



Bilateral ectopic third molar in the maxillary sinuses associated with dentigerous cyst: a case report

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Abstract

A dentigerous cyst is an epithelial-lined odontogenic cyst formed by an accumulation of fluid between the reduced enamel epithelium and the crown of an unerupted tooth. About 70% of dentigerous cysts occur in the mandible and 30% in the maxilla and the most involved teeth are maxillary canines and maxillary third molars. Dentigerous cysts often displace the related tooth into an ectopic position. In the maxilla, when the cyst expands into the sinus, it usually causes total or partial occupation of the sinus cavity and can extend to the nose.

We report a rare case of a 24-year-old woman with bilateral maxillary third molars inside the maxillary sinuses attached to a dentigerous cyst and treated with a minimally invasive endoscopic surgery through the middle meatal meatotomy.

Keywords: ectopic third molar, maxillary sinus, bilateral, dentigerous cyst, endoscopy

Introduction

Tooth development depends on a complex reciprocal interaction between the dental epithelium and the underlying mesenchymal tissue [1]. A dentigerous cyst is created by the hydrostatic force exerted by the fluid accumulation between reduced lining epithelium and the crown of retained or unerupted teeth. Hence, the cyst encloses the crown and is attached to the neck at the cement-enamel junction [2]. Dentigerous cysts often displace the related tooth into an ectopic position [3]. In the maxilla, when the cyst expands into the sinus, it usually causes total or partial occupation of the sinus cavity and can extend to the nose. Surgical treatment includes extraction of the tooth and enucleating the cyst using a conservative surgical technique by using intra-oral approach [3-5], or with endoscopic surgery [6-9].

In this report, we describe a rare case of bilateral maxillary third molars inside the maxillary sinuses attached to a dentigerous cyst and treated with a

minimally invasive endoscopic surgery through the middle meatal meatotomy.

Case report

A healthy, ASA I, 24-year-old female patient was referred to our clinic by her orthodontist for the assessment of her third molars before orthodontic treatment. Clinical examination revealed a minor pain in the right anterior maxilla and the left posterior maxilla. A 2D panoramic radiograph showed two third molars situated in the maxillary sinus cavities with a radiopaque image (Figure 1a).

Sagittal view of a Cone-Beam Computed Tomography detected the existence of a round unilocular, well-defined radiopacity, on the right-side, located in the middle of the anterior border of the sinus cavity. Also, the same image was found on the left side with defined radiopacity located in the middle of the posterior border of the sinus cavity at the level of the tuberosity; the radiopaque appearance of the left and right sinuses is noted (Figure 1b and 1c).

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The first diagnosis was a bilateral ectopic maxillary third molar inside the maxillary sinus cavities related to a dentigerous cyst.

The axial image of a CT scan showed two dental elements inside, with a radiolucency occupying the totality of the sinus cavity on both sides. On the left side, the tooth is in close relationship with the anterior wall of the sinus, and on the right side, the tooth is pushed into the posterior wall of the sinus (Figure 1d). The frontal image revealed a radiolucency occupying the whole sinus cavity and the ostium was completely blocked on both sides (Figure 1e).

The transnasal approach was decided after discussing it with the patient and informed consent was signed before the surgery.

The surgery was performed under general anesthesia in the supine position. The patient received 2 grams of amoxicillin/clavulanic acid on call to the operating room. The nasal cavity received cotton pads saturated with 4 ml of adrenaline (1:1000) and was inserted lateral to the medial turbinate and then placed more anteriorly to reach the vestibule and kept for 5 minutes. The same decongestion technique was repeated for another 5 minutes.

Local injection of lidocaine 1% with adrenaline (1:100,000) was done on the base of the middle turbinate and uncinata process.

