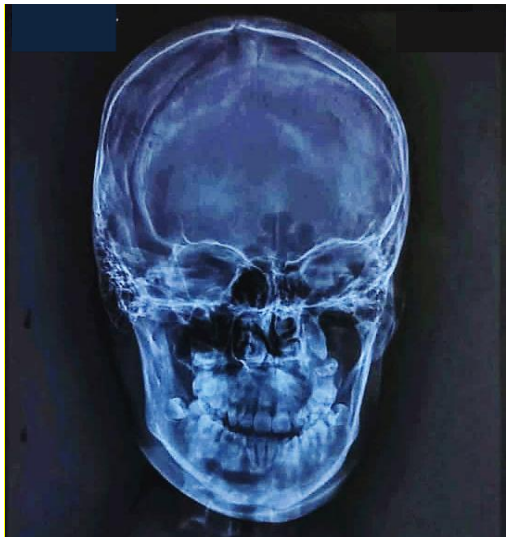

Fig.3 PA view of skull

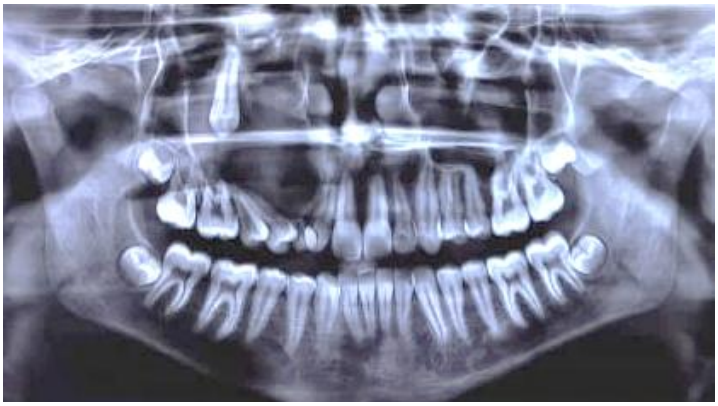

Fig.4 Pre-op OPG of the patient

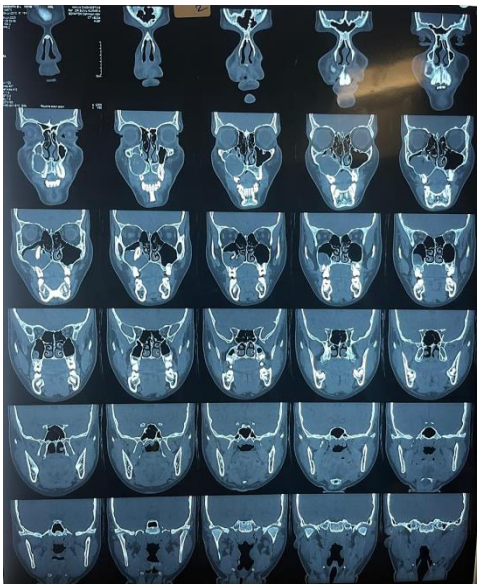

Fig. 5 CBCT report

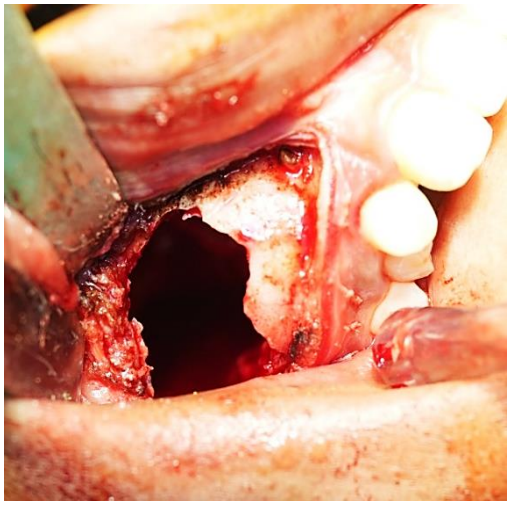

Fig.6 Intraoperative view of dentigerous cyst cavity

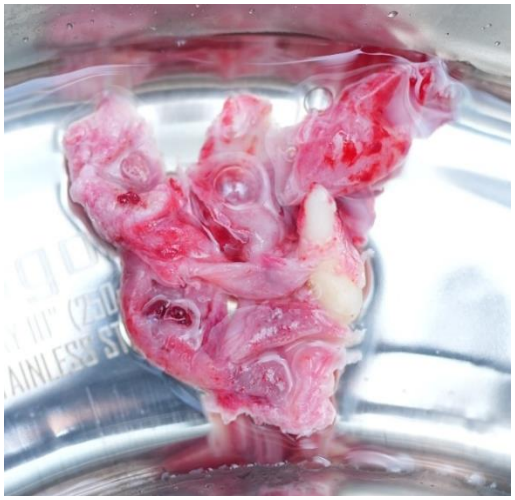

Fig.7 Enucleated cyst with impacted canine

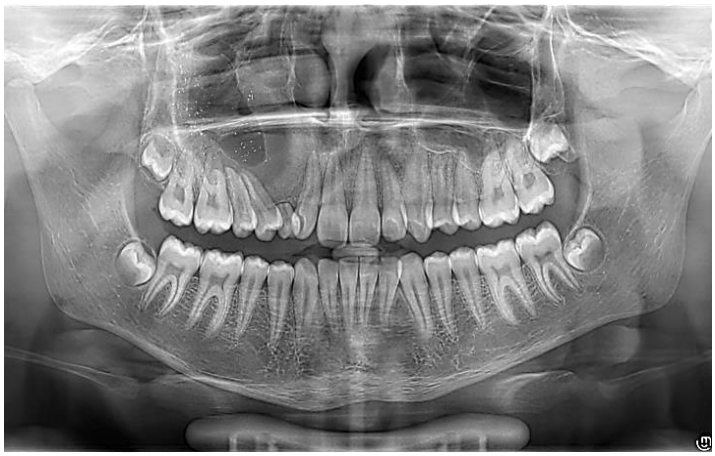

Fig.8 Post-op OPG of the patient

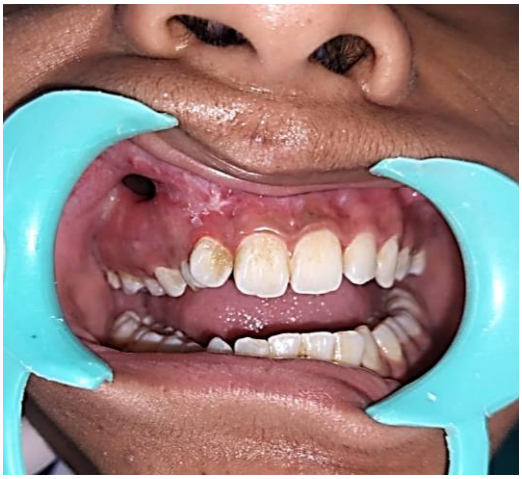

Fig.9 Secondary healing after cyst removal

DISCUSSION

It is suggested that the erupting tooth exerts pressure on an impacted follicle, obstructing the venous outflow, thereby inducing rapid transudation of serum across capillary walls. An increase in hydrostatic pressure exerted by the pooling fluid separates the follicle from the crown, with/without REE. The capillary permeability is also altered with time, and proteins (albumin, immunoglobulins, and glycosaminoglycans) are released into the lumen, raising the osmolality and thereby causing expansile growth of the cyst. The epithelium also secretes osteoclast activating factor and collagenase, which aid in cyst formation.

The histologic features of biopsy specimen taken from this patient showed nonkeratinizing thin stratified squamous epithelium with 2–4 layers of flat or cuboidal cells. The cyst wall showed young fibroblasts separated by stroma and acid mucopolysaccharide rich ground substance. The dentigerous cyst associated with a maxillary cuspid, usually causes expansion of anterior maxilla and may be mistaken for acute sinusitis or rhinorrhea. In this case, the cyst projected into the nasal cavity abutting the inferior turbinate and