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Idiopathic ankylotic wisdom tooth in the maxillary sinus with surgical removal and buccal fat pad graft closure

Idiopatyczny ankylotyczny ząb mądrości w zatoce szczękowej z chirurgicznym usunięciem i zamknięciem przeszczepem poduszeczki tłuszczowej policzka

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Summary

Aim of the study. *Ectopic teeth in the maxillary sinus are a rare clinical condition, often associated with chronic sinusitis, facial pain or nasal obstruction. This case report describes the successful treatment of a young female patient with an idiopathic ectopic wisdom tooth in the medial wall of the left maxillary sinus, causing refractory chronic sinusitis.*

Case report. *The surgical approach, challenges, and outcomes are discussed, highlighting the application of a buccal fat pad graft for defect closure. A 28-year-old female patient presented with a history of chronic sinusitis, exacerbated during autumn and winter. Imaging scans revealed an ectopic wisdom tooth in the medial wall of the left maxillary sinus. Surgical removal was performed under general anesthesia via an intraoral approach. The tooth was sectioned into pieces for safe extraction, and a buccal fat pad graft was used to close the anterior sinus wall defect. Postoperatively, the patient experienced*

Streszczenie

Cel pracy. *Zęby ektopowe w zatoce szczękowej to rzadkie schorzenie kliniczne, często związane z przewlekłym zapaleniem zatok, bólem twarzy lub niedrożnością nosa. W pracy opisano skuteczne leczenie młodej kobiety z idiopatycznym, ektopowym zębem mądrości w ścianie przyśrodkowej lewej zatoki szczękowej, powodującym oporne na leczenie przewlekłe zapalenie zatok.*

Opis przypadku. *Omówiono podejście chirurgiczne, wyzwania i wyniki leczenia, podkreślając przydatność przeszczepu tkanki tłuszczowej policzka w celu zamknięcia ubytku. Do badania zgłosiła się 28-letnia kobieta z przewlekłym zapaleniem zatok w wywiadzie, zaostrzającym się jesienią i zimą. Badania obrazowe ujawniły ektopowy ząb mądrości w ścianie przyśrodkowej lewej zatoki szczękowej. Chirurgiczne usunięcie zęba przeprowadzono w znieczuleniu ogólnym, z dostępu wewnątrzustnego. Ząb pocięto na fragmenty w celu bezpiecznej ekstrakcji, a do zamknięcia ubytku w ścianie przedniej zatoki zasto-*

complete resolution of symptoms, with no complications.

Conclusion. *This case highlights the importance of considering ectopic teeth in the differential diagnosis of refractory chronic sinusitis. The intraoral approach, tooth sectioning and buccal fat pad graft closure are effective strategies for managing this rare condition. Timely diagnosis, careful surgical planning and attention to potential complications are essential for achieving favourable outcomes.*

sowano przeszczep tkanki tłuszczowej policzka. Pozabiegowo, stwierdzono całkowite ustąpienie objawów, bez powikłań.

Wnioski. *Przypadek podkreśla wagę uwzględnienia obecności zębów ektopowych w diagnostyce różnicowej opornego na leczenie przewlekłego zapalenia zatok przynosowych. Dojście wewnątrzustne, rozcięcie zęba i zamknięcie przeszczepem poduszeczki tłuszczowej policzka to skuteczne strategie leczenia tego rzadkiego schorzenia. Wczesna diagnoza, staranne planowanie zabiegu chirurgicznego i zwrócenie uwagi na potencjalne powikłania są kluczowe dla osiągnięcia pomyślnych wyników.*

Introduction

Ectopic teeth in the maxillary sinus are a rare clinical entity.[1] It can be associated with symptoms such as chronic sinusitis, facial pain or nasal obstruction.[2] The aetiology of such ectopic teeth remains unclear, though trauma, developmental anomalies or idiopathic causes have been proposed.[3-5] This case report describes a young female patient with an idiopathic wisdom tooth located in the medial wall of the left maxillary sinus, causing chronic sinusitis.

