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Acute compartment syndrome of the hand secondary to propofol extravasation

Acute compartment syndrome (ACS) of the hand secondary to extravasation of intravenous (IV) propofol is a rare phenomenon. We present the following case from a 52-year-old African American woman treated at our institution after obtaining the appropriate written consent from the patient for publication.

A 52-year-old woman with sinus cancer underwent an extensive surgery involving a radical maxillectomy with orbital exenteration and fibular free-flap reconstruction. The duration of the surgical procedure was approximately 16 h. Postoperatively, the patient remained intubated and sedated in the surgical intensive care unit (SICU). On postoperative day 2, the patient's nurse noted increasing swelling and decreased capillary refill isolated to the left hand recently after starting a propofol infusion through a new IV-site over the dorsum of the left hand. Approximately 4 h had passed from the time of initial propofol extravasation to official orthopedic surgery evaluation.

The physical examination was limited given the patients intubated and sedated condition. The left hand was diffusely swollen secondary to the apparent extravasation of propofol into the soft tissues of the hand. The IV site was immediately removed. A Stryker Intra-Compartmental Pressure Monitor System (Stryker Surgical, Kalamazoo, MI) was used to measure the hand compartments. The intra-compartmental readings for the 1st (59 mmHg) and 2nd (69 mmHg) dorsal interossei compartments were diagnostic for acute compartment syndrome.

The patient was taken for emergent fasciotomies of the left hand. Two vertical incisions were made over the dorsum of the hand and just ulnar to the 2nd metacarpal and radial to the 4th metacarpal. Separate incisions were made over the thenar and hypothenar regions of the palm to ensure adequate compartment releases. After blunt dissection through the interossei compartment fascia, copious amounts of propofol were released under pressure (Fig. 1). Nine liters of normal saline was used to irrigate the hand. The skin edges were all loosely approximated with 3–0 nylon suture and a penrose drain was placed for 48 h postoperatively. Unasyn was continued for 72 h postoperatively. By 3-week follow-up, the stitches were removed in the office and the patient clinically did not demonstrate any signs of sequelae or functional deficits to the extremity.

Early recognition of ACS is imperative and emergent fasciotomies are to be performed as soon as the diagnosis is made. To our knowledge this is the 3rd reported case of ACS after propofol soft tissue extravasation; In our review of the literature, 6 of the 13 cases noted extensive soft tissue necrosis occurring from 1 to 5 days out from the initial incident [1]. Perhaps even more concerning is the fact that these cases all present with wide

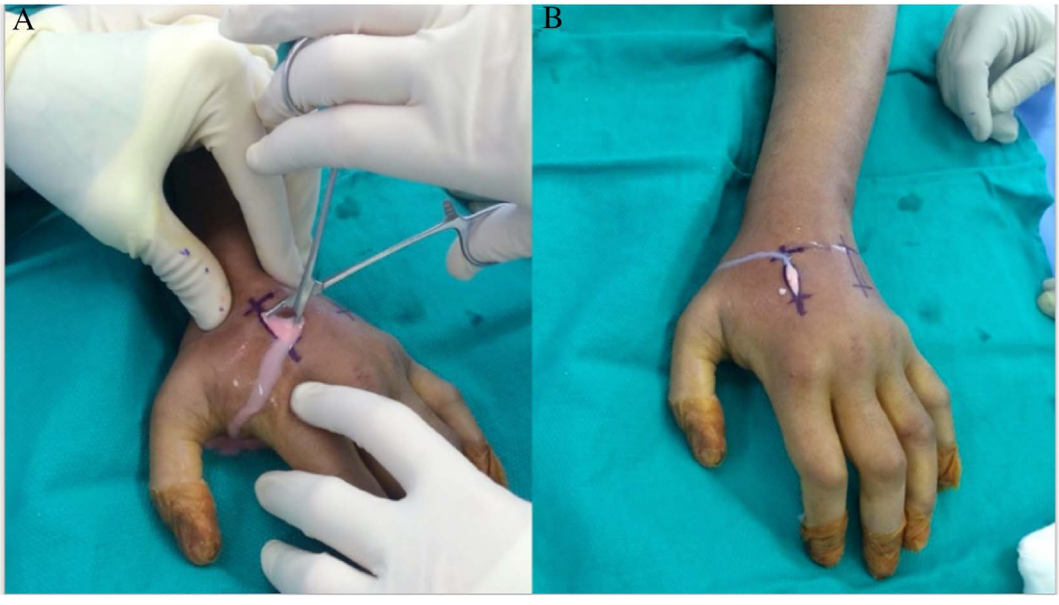

Fig. 1. Intraoperative photographs of interossei compartment releases.
The patient was taken for emergent fasciotomies and after opening the interossei compartments (A,B), the entire hand immediately returned to a soft and compressible state. This was followed by 9 l of 0.9% normal saline irrigation.

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variation in terms of the patient's clinical status, and the amount and depth of the extravasate [2–5]. While propofol is known for its innocuous chemical properties on surrounding tissue given its neutral pH and isotonicity, there is no consensus on a standardized treatment protocol to manage cases of soft tissue extravasation [1].

ACS is a rare complication after propofol extravasation. IV sites for infusion must be carefully monitored and discontinued once extravasation is suspected. Physicians should strongly consider surgical washout for cases involving significant amounts of propofol extravasation, as soft tissue necrosis is becoming a well-known complication in this particular clinical setting. Future research should focus on delineating the extent of soft tissue extravasation requiring surgical washout in cases not presenting as ACS.

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