

Muscle Versus Skin or Perforator Flaps for Limb Salvage in War Trauma: Is There a Difference?

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Abstract

Background: Wars in Iraq and Afghanistan have presented surgeons with soft tissue coverage challenges in patients who often have multiple injuries that limit options for availability of known reconstructive workhorse flaps. The purpose of this study is to investigate our experience and compare outcomes for muscle and skin based flaps.

Methods: A multicenter retrospective review of injured Servicemembers treated for extremity injuries from 2003 through 2012 was completed. Data collected included location and flap type. Outcomes measured included complications such as infection and flap loss, extremity complications, and failed limb salvage.

Results: Since 2003, 346 flap procedures (213 pedicle, 133 free) were performed. Patients were mostly males, aged 17-63, with a mean injury severity score of 18. A variety of flaps were used for reconstruction (Table 1).

Muscle		Skin/Perforator		Other	
	n(%)		n(%)		n(%)
Total	196(57)	Total	143(41)	Total	7(2)
Free	63(32)	Free	65(45)	Free	5(1.5)
Latissimus	44(70)	Anterolateral thigh (ALT)	31(48)	Pedicle	2(0.5)
Rectus	12(19)	Lateral arm	15(23)		
Serratus	3(5)	Scapular	13(20)		
Pedicle	133(68)	Pedicle	78(55)		
Gastrocnemius	63(47)	Sural	21(27)		
Soleus	35(26)	Groin	17(22)		
Latissimus	19(14)	Radial forearm	8(10)		

Table 1. Flap Options

Muscle flaps had a higher failed limb salvage rate; otherwise outcomes were similar (Table 2).

	Muscle	Skin/Perforator	
	n(%)	n(%)	P-value
Total	46(13)	34(10)	0.524
Flap failure	25(7)	11(3)	0.093
Soft tissue Infection	26(8)	12(3)	0.108
Osteomyelitis	21(6)	19(5)	0.288
Amputation	33(10)	13(4)	0.027

Table 2. Complications

Conclusion: In nearly a decade of war trauma, our group has performed a high volume of complex extremity reconstructions. We present a broad range of flap options to provide adequate coverage in extremity salvage. Complication rates did not significantly differ between the muscle and skin/perforator-based flap groups. Each flap category has utility, but each must be carefully considered prior to transfer based on reconstructive and rehabilitation goals of our war wounded.