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Case Report

Incidentally detected ectopic maxillary tooth in an asymptomatic adult male: A rare case scenario ☆☆☆

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ABSTRACT

Ectopic teeth, growing in abnormal locations like the maxillary sinus, are rare occurrences, with uncertain causes including trauma, infection, and developmental abnormalities. They often appear in the second or third decade of life, sometimes without symptoms. They are often missed as symptoms can mimic chronic sinusitis but may include sinonasal issues like obstruction and facial pain. Complications ranging from recurrence to potential blindness or carcinoma have been reported. Diagnosis involves radiographic imaging, with CT scans providing precise localization. Following accurate diagnosis, treatment typically involves surgical removal, with endoscopic procedures gaining popularity due to reduced risks. Follow-up for asymptomatic cases can be conducted through periodic radiographs. We report a case of maxillary ectopic tooth as an incidental finding in an asymptomatic patient presenting to the emergency department with head trauma.

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Introduction

An ectopic tooth is a condition where a permanent tooth grows in an abnormal location, often leading to issues like misalignment and premature loss of primary teeth [1]. Typically, teeth erupt normally when the tooth germ is positioned correctly, the eruption pathway is clear, and the dental fol-

licle/periodontal ligament (PDL) is intact. However, if any of these factors are compromised, it can lead to disturbances in tooth eruption. Ectopic teeth occur in approximately 1.5% to 4.3% of the population [1–4]. We report a case of ectopic tooth present along the floor of the right maxillary sinus causing no symptoms in an adult male presenting to the emergency department with head trauma.

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Case presentation

A 47-year-old male patient presented to our emergency department following a fall from his bike. The patient was accompanied by his son who witnessed the accident. His vitals were within normal limits. However, he displayed a mild altered level of consciousness along with signs of confusion following the fall for a brief period according to his son. However, reported GCS at the time of presentation was 15/15. Cranial nerve examination was normal. Tone, power, and reflexes were normal in all limbs. He admitted to being a smoker with 10 pack-year history and occasional drinking habits.

Given the mechanism of injury and his reported symptoms, a non-contrast computed tomography (NCCT) scan of the head and paranasal sinuses was ordered to assess for any intracranial abnormalities. A thin-section NCCT scan of the head and paranasal sinuses (PNS) from vertex to hard palate was performed to evaluate for potential head or facial trauma. Thin reconstructions in bone and soft tissue window were done. The scan demonstrated unremarkable brain parenchyma without acute hemorrhage, contusion, or extra-axial collections. No fractures were identified in the skull or facial bones. The paranasal sinuses were clear except for a well-defined, tooth-like, hyperdense structure measuring approximately 14 × 9 mm (anteroposterior x transverse dimensions) along the floor of the right maxillary sinus, consistent with a tooth within the sinus cavity. Additionally, right concha bullosa and minimal nasal septal deviation to the left were noted (Fig. 1). Upon discovery of this finding, the patient was asked about past history of trauma, recurrent congestion, nasal discharge, loss of smell or other features of sinusitis. However he denied having recurrent sinusitis in the past and was completely asymptomatic.

Patient was admitted for 24 hours for observation according to head injury protocol. Throughout his hospitalization, this patient was closely monitored for any neurological changes with serial neurological examinations and was advised to refrain from activities that could exacerbate his symptoms. He maintained normal vitals and serial neurological examinations were normal throughout his admission.

Patient was advised about endoscopic sinus surgery and conventional Caldwell Luc procedure for the removal of the ectopic tooth. However, the patient refused to undergo surgery. Patient came for follow-up after 1 month and 3 months, and he had no symptoms.

Discussion

The occurrence of a tooth erupting in a location outside of the dental arch, such as the maxillary sinus, is infrequent but not unheard of [5]. The cause of ectopic eruption remains uncertain, with several theories proposed, including trauma, infection, pathological conditions, crowding, and developmental abnormalities [6]. Ectopic teeth typically manifest in the second or third decade of life, with the average age of detection being 28.6 years. There is no gender predisposition

observed, although the age range for reported cases varies significantly, ranging from 4 to 57 years of age [7–9].

