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A Huge Infected Dentigerous Cyst Occupying the Maxillary Sinus

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Abstract **Case Report**

A dentigerous cyst (DC) ranks as the second most common odontogenic cyst after a radicular cyst arising from the crowns of impacted, embedded, or unerupted teeth. DC frequently causes the corresponding tooth to be displaced into an ectopic location, such as the sinus cavity in the maxilla. Surgical treatment involves extracting the tooth and enucleating the cyst using a conservative intra-oral approach or endoscopic surgery. We report a rare case of a 25-year-old woman with maxillary third molars inside the maxillary sinus attached to a dentigerous cyst and treated with Caldwell Luc surgery through an intraoral approach.

Keywords: Dentigerous cyst, sinus, ectopic tooth, Caldwell-Luc, pathology.

INTRODUCTION

Ectopic eruption refers to a condition where teeth are present in a location distant from their typical anatomical position. The etiology of ectopic tooth eruption may stem from three processes: abnormal tissue interaction during development, pathological processes such as tumors or cysts, and iatrogenic activity [1]. The third molar is the most common form of dental ectopia [2].

A dentigerous cyst (DC) ranks as the second most common odontogenic cyst after a radicular cyst arising from the crowns of impacted, embedded, or unerupted teeth [3].

It occurs when fluid accumulates within the follicular space of a tooth that has fully formed its crown but remains unerupted

The most frequently affected teeth, listed in descending order, are the third molars, canines, and second premolars [4].

DC frequently causes the corresponding tooth to be displaced into an ectopic location, such as the sinus cavity in the maxilla.

Surgical treatment involves extracting the tooth and enucleating the cyst using a conservative intra-oral approach or endoscopic surgery [5].

This paper will present a clinical case involving an intra-sinusal dentigerous cyst and discuss the various surgical approaches available to practitioners for treating this type of lesion.

CASE PRESENTATION

A 25-year-old female with no previous medical history was referred to the Oral Medicine and Surgery Department at the University Hospital Dental Clinic in Monastir due to a swelling in the upper left cheek region that had been progressing for 3 months.

Before consulting us, the patient underwent a drainage incision at the depth of the vestibule without significant improvement.

External examination revealed slight facial asymmetry and a flattening of the vasogenic groove on the left side (**Figure 1**).

Intra-oral examination revealed an adequate mouth opening, filling at the depth of the vestibule, from which pressure resulted in pus discharge, no dental mobility, and a superficial decay at tooth 26 g with absence of the upper left third molar (**Figure 2**).

Figure 1: Preoperative exobuccal view revealing facial asymmetry

Figure 2: Pre-operative intraoral View

A panoramic radiograph showed a well-defined unilocular radiolucency involving the left maxillary sinus along with the impacted third molar (**Figure 3**).

Figure 3: Pre-operative orthopantomography

A three-dimensional radiological examination was requested, and the patient was placed on Augmentin at 3g per day.

The cone beam computed tomography (cbct) reveals tooth 28 occupying a high position at the level of the sinus roof, surrounded by a large cystic image pushing against the vestibular cortical bone (**Figure 4**).