Case Report

A 28-year-old female patient presented with a history of chronic sinusitis, particularly exacerbated during the autumn and winter seasons. The patient reported persistent left-sided facial pain, nasal congestion and purulent nasal discharge, with no history of previous trauma. Clinical examination revealed no signs of dental infection or caries. However, a panoramic radiograph and cone-beam computed tomography (CBCT) identified an ectopic wisdom tooth located in the medial wall of the left maxillary sinus (Figure 1). The patient was admitted to Velayat Hospital in Mashhad, Iran, and received the necessary medical treatment there. This study was conducted in accordance with ethical standards and approved by the Bioethics Committee of Mashhad University of Medical Sciences (Ethics Code: IR.MUMS.REC.1404.045).

No history of trauma or prior dental procedures was reported, suggesting an idiopathic etiology.

The patient was scheduled for surgical removal under general anesthesia. An intraoral incision (Caldwell-Luc approach) was chosen, with access to the maxillary sinus achieved through the anterior wall (Figure 2).

The tooth was carefully sectioned into smaller pieces to facilitate removal without damaging surrounding structures.

Due to their ankylotic condition, the roots were retained in the region to avoid extreme bone destruction. Following extraction, a buccal fat pad graft was harvested and used to close the anterior sinus wall defect, ensuring proper healing and reducing the risk of postoperative complications (Figure 4).

The postoperative course was uneventful, with the patient reporting complete resolution of her chronic sinusitis symptoms.

Follow-up imaging confirmed the absence of the ectopic tooth and proper healing of the surgical site (Figure 5).

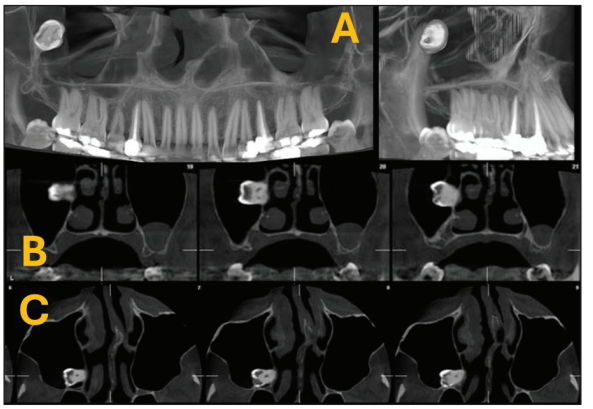

Fig. 1. CBCT revealing the impacted ankylosed wisdom tooth in the lateral wall of the maxillary sinus (A). Coronal (B) and axial (C) views.

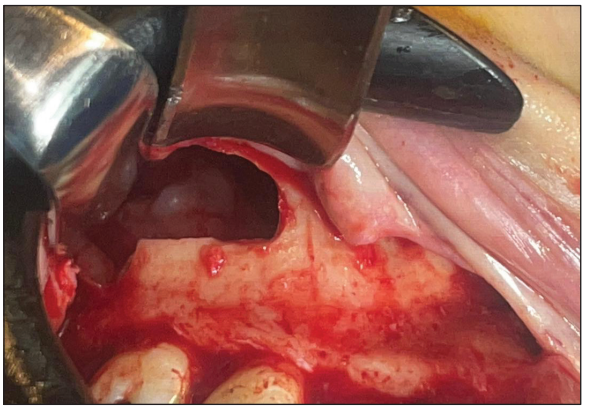

Fig. 2. Caldwell Luc approach to access the maxillary sinus.

