

## Hand gangrene after repetitive IV midazolam injections

Marta Matos<sup>1</sup>, Gianluca Sapino<sup>1</sup>, Celine Haselbach<sup>2</sup>, Pietro Giovanni di Summa<sup>1</sup>

<sup>1</sup> Department of Plastic and Hand Surgery, University Hospital of Lausanne (CHUV), Lausanne, Switzerland

<sup>2</sup> Department of Internal Medicine, University Hospital of Lausanne (CHUV), Lausanne, Switzerland

**Background:** Intravenous midazolam is a commonly used sedative and anesthetic agent. Although usually considered safe, repeated injections outside proper venous access may lead to vascular injury and tissue necrosis. Such complications are rare but potentially devastating. We report a case of severe hand gangrene following repetitive IV midazolam injections.

**Case Report:** A 36-year-old man with a long history of intravenous heroin abuse presented with a two-year history of progressive necrosis of the right hand, secondary to repeated self-injections of crushed midazolam. Preferred injection sites included the elbow, forearm, and dorsum of the hand.



**Figure 1:** 36 years-old man presented to the ER with a 24-months history of slowly progressive necrosis to his right hand. Dry necrosis had progressively developed into gangrene with almost spontaneous amputation at the level of the wrist.



**Figure 2:** Swelling and marble skin had developed in the proximal forearm.

On admission, dry necrosis had evolved into gangrene with near-spontaneous amputation at the wrist, accompanied by swelling and mottled skin of the proximal forearm. Doppler ultrasonography revealed distal occlusion of both the ulnar and radial arteries.

Urgent surgical amputation at the proximal forearm was performed, and intravenous amoxicillin-clavulanate was administered perioperatively. The patient was discharged four days later against medical advice and failed to attend follow-up visits. Despite the severity of his condition, he expressed no intention of discontinuing intravenous drug use.



**Figure 3:** Surgical intervention was performed urgently with amputation and stump formation at the proximal forearm level

**Discussion:** The mechanisms of ischemia after intra-arterial drug injection are multifactorial and may involve direct endothelial injury, thrombosis, vasospasm, platelet aggregation, toxic vasculitis, or embolization of insoluble excipients such as microcrystalline cellulose. Acute cases typically present with pallor, cyanosis, edema, and risk of necrosis or compartment syndrome, requiring urgent intervention to restore perfusion.

In contrast, the present case illustrates a rare chronic course, with progressive microembolization leading to hand and forearm mummification over two years, without systemic infection. This atypical evolution was favored by delayed medical consultation due to adverse social conditions. While most reported cases describe acute ischemic necrosis within hours or days, this case demonstrates that repetitive, low-grade embolization can remain silent for long periods before overt tissue loss occurs.

Clinicians should carefully evaluate patients with a history of intravenous drug use, inquire about pulverized drug injection, and perform thorough limb examination to detect early vascular compromise and prevent severe outcomes.