

Factors Associated with Failed Hardware Salvage in High Risk Patients following Microsurgical Lower Extremity Reconstruction

Ketan M. Patel MD; Mitchel Seruya MD; Brenton Franklin BS; Margaret Gatti MD, MPH; Christopher Attinger MD; Ivica Ducic MD, PhD

Background: Lower extremity hardware salvage remains a difficult challenge in patients with multiple, complex co-morbidities. Surgeons must weigh the benefit of stabilization against the costs of compromised wound healing and potential limb loss. The purpose of this study was to identify factors associated with failed hardware salvage following microsurgical lower extremity reconstruction

Methods: The authors performed a retrospective, IRB-approved review of patients who underwent lower extremity hardware salvage via free tissue transfer by the senior author (I.D.) from 2004-2010. Outcomes were binarized into successful versus failed hardware salvage, with failure defined as absence of hardware at latest follow-up.

Results: 34 patients were identified, with an average follow-up of 2.6 years (0.3 – 7.0 years). Fifteen patients had successful salvage; 19 patients required hardware removal, representing a 55.9% failure rate. Comparison of patient demographics revealed similar surgical age, BMI, and co-morbidities between successful versus failed hardware salvage groups. Analysis of wound characteristics revealed significantly longer time to hardware coverage and longer duration of IV antibiotic coverage in failed versus successful hardware salvage patients (38.9 versus 9.3 weeks, $p = 0.02$; and 6.5 versus 4.1 weeks, $p = 0.03$, respectively). Initial wound cultures demonstrated a significantly higher positive growth with failed versus successful salvage (100.0% versus 57.1%, $p = 0.003$); the distribution of microbial flora on initial and final cultures was similar between groups. Initial pathology revealed higher frequency of chronic osteomyelitis in failed versus successful hardware salvage patients (66.7% versus 33.3%, $p = 0.08$); absence of osteomyelitis and presence of acute osteomyelitis were similar between groups.

Conclusions: Based on this study, factors associated with failed hardware salvage included: longer time to hardware coverage; increased duration of antibiotics; positive initial wound cultures; and presence of chronic osteomyelitis on initial pathology. These findings underscore the need for early and timely hardware coverage to maximize the likelihood of salvage.