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An Ectopic Tooth in the Coronoid Process: a rare case report

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A 46-year-old male patient presented to the outpatient department of a tertiary institution with a main complaint of flaring and progressive shifting of his teeth. His medical history revealed that he was healthy with no history of hospitalization, operations or chronic conditions. His social history confirmed that he consumed alcohol occasionally and did not smoke or use any other illicit substances. Extra-oral examination revealed no abnormalities. Upon intra-oral examination, the patient presented with multiple mobile teeth, missing teeth (16, 17, 26, 38 and 48), sinus tracts buccal to his 15 and 25, and periodontal pockets around all of his remaining dentition ranging between 8mm and 15mm.

RADIOGRAPHIC REPORT

The patient's right and left condylar heads and necks were devoid of pathology and anomalies. The right maxillary sinus had pronounced air cells while the left maxillary sinus presented with slight pneumatization. Both the coronoid notches were devoid of anomalies or pathology. The right coronoid process was devoid of anomalies or pathology however, the left coronoid process presented with an incidental finding of an ectopic tooth (38) embedded within the bone. The inferior alveolar canals were devoid of pathology or anomalies, apart from the appearance of a 9x6mm radiopacity apical to the 45 which may be indicative of idiopathic osteosclerosis or a focal cemento-osseous dysplastic lesion. The alveolar bone had various defects throughout the maxillary and mandibular ridges around all remaining dentition with areas of rarefying osteitis apical to several teeth (indicative of advanced periodontal breakdown).

A cone beam computed tomographic (CBCT) image of the left coronoid process was taken, revealing the ectopic 38 embedded within the left coronoid process. A 3-dimensional rendering displayed the perforation of the bone by the crown of the ectopic tooth. (Figure 2 and 3)

The ectopic tooth exhibited a radiolucency that appeared to be attached to the cemento-enamel junction. On the sagittal view of the CBCT, the radiolucency measures +/- 7.76mm above the crown of the tooth. This was indicative of a dentigerous cyst or a dilated follicle. (Figure 4)

The patient was educated about the ectopic tooth as well as the possible implications of having the cystic lesion attached to the coronal area of the tooth. Regardless, the patient only requested treatment for his main complaint, a periodontal related issue. The patient was then referred to the Periodontology and Oral Medicine department for follow-up treatment and further management.

DISCUSSION

This paper presents a case of an ectopic tooth in the coronoid process. There are limited reported cases of this condition to date, thus this case report adds further insight to the already limited presentations of this rare form of displaced dentition.[7]

Ectopic teeth refer to teeth that develop in a location, away from their usual anatomical position. This term can apply to deciduous, permanent, and supernumerary teeth that emerge in various sites, such as the maxillary sinus, orbit, palate, mandibular condyle, and coronoid process. While impacted mandibular third molars are relatively common, with a prevalence of 20–30% due to space constraints or obstructions affecting their eruption, ectopic mandibular third molars are rare, with limited documented cases.[1] Thus, the etiology, clinical manifestations, and appropriate management of ectopic mandibular third molars are not well-established. Ectopic third mandibular molars were found in older individuals, with a predilection for females in contrast to impacted mandibular third molars that are commonly found in the younger population.[1]

The presentation of ectopic teeth may present with a myriad of clinical signs and symptoms (such as pain, swelling, or infection), although many cases are asymptomatic and discovered incidentally through radiographic imaging. The use of radiographic tools (such as the panoramic radiograph and CBCT scans) play a crucial role in diagnosis, helping to determine the appropriate treatment approaches.[1]

The etiology of ectopic dentition has not yet been completely understood, however theories have been put forward to explain these rare conditions. For a rare conditions such as trauma, deviant position of tooth germ, aberrant eruption patterns, or displacement by pathological lesions such as cysts or tumours in the jaw. [2,3]

Wu *et al.* included a classification for ectopic third molars in their comprehensive analysis of ectopic third molars. The images below describe a classification in which 4 lines (a, b, c and d) are created to form four levels (I-IV) as well as a yellow area that should be considered to be a 'normal region' in which any third molar in contact would be regarded as an impaction rather than ectopic.[1]

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Figure 1: Panoramic Radiographic view of the patient

Figure 2: A lateral view of a CBCT reconstruction of the ectopic tooth in the left coronoid process

