

Emerging Trends In Limb Salvage Over the Last Decade of War Trauma

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Abstract

Introduction: The last decade of war trauma has resulted in a high volume of flaps for limb salvage being performed at our military treatment facilities. Tremendous advancements in forward surgical care have resulted in improved survival rates despite the presence of devastating complex multi-extremity injuries. Throughout the course of the Iraq and Afghanistan Wars interesting trends in flap procedures for limb salvage have emerged and identified.

Methods: All combat extremity flap salvage cases treated from 2003 through 2012 at our center were reviewed. Data assessed included lower, upper, and multi-extremity flap reconstructions and timing of definitive wound coverage. Outcomes measured included flap and limb salvage success rates, complications such as partial/total flap losses, donor or recipient wound healing problems (hematoma, infections, dehiscence, or secondary revision procedures), and failed limb salvage.

Results: A total of 160 flap limb salvage procedures were performed, consisting of 76 upper and 84 lower extremity cases, respectively. From 2003-2008, lower extremity salvages outnumbered upper extremity cases by two-fold (50 lower versus 25 upper cases). Additionally, pedicle flap reconstructions were utilized 3x more often than free tissue transfers (78% of lower and 76% of upper). Average time to definitive flap procedure for this period was 27 days. From 2009 to 2012, upper limb salvages became more predominant, occurring at a 3:2 ratio over lower limb salvage cases. A shift was also noted in a transition away from pedicle flap limb salvages as free tissue transfer procedures were performed twice as commonly. Average time to definitive flap extremity salvage decreased to 24 days. Flap success rates for the two time periods did not significantly differ (93% versus 97%, $p > 0.05$).

Conclusion: The last decade of war trauma has presented our institution with a high volume of limb salvage cases. Over the duration of this war reconstruction experience, emerging trends have been noted as the types of combat injuries have changed. Trends such as a shift to more upper extremity compared to lower extremity flap coverage for limb salvage cases, increases in the use of skin and perforator flaps for extremity limb reconstruction, and slight reductions in the time to definitive flap coverage have emerged. Furthermore, high flap success rates within the subacute period of injury for reconstruction have been maintained throughout the duration of war reconstruction experience.