



CASE STUDY

MULTIDISCIPLINARY APPROACH WITH PARTSCH II TREATMENT FOR DENTIGEROUS CYST ASSOCIATED WITH SUPERNUMERARY TOOTH INVOLVING ONE COMPLETE QUADRANT OF MAXILLA

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ABSTRACT

A dentigerous (follicular) cyst is a developmental odontogenic cyst, which apparently develops by the accumulation of fluid between the reduced enamel epithelium and the tooth crown of an unerupted tooth. Typically dentigerous cysts are commonly seen in association with impacted third molars and maxillary canines. Only 5–6% of dentigerous cysts are associated with supernumerary teeth. Dentigerous cyst diagnosis in case of presence of full complement of the teeth is rarest of the rare condition. We report a rare case of huge dentigerous cyst associated with an impacted supernumerary tooth which extended throughout the second quadrant of maxilla crossing the midline. The patient was treated in a multidisciplinary way with conservation approach of root canal treatment for affected teeth under local anesthesia followed by enucleation of the cyst and apicectomies of root canal treated teeth under general anesthesia.

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INTRODUCTION

The definition of dentigerous cyst according to the world health organization (WHO) is 'A cyst which encloses the crowns and is attached to the neck of an unerupted tooth' (Kramer *et al.*, 1992). These cysts are caused by expansion of dental follicles resulting from an accumulation of fluid between the tooth crown and epithelial components (Buyukkurt *et al.*, 2010). Dentigerous cysts are the second most common odontogenic cysts after radicular cysts, accounting for approximately 24% of all true cysts in the jaws (Ko *et al.*, 1999). It is a benign and generally solitary and most frequently found in individuals in the age group between 20 and 40 years (Lustmann and Bodner, 1988). Dentigerous cysts are commonly associated with the third molar teeth of the mandible, followed by maxillary third molars, maxillary canines, and premolars of both the maxillary

and mandibular jaws (A Rawat *et al.*, 2012). They are occasionally associated with supernumerary teeth (Roberts *et al.*, 1984). Stafne first described dentigerous cysts associated with supernumerary teeth and found an incidence of 5.5% among 200 supernumerary teeth (Stafne, 1931). We are presenting a rare case of dentigerous cyst extended whole second quadrant in the maxillary region associated with an impacted supernumerary tooth along with treatment done and good prognosis one-year postoperative follow-up.

Case report

A 27-year-old male patient reported to our department with the complaint of swelling in the left side of palate since one month. Swelling had increased gradually with no signs of pain. No history of trauma. On general examination, the patient was apparently healthy. There was no significant past medical history. Extra-orally slight obliteration of nasolabial fold on the left side was noticed. On clinical examination, an oval-

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shaped solitary well-defined intraoral swelling measuring about 4 cm×3 cm was seen on the left side of the palate (Fig 1). It was non-tender on palpation. Sinus tract with pus discharge was seen at the muco-gingival junction between 24 and 25 (Fig 2).



