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## CASE REPORT

# Foreign body (metal key) impacted in the upper neck

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## Case report

A 25-year-old man attended the Accident and Emergency Department following an alleged assault. His presenting complaint was rather non-specific and merely centered around cervico-facial pain and tenderness. Although not knocked out, he had minimal recollection of events as he had consumed a significant quantity of alcohol. The patient had no significant past medical history.

On examination the patient was alert and orientated, haemodynamically stable, without any focal neurology. Clinical examination revealed some facial contusions and multiple soft tissue abrasions in the neck. He had no signs or symptoms suggestive of an underlying bony injury. This patient was therefore reassured and discharged from A&E with prescribed analgesia.

One week after his presentation, the patient returned to the Accident and Emergency Department complaining of persistent discomfort in the left submandibular region and upper neck, together with reduced mouth-opening. Clinically the post-auricular region was very tender to palpation. On closer inspection of his upper neck, a 4 mm healing

wound was noted in the region of the left mastoid process.

A plain radiograph of this area was requested and revealed a large segment of a key that had broken off and become embedded in the retro-mandibular space. Further radiographs were requested to more accurately localize the position of the key (Figs. 1–3).

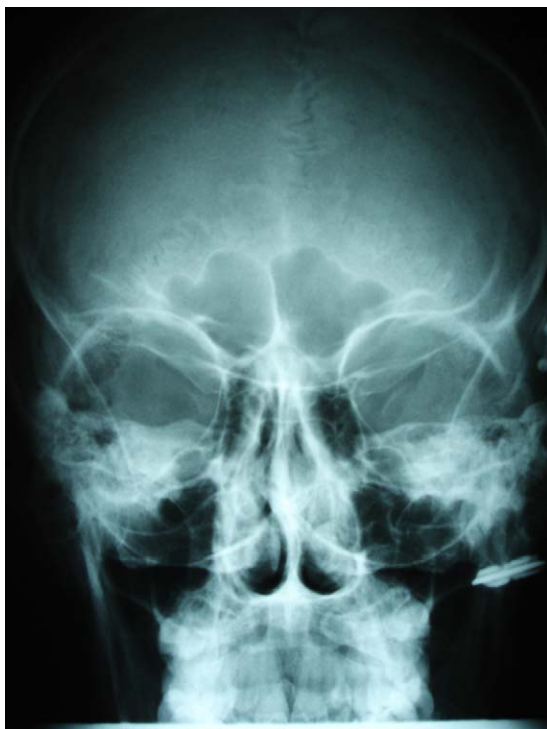
This patient was admitted to the ward pre-emptive of an urgent surgical exploration of the region under general anaesthesia. The key was located in the retromandibular region, deep to the parotid, adjacent to the left stylomastoid foramen. The trunk of the facial nerve was identified and found to be intact. There was no damage to any adjacent vascular structures. A 2 cm segment of a key was successfully retrieved. The patient made an uneventful recovery and was discharged 24 h post-operatively.

## Discussion

Soft tissue injuries to the head and neck are a very common presentation to the Accident and Emergency Department. A significant number of these patients are subsequently referred to the various head and neck specialties for definitive treatment. These injuries account for a large percentage of the out-of-hours case load for junior staff. Despite the

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**Figure 1** PA radiograph (PA) showing metal key in the left condyle region.



**Figure 2** Radiograph (AP) showing metal key in the left side.



**Figure 3** Lateral skull radiograph (AP) showing position metal key in the left side.

high prevalence of soft tissue trauma in the UK, penetrating injuries resulting in the impaction of foreign bodies in this region would appear to be very uncommon.<sup>8</sup> In the main, when they do occur, it is usually secondary to a gun shot or knife wound.

The diagnosis of penetrating neck trauma with an associated foreign body in situ, is generally quite obvious. However, identifying a foreign body can be very challenging at times, especially in patients with multiple soft tissue injuries of the head and neck, or other significant injury. Hersman et al.<sup>6</sup> in a retrospective study reported an overall mortality rate of 9% for penetrating injuries of the neck. They highlighted the difficulties in accurate evaluation of penetrating neck injuries, particularly in the presence of the other associated injuries.

The request for further investigations is obviously dependent on clinical observations and the history given by the patient. In practice however, a significant number of patients will have variable levels of consciousness and therefore the history provided is often unavailable or unreliable. In these cases, greater emphasis is placed on the presenting physical signs of the patient. Research conducted by the British Association of Oral & Maxillofacial Surgeons has demonstrated a shift in the causative mechanisms of facial injuries in the UK. The study highlighted that increasing numbers of injuries would appear to be associated with excessive alcohol consumption.<sup>7</sup> In addition, given the recent government introduction of extended licenses in the UK whereby pubs and clubs may remain open for 24 h, it would be more likely that clinicians will encounter greater numbers of patients who present as a diagnostic challenge because of the aforementioned reasons.

