

Case Report

Missed foreign body-buccal space

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ABSTRACT

Foreign bodies may get embedded in the maxillofacial region as a result of penetrating trauma in the maxillofacial region. The ensuing complications and sequelae of these occult foreign bodies can pose a diagnostic challenge to an oral and maxillofacial surgeon. Diagnosis of these foreign bodies can be achieved by the use of plain radiographs, ultrasonography, computed tomographic scans, and magnetic resonance imaging. Once diagnosed and located, these foreign bodies should be removed for definitive management. I report a case of a persistent sinus of the cheek caused by an occult wood splinter and discuss its diagnosis and clinical management

Keywords: Foreign body, Infection, Maxillofacial trauma

INTRODUCTION

The presence of foreign body should be considered in penetrating injuries of the head and neck region. Such wounds harbouring foreign bodies may appear to be deceptively minor and may not be accompanied by any major symptoms. But if these foreign bodies are left undetected in the tissues they can result in serious sequelae days, months or even years after initial trauma.¹ The presence of foreign substance can result in acute or chronic inflammation causing persistent symptoms. One third of all cases of foreign body contamination or impaction are missed during initial examination.² At times foreign bodies are diagnosed accidentally on radiographic examination due to unexplained persistent pain or swelling.^{3,4}

This unusual case of persistent sinus of the cheek caused by a retained wood splinter is being reported to highlight the difficulties in detection of foreign bodies and to discuss its clinical management. The usefulness of various imaging modalities is being discussed with emphasis on the importance of performing ultrasound examinations on patients with injuries caused by wood splinters.

CASE REPORT

A 5-year-old boy presented in the Dental OPD presenting with a persistent sinus in the right buccal mucosa for the last 2 and a half months. He had a history of accidental fall 3 months ago, resulting in a sharp wood splinter piercing the right buccal cavity. A piece of the splinter fractured and remained embedded in the soft tissues. He visited two general dental practitioners who attempted removal of the foreign body but were unable to detect any foreign body. He was prescribed antibiotics, analgesics and a tetanus toxoid injection without performing any other investigations. Three weeks after this treatment, a small painful diffuse swelling with a draining sinus appeared in the right buccal mucosa.

A month later the patient presented to our OPD with a draining sinus in the right buccal mucosa with a 2 cm fibrotic thickening surrounding the sinus openings. Overlying skin too was found adherent to the fibrous tissue. There was mild tenderness on palpation. The patient was otherwise healthy with normal vital signs. There were no dental or periodontal tissues abnormality. Based on the history and clinical presentation a differential diagnosis of a sinus related to a retained

foreign body or persisting infection were considered and radiographs were ordered.



Figure 1: Depression over right cheek region due to fibrosis.



Figure 2: Edematous tissue surrounding sinus opening.



Figure 3: Extracted splinters (wood).



Figure 4: Follow up six months.

Being a soft tissue injury with history of possible retained foreign body ultrasound was done which revealed a hyper echoic region of 1.8 cm surrounded by a hypo echoic zone in the cheek suggestive of a retained foreign body. Surgical exploration of the draining solitary sinus was performed under dissociate anaesthesia. Mucosa surrounding the sinus was excised. A fibrous capsule was detected which on exploration yielded a 1.5 cm wood splinter. As fibrosis was still persisting the tissue was further probed and revealed another splinter of 1 cm length. The splinter was removed and the wound cleaned, debrided and sutured. Post-operatively recovery was uneventful.

DISCUSSION

Foreign bodies if left undiagnosed in the tissues can result in serious complications within few days, months, or even years after the initial trauma.¹ Any non-healing wound resulting from penetrating injury that shows continuous purulent discharge, pain or a chronic draining sinus, the presence of a retained foreign body should be suspected. Wood being soft, friable and radiolucent evades easy detection. Porosity of wood provides a good medium for microbial growth especially clostridium tetani.^{1,5} Therefore, an early detection and removal of wooden foreign particles from soft tissues is essential.