Ectopic teeth found in the maxillary sinus can be permanent, deciduous, or supernumerary, and the majority of them originate from dentigerous cysts. Dentigerous cysts form due to the accumulation of fluid between the unerupted tooth and the surrounding dental follicle. These cysts are commonly linked with unerupted teeth and are typically identified during investigations related to failed tooth eruption, missing teeth, or misaligned teeth [10,11]. The process of odontogenesis occurs due to a complex series of interactions between the oral epithelium and the underlying mesenchymal tissue. Disruptions or abnormalities in these tissue interactions during development can result in the formation of ectopic teeth [12].

Many patients with an ectopic tooth present with sinonasal symptoms such as nasal obstruction, unlocalized facial pain, snoring, postnasal drainage, and headaches, which are often misdiagnosed as chronic sinusitis resistant to medical treatment. However, these symptoms may be attributed to an ectopic tooth in the maxillary sinus, leading to obstruction of the ostiomeatal complex [6]. However, as in our case, the presence of an ectopic tooth might not lead to any symptoms whatsoever, and might be an incidental finding. Complications associated with ectopic teeth in the maxillary sinus include recurrence due to incomplete removal, potential blindness, development of ameloblastoma or carcinoma originating from the lining epithelium or remnants of odontogenic epithelium within cyst walls, hemoptysis, acute sinus perforation resulting from displaced premolar teeth, nasolacrimal duct obstruction, as well as the formation of antro-oral and antro-cutaneous fistulas [6,10,11,13,14]. The patient was asymptomatic in our case because of the location of the ectopic tooth along the floor of the right maxillary sinus, with no blockage to the right maxillary ostium, and patent sinus drainage pathway.

Diagnosis is usually facilitated in plain film techniques such as water's view panoramic radiography and plain skull radiography- which are simple and cost-effective methods - by the fact that the ectopic tooth in the maxillary sinus is typically radiopaque. It often appears as a smooth, unilocular lesion, although occasionally a multilocular appearance may be observed. Plain X-rays may demonstrate subtle alterations such as abnormal tooth alignment or displacement [9,15]. However, in some instances, Water's view may prove inadequate for diagnosing ectopic maxillary teeth, potentially leading to misdiagnosis of chronic sinusitis. In such cases, computed tomography (CT) becomes necessary and more valuable than plain film radiographs. Computed tomography (CT) scans typically reveal the exact positioning of the ectopic tooth relative to neighboring structures, highlighting potential complications like the displacement or erosion of adjacent teeth, and occasionally sinus involvement. CT not only provides a definitive diagnosis but also allows for evaluation of associated pathologies, precise localization of the ectopic tooth, and proper treatment planning. Orthopantomography (OPG) offers a panoramic view of the entire maxilla, aiding in the detection of abnormal tooth positioning and potential impacts on surrounding dentition [6].

The standard treatment for an ectopic tooth in the maxillary sinus typically involves surgical removal, commonly

