



INFECTED DENTIGEROUS CYST WITH THE IMPACTED 3RD MOLAR TOOTH IN THE RIGHT MAXILLARY SINUS: A CASE REPORT

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ABSTRACT

Cyst is defined as a pathological cavity having fluid, semifluid or gaseous contents and which is not created by accumulation of pus. The Dentigerous cyst initially is always associated with the crown of an impacted, embedded, or unerupted tooth. It develops around the crown of an unerupted tooth by the expansion of the follicle when fluid collects between the reduced enamel epithelium. Such cysts remain initially completely asymptomatic unless when infected and can be discovered only on routine radiographic examination. It accounts for more than 24% of jaw cysts, usually developing around the crown of mandibular third molar, maxillary canine, followed by mandibular premolars, rarely involving supernumerary teeth and central incisors. A case of cyst in a 23-year-old female, which developed around an impacted right maxillary third molar tooth in the maxillary sinus. Incisional biopsy revealed an infected dentigerous cyst. Enucleation of the cyst was done under General Anesthesia. Maxillary dentigerous cyst

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INTRODUCTION

Cyst is defined as a pathological cavity having fluid, semifluid or gaseous contents and which is not created by accumulation of pus. Dentigerous cyst is the most prevalent type of odontogenic cysts and is associated with the crown of an unerupted tooth, and accounts for more than 24% of jaw cysts, the cyst mainly involves the crown of impacted mandibular third molar, followed by maxillary canines, mandibular premolars, rarely supernumerary teeth and central incisors.^[1] About 70% of the dentigerous cysts occur in the mandible and 30% in the maxilla.^[2] The dentigerous cyst is commonly associated with impacted mandibular third molars. In the maxilla, it is usually associated with an impacted canine. It is very rarely seen in association with an impacted third molar. It is commonly seen in the age group between 18 and 25 years when third molars are supposed to erupt. Dentigerous cyst in the maxillary sinus in association with an impacted third molar is an uncommon entity. Failure to intervene may cause impingement on the surrounding structures like the nasal septum, orbit, alveolar arch, and hard palate. Some untreated dentigerous cysts have the potential to develop odontogenic tumors like ameloblastoma, and malignancies like oral squamous cell carcinoma and mucoepidermoid carcinoma.

Case Report

A 23-year-old patient reported to the Department of Oral and Maxillofacial Surgery, Adhiparasakthi Dental College and

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Hospital, Melmaruvathur with a chief complaint of painful swelling over the right side of the face for the past 2 months, with pus discharge. Patient gives history of biopsy, without any reports. The swelling was initially small in size and gradually increased to attain the present size. The patient had no medical history. The past dental history reveals extraction before 2 months. There was no surgical history for the patient.

On extraoral examination, it shows gross facial asymmetry due to diffuse swelling present over the right side of the face measuring approximately 5x2x1 cm extending superiorly from the alar tragus line to inferiorly 1 cm above the right angle of the mouth, anteriorly 1 cm from the alar of the nose to posteriorly 3 cm from the ear lobe.

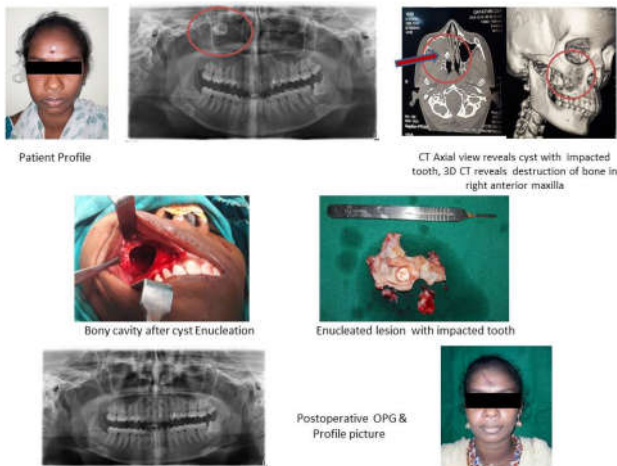
On intraoral examination, a diffuse swelling is present over the right buccal vestibule between the 15 to 17 region. A pus discharge is present in the vestibule between the 13-15 region. Based on clinical and radiological examination, it was diagnosed as a dentigerous cyst.

Routine haematological investigations, radiological investigation were taken before the surgery. CT scan revealed a large hypodense cystic lesion involving the right maxillary antrum arising from the superior aspect of the alveolar margin of the maxilla on the right side causing expansion and thinning of the bony margin with minimal extra-sinus extension of the lesion through the breach in the posterolateral wall and floor posteriorly of the right maxillary sinus with a tooth in it – suggestive of a cystic lesion.