Fig. 1. Intraoral swelling on left palatine side



Fig. 2. Intraoral sinus tract in muco-gingival junction



Fig. 3. Pre Operative OPG



Fig. 4. PRE Operative Occlusal radiograph of maxilla



Fig. 5. Post Operative OPG

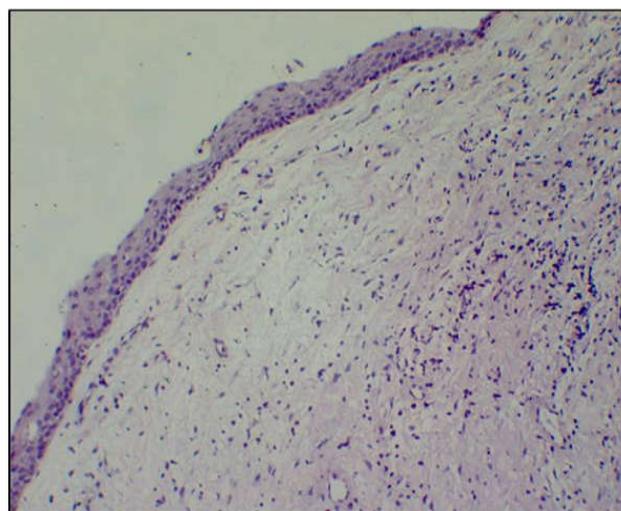


Fig. 6. Histopathological view

There was no evidence of mobility in any teeth. A standard maxillary occlusal view and an orthopantomograph were advised. Diagnostic orthopantomograph (OPG) revealed well-defined radio opacity near the apices of maxillary incisors indicative of supernumerary tooth and well-defined radiolucency was seen involving the apices of 12, 11, 21, 22, 23, 24, 25, 26, 27 (Fig. 3). Standard occlusal view of the maxilla was showed well-defined radio opacity near the apices of 21, 22 suggestive of a supernumerary tooth and a well-defined radiolucency involving the crown of that supernumerary tooth (Fig. 4). After a clinical and radiological examination, a provisional diagnosis of dentigerous cyst arising from the supernumerary tooth was given. The differential diagnoses included large periapical cyst, odontogenic keratocyst, central giant cell granuloma, adenomatoid odontogenic tumor and ameloblastic fibroma arising from a supernumerary tooth. Routine hematological & biochemical investigations were within normal limits. A fine needle aspiration cytology (FNAC) and pulp vitality test were done at the time of examination along with an incisional biopsy. On aspiration, yellow color fluid was obtained. Vitality test showed negative response for 12, 11, 21, 22, 23, 24, 25, 26, 27. Histopathological examination revealed it to be the dentigerous cyst. After confirmation of diagnosis. Root canal treatment was carried out for 12, 11, 21, 22, 23, 24, 25, 26, 27. And the surgical treatment consisted of enucleation of the cystic lining along with the extraction of a supernumerary tooth, curettage, and apicectomies of root canal treated teeth. The surgery was done under general anesthesia and antibiotic cover (Fig. 5). Excision biopsy of cystic lining along with the supernumerary tooth was sent for histopathological examination. Histological examination showed a thin fibrous

cystic wall lined by two to three layers of non-keratinized, stratified, squamous epithelium (Fig. 6). The connective tissue showed a slight inflammatory cell infiltrate, which confirmed the diagnosis of an infected dentigerous cyst, associated with the supernumerary tooth. The patient was on regular follow-up and no complications developed within the one-year follow-up.

DISCUSSION

Dentigerous cysts are the most common developmental, odontogenic cysts arising from a crown of impacted, embedded or unerupted teeth. The exact pathogenesis of these cysts is unknown. They are believed to originate from the follicle of the unerupted tooth (Nair and Khare, 2013; Ziccardi *et al.*, 1997). Dentigerous means “containing tooth” and this is the character description of the cyst. A dentigerous cyst surrounds the crown of an unerupted tooth, expands the follicle, and is characteristically attached to the cemento-enamel junction of the unerupted tooth (Boyczuk *et al.*, 1995). Dentigerous cysts account for approximately 16.6% of all jaw cysts. About 95% of these cysts involve permanent dentition and only 5% are associated with supernumerary teeth. The exact etiology of supernumerary teeth is still unknown but it can be a result of local, independent or conditioned hyperactivity of dental lamina (Sharma *et al.*, 2010). Cyst involves the mandible more commonly than the maxilla. Radiographically, a dentigerous cyst may appear as well-defined unilocular or multilocular radiolucency enclosing the crown of an unerupted tooth (Zhang *et al.*, 2010). However, dentigerous cysts attains maximum size since lesion are painless & treating of such cystic lesion may require removal of multiple teeth or tooth buds or endanger vitality of adjacent teeth (Motamedi and Talesh, 2005). In this case, the cyst was associated with an impacted maxillary supernumerary tooth which is not common and the standard maxillary occlusal view radiograph showed the cyst enveloping the crown of impacted supernumerary tooth which is the typical feature of the dentigerous cyst. Cyst became huge by expanding throughout the second quadrant of the maxilla and lead to pulp necrosis of all the teeth of the same quadrant except the third molar. In-turn the cyst became infectious because of these non-vital teeth. So, we treated this case in a multi-disciplinary approach by performing root canal treatment for all of the non-vital teeth before enucleation to save the affected non-vital teeth and apicectomies to avoid recurrence. Various treatment modalities are indicated for dentigerous cysts, such as the surgical removal of the cyst, avoiding damage to the involved permanent tooth; enucleation (Partsch II) of the cyst along with removal of the involved tooth; or use of a marsupialization (Partsch I) technique in huge cyst removal for preserving the developing tooth buds and adjacent vital structures. The nature of the causative tooth influences the type of surgical treatment required for the dentigerous cyst. If the cyst is associated with a supernumerary or impacted tooth, enucleation (Partsch II) of the cyst along with the removal of tooth associated with dentigerous cyst will be the treatment of choice. However, when preservation of the teeth is desirable in a young patient, where the lesion is associated with a non-functional tooth (unerupted), then a multidisciplinary way is the treatment of choice. Choice of Treatment depends on the size, location, and disfigurement to ensure complete removal of the cystic lining, especially in cases of large ones (Baranwal *et al.*, 2012).

In summary, although a dentigerous cyst associated with impacted permanent teeth is not uncommon, such development as a result of an impacted supernumerary tooth might be rare and delayed diagnosis may cause the destruction of nature vital structures. Therefore, early diagnosis and proper treatment planning for such uncommon cases are necessary to prevent harmful effects on the adjacent regular teeth and further complications.

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