Nailed! Penetrating Head Injury in a 19-year-Old Male

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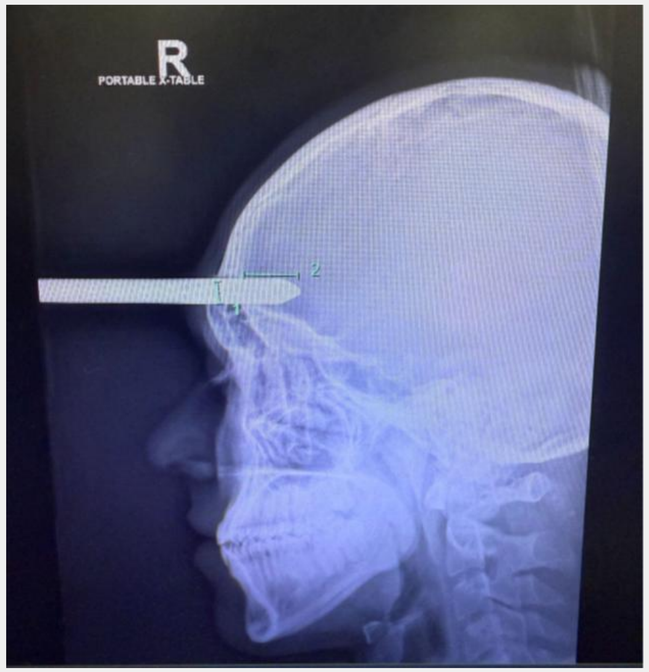
Introduction

- Penetrating brain injuries are a rare but severe presentation to the emergency department accounting for approximately 0.4% of all head injuries.
- Preoperative management of these injuries is challenging as there are no standardized guidelines on the management of penetrating brain injuries.
- It is essential for emergency physicians to have general guidelines to follow for the management of these injuries.

Patient Description

- A 19-year-old Spanish-speaking male was transferred to the emergency department (ED) for a penetrating head injury.
- The patient walked into triage at an outside facility
- He stated that he works at a construction site and that he was attempting to dislodge a large metal nail when it broke loose and lodged into the front of his head.
- Radiographs of the patient's head were obtained outside the facility, demonstrating a 1 cm in diameter nail protruding 2 cm into the frontal lobe (Figure).
- The protruding nail was stabilized with gauze for transfer. The patient was transferred to our ED as a trauma activation.
- The patient had a headache but denied vision changes, numbness, tingling, or weakness.
- Primary and secondary surveys were completed, and the patient was taken to the CT scanner for CT Head.
- CTH was obtained and demonstrated a significant metal spike traversing the left frontal calvarium and extending 2.5 cm intracranially with a small extra-axial hematoma.

Figure. Lateral head radiograph showing 1 cm diameter nail protruding 2 cm into the frontal lobe.



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Intervention

- Computed tomography angiography (CTA) of the head and neck was obtained and was negative for vascular injury.
- The patient was administered tetanus immunoglobin, ceftriaxone, vancomycin, and metronidazole.
- Neurosurgery was consulted, and the patient was admitted to the surgical intensive care unit with plans for operative intervention.
- Ultimately the patient was taken to the operating room for bilateral frontal craniotomy with cranialization of the left frontal sinus and removal of foreign body.
- Infectious disease was consulted, and recommendations for the postoperative course were made.
- The patient was ultimately discharged home on post-op day three.

Conclusion

- Penetrating brain injuries with foreign bodies are rare cases that can be fatal and have detrimental long-term neurological outcomes.
- Preoperative care is essential and includes obtaining imaging and administering broad-spectrum antibiotics and anticonvulsant medications.
- The patient achieved good neurologic outcomes despite the challenges that this case offered.