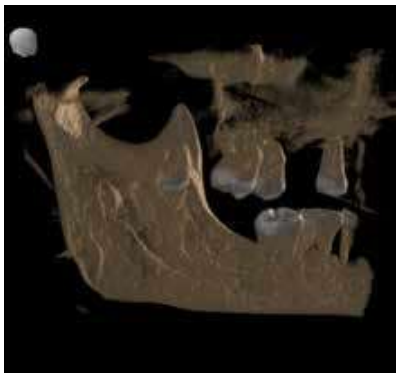

Figure 3: A Medial view of a CBCT reconstruction of the ectopic tooth in the left coronoid process

Figure 4: CBCT lateral view of the left coronoid process

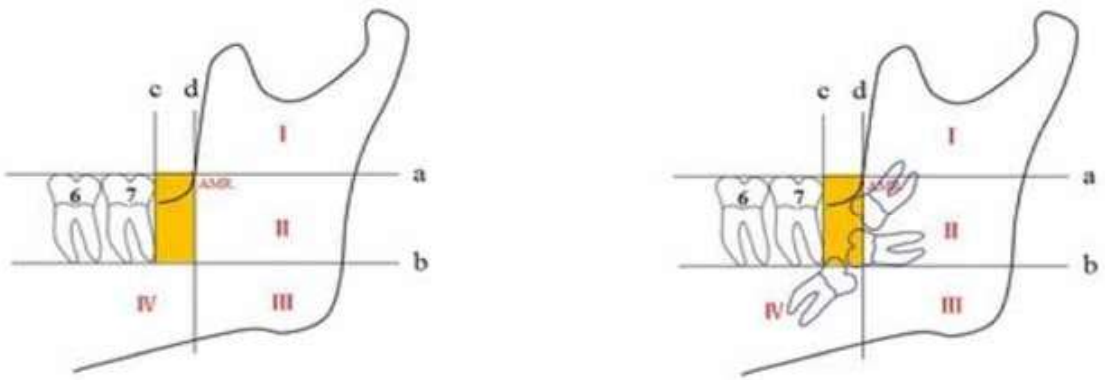

Figure 5: An illustration of the classification used for ectopic teeth adapted from Wu et al. (2017)

Most reported ectopic mandibular third molars were found to be located unilaterally and bilaterally in extreme rare cases. Furthermore, ectopic teeth were found more common in Level I and II followed by level III and IV which align with previous reported cases of ectopic mandibular molars.[1]

Treatment and management of ectopic third molars require meticulous preoperative planning and usually involve surgical removal. Although two-dimensional diagnostic imaging, such as panoramic radiograph and lateral jaw projections, were mainly used, Ghaminia *et al*. suggested in their study that three-dimensional imaging techniques would significantly contribute to appropriate risk assessment and subsequently allow improved surgical planning.[9]

Three-dimensional imaging techniques allow for easier identification and surroundings of the tooth's position, associated pathologies, surrounding neurovascular structures.[1]

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Apaydin & Salahattin highlighted several factors when considering the management of ectopic third molars such as signs, symptoms and associated pathologies. Pathology in the mandibular ramus and condyle areas may lead to several complications (such as condylar resorption, fractures and osteolysis). The choice of surgical approach depends on surgeon preference and tooth position. However, it is widely accepted to utilise a more conservative technique (intra-oral approach to prevent scarring). Intra-oral approaches may incorporate the use of an endoscope to achieve a better field of vision. An extra-oral approach through the submandibular and retromandibular routes were most commonly used when encountering a molar in the condylar or subcondylar region. Apaydin & Salahattin stated that despite common complications such as scarring and damage to surrounding nerve structures, complications were rare.[1]

CONCLUSION

This case report represents an ectopic tooth (38) in the coronoid process, a rare presentation of an ectopic tooth. Furthermore, association of a dilated follicle or dentigerous cyst is represented in the pantomogram and CBCT imaging. This case report highlights the importance off basic radiographic examinations for all patients (within sound clinical justification) as this may reveal certain conditions or anomalies that may otherwise be harmful towards patients' wellbeing.

COMPLIANCE WITH ETHICAL STANDARDS

Funding

This is a case report and no funding was required

Conflict of interest

All authors declare that they have no conflict of interest

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent

There are no patient identifiers in this case report and informed consent was obtained from the patient.

Consent for publication

For this type of study consent for publication is not required.

Availability of data and Materials

All data sets and research materials are available for revision on request.

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