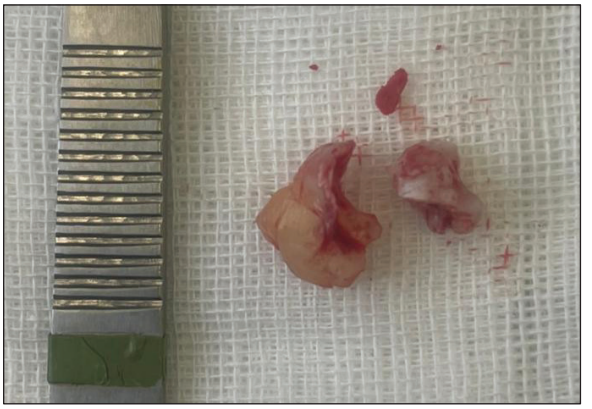

Fig. 3. Sectioned removed wisdom tooth.

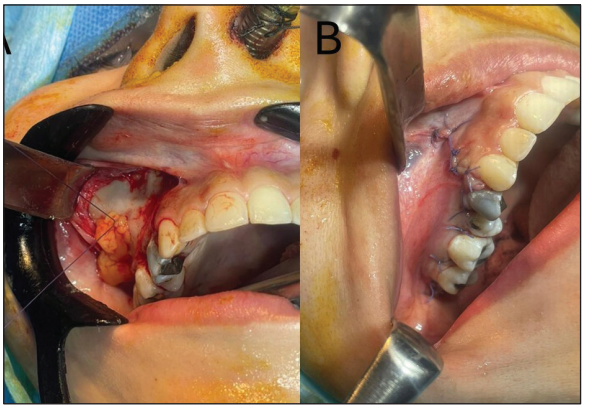

Fig. 4. Buccal fat pad used to close the surgical site (A) and final suture (B).

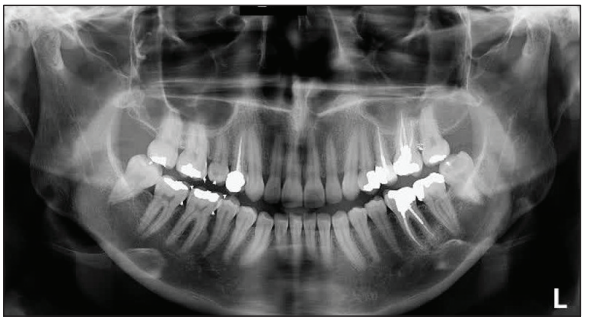

Fig. 5. Postoperative control panoramic X-ray taken after eight months.

Discussion

The presence of an ectopic tooth in the maxillary sinus is a rare but clinically significant condition that poses unique diagnostic and therapeutic challenges.2 In this case, the idiopathic nature of the ectopic wisdom tooth in the medial wall of the left maxillary sinus underscores the importance of considering such anomalies in patients with refractory chronic sinusitis, particularly when no other obvious causes are identified. Approximately 10% to 20% of sinusitis have odontogenic etiology.6,7 The patient's symptoms, which were notably exacerbated during the autumn and winter seasons, likely resulted from the tooth acting as a nidus for infection or obstructing the sinus drainage pathway. The resolution of her symptoms following surgical removal further supports the role the ectopic tooth plays as the primary aetiological factor.

Ectopic teeth in the maxilla are generally associated with odontogenic cysts[3,5,8-10] or

tumours,[1] which is not the case in this report. Another typical aetiology is iatrogenic, during third molar removal.[11] The patient did not present any associated lesions. To the best of the authors' knowledge based on a review of the literature, this is the first reported case of an ankylosed wisdom tooth located in the medial wall of the maxillary sinus.