Clinical decision protocols are increasingly setting the standards by which patients treated or managed in A&E departments in the UK. This is especially apparent when it relates to requesting further investigations such as radiographs in trauma patients. These clinical decision rules, in the main, are aimed at improving cost-effectiveness by reducing the numbers of unnecessary investigations. However, this patient had no clinical signs of facial fracture such as swelling, malocclusion, trismus, crepitus, or step deformity. Therefore based on recent guidelines<sup>4</sup> (in the absence of parameters suggestive of facial bony injuries) this patient was not deemed to be suitable for further radiographic investigations, clearly plain facial views taken at his initial visit would have facilitated the early diagnosis of the metallic foreign body, and avoided the subsequent delay in definitive management. Although guidelines need to be adhered to, however this example of delayed identification of metallic foreign body highlights that stringent protocols for radiographic investigation may not always be in the best interest of the patient, and that clinical judgment should dictate patient care.

There are currently no defined criteria regarding the management of cervical foreign bodies. Many authors suggest that "mandatory exploration" be undertaken for any neck wound that has penetrated the platysma, while others prefer exploration for "selected cases" on the basis of diagnostic studies. Fogelman and Stewart<sup>5</sup> reported a mortality rate of 6% with prompt exploration compared to 35% in cases with delayed or omitted operation. Apffelstaedt and Muller<sup>2</sup> in a prospective study of 393 patients with stab wounds penetrating the platysma, found that clinical signs were absent in 30% of positive neck explorations. They concluded that mandatory exploration was safe and effective and also potentially avoided unnecessary diagnostic studies with a concomitant reduction in hospital stay. In contrast, Obeid et al.<sup>9</sup> recommend that only patients with positive clinical findings indicative of an underlying neck injury should undergo operative exploration while those patients with a negative clinical examination should be closely observed. Asensio et al.<sup>3</sup> performed a thorough review of the literature on the subject of "mandatory exploration versus selective exploration". They found no advantage of one approach over the other.

The phenomenon of a "migratory foreign body" has been reported in the literature and lends support to the argument for early mandatory exploration. Khan et al.<sup>8</sup> reported a case in which a 1 cm coiled metal foreign body in the anterior neck at the level of the thyroid cartilage "migrated" through soft tissues into the trachea. Rodriguez<sup>10</sup> reported a

similar case of neck trauma where a 1 cm metallic rod in the right cervical region had embolised to the heart. He postulated that the foreign body had perforated the internal jugular vein and was driven by venous flow/negative pressure to the heart. Ahmad et al.<sup>1</sup> presented a case of a foreign body resulting from a penetrating neck wound. They failed to locate this during initial exploration as it had subsequently migrated deep into the retropharyngeal/parapharyngeal spaces. Khan et al.<sup>8</sup> therefore recommend that repeat X-rays should be undertaken immediately prior to exploratory procedures in the neck, especially if there has been a delay in surgical intervention.

## Conclusion

Penetrating metallic foreign bodies in the neck, in general, require urgent surgical exploration, identification and removal to prevent secondary complications of haemorrhage/haematoma, infection, neurovascular compromise, and the potential migration into either vascular structures or the aero-digestive tract. Although this is a rare case, the index of suspicion for retained objects following cervico-facial trauma should always be high. Given the potential high morbidity associated with the failure to definitively identify a cervical foreign body, we feel that over-investigation in select cases can be justified, we therefore suggest that clinicians should have a low threshold for requesting plain radiographs of the head and neck, particularly when the history is unavailable or unreliable.

## References

1. Ahmad R, Pampori RA, Wani AA, Qazi SM, Abdul Ahad SA. Transcervical foreign body. *J Laryngol Otol* 2000;114(6):471–82.
2. Apffelstaedt JP, Muller R. Results of mandatory exploration for penetrating neck trauma. *World J Surg* 1994;18:917–20.
3. Asensio JA, Valenziano CP, Falcone RE, Grosh JD. Management of penetrating neck injuries. The controversy surrounding zone II injuries. *Surg Clin North Am* 1991;71:267–96.
4. Charalambous C, Dunning J, Omorphos S, Cleanthous S, Begum P, Mackway-Jones K. A maximally sensitive clinical decision rule to reduce the need for radiography in mandibular trauma. *Ann R Coll Surg Engl* 2005;87(4):259–63.
5. Fogelman MJ, Stewart RD. Penetrating wounds of the neck. *Am J Surg* 1956;91:581.
6. Hersman G, Barker P, Bowley DM, Boffard KD. The management of penetrating neck injuries. *Int Surg* 2001;86(2):82–9.
7. Hutchison IL, Magennis P, Shepherd JP, Brown AE. The BAOMS United Kingdom survey of facial injuries part 1: aetiology and

- the association with alcohol consumption. British Association of Oral and Maxillofacial Surgeons. *Br J Oral Maxillofac Surg* 1998;36(1):3–13.
8. Khan MS, Kirkland PM, Kumar R. Migrating foreign body in the tracheobronchial tree: an unusual case of firework penetrating neck injury. *J Laryngol Otol* 2002;116(2):148–59.
  9. Obeid FN, Haddad GS, Horst HM, Bivins BA. A critical reappraisal of a mandatory exploration policy for penetrating wounds of the neck. *Surg Gynecol Obstet* 1985;160(6): 517–22.
  10. Rodriguez Gomez E. Cervical foreign body. An unusual case. *Acta Otorrinolaringol Esp* 2004;55(6):298–301.