Lateral Patient Positioning for Pilon and Trimalleolar Ankle Fractures
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Introduction/Purpose: Preoperative planning for pilon and trimalleolar ankle fractures can be difficult. Due to fracture complexity, staged open reduction and internal fixation (ORIF) is performed, resulting in two surgeries. For other situations, definitive fixation occurs with one surgery. However, patients require both prone and supine positioning in order to address all fracture components. Repositioning, re-prepping and re-draping adds to operating room (OR) time and time under anesthesia, increasing the risk for anesthesia related complications. Additionally, repositioning the patient can potentially increase fluoroscopy time and radiation exposure to the patient. Lateral patient positioning obviates many of these concerns. Our study goal was to assess the safety and effectiveness of lateral positioning for pilon and trimalleolar ankle fracture ORIF compared with patients placed in standard positioning (i.e supine/prone).

Methods: This was a retrospective cohort analysis of 41 patients who underwent operative fixation of a pilon or trimalleolar ankle fracture at a single institution level I trauma center. This study compared outcome data for those undergoing the procedure in lateral positioning (n=31) vs. standard (prone/supine) positioning (n=10). Exclusion criteria included pregnant women, prisoners, patients with less than 6 weeks of follow-up, previous or bilateral pilon or ankle fracture surgery or patients treated with limited internal fixation and external fixation. Variables collected included patient demographics, time to union, time to weightbearing, complications and any repeat surgeries. Additionally, chart review was performed analyzing OR time, fluoroscopy time and radiation dose to patient.

Results: The patients fixed in the lateral position underwent significantly less time in the OR and subsequent time under anesthesia (p= 0.02). The average OR time in the lateral positioning group was 160 minutes (min) (range: 65-234 min). The average OR time in the standard positioning group was 193 minutes (range: 143- 263 min). Fluoroscopy time was less in the lateral group compared with the standard group (1.47 vs 2.09 min), though this was not statistically significant. Mean patient radiation dose was less in the lateral position group, but without statistical significance (3.22 vs 3.66 mGy). Compared with the standard positioning group, the lateral group demonstrated a significantly shorter time to weightbearing both in (avg 7.8 weeks) and out (avg 11.8 weeks) of the walking boot (p= 0.01). There were no significant differences in complications or time to fracture union.

Conclusion: Our results demonstrated that patients treated in the lateral position progressed in their weightbearing faster without increased risk of complications or delayed union, compared with the standard positioning group. Additionally, perhaps the most intriguing conclusion from our study was that OR time, and therefore time under anesthesia was significantly improved with lateral positioning. Fluoroscopic time and radiation dose exposure were also found to be less on average in the lateral positioning group. Our study suggests that lateral positioning for ORIF of pilon or trimalleolar fractures may not only improve patient safety but also reliably lead to acceptable patient outcomes.
