

Tourniquet Use During Ankle Fracture Fixation Does Not Affect Rates of Wound Healing and Infectious Complications

*Trenton William Rivera, BA; Alex Benedick, MD; Heather A. Vallier, MD
MetroHealth System, Cleveland, OH, United States*

Purpose: Use of a tourniquet during ankle fracture fixation varies at the discretion of the treating surgeon. Many surgeons prefer the bloodless field provided with tourniquet use; however, others fear the ischemic insult to tissues with tourniquet use can have deleterious effects to the soft-tissue envelope, theoretically setting the stage for wound healing issues and infection. The purpose of this study was to evaluate the effect of tourniquet use on postoperative wound healing complications, superficial infections, and deep infections after ankle fracture fixation.

Methods: 995 adult patients treated surgically for a torsional ankle fracture (OTA 44B and C) at a single Level-I trauma center were reviewed. Demographic information, comorbidities, injury characteristics, complications, and secondary procedures were recorded. Analysis was performed initially on the whole group of included patients, followed by subgroup analysis on patients who might be more sensitive to the transient tissue ischemia encountered with tourniquet use (including those with diabetes, obesity, tobacco users, age >65 years, and open fracture). Multiple logistic regression analysis was performed.

Results: A tourniquet was used in 571 (57.4%) of cases. 22.2% of patients had open fractures in the group with no tourniquet, versus 11.6% ($P < 0.001$), but no differences in fracture pattern were noted. There were no differences in demographics or medical comorbidities except tobacco use was more frequent in the no tourniquet group (52.3% vs 45.5%, $P = 0.04$). No significant difference in rates of postoperative complications between the no tourniquet and tourniquet groups was found, including superficial infection (4.0% vs 5.1%), deep infection (both 2.1%), and wound healing problems (5.7% vs 3.9%, $P = 0.18$). Similarly, subgroup analysis failed to reveal any difference in postoperative complication rates based on diabetes, obesity, tobacco, age, or open fracture. However, patients with open fractures or diabetes were more likely to experience deep infection (odds ratio [OR] 4.05 and 5.01, respectively, $P < 0.01$).

Conclusion: Tourniquet use during ankle fixation did not affect rates of wound healing problems or infections. Although patients with open fractures or diabetes are at higher risk, tourniquet use was not associated with increased rates of postoperative complications. Surgeons should be aware that the tissue ischemia produced by a tourniquet does not appear to result in more wound healing or infectious complications.