

CONTINUING MEDICAL EDUCATION ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

Surgery Quiz – Case 49

A 35-year-old male patient with severe high-dose opioid use disorder (intravenous administration of heroin 300 mg twice daily) referred to our emergency department with delayed presentation of acute left hand and forearm compartment syndrome related to heroin extravasation after syringe injection and associated complicated (non-necrotizing) skin and superficial soft tissue infection. Clinical findings included progressive intractable hand and forearm pain that worsened with passive fingers and wrist motion, extensive skin redness with palpable swelling, firmness and decreased compressibility, hypoesthesia localized to the palmar aspect of the first to the fourth finger and the distal palm, present peripheral pulses and no paralysis. Laboratory findings were remarkable for leukocytosis and elevated CRP levels. Radiographs performed which ruled out air in soft tissues and fractures. As physical examination findings were conclusive for acute compartment syndrome, no needle compartment pressure measurements performed.

Which is the optimal further treatment strategy?

Comments

Blood, urine and wound samples cultures obtained and intravenous empiric antimicrobial and antifungal therapy with meropenem 2 g every 8 hours, linezolid 600 mg twice daily and fluconazole 200 mg twice daily initiated. As diagnosis of acute compartment syndrome was definitive, operative treatment with emergent fasciotomies of all involved compartments of the left forearm and arm performed under upper extremity nerve block with axillary approach.

Forearm fasciotomies included: (1) volar forearm and hand fasciotomy for decompression of volar compartment and carpal tunnel performed with volar incision starting radial to the flexor carpi ulnaris muscle at the level of the wrist and extending proximal at the level of the median epicondyle of the humerus and distally to the thenar palmar crease (fig. 1); (2) dorsal forearm fasciotomy for decompression of mobile wad and dorsal compartment performed with a longitudinal dorsal incision starting at the level of the lateral humerus epicondyle towards the midline of the wrist (fig. 2).

Hand fasciotomies included: (1) two longitudinal dorsal incisions over 2nd and 4th metacarpals for dorsal/volar interossei and adductor compartment decompression (fig. 2); (2) two longitudinal incisions over the radial side of 1st metacarpal and ulnar side of 5th metacarpal for decompression of thenar and hypothenar compartment decompression, respectively (fig. 3 a, b).

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ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2023, 40(3):431–432

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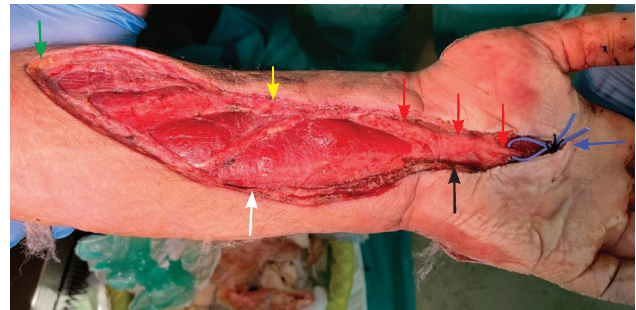


Figure 1. Volar forearm and hand fasciotomy included one volar incision starting radial to the flexor carpi ulnaris muscle at the level of the wrist (yellow arrow) and extending proximal to the level of the median epicondyle of the humerus (green arrow) and distally to the thenar palmar crease (blue arrow) (volar compartment: white arrow, carpal tunnel: black arrow, median nerve: red arrow).



Figure 2. Dorsal forearm and hand fasciotomy included one longitudinal dorsal incision starting at the level of the lateral humerus epicondyle (yellow arrow) towards the midline of the wrist (green arrow) and two longitudinal dorsal incisions over 2nd and 4th metacarpals (dorsal compartment: blue arrow, dorsal/volar interossei and adductor compartment: white arrow).

Third intention wound healing initiated with repeat irrigation over the following 5 days and subsequent early primary closure of dorsal and lateral wounds on postoperative day 6 and delayed closure with split thickness skin graft of the volar wound on postoperative day

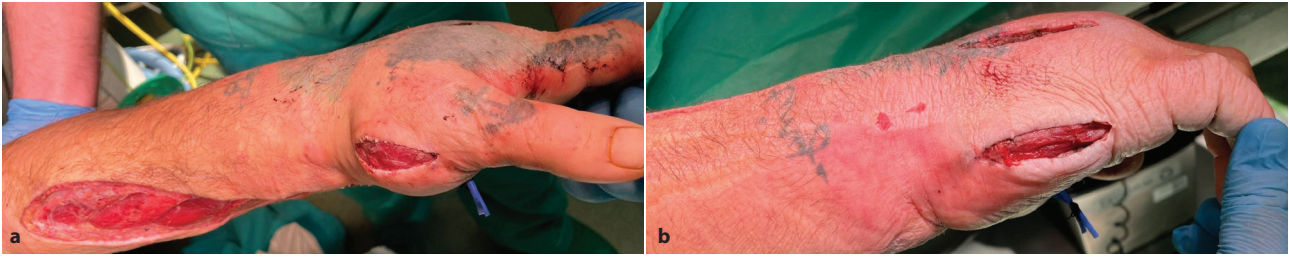


Figure 3. Lateral hand fasciotomy included (a) a longitudinal incision over the radial side of 1st metacarpal and (b) ulnar side of 5th metacarpal (thenar compartment: yellow arrow, hypothenar compartment: green arrow).

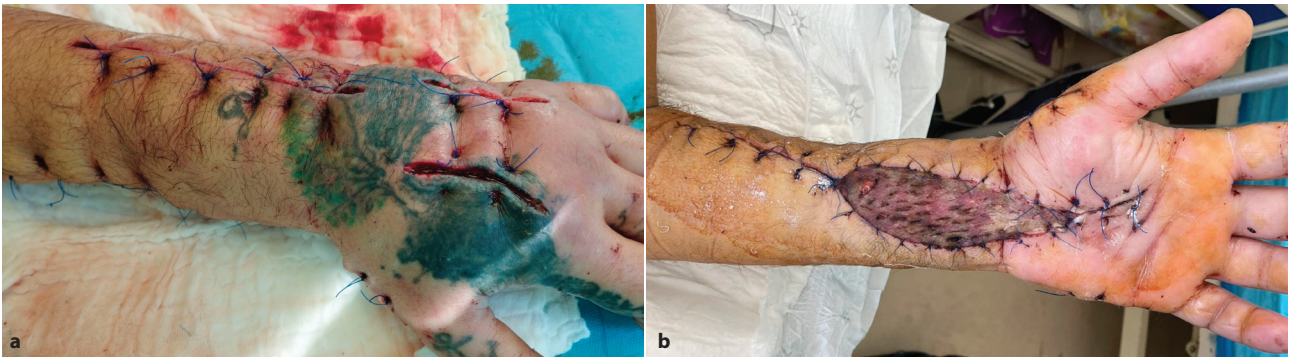


Figure 4. Early (a) primary dorsal and lateral wounds closure on postoperative day 6 and (b) delayed split thickness skin graft volar wound closure on postoperative day 12.

12 (fig. 4 a, b). Interestingly, blood, urine and intraoperative wound cultures were negative. Postoperative course was uneventful and the patient discharged home on postoperative day 14.

References

1. KISTLER JM, ILYASI AM, THODER JJ. Forearm compartment syndrome: Evaluation and management. *Hand Clin* 2018, 34:53-60

2. SRAJ S, HENDERSON JT, BRAMER M, GELMAN J. Principles of fasciotomy closure after compartment syndrome release. *J Am Acad Orthop Surg* 2022, 30:879-887

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