CASE REPORT

84. Successful Microsurgical Replantation After Multiple Traumatic Amputations Caused by an Electric Grinder: A Case Report

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Traumatic digital amputations are uncommon but carry significant functional, aesthetic, and occupational consequences, particularly in young adults. Microsurgical replantation has been shown to restore hand function and improve quality of life; however, success depends on factors such as ischemia time, injury mechanism, tissue viability, and surgical technique. Machinery-related injuries are especially challenging due to extensive crush and avulsion damage, often limiting replantation possibilities. Recent evidence suggests that even in the absence of suitable veins for anastomosis, venous congestion techniques can sustain digital viability, with reported survival rates up to 78.5%.

We report the case of a 24-year-old woman who suffered total traumatic amputation of the second (D2) and third (D3) digits, and partial amputation of the fourth (D4) digit of her right hand after an accident with an electric mill. She arrived at the emergency unit 1.5 hours post-injury. D3 was deemed non-replantable and underwent stump remodeling. Successful microvascular replantation of D2 was achieved, including bone fixation with Kirschner wires, terminal-to-terminal arterial anastomosis, nerve repair, and tenorrhaphy. Postoperative management included anticoagulation and antiplatelet therapy. At six weeks, fixation material was removed, and the patient continues rehabilitation with favorable outcomes and no major complications.

This case demonstrates that meticulous microvascular reconstruction of digits, integrating bone, vascular, nerve, and tendon repair, can restore function and aesthetics in complex traumatic amputations. Early intervention, careful patient selection, technical precision, and comprehensive rehabilitative care are critical for success. Multidisciplinary management is essential, providing clinical evidence to guide surgical decision-making in similar high-complexity cases.

Figure 1. Fractured Hand Radiograph

Legend: Left: Anteroposterior (AP) X-ray of the right hand exhibiting traumatic amputation of the second (D2) and third (D3) digits, with partial amputation of the fourth (D4), showing severe, complex skeletal and soft-tissue trauma from an electric grinder. Right: Post-operative AP X-ray after microsurgical replantation. D2 shows stabilization with intramedullary and transverse Kirschner wires. D3 is absent, consistent with stump remodeling. D4 depicts partial preservation and improved alignment. The fixation maintains functional anatomy for pinch and grip via successful skeletal stabilization.

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