Contemporary Use of Trochanteric Plates in Periprosthetic Femur Fractures: A Displaced Trochanter Will Not Be Tamed
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INTRODUCTION: Trochanteric fractures associated with total hip arthroplasty (THA) are a potentially devastating complication. The strong displacing force of the abductors, often in combination with osseous deficiency from osteolysis or resorption, can overwhelm fixation efforts. The purpose of this study is to determine the reoperation and complication rate following trochanteric plate fixation of these fractures and identify risk factors for failure.

METHODS: We identified a consecutive series of 44 patients with 44 periprosthetic fractures of the greater trochanter between 2010 to 2020. Mean age was 72 years, and 61% were female. The greater trochanter was associated with a Vancouver B2 fracture in 22 (50%) patients and occurred in isolation (Vancouver A) in 22 (50%) patients. The majority (n=30, 68%) of the fractures occurred following primary THA, and 14 (32%) occurred during or after revision THA. The fracture was displaced in 14 (31%) patients and there was preexisting osteolysis of the trochanter in 16 (36%) patients. Mean follow up was 2 years.

RESULTS: The 2-year cumulative probability of any subsequent reoperation was 21%. There were 9 total subsequent reoperations, including 5 cases of hardware removal for fixation failure and nonunion, 2 debridements for periprosthetic joint infection, 1 reoperation for a distal femoral shaft fracture, and 1 revision to a constrained liner for subsequent instability. The trochanteric fracture went on to nonunion in 14 (31%) patients, and hardware failure occurred in 10 (23%) patients. A trochanteric bolt was used in addition to the trochanteric plate in 6 (14%) patients, of which 4 (67%) patients had trochanteric bolt failure and 3 (50%) patients had trochanteric nonunion. Displacement of the greater trochanter prior to fixation was a predictor of subsequent nonunion (65% compared to 20%, p<0.01).

DISCUSSION AND CONCLUSION: In this large contemporary series of trochanteric plate fixation for periprosthetic fractures, there was a high rate of reoperation (21%), nonunion (31%), and hardware failure (23%). Despite reduction and fixation with a trochanteric plate, the majority of greater trochanteric fractures with initial displacement went on to nonunion. In patients with displaced trochanteric fractures, reduction and trochanteric plating should be approached with caution secondary to a greater than 50% complication rate with this technique.