The surgical management of ectopic teeth in the maxillary sinus is inherently complex due to the anatomical constraints of the region. The maxillary sinus is surrounded by critical structures, including the infraorbital nerve, the orbital floor and dental roots, which must be carefully preserved during surgery.[8] In this case, the tooth's location in the medial wall of the sinus required precise navigation to avoid injury to the lateral nasal wall and sinus mucosa. The intraoral approach, while minimally invasive, presents limitations in terms of visibility and access, particularly when dealing with deeply embedded teeth.[2,12] The use of advanced imaging techniques, such as cone-beam computed tomography (CBCT), was instrumental in preoperative planning, enabling accurate localization of the tooth and assessment of its relationship to adjacent structures.[2,4,7,13] When available, the use of video-assistance or an endoscope is considered very helpful by some authors.[2,6,9,14]

Tooth sectioning was necessary in this case to facilitate the safe removal without damaging the surrounding tissues. This technique is particularly useful when the tooth is large, impacted, or embedded in the sinus wall. However, it requires careful execution to avoid fragmentation or displacement of tooth remnants, which could lead to persistent symptoms or complications. The use of piezosurgery, which enables precise bone cutting with minimal soft tissue damage, could be considered in similar cases to further reduce the risk of intraoperative complications.[12,14]

The use of a buccal fat pad graft for closure of the anterior sinus wall defect is a well-established technique in maxillofacial surgery. The buccal fat pad is highly vascularized, making it an ideal graft material for promoting rapid healing and reducing the risk of oroantral fistula formation.[15] In this case, the graft was successfully used to close the defect created during surgical access, ensuring proper healing and minimizing the risk of postoperative complications. The use of membranes to anterior sinus wall closure is very beneficial to further promote healing.[16] However, the success of the graft depends on several factors, including proper harvesting, handling and placement. Care must be taken to avoid overstretching or traumatizing the graft, as this can compromise its vascularity and integration.

Potential complications associated with buccal fat pad grafts include graft displacement, infection and inadequate healing.[11] In this case, the patient's uneventful postoperative course and complete resolution of symptoms suggest that the graft was effectively integrated. Prophylactic antibiotics and meticulous postoperative care likely contributed to this favourable outcome. Long-term follow-up is essential to look for any signs of graft failure or recurrence of symptoms.

Despite careful planning and execution, several intraoperative and postoperative intercurrences can arise during the management of ectopic teeth in the maxillary sinus. Intraoperative bleeding, though typically manageable, can obscure the surgical field and complicate tooth extraction. The use of local vasoconstrictors and meticulous hemostasis can help mitigate this risk. Injury to the infraorbital nerve or orbital floor, though rare, can result in sensory deficits or orbital complications. Preoperative imaging and careful dissection are critical to avoiding such injuries.[2,4,13]

Postoperative complications, such as infection, closure failure, or recurrence of

sinusitis, can compromise outcomes. Infection, though uncommon, can be prevented through the use of prophylactic antibiotics and strict adherence to aseptic techniques.[16] Closure failure, while rare, may occur due to inadequate vascular supply or improper fixation. Ensuring proper buccal fat pad placement and avoiding excessive tension during closure are essential to its success.[15] Recurrence of sinusitis is another potential complication, particularly if residual tooth fragments or infected sinus mucosa are left behind. Thorough irrigation of the sinus cavity and complete removal of the tooth are critical to preventing recurrence.

This case adds to the limited body of literature on idiopathic ectopic teeth in the maxillary sinus and highlights the importance of considering this condition in the differential diagnosis of refractory chronic sinusitis. Comparisons with similar cases in the literature reveal consistent themes, including the predominance of chronic sinusitis as the primary symptom and the effectiveness of surgical removal in resolving symptoms. However, the rarity of this condition means that standardized guidelines for management are lacking.

Conclusion

The management of an idiopathic ectopic wisdom tooth in the maxillary sinus requires careful consideration of anatomical challenges, surgical techniques and potential complications. In this case, the intraoral approach, combined with tooth sectioning and buccal fat pad grafting, proved to be an effective strategy for addressing the patient's symptoms and preventing postoperative complications.

