

The Changing Patterns of Extremity War Trauma and Microsurgical Challenges: The Afghanistan Experience

Ian L. Valerio MD, MS, MBA, Patrick L. Basile MD, Robert T. Howard MD, Anand R. Kumar MD.

Abstract

Introduction: Extremity traumatic war injuries are complex. As aggressive forward resuscitative care and stabilization measures in the war theater have advanced, the survival rates of the war wounded continue to improve. Additionally, the latest war transport systems have enabled the provision of complex medical care to our wounded personnel in an abbreviated timeframe, with transfer from initial battlefield injury to a definitive stateside care setting typically within 5 days.

Methods: All extremity limb salvage cases treated over the last 16 months at the National Naval Medical Center were reviewed. Outcomes assessed included: types of flaps utilized, co-morbidities, flap success and failure rates, timing of wound coverage, and complications.

Results: A total of 40 limb salvage procedures were performed, including 22 upper extremity and 18 lower extremity flaps. A total of 15 pedicle and 24 free flaps were utilized for limb salvages. The 24 free flaps consisted of 15 fasciocutaneous, 7 myocutaneous, 4 muscle, 1 osseous, and 1 omental flap. Overall flap success rate was 95%. The average time to definitive flap coverage was 21 days. One patient elected extremity amputation after flap failure (2.5%).

Conclusion: Limb salvage cases secondary to war injuries are challenging and complex. Evolving trends, such as more dismounted blast exposures, new and innovative protective body armor, universal acceptance and use of tourniquets, and aggressive forward care coupled with rapid transport to stateside Level V Military Medical Centers, have contributed to improved war wounded survival rates. Recent changing patterns of war-related limb salvage cases include: 1) a shift to more upper extremity compared to lower limb salvages, 2) an increase in the use of fasciocutaneous flaps, 3) higher "downrange" and pre-flap DVT and pulmonary emboli rates, and 4) acceptable flap success rate and outcomes within the subacute period of injury.