

THE ROLE OF BIOLOGICAL DRESSING IN EARLY WOUND BED PREPARATION FOR CRUSH-AVULSION AMPUTATION INJURIES: CASE SERIES

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Introduction

Crush-avulsion amputations of digits are common industrial injuries. The use of biological dressing in early treatment provides better healing, early grafting and recovery in patients with crush-avulsion injury of digits.

Case reports

Case 1: 36 years old male, sustained complete avulsion of distal phalanx of right thumb and right thenar eminence. Wound was debrided and homograft was applied. 2 weeks post operatively, he achieved adequate tissue coverage and able to preserve thumb function, a definitive skin graft was performed later.

Case 2: 35 years old male, sustained degloving injury of the dorsum of his left hand. Post debridement, the degloved skin was refashioned as biological graft but subsequently lysed with progressive gangrene of all affected fingers after a week, was re-debrided, removed, and replaced with synthetic dressings.

Case 3: 23 years old male with degloving skin of the right hand distal to wrist joint, exposing subcutaneous plane with total amputation of all fingers. Degloved skin refashioned as biological graft, wound gradually healed completely by epithelialization.

Discussions

A degloving injury attains more significance in the hand because of the irreplaceable quality of the skin that has been lost and the exposure of the delicate structures in the hand. It is important to provide an early coverage for early rehabilitation.^[1]

Case 1



Pre-operative

Postoperative

Case 2



Pre-operative

Postoperative

Case 3



Pre-operative

Postoperative

Principles of managing these injuries are to preserve as much structures as possible, early definitive skin cover, good quality skin cover and early return of function.^[1]

When replantation or revascularisation of the degloved skin is not possible, it may be used as a full thickness skin graft or thick split skin graft. The skin is defatted and draped over the degloved hand, and act as a biological dressing^[1].

Biological dressings used for temporary coverage of open wounds exerts both mechanical and physiologic effects by protecting the wound, maintaining microbial control, and hastening wound maturation^[2].

A viable skin allograft can increase vascularity in the wound bed, and promote angiogenesis with enhanced capillary ingrowth on the wound bed, which makes it ideal for early wound bed preparation for subsequent autografting^[3].

Conclusion

Salvaged degloved skin and human skin allograft is effective in providing initial skin coverage. It provides a readily available option and is an excellent adjunct in preparing the wound bed. It can also provide the surgeon time to stabilize the patient prior to definitive reconstruction.

References

- 1.R. Krishnamoorthy. Degloving injuries of the hand. Indian J Plastic Surg. 2011;44(2): 227-236
- 2.Basil A., Pruitt Jr., Characteristics and Uses of Biologic Dressings and Skin Substitutes. Arch Surg. 1984;119(3):312-322.
- 3.Ahmad Sukari Halim, Teng Lye Khoo, Shah Jumaat Mohd Yussof. Biologic and synthetic skin substitutes: an overview. Indian J Plas Surg. 2010;43(Suppl): S23-S28