

**Outcomes of Nonoperatively Treated Vancouver B1 Fractures: Is Failure Common?***William Efird, MD; Evan Boyd, MD; Patrick Christopher Schottel, MD;**Nathaniel Jonathan Nelms, MD; Michael Blankstein, MD**University of Vermont Medical Center, Burlington, Vermont, UNITED STATES*

**Purpose:** Periprosthetic fractures (PPFx) are a severe complication of total hip arthroplasty and are typically treated with lateral locking plate fixation or revision arthroplasty. Surgery can result in significant morbidity. Nonoperative PPFx management may provide an alternative in select patients, but its outcome is not commonly reported. We aimed to determine if nonoperative management of Vancouver B1 fractures with minimal displacement without stem subsidence has acceptable outcomes.

**Methods:** All Vancouver B1 PPFx patients treated over a 10-year period at a single Level I trauma center were identified. Patients were excluded if clinical follow-up was <3 months or were operatively treated not using a lateral locking plate. Patient demographics were retrospectively reviewed from the patient's electronic medical record and postoperative radiographs were studied. Collected outcomes included 1-year mortality, need for unplanned surgery within 24 months of injury, fracture union rate, and return to preinjury ambulation status. Patients were separated into 2 groups based on initial treatment regimen: nonoperative and operative. The decision for nonoperative or operative treatment was at the discretion of a fellowship-trained trauma or arthroplasty orthopaedic surgeon based on fracture characteristics. All nonoperative fractures were spiral, displaced less than 6 mm without angulation, isolated to the metadiaphyseal region of the proximal femur, and had no stem subsidence. Operative fractures were displaced >6 mm, angulated, and had significant diaphyseal involvement.

**Results:** 49 patients met the study's enrollment criteria. The 23 nonoperative and 26 operative patients had a mean age of 81 and 73 years, respectively ( $P = 0.04$ ). There was no significant difference in 1-year mortality between the nonoperative and operative cohorts (17% vs 8%;  $P = 0.27$ ). 91% of the nonoperative cohort healed without surgery. Additionally, we found no significant difference in unplanned surgery between the nonoperative and operative groups (5% vs 12%;  $P = 0.38$ ), fracture union rate (100% vs 92%,  $P = 0.35$ ), or return to preoperative ambulation status (86% vs 88%;  $P = 0.82$ ).

**Conclusion:** Our study reports outcomes for the largest nonoperatively treated Vancouver B1 PPFx cohort to date. We found that select nonoperatively treated patients had a low 1-year mortality rate, infrequent need for unplanned surgery, high union rate, and frequent return to their preinjury ambulation status. Nonoperative management is not appropriate for all Vancouver B1 PPFx patients, but those with a minimally displaced metadiaphyseal spiral pattern and partial remaining distal stem fixation can be successfully treated nonoperatively.