

## Migrating Foreign Body in the Sphenoid Sinus

### Sfenoid Sinüste Göç Eden Yabancı Cisim

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#### ABSTRACT

Foreign body in paranasal sinus is relatively uncommon in adults unlike in pediatrics cases. Majority of foreign bodies in the paranasal sinus are reported to be identified from maxillary sinus (75%), followed by frontal sinuses (18%), finally sphenoid and ethmoidal sinuses. A 34-year-old gentleman with 1-year-history of accidental dislodged screw during a dental surgery presented with unilateral nasal symptoms. To our surprise, computed tomography paranasal sinus revealed opacity in the right sphenoid sinus when the initial screw was missing from the left side. Albeit a rare entity, awareness amongst physician on migration of foreign body is crucial as it may ascribe to devastating consequences.

**Key Words:** Paranasal sinuses, foreign body, screw retained

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#### ÖZET

Paranasal sinüsteki yabancı cisim, pediatri vakalarından farklı olarak yetişkinlerde nispeten nadirdir. Paranasal sinüsteki yabancı cisimlerin çoğunun maksiller sinüsten (% 75) ve ardından frontal sinüslerden (% 18), son olarak sfenoid ve etmoidal sinüslerden tanımlandığı bildirilmektedir. Bir diş cerrahisi sırasında 1 yaşında kazara yerinden çıkmış vida öyküsü olan 34 yaşında bir beyefendi, tek taraflı burun semptomları ile başvurdu. Bizim için sürpriz olan bilgisayarlı tomografi paranasal sinüs, ilk vida sol taraftan eksik olduğunda sağ sfenoid sinüste opasite gösterdi. Nadir bir varlık olsa da, hekimin yabancı cismin göçü konusundaki farkındalığı, yıkıcı sonuçlara yol açabileceğinden çok önemlidir.

**Anahtar Sözcükler:** Paranasal sinüsler, yabancı cisim, tutulmuş vida

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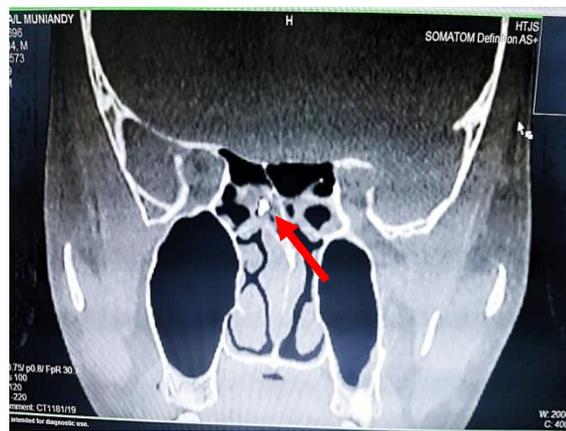
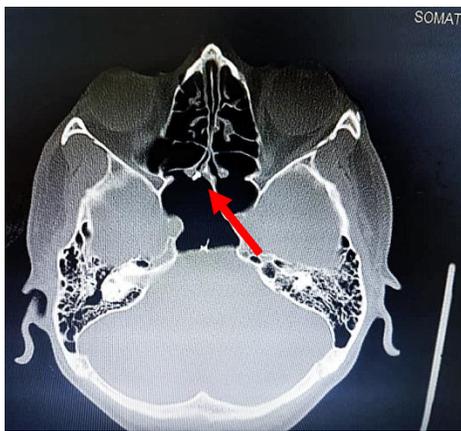
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**INTRODUCTION**

