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Foreign Body in the Left Sub-Masseteric Region Masquerading as a Chronic Parotid Fistula: A Rare and Intriguing Case Report

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Abstract: Oral and maxillofacial surgeons often encounter foreign bodies. They may present a diagnostic challenge, due to many factors such as the size of the object, the difficult access, masked by structures and a close anatomical relationship of the foreign body to vital structures. We report a rare case of a chronic parotid fistula caused by an occult wooden foreign body, emphasizing the importance of thorough history and clinical examination in diagnosis.

Keywords: *Foreign Body, Surgical Exploration, Superficial Parotidectomy.*

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I. INTRODUCTION

The presence of foreign bodies deeply embedded in facial tissues poses a significant challenge for maxillofacial surgeons. Studies indicate that nearly one-third of foreign bodies are overlooked during initial assessments. Following facial trauma, foreign bodies—including grit particles, wooden splinters, thorns, pebbles, and glass fragments—may become embedded within deeper soft tissues.

These retained objects often evade initial detection and may only be identified incidentally during radiographic evaluation or upon the subsequent development of clinical manifestations such as localized pain, purulent discharge, or sinus tract formation. Road traffic accidents are a leading cause of such injuries in the maxillofacial region, yet many cases go unrecognised initially. [1]

This case report describes a delayed diagnosis of a deeply embedded foreign body in the facial region following maxillofacial trauma. Despite initial evaluation, the foreign body was not detected during routine history-taking and clinical examination, and the absence of overt suspicion precluded further radiographic investigation at that stage. However, persistent signs and symptoms of a parotid fistula prompted advanced imaging, including CT and MRI, which ultimately revealed a radiopaque foreign body near the left ramus, lodged beneath the masseter muscle. This highlights the diagnostic challenges posed by occult foreign bodies and underscores the importance of accurate, meticulous history elicitation and maintaining a high index of suspicion in trauma cases, even when initial findings appear unremarkable.

Surgical removal was the treatment of choice for resolution. This case highlights the diagnostic challenges posed by deeply embedded foreign bodies and emphasizes the need for heightened clinical suspicion, thorough wound evaluation, and consideration of advanced imaging in trauma cases where retained objects may not be immediately apparent. The importance of meticulous debridement during initial wound management and maintaining vigilance for delayed presentations is underscored.

II. CASE REPORT

A 24-year-old male presented to the emergency department with a laceration in the left parotid region following a fall onto wooden debris while walking. Initial examination revealed a 3×1 cm soft tissue laceration without evidence of deep penetration by a wooden fragment or damage to the parotid gland and duct. The wound was thoroughly debrided and primarily closed using Polyglactin 3-0 sutures.

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One month later, the patient returned to our outpatient department with persistent pus and serous discharge from the same site. Despite conservative management over five months, symptoms remained unresolved, prompting a clinical diagnosis of parotid fistula. Further evaluation with CT and MRI of the facio-maxillary region revealed a 1.5×1 cm radiopaque mass along the left ramus, situated beneath the masseter muscle. These findings emphasize that meticulous history collection serves as a crucial determinant in selecting appropriate diagnostic tools, where early CT imaging might have revealed the pathology at its initial presentation.

The patient subsequently underwent superficial parotidectomy with surgical exploration under general anaesthesia, leading to the successful removal of an embedded wooden fragment.

