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Case Report

A dentigerous cyst containing an ectopic canine tooth below the floor of the maxillary sinus: a case report

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Abstract: Ectopic eruption into the dental environment is common, whereas eruption into other sites is rare. Diverse anatomical locations such as the mandibular condyle, coronoid process, palate, maxillary sinuses and nasal cavity can infrequently be the site of ectopic tooth eruption. One of the nondental sites for ectopic eruption is the maxillary sinus. Here, we present a case of dentigerous cyst with an ectopic maxillary canine tooth located below the floor of the right maxillary sinus in a 37-year-old man. (J. Oral Sci. 49, 249-252, 2007)

Keywords: ectopic tooth; canine tooth; maxillary sinus; dentigerous cyst.

Introduction

Ectopic teeth are those located in the jawbones or regions other than the alveolar arch. Ectopic placement or irregularity in the migration of a tooth bud occurs due to genetic and environmental relationship factors which cause a budding tooth to congenitally migrate in the initial stages of embryogenesis, or is the result of a change in the displacement of teeth owing to local factors (1). Local factors include volumetric incompatibility between the tooth and the dental arch, prolonged retention of primary teeth, presence of clefts, ankylosis and a cystic or neoplastic lesion or trauma. The dentigerous cyst caused by local factors is associated with the crown of a permanent tooth, and is the most common developmental odontogenic cyst (2,3). It may arise from between the enamel epithelium and the tooth or from remnants of odontogenic epithelium (3). Environmental factors include endocrine insufficiency and febrile diseases or irradiation (1,4). Ectopic teeth are more common in the mandible and in women. Incisors, canines and premolars are the most affected teeth. Ectopic teeth can occur in both deciduous and permanent dentitions. Most cases do not have symptoms and in general, are discovered during routine radiographic examination (5). The increased use of panoramic radiography has resulted in a rise in the number of ectopic teeth detected. Ectopic teeth can be treated with orthodontics or surgery (1). Asymptomatic teeth can be removed surgically or monitored radiographically at regular intervals (1,4-6).

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Case Report

A 37-year-old man attended our clinic with the chief complaint of multiple missing teeth and tooth decay. He had no systemic illness. Intraoral examination revealed that his right maxillary canine and second premolar, left central incisor, second premolar and first molar tooth and mandibular right first and second molars and left third molar tooth were all missing. The mandibular left second molar tooth was carious. No pathology was found during extraoral inspection.

In the panoramic radiograph, an ectopic maxillary canine tooth with an incompletely formed root was discovered in the right maxillary sinus (Fig. 1). In order to determine the exact location of the canine tooth, Computed Tomography (CT) was performed with paranasal inspection. In the axial cross section, a radiopaque image of the tooth and a radiolucent image of the cyst enclosing the tooth were seen (Fig. 2).

Caldwell-Luc operation was performed under local anesthesia on the right side. The cyst was easily dissected together with the ectopic tooth from the floor of the right

maxillary sinus (Figs. 3, 4). Inspection of the cavity showed that the maxillary floor was intact and concave in shape. After histopathological examination, the cyst was diagnosed as a dentigerous cyst.

The postoperative period of the patient was uneventful and he was discharged after three post-operative days.

Discussion

Ectopic teeth are seen in different regions of the jawbones such as the mandibular condyle, coronoid process, palate, maxillary sinuses and nasal cavity, places relatively far away from the arch (1,7). These teeth are rarely found within the sinus, and are discovered on routine clinical or radiographic examination, as most cases are asymptomatic (8,9). Ectopic teeth in the sinus may cause obstruction in the canals of the sinus and chronic sinusitis with severe headache. (6). However, in the present case, the ectopic canine teeth found below the maxillary sinus did not cause any complications. While ectopic molars and supernumerary teeth have been more commonly reported in the maxillary sinus, ectopic permanent canines were less frequently encountered (10,11).

The etiology of ectopic eruption is still not completely understood. But many theories have been suggested, including trauma, infection, pathologic conditions such as dentigerous cyst, crowding and developmental anomalies (12). The dentigerous cyst is the most frequent developmental odontogenic cyst affecting the permanent teeth (2). However, dentigerous cysts of the maxillary sinus are usually associated with maxillary third molars (13,14), and not with a canine tooth. Previous case reports of dentigerous cysts were associated with deciduous (2), and supernumerary teeth (15). Baykal et al. (16) reported that the possible etiologic factor was a dentigerous cyst in only one of 14 cases. In the present case, the etiologic factor was also a dentigerous cyst.