Foreign body in paranasal sinus is rare especially amongst adults. Its occurrence within the paranasal sinuses may remain unrecognized for a significant duration of time as compared to other region of the body(1). Majority of foreign bodies are reported to be identified from maxillary sinus (75%) followed by frontal sinus (18%) as compared to sphenoid and ethmoidal sinus(2). It is noteworthy that foreign body easily gets displaced into the maxillary sinus due to its low density of bone along with its anatomical condition, resorption of bone, intranasal pressure changes, severe atrophy and occasionally due to iatrogenic causes(3). Iatrogenic cause (60%) is the most common cause followed by accidental injury (25%)(4). Iatrogenic causes are particularly due to dental, ophthalmic and otorhinolaryngologic procedures. Long-term retention of foreign body in paranasal sinus may lead to significant complications such as inflammatory reactions, sinusitis, fungal infections and antrolith formation. However, migration of the retained foreign body within the paranasal sinus often leads to devastating complication as vital structures such as the orbit and brain are in close proximity. Sinusitis may occur following interruption of mucociliary clearance or tissue reaction(5). Rigid endoscopy and computed tomography scan should be done promptly as early surgical intervention to remove foreign body is mandatory to prevent fatal consequences(6).

**CASE REPORT**

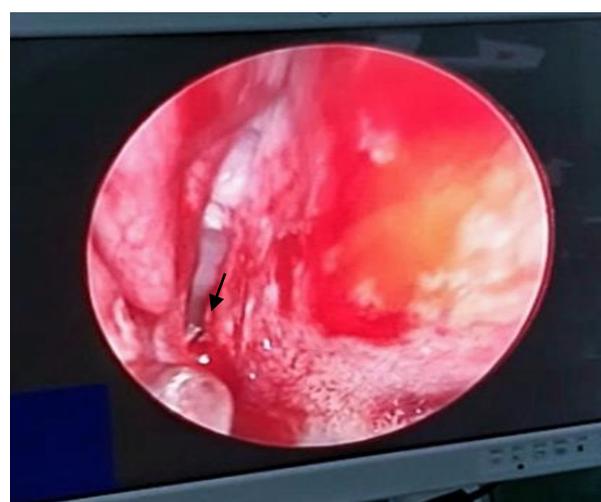
A previously healthy 34-year-old gentleman was referred for unilateral rhinorrhea for the past few months. He was involved in a motor vehicle accident 1 year prior and sustained left Le Fort 1 fracture. Patient underwent open reduction internal fixation (ORIF) procedure by the dental team. Intraoperatively, one tiny screw was dislodged during manipulation from left maxillary region. Examination under anesthesia (EUA) was done along with intraoperative intensive imaging guidance. However, the screw was noted to be missing. Post-operatively, patient was well with no nasal symptoms. 1-year later, patient started to develop unilateral frequent nasal itchiness, sneezing, and rhinorrhea and was subsequently referred to the ENT team. Upon presentation, he was noted to have right nasal symptoms with no foul-smelling nasal discharge or facial pain. Rigid nasoscopy and Water’s view radiography showed no foreign body. Computed tomography paranasal sinus demonstrated hyperdensity within the right anterior sphenoid wall (Figure 1).



**Figure 1 (a)** Coronal cut of CT Paranasal sinus **(b)** Axial cut of CT Paranasal sinus. Both show foreign body at right sphenoid sinus

Subsequently, patient was counselled and he underwent examination under anesthesia of nose. Intraoperatively, transnasal rigid endoscopy revealed foreign body over right anterior sphenoid wall (Figure 2).

Sphenoidotomy was done and foreign body was removed in total which appeared to be a screw (Figure 3). No mucopus or bony erosion was seen. Patient was well post-operatively and subsequent follow-up revealed no active complaints.



**(A)**

**(B)**

**Figure 2(a) and (b).** Screw at sphenoid sinus intraoperatively



**Figure 3.** Screw measured about 5mm length.

## DISCUSSION

Foreign body in the sphenoid sinus is very rare as compared to other sinuses. The exact mechanism of foreign body causing sinusitis has still remained unclear, however, theoretically mucocilliary insufficiency and secondary infection is mainly due to chronic physical and chemical irritation of the mucosa by foreign body(7). Various foreign bodies including plastics, glass, wood, pencils, bullets, and wood were reported to be dislodged previously within the paranasal sinus(8).