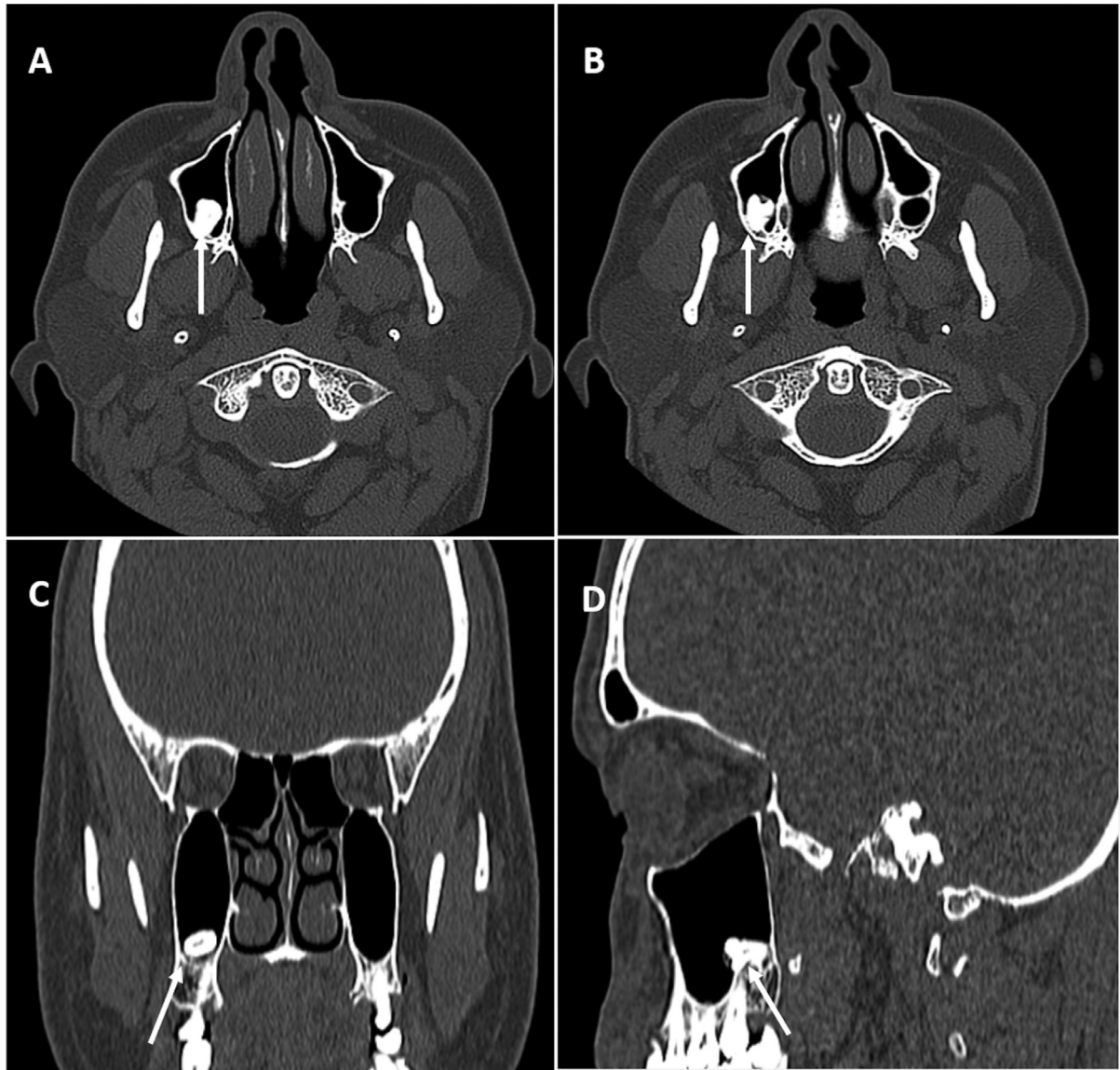


Fig. 1 – Axial (A and B), Coronal (C), and Sagittal (D) sections of non-contrast CT showing ectopic tooth along floor of right maxillary sinus. No hypodense contents seen in sinuses to suggest sinusitis.

performed via the Caldwell-Luc procedure, which accesses the sinus through its lateral, anterior, and inferior walls. However, contemporary approaches increasingly favor endoscopic sinus procedures like middle meatal antrostomy for removing intranasal ectopic teeth that obstruct the nasal cavity, as well as ectopic maxillary third molars causing obstruction of the osteomeatal complex. This trend is due to the advantages of avoiding external mucosal incisions, reducing the risk of oro-antral fistula formation, and lowering the likelihood of recurrent sinusitis. Follow-up assessments of asymptomatic ectopic teeth, which are left in place, can be conducted using panoramic radiographs, as they offer a simple and cost-effective means of monitoring [9,12,15].

Various cases have been reported with ectopic tooth in the maxillary sinus, with varied symptoms including pain, swelling, facial asymmetry, difficulty chewing, sinus issues, and malocclusion with management approaches including

observation, extraction, orthodontic treatment, endoscopic sinus surgery, or combination approaches [15–17]. However the rarity of our case lies in the fact that the presentation was totally asymptomatic.

Conclusion

Despite being a rare diagnosis, an ectopic tooth can sometimes be found in the maxillary sinus. While some patients report having sinonasal symptoms along with recurrent sinusitis, some patients might be completely asymptomatic and such findings might be incidental. Diagnosis can be done with plain film radiographs, and further characterization with surgical planning is possible only with a CT scan. Asymptomatic cases might not require any treatment. However,

surgical management with ESS or Caldwell-Luc surgery is required in symptomatic cases.

Ethical approval

Not required.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Patient consent

Written informed consent was obtained from the patient for publication of this case report. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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