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Musculoskeletal impalement injury: A report of two cases and literature review

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Abstract
Impalement injuries are uncommon but present with significant damage and at times may prove fatal. These injuries require judicial clinical acymen for its management. Musculoskeletal impalement injuries are limited to few reports or small series in the literature. We describe one such impalement injury through the foot by hot 'seekh' or meat skewer that fortunately was associated with no significant morbidity and was managed accordingly. In another case a child got impaled by a metallic rod though t pper orearm and out of the posterior elbow leading to supracondylar fracture. He was also managed by debridement, cleaning and fixation of the fracture with K-wires. Good functional recovery was observed in both cases.

Keywords: penetrating injuries, wound, foot impalement, elbow impalement, injury, extremity, metal rod

Introduction
Impalement injuries are uncommon but challenging emergencies that require judicious management. Many reports describe injury to abdomen, chest, perineum or limbs as common regions involved and road traffic accidents, aircraft crashes or construction site accidents as causative factors [1]. Musculoskeletal impalement injuries, though uncommon, are reported sporadically as case reports. Multi-speciality emergent management is crucial for their optimal management. It is advised to remove the impaled object inside opeation theatre under direct vision [2]. As the complex nature of injuries are increasing in prevalence, attempts to be prepared and anticipate impalement injuries is critical for an emergency team.

Case report
Case 1 - A 18-year-old male patient presented to us with history of accidental injury to his foot as a meat skewer penetrated from sole to the dorsum of foot (Fig.1, a). The skewer was not hot at the time of insertion and was promptly removed by the patient out of the foot. A loose bandage was applied by a local practitioner and tetanus prophylaxis was given. The wound was deep including entry and exit wound which was copiously lavaged with saline, along with hydrogen peroxide. The radiographs we're done and revealed hairline navicular fracture on oblique view that was planned for conservative management (Fig.1, b). There was no other injury. And the wound was regularly dressed under antibiotic cover and resulted in uneventful healing of the wound over a course of three weeks. There was no wound related complications noted in the follow up.
Case 2 - A 7-year-old child brought to us following accidental impalement of a metal rod through the left upper forearm on radial aspect and exited through posterior elbow (Fig.2, a). Initial first aid was given at nearest hospital where the metal rod was removed. Radiographs revealed associated supracondylar fracture which was referred to us (Fig.2, b). Debridement was done under anesthesia followed by K-wires fixation of fracture and plaster slab (Fig.2, c). The wound healed uneventful over a period of three weeks.

Discussion
Our case by definition do not come under impalement injuries despite being ones as the objects were not in-situ. Fortunately uneventful removal of these objects at primary centres was done and patient survived as extremity injuries has better survival probability. It is advised that the impaled objects should not be removed inadvertently and kept in-situ till patient has multi-speciality team available [3]. Continuous vital or neuro-vascular monitoring in the operation theatre is the ideal prerequisite to remove these objects [4]. Early management of hemmorhagic shock in some cases due to excessive bleeding, either from local site wound or some associated perforation, is important as emergency management [5]. In certain rare instances chronic long standing impalement injuries may migrate within body cavities to present with myriad features [6]. The other concern is contaminated wound because of a foreign body, rusty most of times, is prone for infection and delayed healing and requires regular dressing, tetanus prophylaxis and further surgeries for its management [7]. Overall, these injuries require careful observation, prompt removal under direct vision and should be managed by teamwork for good outcome.

Fig 1: The foot entry wound (small arrow) and exit wound (big arrow) following removal of impaled object (a) and the radiograph showing serpiginous tract of the injury with hairline navicular fracture (b).

Fig 2: The elbow region showing entry wound at upper forearm and exit wound incorporated in surgical wound (arrow) in a child leading to supracondylar fracture (b) that was fixed with wires (c).

Conclusion

Impalement injuries pose challenges in diagnosis and treatment. These injuries require preparation and team work and should be taught and practiced in every emergency set up for early care, prompt referral or definitive management as per the resources and preparedness.

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Conflicts of interest - None

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