The first step was to identify the middle turbinate, the uncinata process, and the labyrinth between the anterior portion of the middle turbinate and the uncinata and the lacrimal processes. An incision was made at the free edge of the uncinata process by using a sickle knife and dissection of the uncinata with back-biting forceps was done. The free edge of the uncinata process was then removed submucosally allowing the identification of the position of the anatomic ostium. The ostium was entered, and a ball probe seeker was used to widen the area posteriorly. The sinus cavity could then be examined using a 30-degree and a 70-degree rigid endoscope. Irrigation and suction inside the maxillary sinus were done. At a thorough examination, the maxillary sinus cavity showed evidence of an inflammatory mucosa, and the cyst was enucleated using a 70-degree angled endoscope and the tooth was retrieved using curved forceps for the right side (Figure 2a, 2b, and 2c) and for the left side (Figure 2d, 2e, and 2f). The postoperative period was uncomplicated, and the patient was discharged the same day with a prescription of 2 grams of amoxicillin/clavulanic acid per day for 5 days and paracetamol in case of pain. Nasal pads were removed 72 hours after surgery and followed for nasal cavity debridement weekly postoperatively and initiated to irrigate the nasal cavity with 100 % natural isotonic seawater 3 times per day for 2 months.

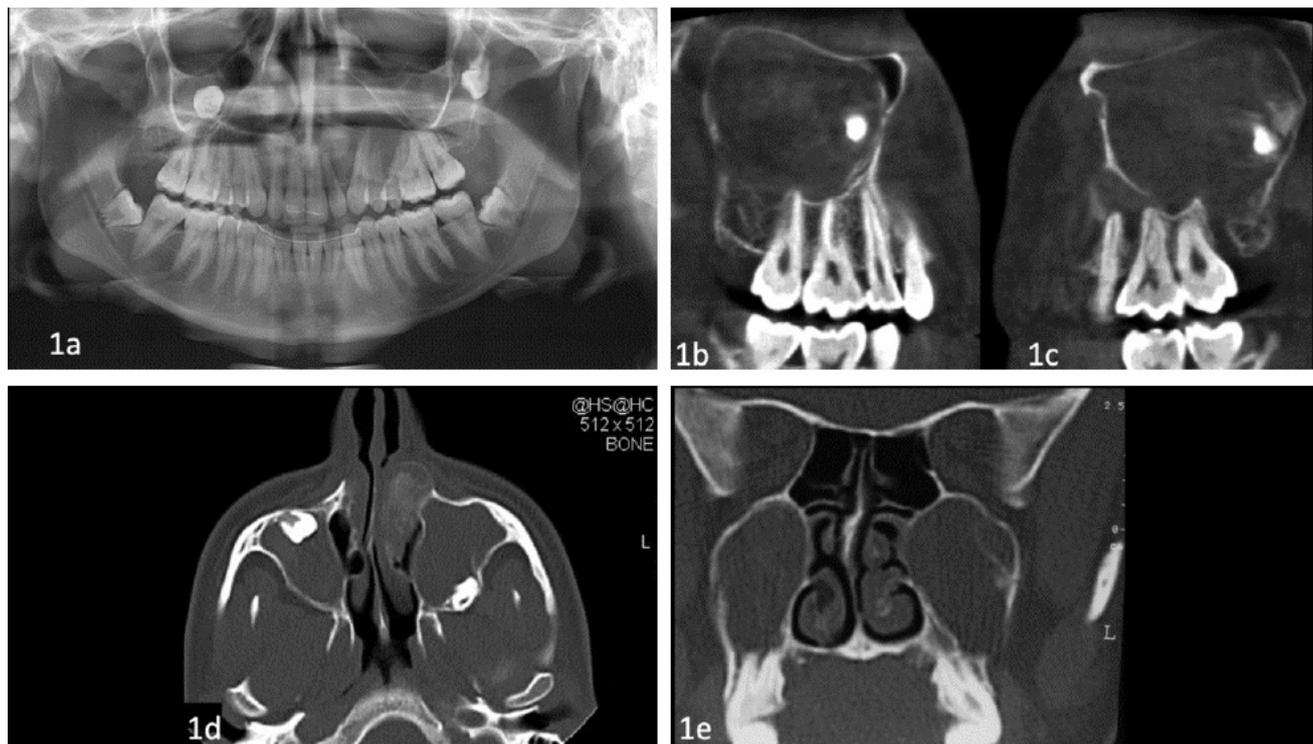


Figure 1. 1a: 2D panoramic radiograph showed 2 maxillary third molars situated in the sinus cavity with radiopaque images; 1b: sagittal view of the CBCT detected on the right side, the presence of a round, well-defined radiopacity into the maxillary sinus with a radiopaque appearance occupying the totality of the maxillary sinus; 1c: the same image on the left side; 1d: the axial image showed two dental elements inside with a radiolucency occupying the totality of the sinus cavity on both sides; 1e: the frontal image revealed a radiolucency occupying the whole sinus cavity and the ostium was completely blocked on both sides.

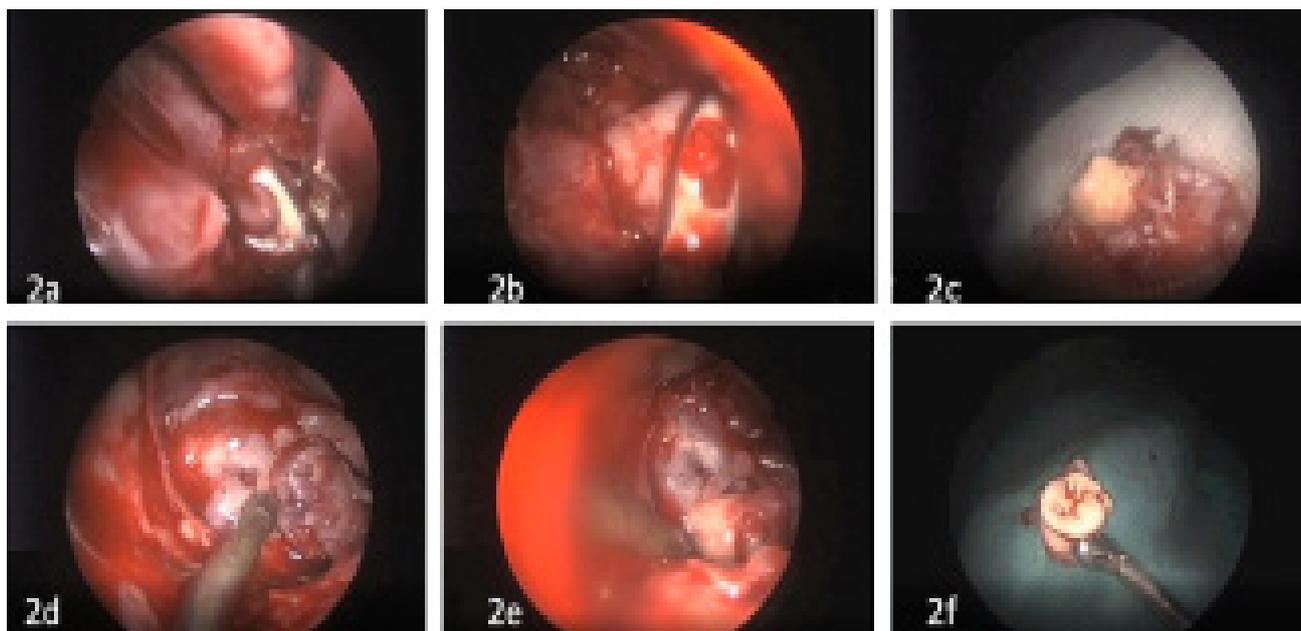


Figure 2. 2a: removing the granulation tissue inside the right sinus. 2b: enucleation of the cyst. 2c: the extracted tooth with the cyst attached at the cement-enamel junction. 2d: the cyst was enucleated on the left side. 2e: the tooth displaced anteriorly. 2f: the extracted tooth with the cyst.

