Do We Need Such Large Implants on the Diaphyseal Ulna? Outcomes of 2.7 mm Versus 3.5 mm Plating

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Purpose: Diaphyseal ulna fractures comprise a significant proportion of traumatic injuries to the upper extremity. Traditionally, these fractures have been treated with 3.5-mm plates; however, these are often symptomatic and can lead to large stress risers after implant removal. The purpose of this study was to compare 2.7-mm plating to 3.5-mm plating for open reduction and internal fixation of diaphyseal ulna fractures.

Methods: A retrospective review of consecutive patients treated surgically for a displaced diaphyseal ulna fracture using either 2.7-mm or 3.5-mm dynamic compression style plates over a 10-year period was conducted. Patients who had a minimum 12 weeks of clinical follow up were evaluated for union outcomes, complications, and need for reoperation.

Results: A total of 135 patients met criteria for inclusion, with 61 patients treated with 2.7-mm plate fixation and 74 patients treated with 3.5-mm plate fixation. The overall rate of union was 94%. When comparing 2.7-mm and 3.5-mm plating, there was no significant difference in rates of union (2.7 mm: 96.7%; 3.5 mm: 91.2%) or rate of elective implant removal (2.7 mm: 6.6%; 3.5 mm: 12.2%). However, the 3.5-mm plate group had a significantly higher rate of total postoperative complications (2.7 mm: 3.3%; 3.5 mm: 18.9%; $p = 0.005$), more superficial infections (2.7 mm: 0%; 3.5 mm: 6.8%; $p = 0.0386$), and more unplanned returns to the operating room (2.7 mm: 0%; 3.5 mm: 6.8%; $p = 0.0386$). In regression analysis, 3.5-mm plating, vascular injury, AO/OTA C fractures, and open fractures were all associated with increased complication rates.

Conclusion: In the treatment of diaphyseal ulna fractures, 2.7-mm plating was associated with equivalent union rates, lower complication rates, and a decreased incidence of additional surgery when compared to 3.5-mm plating. Surgeons should consider 2.7-mm plating to be a safe and efficacious alternative to the historical gold standard of 3.5-mm plating.