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High-Pressure Fluid Injection Injury: The Importance of a Prompt Diagnosis

Lesões por Injeção de Fluído a Alta Pressão: A Importância do Diagnóstico Atempado

Keywords: Amputation, Surgical; Decompression, Surgical; Hand Injuries
Palavras-chave: Amputação Cirúrgica; Descompressão Cirúrgica; Lesões da Mão

Dear Editor,

Hand and forearm injuries caused by high-pressure fluid injection are underreported and often diagnosed late.[1,2] In certain professional activities such as construction work, there is an increased risk of these injuries, especially in the index finger of the non-dominant limb, due to the use of tools such as paint guns or air compressors.[3]

This article reports the case of a 57-year-old man, who presented to the emergency department with a punctiform wound on the volar surface of his left index finger, caused by a plaster gun (Fig. 1A). The incident had occurred approximately 12 hours prior to seeking medical attention, and the patient complained of pain and local swelling, but there were no apparent signs of tenosynovitis. A radiograph of the hand showed extensive infiltration of plaster throughout the subcutaneous tissues from the metacarpal to the distal interphalangeal joint of the same finger.

After identifying the apparent extent and severity of the injury, urgent surgical exploration of the wound and attempted debridement using dilution with normal saline were performed. There was complete adhesion of the plaster to the neurovascular bundle, which was inseparable, and therefore only partial removal was possible (Fig. 1B). In addition, empirical intravenous antibiotic therapy with amoxicillin and clavulanic acid was initiated during the preoperative period.

The patient had a good postoperative course, with no signs of infection or ischemia throughout the follow-up period. At eight weeks post-trauma, there was complete resolution of symptoms, and the patient was able to resume his professional activity.

When faced with a high-pressure fluid injection injury, early assessment and treatment are essential since these injuries can have devastating consequences even though their external appearance can often seem innocuous.[4] The rates of amputation described in the literature can exceed 50%, even when injuries are treated within the first six hours.[5] In cases where amputation is avoided, the resulting sequelae prevent more than half of individuals from returning to their professional activities. Injected substances can progress through tissues along paths of least resistance, such as neurovascular bundles, triggering inflammatory reactions that contribute to tissue irrigation compromise and eventual necrosis. In addition, the presence of a portal of entry, combined with local ischemia, promotes infection.[1,3]

High-pressure fluid injection injuries are a surgical emergency. Prompt diagnosis is very important to avoid serious complications such as amputation. Given the severity of this condition and the associated consequences, clear and thorough communication with patients is crucial.

AUTHOR CONTRIBUTIONS

FS, MR: Conception and design of the work, data acquisition, analysis, and interpretation, drafting of the work.

MJL: Data analysis and interpretation, drafting of the work.

AS: Critical review of the manuscript.

VV: Critical review and approval of the final version of the manuscript.

PROTECTION OF HUMANS AND ANIMALS

The authors declare that the procedures were followed

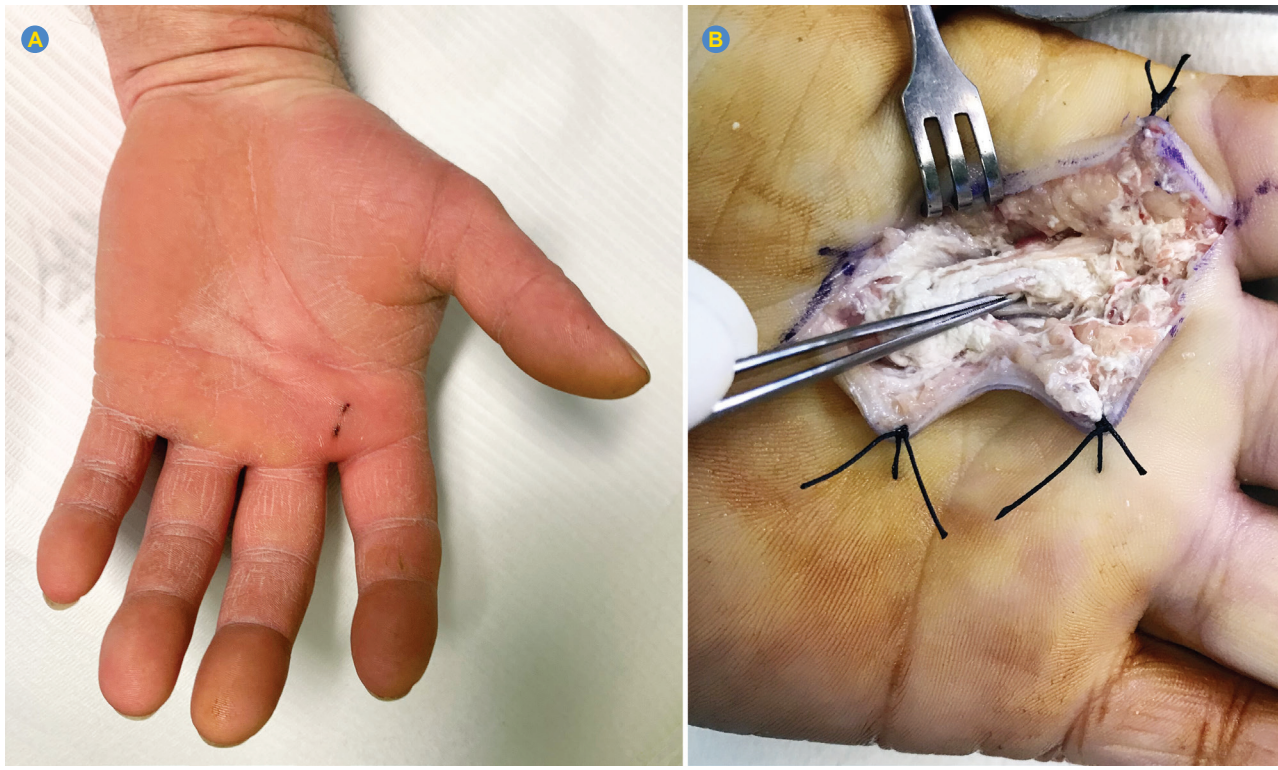

Figure 1 – Punctiform wound on the volar surface of index finger (A). Thick and adhesive consistency of plaster adherent to the neurovascular bundle (B).

according to the regulations established by the Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association updated in 2013.

DATA CONFIDENTIALITY

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

PATIENT CONSENT

Obtained.

COMPETING INTERESTS

The authors have declared that no competing interests exist.

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