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Whisk finger: An electric hand whisk injury

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CASE STUDY

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ABSTRACT

This case highlights the rare but serious nature of hand injuries caused by domestic accidents, such as entanglement in running machines. Early diagnosis and prompt management, including removal of the object causing the injury and surgical intervention, when necessary, can help prevent complications and improve functional outcomes. In this case, the patient underwent successful arthrodesis and tendon repair, resulting in the return of normal function to the affected fingers.

Key Words

Whisk finger.

Introduction

The hand is a highly utilized part of the body, second only to the feet, and is continuously exposed to physical stress, making it more susceptible to injuries compared to other body parts. Moreover, the hand's skin possesses distinct properties that provide increased protection against physical, chemical, and environmental agents [1]. Functionally, structurally, and psychologically, the hand is a critical component of the human body. In fact, other than the brain, the hand is arguably the most valuable asset to humans. Hands play a crucial role in maintaining body image and self-identity, and serve as a means of communication, among other important functions [2]. The epidemiology of hand injuries can differ among communities, depending on the specific occupations and industrial activities present in a given location [3]. Injuries caused by foreign bodies in the hand can take on a variety of forms and result from different mechanisms. Among them, penetrating metal injuries can be particularly challenging to treat [4]. The literature documents a diverse range of objects causing foreign body injuries to the hand, including air gun pellets [5], knitting hooks, nail gun injuries [6-7], and even teeth in bite injuries with several other uncommon presentations recorded [8]. To our knowledge, only one case of traumatic injury caused by an electric whisk has been described in the literature.

Case presentation

On the day of admission, a 45-year-old housewife with no medical history suffered a hand injury due to a domestic accident. While replacing the metal whisk of her running machine, her fourth and fifth fingers became entangled in the whisk, followed by rotation and twisting (Figure: 1). X-rays of the hand from the front and side were taken to assess the position of the metal wires and search for associated fractures (Figure 2). During the clinical examination, the patient presented with pain and total functional impairment of the fourth and fifth fingers. Inspection revealed deformation and a wound on the dorsal and palmar surface of the fourth and fifth finger, with a bluish appearance of the fifth finger indicating ischemia. The first step in the management was removing the metal whisk using a wire cutter, resulting in the reperfusion of the finger, with a pink appearance of the pulp and a return to normal capillary filling (Figure 3). Radiographs taken after the removal of the metal whisk showed a dislocation of the distal interphalangeal joint of the fourth and fifth fingers, with no signs of associated fractures (Figure 4). The patient was then taken to the operating room under local anesthesia. In the operating room under antibiotic prophylaxis coverage, debridement of the wounds was performed. During surgical exploration, a section of the extensor and deep flexor tendons of the fourth and fifth

fingers, as well as a section of the internal pedicle of the fourth finger, were found. The patient underwent arthrodesis of the distal interphalangeal joints and tendon repair using a PDS 3.0 suture (Figure 5). Six months after the surgery no complications were detected. The pins were removed and the patient was able to start rehabilitation.

Discussion

Generally, penetrating injuries to the hand are associated with gunshot or stab wounds. As far as we know, there has only been one reported case of a penetrating injury caused by a whisk in the medical literature. When managing hand injuries and identifying the damaged structures, the examiner should determine the appropriate steps to restore full function. Reattaching avulsed tissue can lead to favourable outcomes if the examiner assesses the mechanism of injury, composition of the avulsed tissue, extent of damage to underlying tissues, and dimensions of the avulsed tissue to determine feasibility [9,10]. Heung et al. [11,12] provided a framework for approaching traumatic hand injuries that includes a comprehensive history and physical examination to assess important factors such as the mechanism and time of injury, tetanus status, and baseline function. The physical examination should involve a thorough inspection of the injured hand and assessment of motor function, tendons, and neurovascular status. X-rays may be required to rule out fractures, dislocations, and foreign bodies. Management of traumatic hand injuries involves immobilizing fractures, obtaining soft tissue coverage, preventing and treating infection, and ensuring tetanus prophylaxis. Primary management often includes a debridement procedure and administration of antibiotics, with third-generation cephalosporins being commonly preferred as broad-spectrum antibiotics. However, adjustments to the antibiotic regimen may be necessary depending on individual circumstances. Early mobilization and physiotherapy are recommended to facilitate the return to functional activities following adequate surgical and medical management of such injuries [13, 14].

Conclusion

Traumatic hand injuries caused by an electric whip are rare but can lead to serious complications. Early diagnosis and rapid management are essential to prevent complications and improve functional outcomes. The management of these injuries requires a multidisciplinary approach, with appropriate surgical and medical interventions, as well as early physiotherapy to promote the return to normal hand function. Finally, prevention of these injuries should be a priority, especially in industries and activities with a high risk of hand trauma.

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Ethics approval and consent to participate

Ethical approval was not sought. Written consent was obtained from the patients.

Availability of data and materials

The datasets used and analysed during the study are available from the corresponding author.

Declaration of conflicting interest

The authors declare that there is no conflict of interest.

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Author's contributions

All authors have read and approved the final manuscript.

