

Case Report

Forearm Degloving

Hospital Middlemore Hospital, New Zealand

Trauma to the blood vessels limited flap surgery as a viable option, so NovoSorb BTM was used for soft tissue reconstruction to provide coverage for the exposed structures.

Healthy male sustained partial right-hand amputation and degloving of forearm, with exposed tendons, due to a motor vehicle accident. The wound was not suitable for immediate skin grafting due to the exposed tendons and the need for deferred tendon reconstruction. A free flap was considered but excluded due to concerns around using previously traumatised donor vessels for microvascular anastomosis.



Figure 1: Initial presentation of injury.



Figure 2: Application of BTM.



Figure 3: Day 19 after BTM application; The matrix appears well vascularised and integrated.

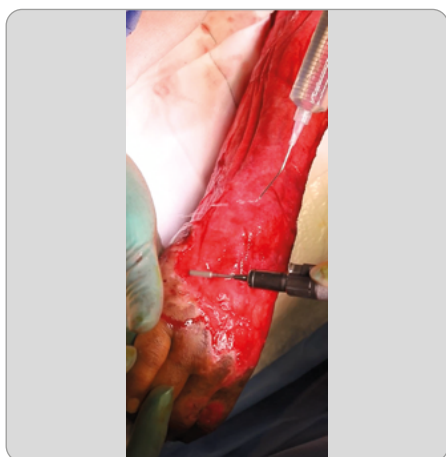


Figure 4: Day 28 after BTM application; Sealing membrane delaminated and neodermis refreshed with dermabrasion.



Figure 5: 6 months post skin grafting.



Figure 6: 11 months post skin grafting after reconstruction of EPL tendon restoring function to the hand.

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Background

A 28-year-old Indian male was involved in a high-speed motor vehicle accident on a motorway. During the crash, his right hand was raised to shield his face, resulting in his hand piercing the windshield. The patient sustained a partial amputation of his right hand with fracture of the distal radius, ischemia of the hand with injury to the radial and ulnar arteries, laceration of several tendons, and degloving of the right forearm soft tissues (Fig. 1). The patient had no significant comorbidities.

Treatment

Initial treatment was provided at Auckland Hospital, where the fracture was reduced with K-wires, radial and ulnar arteries were repaired, arterial inflow to the hand was restored, and the non-viable skin was debrided. The wound was initially managed using negative pressure wound therapy (NPWT).

The patient was transferred to Middlemore Hospital, where he underwent further debridement and application of NPWT until the remaining skin appeared viable. The wound was not suitable for immediate skin grafting due to the exposed tendons and the need for deferred tendon reconstruction. A free flap was considered but excluded due to concerns around using previously traumatised donor vessels for microvascular anastomosis.

After the second debridement, BTM was applied to the wound bed and held in place with staples on the wound margin and quilting staples across the surface (Fig. 2). Initial outer dressings consisted of antimicrobial silver dressing and NPWT. BTM application was reviewed at 1 week, with dressings changed on the ward. BTM was subsequently dressed with an antimicrobial silver dressing and bandage, with changes occurring twice a week. After 19 days, BTM appeared vascularised and integrated (Fig. 3). At 4 weeks post BTM application, the sealing membrane was delaminated, the neodermis was refreshed using dermabrasion, and a split-thickness skin graft was applied and dressed (Fig. 4).

Outcome

Five days after skin graft application, the outer dressing was removed to show complete take of the skin graft. Following graft take, occupational therapy commenced. The skin graft matured well with a good aesthetic and functional result. At 6 months post graft, a tendon transfer was performed to reconstruct the damaged EPL tendon, restoring function to the patient's hand (Fig. 5 and 6).

NovoSorb BTM is designed to temporise the wound and facilitate the construction of a vascularised neodermis, ready for definitive closure. NovoSorb BTM is indicated for full or deep partial thickness burns and wounds, surgical and reconstructive wounds and traumatic wounds. For full device details, including indications, contraindications, warnings and precautions, refer to the Instructions For Use, available at polynovo.com

The case information presented is intended for educational purposes only. Any opinions expressed are the surgeon's own and not intended as a product endorsement.