Patients with retained foreign body in paranasal sinus customarily presents with nasal complaints which may vary from mild rhinorrhea mimicking rhinitis, throbbing facial pain and facial swelling. Patients with long-term retention of paranasal sinus foreign body may present with mucopurulent rhinorrhea, nasal obstruction, cacosmia, facial pain and even cerebrospinal fluid rhinorrhea(6). Unilateral nasal symptoms should always raise suspicion of foreign body despite adult patients as in our patient. In our case, history of dislodged screw 1 year ago during open reduction and internal fixation lead to retained foreign body suspicion.

Patients presenting with retained foreign body suspicion should be subjected to thorough examinations and adequate investigations ought to be performed immediately. Endoscopic examination should be done upon initial presentation evaluate nasal mucosal as well as to identify presence of sinusitis. Imaging including paranasal sinus radiograph, computed tomography should be done to diagnose and locate the foreign body accurately. Magnetic resonance imaging would be imaging of choice provided the foreign body is proven to be non-metallic such as wood, plastic or glass-based objects. Imaging would ease surgeon to evaluate the size, type, and exact location of foreign body as well as to decide surgical approach(4). Caldwell-Luc, transantral, sublabial or transnasal endoscopic approach are amongst the methods of approach to remove foreign body in paranasal sinus(9). Endoscopic sinus surgery is the preferred method of approach as it is less invasive and retains the integrity of the sinus, provides better visibility to remove smaller foreign bodies and prevent secondary infection(5).

Migration of retained foreign body can lead to serious implications if overlooked. This includes mucocele and pyomucocele, ulcers, facial neuralgia, meningoencephalitis and even cerebrospinal fluid fistula(6).

This case is interesting and extraordinary for a few reasons; the foreign body itself, a screw which is displaced during dental surgical procedure has migrated silently from left maxillary sinus to right sphenoid sinuses over the past 1 year without any serious complications.

## CONCLUSION

This case emphasizes that it is important to investigate foreign body paranasal sinus properly and retrieve it immediately even if the patient is asymptomatic. This is because early appropriate intervention is crucial to prevent chronic infections and other deadly complications. Through clinical and radiological findings is warranted as this may aid in diagnosis and surgical removal of the foreign body. Minimally invasive endoscopic sinus surgery ought to be considered as the primary mode of foreign body removal.

## Conflict of interest

No conflict of interest was declared by the authors.

## REFERENCES

1. Kelesidiset al, Osman S, Dinerman H. An Unusual Foreign body as cause of chronic sinusitis:a case report. *J Med Case Rep.* 2010; 4:157.
2. R.V.Nataraj, Jagade M, Chavan R. An unusual maxillary sinus foreign body and its endoscopic assisted removal. *Int J Otolaryngol Head Neck Surg.* 2015;4:53466.
3. Shao L, Qin X, Ma Y. Removal of maxillary sinus metallic foreign body like a hand sewing needle by magnetic iron. *Int J Clin Ped Dent.* 2014;7:61-4.
4. Agarwal S, Kumar S. Foreign bodies in maxillary sinus: Causes and management. *Astrocyte.* 2014;1:89-92.
5. Spiros T, Karabouta-Voulagaropoulou I, Vougaropoulou M, et al. A traumatic removal of an asymptomatic migrated dental implant into the Maxillary sinus: A case report. *J Oral Implant.* 2010;38:189-93.
6. Rodolfo N, Cabrera N, Martelo G, et al. Unusual Sinonasal foreign body: Presentation of 3 cases. *Acta Otorringol Esp.* 2014;65:109-13.
7. Sahin YF, Mudderis T, Bercin S, et al. Chronic maxillary sinusitis associated with an unusual foreign body: A case report. *Case Rep Otolaryngol.* 2012; 903714.
8. Sang WK, Kyoung RC. A Case of an tubular foreign body in the Paranasal sinus after penetrating orbital injury. *J Med Cases.* 2014;5:45-8.
9. Sohn DS, Jung HS, Kim KH, et al. Removal of displaced foreign body from the maxillary sinus using replaceable bony windows and saline irrigation, followed by suctioning of the foreign body. *Implant Dent.* 2011;20:112-7.