

Case report: Expansion and closure of wound after shoulder disarticulation to allow for durable reconstruction in face of myoelectric prosthetic

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Case report #49

Prior to application of DERMACLOSE device: A 47-year-old male patient suffered an avulsion injury of the left upper extremity at the level of the proximal humerus. The patient was treated at the regional trauma center, and a complete shoulder disarticulation was performed. The patient was then transferred to the reconstructive surgery service and deemed an ideal candidate for targeted muscle reinnervation to allow for the future usage of an intuitive pattern recognition-powered myoelectric prosthetic. In order to allow for durability to survive against the myoelectric prosthetic, it was determined that full-thickness soft tissue reconstruction would be necessary. Although skin graft reconstruction could be performed, it would not be durable enough to survive against the weight of a full upper extremity myoelectric prosthetic. Flap reconstruction was considered, but avoidance of a large-scale intervention was desired, considering the patient's overall medical condition. Therefore, tissue expansion was considered.

DERMACLOSE device application: The patient was taken to the operating room for combination targeted muscle reinnervation as well as application of tissue expansion. The targeted muscle reinnervation was completed and then a single DERMACLOSE external tissue expander was placed for expansion and wound closure. The standard V-M-W technique was used with 3 total bars on either side of the wound, 2-3 cm away from each other and 0.5 – 1.0 cm away from the wound edge.

DERMACLOSE device removal: Six days after the application of the DERMACLOSE expander, the wound edges were found to be in close approximation and the patient was returned to the operating room. The expanders were removed and the wound was closed with multiple layers of sutures.

Follow-up: The patient returned for follow-up 2 weeks post operative. Sutures were removed and the wound completely healed. The patient was integrated into an amputation reconstruction multidisciplinary care program. He completed rehabilitation for integration of his targeted muscle reinnervation and obtained a pattern recognition-powered myoelectric prosthetic. The durable soft tissue reconstruction allowed for pain-free utility of the myoelectric prosthetic without concerns for skin breakdown. **Conclusion:** External tissue expansion can be utilized as an excellent method of soft tissue reconstruction for patients who require durable skin when using heavy myoelectric prostheses.

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INDICATIONS FOR USE: The DERMACLOSE Continuous External Tissue Expander is indicated for use in assisting with the closure of moderate to large surgical or traumatic acute full thickness wounds of the skin by approximating and reducing the size of the wound.

CONTRAINDICATIONS: The DERMACLOSE Continuous External Tissue Expander should not be used on ischemic, infected, or acute burned tissue. It should not be used on fragile tissue at the edges of a wound.

For single patient use only.

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Procedure: Targeted muscle reinnervation followed by DERMACLOSE device for durable soft-tissue reconstruction



Suture removal 2 weeks post op



Pain-free myoelectric prosthetic without skin breakdown



Final with Prosthetic



Case report courtesy of Ajul Shah MD.