Fig 1 Preoperative Marking for Flap Reflection

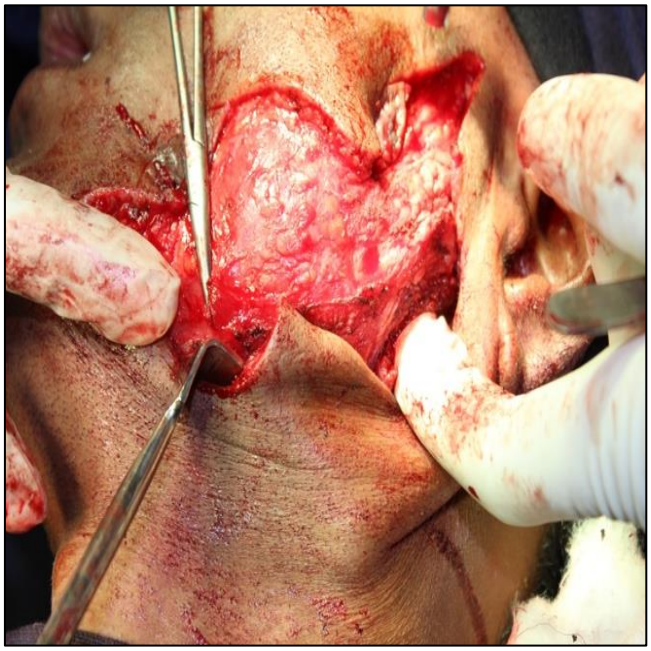

Fig 2 Gland Dissection with Careful Preservation of Facial Nerve Branches

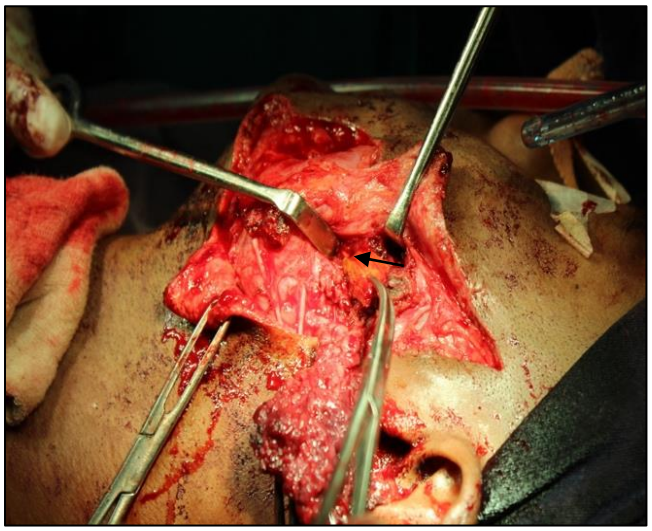

Fig 3 Surgical Removal of Foreign Body Embedded Within the Masseter Muscle

III. DISCUSSION

Maxillofacial surgeons often face difficulties in clinically diagnosing foreign bodies during initial examinations, with approximately one-third of cases being overlooked initially.[4] Initial clinical assessments frequently miss embedded foreign bodies, which typically become apparent only during follow-up visits for unresolved symptoms. Diagnostic imaging aimed at evaluating osseous injuries often serendipitously reveals these retained objects. Predisposing factors include polytrauma presentations (notably high-velocity collisions), where acute stress responses or intoxication-related cognitive impairment frequently hinder accurate patient history documentation.

Retained foreign bodies following penetrating trauma present a significant diagnostic challenge. Clinicians should suspect their presence in cases of chronic wound drainage, persistent sinus tracts, or abscesses with sterile cultures. The presence of recurrent inflammatory symptoms, including swelling and pain, warrants consideration of occult foreign body retention in the differential diagnosis. Wooden foreign bodies are particularly difficult to diagnose, as they often result from minor trauma (e.g., small pricks) and are rarely visible during clinical examination. Only 15% of wooden foreign bodies are detectable on plain radiographs, leading to frequent misdiagnosis.[5] In contrast, denser materials such as grit, pebbles, stones, and glass fragments are more readily identified via conventional radiography. For radiolucent organic materials such as wooden objects, bamboo splinters, and thorns, cross-sectional imaging modalities including CT and MRI demonstrate superior diagnostic capability compared to conventional radiography.

In the present case, radiographic confirmation of the wooden foreign body was achieved exclusively through computed tomography. CT imaging continues to represent the diagnostic gold standard for identification of deeply embedded foreign objects. If a wooden fragment is suspected but not visualized on CT, MRI should be performed.

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Additionally, ultrasound imaging serves as a well-established modality for foreign body localization

Foreign bodies penetrating facial tissues often harbor significant microbial contamination due to their typically unclean nature. The presence of these contaminated objects in the facial region frequently leads to infection, as evidenced by numerous case reports in the literature. Clinical manifestations may include substantial sinus tract formation and persistent purulent discharge, representing serious complications that underscore the importance of prompt diagnosis and removal.