Plain radiographs, computed tomographic (CT) scan, ultrasonography, and magnetic resonance imaging (MRI) are helpful diagnostic tools to confirm the presence, location, size, and shape of foreign body.³ Embedded foreign bodies induce a reparative granuloma formation, which surrounds them thus making their detection by the naked eye difficult during surgery. This emphasises the need for performing ultrasound as a preferred imaging modality for detection of wooden foreign bodies in soft tissues.⁶

Plain radiographs have detection success rate of 69-90% for metallic foreign bodies and 71-77% for glass cases; however, little or no information is available regarding the identification of organic material such as wood (0-

15%).⁴ X-rays detect materials depending on the materials ability to absorb the rays, their density and the difference in density between them and the tissue in which they are embedded. Since wood has a low density, plain radiographs are unable to detect them in soft tissues.⁷

Computed tomography is the imaging modality of choice for detection of the majority of foreign bodies.^{1,5} But in the detection of wooden foreign particles, the role of a CT scan is limited. Wood being organic has low density almost like that of soft tissues as such it can be mistaken for a gas bubble or air in the anatomical sinuses.^{1,8,9,10} Moreover, CT scan patterns of wood are variable. The image pattern can mimic a gas bubble or a bone fragment.^{1,9} Variability in appearance of the wood on a CT scan not only depends on the varieties of wood but also depends on the freshness and dryness of wooden splinters. Dry wood is porous while fresh wood has capillaries, which cause differences in their densities.⁹ It is believed that after 48 hours in an aqueous environment, the wooden foreign body absorbs water and its density increases.⁸ Therefore, dry wood can be detected after some time as it absorbs water from the surrounding tissues.^{1,8} Hence a delayed CT scan detects the wooden splinter better than in acute cases.

MRI gives better visualisation of soft tissues as it is based on the behaviour of protons in the magnetic field; materials with water content can be more easily detected than those without it. Thus, MRI cannot detect dry wooden splinters while CT scan is demonstrated to be superior to MRI in the detection of wooden foreign bodies.^{1,8,10}

Literature too suggests that ultrasound is a superior, simple, less expensive and better imaging modality than CT scan and MRI for detecting foreign bodies in soft tissues.^{7,11,12} It is sensitive and specific in detecting wooden foreign bodies.¹² Wood on ultrasound appears hyper echogenic with no reverberations or acoustic shadowing.⁴ Thus, the awareness of the usefulness of ultrasounds in detection of foreign bodies in soft tissues is emphasized.

CONCLUSION

Ultrasound should be performed on all patients with suspected or known wood foreign bodies for early detection and prompt treatment.

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REFERENCES

1. Vanderwal KGH, Bourkes RJ. Intra-orbital bamboo foreign body in a chronic stage-A case report. *Int J Oral Maxillofac Surg.* 2000;29:4289.
2. Pulkit K, Vikas D, Francis A, Neha H. Impacted Foreign Bodies in the Maxillofacial Region-A Series of Three. *J Cutan Aesthet Surg.* 2018;11(4):237-40.
3. Altan A, Damlar I, Kilic S, Turgay B. Unusual foreign bodies in the oral cavity: A report of three cases. *Sch J Dent Sci.* 2015;2:126-9.
4. De Santos TS, Melo AR, De Moraes HH, Avelar RL, Becker OE, Haas OL Jr. Impacted foreign bodies in the maxillofacial region-diagnosis and treatment. *J Craniofac Surg.* 2011;22:1404-8.
5. Akuner M, Ajay A, Top H. A case of self-inflicted intra-orbital injury: Wooden foreign body introduced into the ethmoidal sinus. *Ann Plast Surg.* 1998;41:422-4.
6. Auluck A, Behanan AG, Pai K, Shetty C. Recurrent sinus of the cheek due to a retained foreign body: report of an unusual case. *Bri Dental J.* 2005;198:337-9.
7. Graham DD. Ultrasound in the emergency department: Detection of wooden foreign bodies in soft tissues. *J Emerg Med* 2002;22:75-9.
8. Hansen JE, Gudeman SK, Holgate RC, Saunders RA. Penetrating intracranial wood wounds: clinical limitations of computed tomography. *J Neurosurg.* 1988;68:752-6.
9. Pythinen J, Ilkko G, Ladhe S. Wooden foreign bodies in CT. Case reports and experimental studies. *Acta Radiol.* 1995;36:148-51.
10. Krimmel M, Cornelius CP, Stojadinovic S, Hoffmann J, Reinerts J. Wooden foreign bodies in facial injury: A radiological pitfall. *Int J Oral Maxillofac Surg.* 2001;30:445-7.
11. Ng SY, Songra AK, Bradley PF. A new approach using intra-operative ultrasound imaging for the localization and removal of multiple foreign bodies in the neck. *Int J Oral Maxillofac Surg.* 2003;32:433-6.
12. Jacobson JA, Powell A, Craig JG, Bouffard JA, Van Hobsbeeck MT. Wooden foreign bodies in soft tissue-detection by US. *Radiology.* 1998;206:45-8.

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