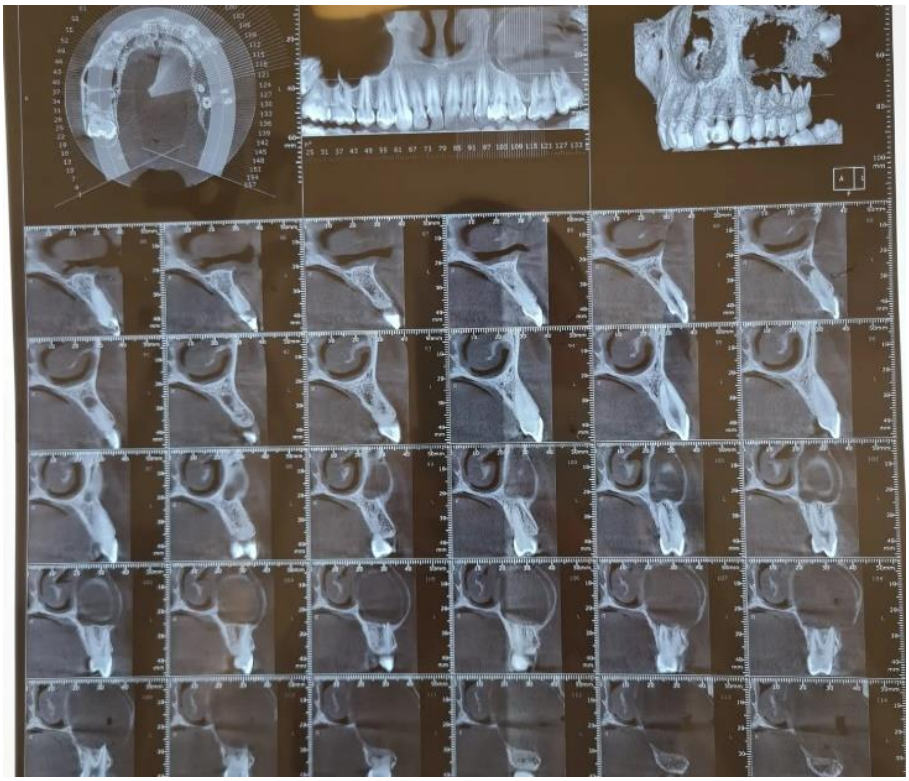

Figure 4: CBCT

The diagnosis of an infected dentigerous cyst of the maxillary sinus resulting from an ectopic third molar was made based on the clinical and radiological findings.

The cystic lesion was enucleated under local anesthesia using the Caldwell-Luc approach. A vestibular sulcular incision was made from the canine to the second molar, with a vertical releasing flap on both sides. A pus-filled cyst covering the entire sinus was enucleated (Figure 5-8), and the biopsy was taken and sent for histopathological examination (**Figure 9**).

Figure 5: Cystic enucleation via the endobuccal approach

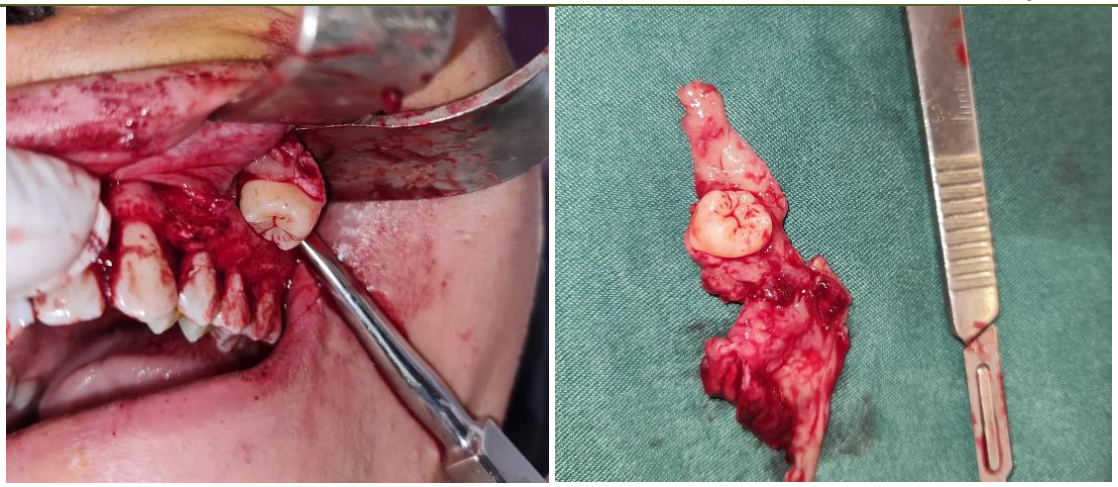

Figure 6 et 7: Extraction of the ectopic tooth 18 located within the maxillary sinus, surrounded by the cystic lesion

