
600 Reconstruction of Finger Contracture with an Expanded Dorsal Metacarpal Artery Perforator Flap

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Introduction: The first dorsal metacarpal artery perforator (DMCAP) flap is frequently used to cover exposed bone, tendon and neurovascular structures in the hand after trauma and burns. The size and width of DMCAP flap is limited and rotation arc generally lets to cover defects up to middle phalanx. Expansion of the DMCAP flap has not been reported in the literature and this technique might be solution to increase flap viability and size in order to cover defects up to distal phalanx. In this study, we will describe utilization of tissue expander to first DMCAP and present a case of electric burns in with flexor contracture.

Methods: A nine-year-old male patient applied to our clinic with the complaint of inability to extend the second finger of the left hand after an electrical burn. Physical examination revealed flexor contracture in the distal interphalangeal (DIP) and proximal interphalangeal (PIP) joints. Reconstruction was planned for the patient with a two-session expanded first DMCAP flap.

In the first session, a 16 cc 5x3 cm tissue expander placed through a 3 cm vertical incision at the fifth metacarpal level. From the second postoperative week, the tissue expander was inflated with 1 ml of isotonic three days a week. Six weeks later, the DMCAP area was enlarged by giving 45 cc saline.

Results: In the second session, contractures at the level of the left hand 2nd finger DIP and PIP were excised.. Left hand 2nd finger was fixated in extension with K-wire. 9x3 cm DMCAP flap was elevated by dissection over the paratenon and the pedicle was preserved. The flap was adapted to the defect area on the volar face with 180-degree rotation angle. The flap donor site was closed primarily.

There were no complications in the post-operative period. K-wire was removed at 6 weeks postoperatively. The patient was referred to the physical therapy.

Conclusions: In cases where the tissue defect cannot be closed with loco regional flaps, extra tissue can be provided by free flaps or using tissue expanders. Primary closure of the donor area, appropriate flap thickness for the finger, and aesthetically pleasing results are among the advantages of the expanded DMCA flap.. However, in tissue expander applications in the upper extremity, the patient should be followed closely, and pain and finger circulation should be constantly questioned.

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601 Bromelain Based Enzymatic Debridement Followed by Application of Autologous Cell Suspension for Treatment of Burns

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Introduction: Bromelain based enzymatic debridement has been shown to have a unique selectivity for nonviable tissue and is being evaluated for its use in the treatment of select burn wounds. The treatment has potential to augment more traditional operative eschar excision. Herein, we retrospectively review our tertiary burn center's early experiences in cases in which bromelain based enzymatic debridement (BBED) is paired with autologous cell suspension (ACS).

Methods: Patients whose burn wounds were deemed eligible for BBED at our institution from July 2020 to June 2021 were queried for concurrent treatment with ACS. Inclusion criteria by study design consisted of 18 years of age or older, non-electrical and non-chemical burns, predominance of deep partial and/or full thickness burn, and less than 30% total body surface area. Success of escharotomy by BBED, grafting methods, infections, transfusions, inflammatory response, and response to grafting were analyzed.

Results: Seven patients met inclusions criteria from July 2020 to June 2021. The mean age was 44 (IQR: 39-53). The mean TBSA was 13.7% (IQR 8-20). The mean time from injury to BBED was 2.1 days (IQR 1.5-2.0). The mean time to ACS after BBED was 1.3 days (IQR 1.0-1.5). The mean area debrided with BBED was 2347 sq cm (IQR 1367-3534). All patients were determined to have complete eschar removal on the day of application by the multidisciplinary burn team. All seven cases had deep partial thickness areas treated with ACS alone, with a mean area of 1574sq cm (IQR 877-2327). The total area treated was 11,016 sq cm. Only two patients required delayed grafting, a combined total of 1573 sq cm, meaning that 86% of the total burn area treated with ACS alone was recovered. Five patients had ACS paired with split thickness autografts, with a mean area of 867 sq cm (IQR 519-1328). Graft imbibition was noted to be rapid with >95% wound closure by postoperative day eight. There were no graft infections, and no transfusions required. White blood cell (WBC) counts decreased after BBED, then increased marginally after grafting. Only two patients had WBC >20,000 and this aided in diagnosis of one donor site infection and one pneumonia.

Conclusions: In our series, BBED within three days of injury paired with ACS within two days of BBED resulted in excellent split thickness graft take and recovery of 86% of the burn wounds treated with ACS alone.