Blade Plate Fixation for Peritrochanteric Nonunion Is Associated With a High Rate of Hardware Failure

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Purpose: Previous studies evaluating angled blade plates (ABPs) to correct peritrochanteric nonunions have been limited to small, retrospective case series. The purposes of this study were to (1) compare outcomes between the ABP and other fixation methods used in peritrochanteric nonunions and (2) identify predictors of ABP failure.

Methods: Operatively treated peritrochanteric nonunions were retrospectively identified using CPT codes. All included patients had minimum 6-month follow-up or a documented complication. Pathologic, femoral neck, and femoral shaft fractures were excluded. Surgical technique, clinical, and radiographic outcomes were compared between patients fixed with ABP vs other fixation hardware (intramedullary nail [IMN], side plate [SP], and IMN + SP) and between patients with successful vs failed ABP using Pearson's $\chi 2$ and analysis of variance. Regression analysis was performed to identify variables with increased odds of ABP failure.

Results: A total of 72 peritrochanteric nonunions were included: 37 blade plates, 22 IMNs, 8 SPs, and 5 IMN + SP. The mean age was 62.9 years with a mean follow-up of 2.2 years. There were no significant differences in demographics, presence of septic nonunions, bone graft supplementation, additional surgical techniques used, and radiographic outcomes between patients treated with ABP vs other fixation hardware. However, ABP had a significantly higher rate of hardware failure compared to other methods of fixation (35.1% vs 8.6%, P = 0.010). When comparing patients with successful vs failed ABP fixation, mean body mass index (BMI) was significantly higher in those with failed ABP (26.2 vs 33.9, respectively; P = 0.019). There were 5 patients with BMI >35 and 25 patients with BMI <35. Patients with BMI >35 had 16-times higher odds of failed ABP fixation (P = 0.019). No additional demographic, surgical, or radiographic outcomes were independently associated with increased odds of ABP failure.

Conclusion: The use of ABP for peritrochanteric nonunion is associated with a significantly higher rate of hardware failure compared to other methods of fixation. Additionally, patients with a BMI >35 are at significantly increased risk of ABP failure. Intramedullary fixation strategies should be considered for peritrochanteric nonunions, particularly in obese patients.