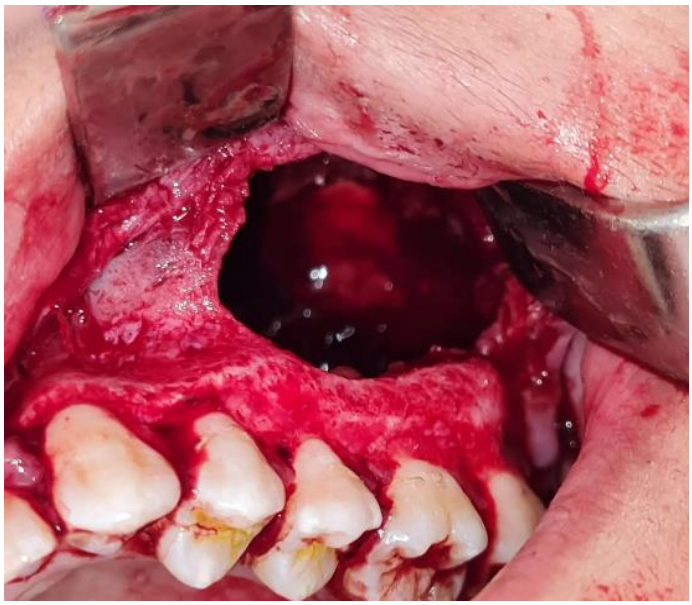

Figure 8: Sinus cavity after enucleation

Figure 9: Specimen sent for biopsy

Histopathological examination revealed a cystic wall lined with extensively ulcerated squamous epithelium based on a connective tissue that often takes the appearance of a granulated tissue rich in neovessels and contains an abundant polymorphic inflammatory infiltrate rich in neutrophilic polynuclear, plasmocytes, and lymphocytes.

DISCUSSION

Dentigerous cysts (DCs), which account for 14% to 20% of all jaw cysts, are the second most prevalent type of cyst seen in the dental arches.75% of DCs are found in the mandibular third molars. Rare are those found in the maxillary sinus [6].

There are three variants of dentigerous cyst: (a) Central: Crown is enveloped by the follicle symmetrically, (b) Lateral: Dilatation of the follicle on one aspect of the crown, and (c) Circumferential: The follicle expands in a manner which envelopes the entire tooth [7].

The surgical approach to cystic lesions of the jaws is either marsupialization or enucleation depending on the bony integrity of the jaw adjacent to the cyst [8]. Marsupialization of an antral cyst towards the oral cavity will consequently create an oroantral fistula, therefore enucleation is the treatment of choice.

To treat dentigerous cysts within the sinus several surgical methods have been described, including intraoral and transnasal endoscopic techniques.

Due to the operating field, most DCs are treated with Caldwell-Luc surgical removal. Although the lesions can be eliminated, the surgical procedure is frequently associated with further trauma and complications than trans-nasal endoscopy.

Viterbo *et al*., accessed the sinus cavities through the canine fossa as a route for endoscopy [9].

Di Pasquale and Shermetaro removed the ectopic tooth and the associated cyst by using a nasal endoscopic surgery through the middle meatal antrostomy [10]. Emmanuelle *et al*., used the lower and middle meatotomies to access the sinus cavity with an endoscopy-assisted transnasal approach to remove the ectopic upper third molar in the sinus associated with a dentigerous cyst [10].

Courtot *et al*., conducted a meta-analysis of 39 instances from 33 papers. Caldwell-Luc's procedure was performed in 77% of cases, with 10% requiring transoral endoscopy. In 10% of cases, nasal endoscopy was employed alone, whereas in 3% (one patient), a Le Fort I osteotomy was performed. Courtot *et al*., found that the Caldwell-Luc method is still the gold standard. However, depending on the tooth location, endoscopic procedures may be a better choice being less invasive and with lower morbidity and complications [11].

CONCLUSION

Early detection and treatment of odontogenic cyst lesions is crucial to reduce morbidity. The treatment of dentigerous cysts located within the sinus highlights the necessity of interdisciplinary collaboration among various dental specialties, oral surgeons, and otolaryngologists.

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