References

1. *James O, Suleiman IK, Ahmad MM, Olasoji HO:* Management of rare ectopic teeth eruption: case series. J Korean Assoc Oral Maxillofac Surg 2023; 49(2): 86-90.
2. *Zubiate-Illarramendi I, Monsalve F, Cariati P, Camacho-Sanchez-Mora C, García-Medina B:* Endoscopically assisted removal of ectopic teeth in the floor of the orbit. Case report and latest literature review. J Clin Exp Dent 2024; 16(5): e639-42.
3. *Arici M, Bayar T, Tas-Ozyurtseven B, Gungormus M:* Bilateral ectopic third molars in maxillary sinus associated with dentigerous cyst identified with ophthalmic, nasal and maxillary complication: A rare case report. J Oral Maxillofac Pathol 2022; 26(Suppl 1): S84-87.
4. *Almomen A, Alkhudair B, Alkhatib A, Alazzah G, Ali Z, Al Yaeesh I,* et al.: Ectopic maxillary tooth as a cause of recurrent maxillary sinusitis: A case report and review of the literature. J Surg Cse Rep 2020; 2020(9).
5. *Sheethal HS, Rao K, H S U, Chauhan K:* Odontogenic keratocyst arising in the maxillary sinus: A rare case report. J Oral Maxillofac Pathol 2019; 23(Suppl 1): 74-77.
6. *Ibrahim MA, El Orra S, Ramadan N, Lakis A, Dabbous M:* Five Ectopic Teeth in the Maxillary Sinus: A Rare Cause of Chronic Sinusitis. Cureus 2022; 14(2): e22204.
7. *Jendi SK. Ectopic Third Molar:* A Hidden Cause For Maxillary Sinusitis-A Rare Case Report. Indian J Otolaryngol Head Neck Surg 2019; 71(Suppl 1): 831-834.
8. *Zou B, Ding SX, Ru L, An FX, Li YG:* Odontogenic Keratocyst in Maxillary Sinus with Ectopic Third Molar: A Case Report. Am J Case Rep 2024; 25.
9. *Abd El-Fattah AM, Khafagy YW, El-Sisi H, Elkahwagi M, Ebada HA:* Ectopic maxillary sinus third molar with dentigerous cyst in 11 patients: Tailored endoscopic-assisted approaches for a successful outcome. Clin Otolaryngol 2021; 46(5): 1095-1099.
10. *Newaskar V, Verma M, Rajmohan S, Dashore D:* KCOT Occurring in Bilateral Maxillary Sinus in Non-Syndromic Patient. J Clin Diagn

Res 2016; 10(8): ZD16-18.
11. *Mavriqi L, Lorusso F, Tartaglia G, Inchingolo F, Scarano A:* Transinusal Pathway Removal of an Impacted Third Molar with an Unusual Approach: A Case Report and a Systematic Review of the Literature. Antibiotics 2022; 11(5).
12. *Kumar A, Srivastava RK, Saxena A, Khanna R, Ali I:* Removal of Infected Maxillary Third Molar from the Infra-temporal Fossa by Caldwell Luc Procedure - Rare Case Report with Literature Review. J Clin Diagn Res 2016; 10(12): ZD01–3.
13. *Al-Ani RM, Aldelaimi TN, Khalil AA:* Ectopic Upper Third Molar in Maxillary Sinus: A Case Report and Literature Review. Indian J Otolaryngol Head Neck Surg 2022; 74(Suppl 3): 4718-4721.
14. *Berberi A, Aoun G, Hjeij B, AboulHosn M, Al Assaad H, Azar E:* Bilateral ectopic third molar in the maxillary sinuses associated with dentigerous cyst: a case report. Med Pharm Rep 2023; 96(2): 221-224.
15. *Debortoli C, Afota F, Lerhe B, d' Andrea G, Latreche S, Rios O,* et al.: Buccal fat pad lift: A technical note. J Stomatol Oral Maxillofac Surg 2024.
16. *Çelik OE, Ceylan ME:* Sinus Augmentation Using Caldwell-Luc Technique in the Existence of Ectopic Tooth in the Maxillary Sinus: A Multidisciplinary Approach. J Craniofac Surg 2022; 33(7): E758-761.

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