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(Limb Salvage After Bilateral Lower Leg and Foot Third-Degree Flame Burns: A Multidisciplinary Reconstructive Approach)

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Purpose: Extensive third-degree burns of the lower extremities involving deep muscle and joint structures present a significant reconstructive challenge and high risk of limb loss. Successful management requires staged debridement, infection control, skeletal stabilization, and durable soft tissue coverage. We report a case of bilateral lower leg and foot flame burns managed with a multidisciplinary limb salvage strategy.

Methods: A patient sustained bilateral lower leg and foot flame burns in a house fire, resulting in third-degree injuries with eschar formation and muscle involvement (Figure 1). Escharectomy was performed, followed by negative pressure wound therapy (Figure 2). Definitive reconstruction was performed 34 days after injury. After thorough debridement, left ankle arthrodesis with intramedullary nailing was performed by the orthopedic team. Soft tissue coverage was achieved using a free latissimus dorsi muscle flap. A full-thickness skin graft was applied to the posterior ankle and heel, and meshed split-thickness skin grafts were used to cover the remaining defects. An external fixator was applied for additional stabilization (Figure 3). Hardware removal was performed 63 days after surgery.

Results: The flap survived completely, and the skin grafts demonstrated successful engraftment. No major complications occurred (Figure 4). At the 3-month follow-up, durable soft tissue coverage was maintained with successful limb salvage. The patient was able to bear weight and ambulate on the reconstructed limb.

Conclusion: Bilateral lower extremity third-degree burns with joint involvement can be successfully treated with a staged, multidisciplinary approach. Aggressive limb salvage efforts may prevent amputation and restore structural integrity even in complex burn injuries.

Fig 1. Preoperative photographs and computed tomography demonstrating nasal deformity with anterior nasal spine defect secondary to neonatal nasal tube–related infection

Fig 2. A photograph of wound after escharectomy and application of negative pressure wound therapy

Fig 3. Intra-operative photographs demonstrating successful coverage of extensive soft tissue defects with free muscle flap after skeletal fusion

Fig 4. 3-month follow up photographs showing stable soft tissue coverage and limb preservation