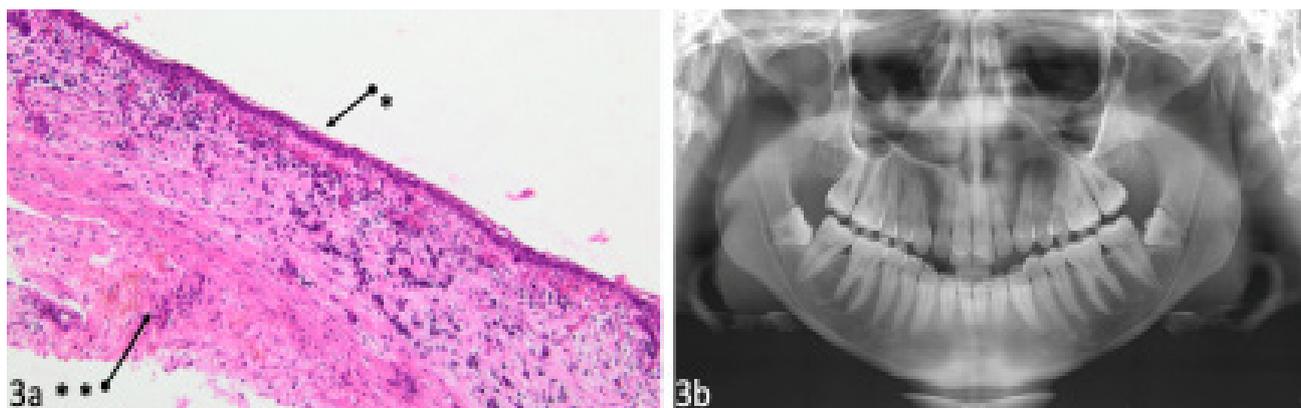


Figure 3. 3a: *: histopathology of the cyst (HE x 20) the cystic border was lined with a non-keratinized stratified squamous epithelium. **: the connective tissue composed of fibrous tissue and inflammatory infiltration. 3b: the 2 D panoramic radiograph at one year.

The histopathology confirmed the diagnosis of dentigerous cysts (Figure 3a).

The patient was followed monthly, and no complications were noted. A 2D panoramic was done after one year (Figure 3b).

Discussion

Bilateral dentigerous cysts associated with ectopic teeth in the maxillary sinuses are very rare and only a few cases have been published in the literature [4,5].

The radiological investigation is fundamental, however, diagnosis must be based on histological

examination because of the similarity in radiographic features with various other lesions [2]. Various surgical approaches have been described including intraoral and transnasal endoscopic procedures [3-9]. Intraoral approaches or the Caldwell-Luc technique is the classic surgical technique to access the maxillary sinus through the anterior wall by the canine fossa [5]. Sharma et al. described the intraoral approach for removal of ectopic maxillary third molars and enucleation of cyst bilaterally [4].

Postoperative edema and subcutaneous emphysema may frequently after this procedure, also some complications such as lesion of the infraorbital nerve, dental pain, bleeding,

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and fistula formation may be observed. It is associated with more morbidity than trans nasal endoscopy [6-9].

Viterbo et al. accessed the sinus cavities through the canine fossa as a route for endoscopy [7]. Di Pasquale and Shermetaro removed the ectopic tooth and the associated cyst by using a nasal endoscopic surgery through the middle meatal antrostomy [9].

Emmanuelli 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 [9].

Al Khudair et al. reported a case of bilateral ectopic teeth related to dentigerous cysts inside the maxillary sinus cavities and treated with the endonasal endoscopic approach and found that the transnasal approach was superior to the intraoral approaches in the management of their cases [6].

In our case, the decision of transnasal endoscopic surgery was based on the very high and complicated position of the two ectopic third maxillary molars. On the right side, the tooth was facing the anterior wall of the maxillary sinus and a lesion of the infraorbital nerve was more obvious. Besides, on the left side, the tooth was in a very posterior position and the intraoral methodology agrees on a direct view of the lesions; but it does not offer a clear vision of the medial and posterior sides of the cyst. In the two cases, the cysts were occupying the totality of the sinus cavities and the ostium with complete obstruction of both.

Conclusion

Endonasal endoscopic treatment is feasible and effective and may carry some advantages including minimal complications, shorter operating time, and reestablishment of the mucociliary clearance, as well as the natural ventilation through the natural ostium and the middle meatal meatotomy.

Consent Form

Patient signed consent form before surgery.

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