## High Nonunion Rates Associated with Greater Trochanteric Claw Plate Fixation

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INTRODUCTION: Successful fixation of the greater trochanter in total hip arthroplasty poses a significant challenge with varied clinical outcomes reported despite advancements in fixation technology, especially in cases involving patients with poor bone quality or small fracture fragments, such as those classified as Vancouver A fractures. This study aimed to evaluate nonunion and reoperation rates following trochanteric plate fixation, comparing claw plate to locking plate methods.

## METHODS:

A retrospective review of 97 patients with periprosthetic greater trochanter fractures in primary and revision total hip arthroplasty from 2014-2023 was conducted. Initial injury, immediate, and final follow-up radiographs were assessed. Primary outcomes included fracture healing rate, reoperation rate, and mortality rates.

RESULTS: Of the 97 patients (mean age 75.0 years, 65% female), 56 (57.7%) underwent claw plate fixation and 41 (42.3%) underwent locking plate fixation. 51.6% of periprosthetic fractures occurred in primary hip arthroplasties and 48.4% in revision hip arthroplasties, with 24% classified as Vancouver A and 17% as Vancouver B2 fractures. No significant differences were observed in the rate of osseous union (56.8% claw vs 83.3% locking), fibrous union (24.3% claw vs 14.6% locking), and overall union (81.0% claw vs 97.9% locking). However, nonunion rates were significantly higher with claw plate fixation (18.9%) compared to locking plate fixation (2.1%), with 13.4% of claw plate patients requiring reoperation versus 3.1% in the locking plate group. All-cause mortality did not differ between the two groups. DISCUSSION AND CONCLUSION:

Fixation of trochanteric fractures remains a challenge in total hip arthroplasty as evidenced by a high incidence of nonunion rate and reoperation in this large series. Claw plate fixation demonstrated significantly higher nonunion rates, suggesting potential limitations of this approach in certain patient populations.

| Fracture Healing |                      |                      |                      |                 |   |
|------------------|----------------------|----------------------|----------------------|-----------------|---|
|                  | Osseous<br>Union (%) | Fibrous<br>Union (%) | Overall<br>Union (%) | Nonunion<br>(%) |   |
| Claw             | 56.76                | 24.32                | 81.08                | 18.92           | F |
| GT locking       | 83.33                | 14.61                | 97.94                | 2.06            |   |

| Outcomes                       |       |  |  |  |
|--------------------------------|-------|--|--|--|
| <b>Overall Reoperation (%)</b> | 16.49 |  |  |  |
| Claw plate                     | 13.40 |  |  |  |
| GT plate                       | 3.09  |  |  |  |
| Overall Mortality (%)          | 8.25  |  |  |  |
| Claw plate                     | 5.15  |  |  |  |
| GT plate                       | 3.09  |  |  |  |