caused erosion of the alveolar process of maxilla and medial wall of the maxillary sinus. Hence, prompt diagnosis and treatment are essential to reduce the morbidity associated with them. The general mode of treatment for a dentigerous cyst is enucleation or marsupialization of the cyst and extraction of the associated tooth usually under general anaesthesia. Modified approaches employ the use of Carnoy's solution following enucleation and condensation of bone graft in the cystic cavity. As presented in this case, after complete enucleation of the lesion, BIPP dressing provided a complete aseptic environment and promoted secondary healing (Fig.9). Bismuth releases dilute nitric acid on hydrolysis, which is responsible for antibacterial and antiseptic properties with a half-life of 5 days. Iodoform is a yellow crystalline solid called triiodomethane and belongs to the halogen compounds used as an antiseptic and disinfectant. Thus, no postoperative complications were noted in the healing phase.

CONCLUSION

General physicians should remain vigilant for the possibility of a dentigerous cyst in the maxillary sinus, particularly in patients experiencing recurrent sinusitis. Prompt referral to a dental specialist is essential to exclude this diagnosis. Likewise, general dentists must consider this condition when patients report persistent pain without any clear odontogenic origin. A simple radiographic examination is often sufficient to detect or rule out the presence of a cyst. Timely identification not only facilitates appropriate management but also helps prevent potential complications, ultimately enhancing the patient's prognosis.

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