

Delay in Flap Coverage for Open Tibia Fractures Increases Inpatient Complications: A Cohort Study of 140 North American Trauma Centers

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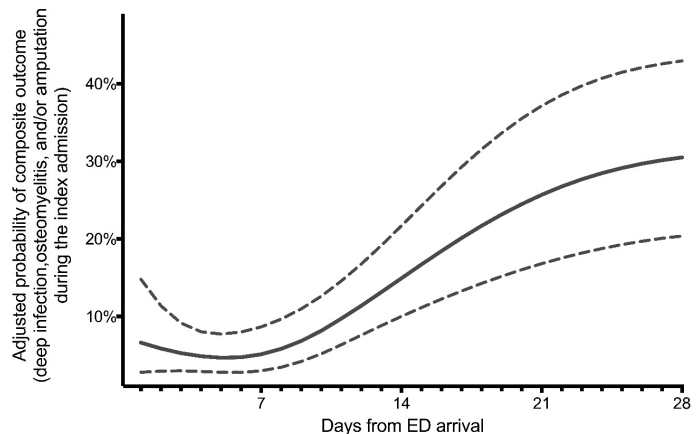
Purpose: This study was conducted to measure time to flap coverage after open tibia fractures and assess whether delays are associated with inpatient complications.

Methods: Data were derived from participating Trauma Quality Improvement Program (TQIP) centers between 2012 and 2015. Adults undergoing surgery for (1) an open tibia fracture and (2) a soft-tissue flap were eligible. The primary exposure was time from hospital arrival to definitive flap coverage (in days). The primary outcome was a composite of the following complications during the index admission: deep infection, osteomyelitis, and/or amputation. The primary analysis compared early and delayed coverage groups (≤ 7 and > 7 days, respectively) after matching on propensity scores. We also modeled time to flap coverage as a continuous variable with logistic regression and cubic splines.

Results: There were 672 patients at 140 centers included, of which 412 (61.3%) received delayed coverage (> 7 days). After matching, delayed coverage was associated with a significant increase in complications (16.7% vs 6.2%, $P < 0.001$, NNH [number needed to harm] = 10). The duration of delay was also associated with an increasing risk (adjusted odds ratio [OR] 1.45, 95% confidence interval [CI] 1.27 - 1.66, per week coverage was delayed, $P < 0.001$).

Conclusion: This is the first multicenter study of flap coverage for open tibia fractures. Complications rose significantly when flap coverage was delayed beyond 7 days, consistent with current guideline recommendations. Since the majority of patients did not receive coverage within this time frame, quality improvement initiatives are required.

Relationship between timing of flap coverage and the adjusted probability of the composite outcome. Probabilities (with 95% CIs) were modeled using adjusted cubic splines.



See pages 401 - 442 for financial disclosure information.