Compression Locking Plate Use in Lateral Column Hindfoot Arthrodesis

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Summary: Compression locking plates provide adequate fixation with acceptable union rates in lateral column hindfoot arthrodesis.

Background: Arthrodesis of the calcaneocuboid joint is performed for a variety of pathological hindfoot conditions. This procedure can be performed in an isolated fashion for posttraumatic arthritis, or can be combined into a triple arthrodesis for deformity or instability cases. Traditional fixation of the calcaneocuboid joint involves the use of compression screws or staples. The development of locking plate technology has led to increased consideration of plate fixation in the foot, due to the relatively small size of the bones and often poor bone quality. This rigid fixation, combined with the ability to compress across the fusion site should result in improved healing rates, increased stability and ease of insertion. This study reviews our clinical experience with a compression locking plate to determine efficacy and complication rates in calcaneocuboid joint arthrodesis.

Materials and Methods: Surgical cases performed by a group of four foot and ankle specialty-trained surgeons over a 40-month period were reviewed. 101 patients were identified who had calcaneocuboid fusion performed with the locking compression plate and minimum one-year follow-up. One hundred of these cases were part of a triple arthrodesis, with only one isolated calcaneocuboid fusion. Clinical charts and routine radiographs were reviewed. Computed tomography scans were also utilized when available.

Results: Radiographic fusion was found in 92% of the cases. Mean time to radiographic union was 106 days. Of the eight nonunions, none were sufficiently symptomatic to require revision arthrodesis. The overall postoperative complication rate was 26%. Fifteen percent developed significant wound healing problems requiring surgical debridement or vacuum-assisted closure of the lateral hindfoot wound, however, only four patients experienced deep infection that necessitated hardware removal. Eight percent developed nonunion and 5% had hardware failure at the plate-screw interface, although only two of these failures led to nonunion.

Conclusion: The compression locking arthrodesis plate performed well in calcaneocuboid joint arthrodesis with fusion rates similar to those previously published. Complication rates were also similar and likely reflect difficulties with the lateral wound of a triple arthrodesis itself, rather than with a specific implant. This fixation method provides a quick, reliable and effective means of securing the lateral column in hindfoot fusions.