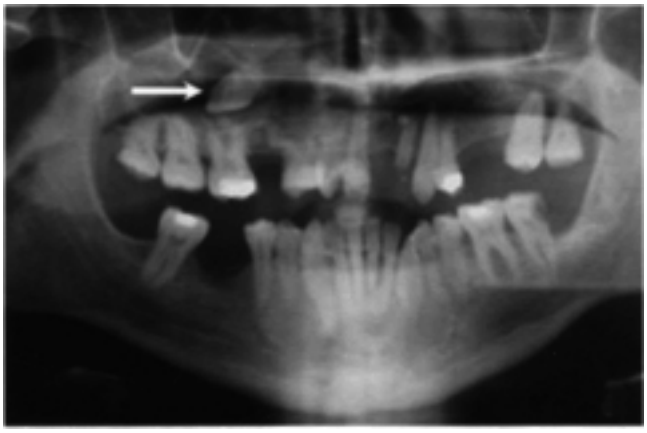

Fig. 1 Panoramic radiograph revealed a canine tooth crown in the right maxillary sinus.

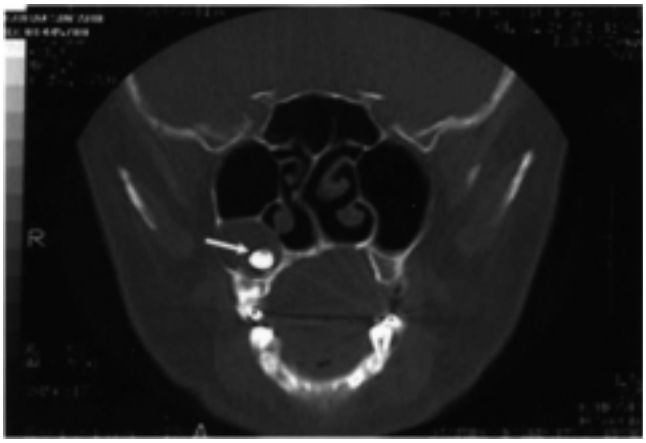

Fig. 2 CT scan of the paranasal sinuses revealed a cyst containing an ectopic canine tooth below the floor of the right maxillary sinus.

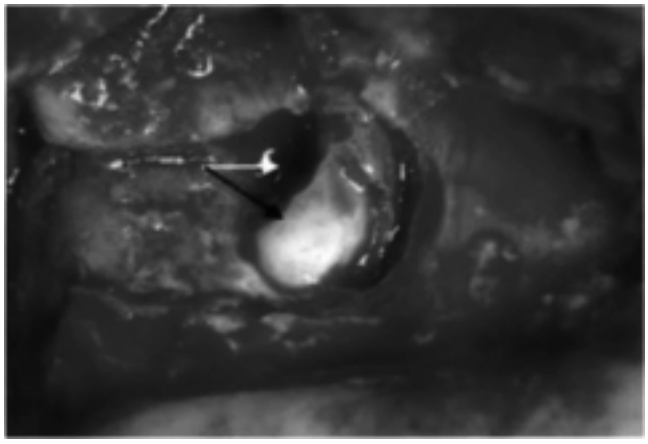

Fig. 3 Dentigerous cyst enclosing the tooth was observed at the time of surgery. (white arrow, dentigerous cyst; black arrow, ectopic canine tooth).

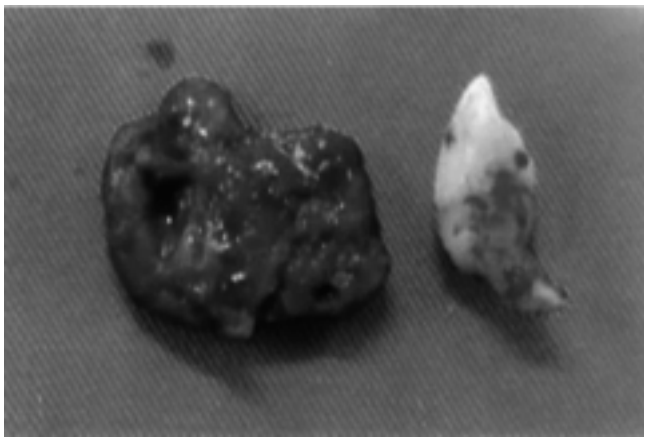

Fig. 4 The excised specimen of the dentigerous cyst and ectopic canine tooth.

The differential diagnosis of a dentigerous cyst includes ameloblastoma, odontogenic fibroma, odontogenic myxoma, radicular cysts, the origins of which are inflammatory, other types of odontogenic developmental cysts of the jawbones, and maxillary cysts. Odontogenic developmental cysts arise from the dental organ. Those arising in suture regions are termed fissural cysts. Follicular cysts arise in any region of the alveolus. If the follicular cysts develop once the tooth has started to form, the tooth or its crown may become part of the cyst wall and may penetrate into the cystic cavity. This type is referred to as a dentigerous cyst (17).