Complete enucleation of the cyst along with the impacted third molar was done under General Anesthesia via an intraoral

approach, crevicular incision placed from 12-17 region, mucoperiosteal flap elevated bony window created and enucleation of cyst with impacted tooth was removed. From the remanent epithelium, recurrence can occur, so chemical cauterization done with Carnoy's solution for 3 min. Irrigation done with saline and betadine, metronidazole and the closure was done by suture material. Hemostasis achieved. Postoperatively patient recovered unevenly.

The specimen was sent for histopathologic examination which confirmed dentigerous cyst. The patient was kept under regular follow-up.



DISCUSSION

Dentigerous cyst is an uncommon cyst found in the maxillary sinus and there are only a few articles reporting the lesion in maxillary sinus.^[2] In our case, the tooth was present at the posterior aspect near lateral wall of the maxillary sinus which is a very rare position for maxillary third molars to erupt. If not treated, early cyst in the maxillary sinus may displace and obliterate the maxillary antrum and nasal cavity. The cyst may cause pathological fracture and may become secondarily infected.^[3] Metastatic and dysplastic changes may occur; associated aneurysmal bone cyst and hemangiomas have also been reported in rare instances.^[4] Ectopic eruption of a tooth into the dental environment is common, whereas ectopic eruption of a tooth in other sites is rare. Its presence in the maxillary sinus is a rare entity and very few cases have been reported in the literature.^[5] Ectopic eruption may result due to one of the three processes: Developmental disturbances, pathological process and iatrogenic activity.^[6]

It is believed that the displacement of the tooth buds by the expansion of these dental cysts results in the displacement of the tooth to other areas, as seen in our case.

Dentigerous cysts are usually solitary, benign odontogenic cysts associated with the crowns of unerupted teeth. The exact histogenesis of the dentigerous cyst is not known. It is stated that the dentigerous cyst develops by the accumulation of fluid either between the reduced enamel epithelium and the enamel or in between layers of the enamel organ. This fluid accumulation occurs as a result of the pressure exerted by an erupting tooth on an impacted follicle, which obstructs the venous outflow and thereby induces a rapid transudation of serum across the capillary wall.^[7]

Toller stated that the likely origin of the dentigerous cyst is the breakdown of proliferating cells of the follicle after impeded

eruption. These breakdown products result in increased osmotic tension and hence cyst formation. These cysts usually occur in the late second and third decades, are discovered on routine radiography, and predominantly involve mandibular third molars.^[8]

In addition to the developmental origin, some authors have suggested that periapical inflammation of non-vital deciduous teeth in proximity to the follicles of unerupted permanent successors may be a factor for triggering this type of cyst formation.^[9] Histologically, a dentigerous cyst is lined by non-keratinized stratified squamous epithelium. Since the dentigerous cyst develops from follicular epithelium it has more potential for growth, differentiation and degeneration than a radicular cyst. Occasionally, the wall of a dentigerous cyst may give rise to a more ominous mucoepidermoid carcinoma. Due to the tendency for dentigerous cysts to expand rapidly, they may cause pathological fractures of jaw bones.^[10] The usual radiographic appearance is that of a well-demarcated radiolucent lesion attached at an acute angle to the cervical area of an unerupted tooth. The border of the lesion may be radiopaque. The radiographic differentiation between a dentigerous cyst and a normal dental follicle is based merely on size. Radiographically, a dentigerous cyst should always be differentiated from a normal dental follicle. Dentigerous cysts are the most common cysts with this radiographic appearance.

Radiographically the cyst appears unilocular with well-defined margins and often sclerotic borders. Infected cysts show ill-defined margins.

The management of this lesion depends on the age of the patient, site and extension of the cyst. Various treatment modalities have been proposed. Basic surgical procedure includes marsupialization or enucleation. The modified procedures include a combination of both, use of Carnoy's solution following enucleation, and use of bone grafts to fill the cystic cavity. The recurrence rate of dentigerous cyst is very low as when compared to other jaw cysts.^[11]

In the present case, enucleation was preferred over the marsupialization. Since there was no danger of devitalizing teeth, the surgical procedure did not require any sacrifice of any important structure, and the impacted third molar was nonfunctional.

CONCLUSION

This case report highlights maxillary third molar in an ectopic position into the roof of the maxillary sinus, associated with a dentigerous cyst which was completely obliterating the maxillary sinus. Very few such cases have been reported in the literature. Since the untreated cyst may lead to facial asymmetry, infection, nasal obstruction and even metaplastic and dysplastic changes, its diagnosis and treatment is essential.

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