Figures

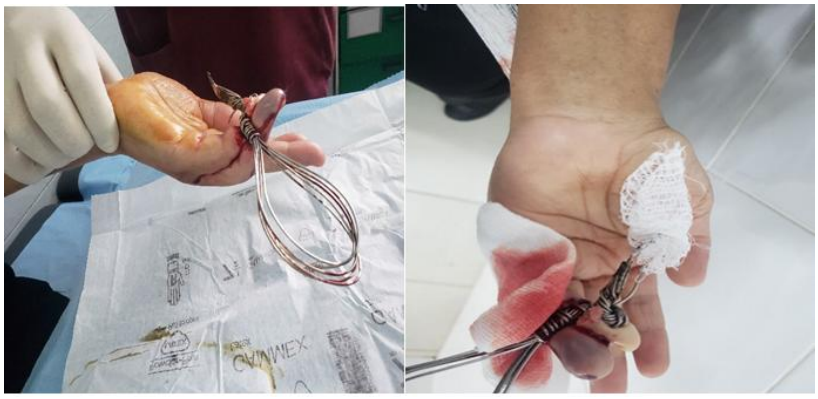

Figure 1: Clinical photographs show a metal object penetrating the fourth and fifth fingers, causing wounds on both the volar and dorsal sides, and resulting in pulp ischemia.

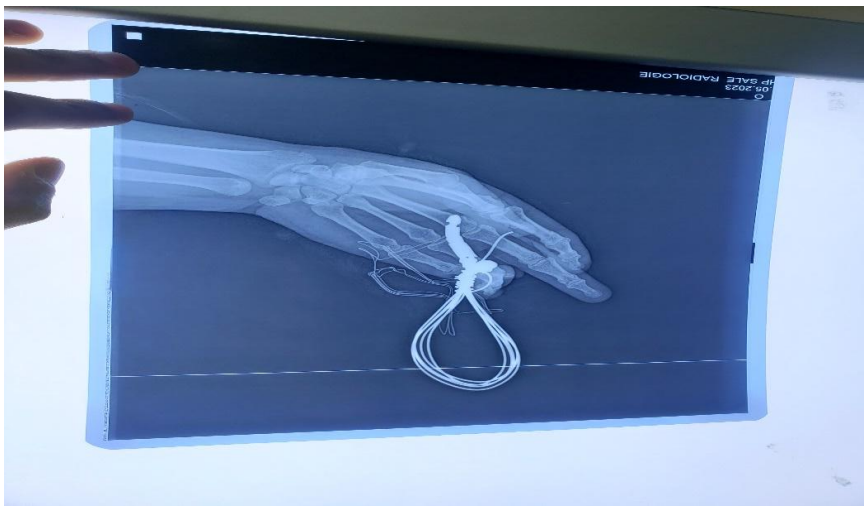

Figure 2: X-rays of the hand with the metal whip in place.

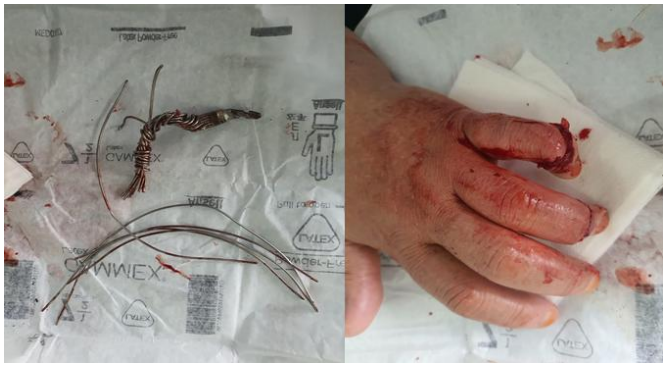

Figure 3: Clinical photographs of the finger pulp after removal of the object, demonstrating recovery of staining and perfusion of the finger.

Figure 4: Anteroposterior and lateral radiographs of the hand after removal of the object, showing dislocation of the distal interphalangeal joints of the 4th and 5th fingers.

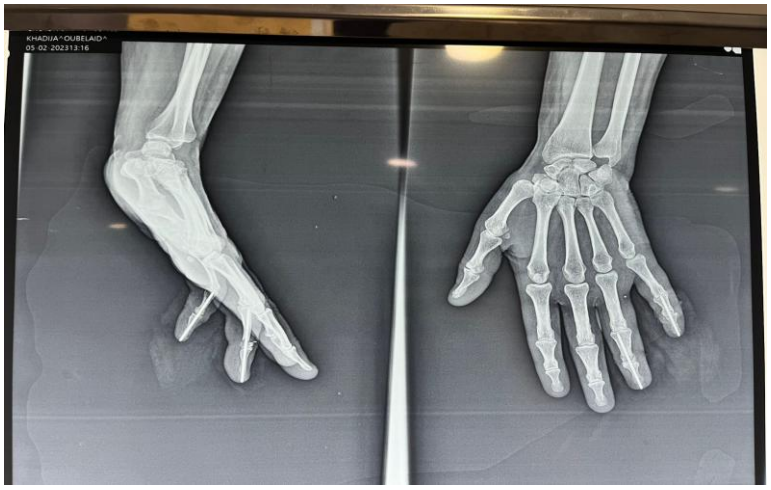

Figure 5: front and side radiographs of the postoperative hand.

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