The management of facial trauma requires particular vigilance regarding embedded foreign bodies. Standard protocol should include radiographic evaluation of deep facial lacerations to detect potential foreign material in underlying tissues. This becomes especially crucial when the mechanism of injury involves wooden or bamboo objects, as these materials present unique diagnostic challenges.

Previous clinical reports emphasize the necessity of maintaining a high index of suspicion for retained radiolucent foreign bodies, particularly in cases where the injury mechanism suggests possible penetration by such materials. The diagnostic difficulty is compounded by the variable radiopacity of different foreign materials: while metallic or mineral objects are typically radiographically apparent, organic materials like wood often evade detection on conventional imaging.

➢ *These Considerations Highlight the Need for a Systematic Approach to Facial Trauma Evaluation, Incorporating:*

- Thorough history-taking regarding the nature of the injuring object
- Comprehensive physical examination of wound tracts
- Appropriate imaging modalities based on suspected foreign body composition
- Early intervention when foreign body retention is suspected

The potential for serious infectious complications and chronic wound issues necessitates this comprehensive approach to ensure optimal patient outcomes in cases of facial trauma with suspected foreign body retention.

In the present case, both clinical examination and conventional radiography failed to detect the retained foreign body, underscoring the limitations of these standard diagnostic approaches. It was only through computed tomography (CT) imaging that the embedded wooden fragment was successfully identified, highlighting the critical role of advanced diagnostic modalities in such challenging scenarios.

➢ *This Case Reinforces Several Important Clinical Considerations:*

- *Limitations of Initial Assessment:*

✓ Superficial examination and plain radiographs have well-documented shortcomings in detecting organic foreign bodies, with reported miss rates as high as 85% for wooden objects. [7,8]
✓ Deeply embedded foreign bodies often evade visual detection during primary wound inspection, particularly when masked by tissue edema or located beneath muscle layers.

- *Essential Diagnostic Protocol:*

✓ Meticulous wound exploration with thorough debridement remains the cornerstone of initial management, as it may reveal foreign material that would otherwise go unnoticed.
✓ A high index of suspicion should be maintained for all penetrating facial injuries, especially those involving organic materials or high-velocity mechanisms.

- *Advanced Imaging Indications:*

✓ When clinical suspicion persists despite negative initial findings, CT imaging should be considered the diagnostic modality of choice, offering superior sensitivity for both radiopaque and radiolucent foreign bodies.[9]
✓ MRI may serve as an alternative for suspected wooden fragments that remain undetected on CT, particularly in soft tissue-rich anatomical regions.[10]

- *Proactive Diagnostic Approach:*

✓ Surgeons should maintain a low threshold for obtaining advanced imaging in cases of:
✓ Persistent symptoms (pain, swelling, discharge)
✓ Dubious injury mechanisms (wood, bamboo)
✓ Deep or complex wound configurations

This case exemplifies the diagnostic challenges posed by retained foreign bodies and emphasizes the need for a systematic, multimodal approach to evaluation. The combination of thorough clinical assessment, appropriate imaging selection, and timely intervention remains paramount in preventing the long-term complications associated with missed foreign bodies.

IV. CONCLUSION

This case illustrates the diagnostic pitfalls in maxillofacial trauma when a patient's history is incomplete or overlooked. Despite inconclusive initial exams and imaging, the patient's persistent symptoms—rooted in undisclosed details of the injury—necessitated advanced imaging, ultimately revealing a retained wooden fragment. The scenario highlights three key lessons: (1) organic foreign bodies often escape detection due to their radiolucent nature and gaps in patient-reported history, (2) CT imaging is critical when symptoms and clinical suspicion conflict with initial findings, and (3) delayed intervention risks complications, particularly when early clues are missed. These findings underscore the importance of meticulous history-taking, especially in penetrating injuries involving organic materials. A proactive diagnostic approach—integrating patient narratives, targeted imaging, and timely intervention—is vital to avoid missed diagnoses and ensure optimal outcomes.

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