Ectopic teeth in the maxillary sinus are easily diagnosed radiographically, because of their radiopaque image. Water's view, panoramic radiography and plain skull radiography are simple and inexpensive methods, which can be used in daily practice (18). The structure of a tooth can be clearly detected on panoramic radiographs. Therefore, panoramic radiographs are preferred over CT. Lateral cephalometric radiographs may also be helpful for localization in unilateral cases. In some cases, Water's view is inadequate to diagnose ectopic maxillary teeth (16). Although, the structure of the tooth can be clearly detected on panoramic radiographs, they are inadequate to localize ectopic maxillary teeth because of their inherently less-sharp image, and ghost image (19). Likewise, in our case, the dentigerous cyst with the ectopic maxillary canine appeared to be within the maxillary sinus in the panoramic radiograph. In order to determine the exact location of the canine teeth, we observed the CT images. The dentigerous cyst with an ectopic maxillary canine tooth was located below the floor of the right maxillary sinus. CT is especially useful for the localization of ectopic teeth (4). CT is necessary and more valuable than plain film radiographs not only for definitive diagnosis, but also for evaluation of the associated pathoses, exact localization of the ectopic tooth and proper treatment planning (4,20).

The surgical treatment of an ectopic tooth in the maxillary sinus involves removal via a Caldwell-Luc procedure (4,6,10). In addition, we performed surgical enucleation with the Caldwell-Luc operation. Trans-nasal extradition of tooth may be attempted if the tooth is small and sited near the maxillary ostium (6,21). It is also mandatory to completely remove all diseased antral tissue and thoroughly assess all resected soft tissue histologically (6).

In conclusion, we strongly suggest that computed tomography is useful, especially for the localization of ectopic teeth. Additionally, in routine clinical practice, conventional radiographs may be preferred over CT, and may be helpful for diagnosis and treatment plans as they are simple and inexpensive.

References

1. Laskaris G (2000) Color atlas of oral diseases in children and adolescents. Thieme, Stuttgart, 12-13
2. Kusukawa J, Irie K, Morimatsu M, Koyanagi S, Kameyama T (1992) Dentigerous cyst associated with a deciduous tooth. Oral Surg Oral Med Oral Pathol 73, 415-418
3. Kaya Ö, Bocutoğlu Ö (1994) A misdiagnosed giant dentigerous cyst involving the maxillary antrum and affecting the orbit. Case report. Aust Dent J 39, 165-167
4. Bodner L, Tovi F, Bar-Ziv J (1997) Teeth in the maxillary sinus – imaging and management. J Laryngol Otol 111, 820-824
5. Erkmen N, Ölmez S, Önerci M (1988) Supernumerary tooth in the maxillary sinus: case report. Aust dent J 43, 385-386
6. Goh YH (2001) Ectopic eruption of maxillary molar tooth – an unusual cause of recurrent sinusitis. Singapore Med J 42, 80-81
7. el-Sayed Y (1995) Sinonasal teeth. J Otolaryngol 24, 180-183
8. Elonga S, Palaniappan SP (1991) Ectopic tooth in the roof of the maxillary sinus. Ear Nose Throat J 70, 365-366
9. Yeung KH, Lee KH (1996) Intranasal tooth in a patient with a cleft lip and alveolus. Cleft Palate Craniofac J 33, 157-159
10. Altas E, Karasen RM, Yılmaz AB, Aktan B, Kocer I, Erman Z (1997) A case of a large dentigerous cyst containing a canine tooth in the maxillary antrum leading to epiphora. J Laryngol Otol 111, 641-643
11. Edwards JL, Ferguson JW (1976) Ectopic maxillary canine. N Z Dent J 72, 33-34
12. Raghoebar GM, Boering G, Vissink A, Stegenga B (1991) Eruption disturbances of permanent molars: a review. J Oral Pathol Med 20, 159-166
13. Frer AA, Friedman AL, Jarrett WL (1972) Dentigerous cyst involving the maxillary sinus. Oral Surg Oral Med Oral Pathol 34, 378-380
14. Warson RW, Whitehead RG (1972) Dentigerous cyst of the nasal cavity and maxillary sinus: report of case. J Am Dent Assoc 85, 652-653
15. Most DS, Roy EP (1982) A large dentigerous cyst associated with a supernumerary tooth. J Oral Maxillofac Surg 40, 119-120
16. Baykul T, Doğru H, Yasan H, Aksoy MÇ (2006) Clinical impact of ectopic teeth in the maxillary sinus. Auris Nasus Larynx 33, 277-281
17. Shklar G (1984) Diseases of jaws. In Pathologic basis of disease, 3rd ed, Robbins SL, Cotran RS, Kumar

V eds, WB Saunders, Philadelphia, 785-786
18. Saiki T, Yumoto E (1997) Quantification of X-ray opacity of the maxillary sinus in the Water's view. Auris Nasus Larynx 24, 289-297
19. White SC, Pharoah MJ (2000) Oral radiology: principles and interpretation. 4th ed, Mosby, St Louis, 205-217
20. Konen E, Faibel M, Kleinbaum Y, Wolf M, Lusky A, Hoffman C, Eyal A, Tadmor R (2000) The value of the occipitomental (Water's) view in diagnosis of sinusitis: a comparative study with computed tomography. Clin Radiol 55, 856-860
21. Kim DH, Kim JM; Chae SW, Hwang SJ, Lee SH, Lee HM (2003) Endoscopic removal of an intranasal ectopic tooth. Int J Pediatr Otorhinolaryngol 67, 79-81