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From Devastation To Restoration: Acellular Dermal Matrix In Bilateral Thigh Degloving Injuries With Open Fracture Femur

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INTRODUCTION:

Acellular dermal matrix (ADM) provides a collagen-rich scaffold that supports neovascularization and soft tissue coverage in severe degloving injuries (1,2). It promotes vascular ingrowth, reduces infection risk, and minimizes donor-site morbidity compared to flaps (1).

REPORT:

A 28-year-old paramedic with no significant medical history sustained severe bilateral thigh degloving wounds and an open comminuted fracture left distal femur (Gustilo 3B) following an oxygen tank explosion on 4/11/24. An emergent bilateral debridement was performed on 5/11/24, and an external fixator was applied to stabilize the left femur.

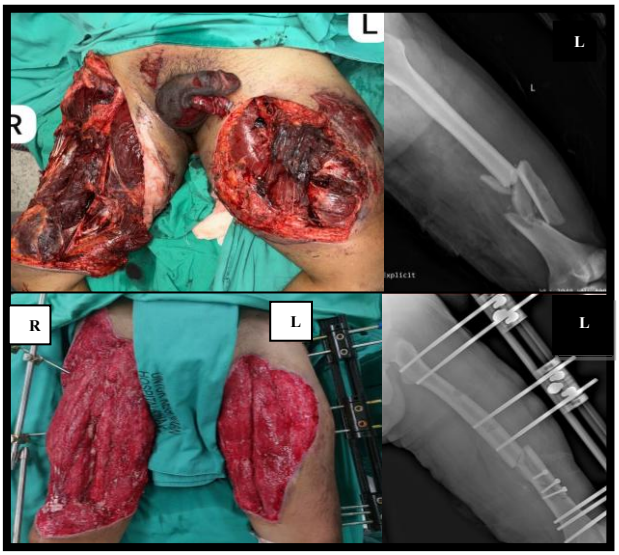

Figure 1: Pre-op and post-op wound pictures and x-rays.

Postoperatively, daily dressings with superoxidized solution and paraffin net transitioned to carboxymethyl cellulose (CMC) silver dressings to manage wounds. Multiple debridements were performed due to infection and necrosis. Despite healthy granulation, large soft tissue defects persisted, leaving neurovascular structures exposed. On 19/12/24, ADM was applied as a scaffold for neovascularization and wound prep. Subsequently, split-thickness skin grafting (SSG) to achieve stable coverage.

Figure 2: Wound picture of bilateral lower limbs post-ADM application (left) and post-SSG (right).

ADM converted a devitalized wound bed into a viable grafting surface (1,2), providing structural support while protecting neurovascular structures. It minimized contracture, maintained flexibility, and reduced donor-site morbidity compared to flaps (2). SSG successfully restored soft tissue coverage, reinforcing ADM's role in limb salvage and wound management (1,2).

CONCLUSION:

This case highlights the complexity of managing severe degloving injuries with open fractures, where ADM was a critical scaffold, supporting neovascularization and optimizing soft tissue regeneration in extensive defects (1,2).

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