Locked Dorsal Compression Plate Arthrodesis for Degenerative Arthritis of the Midfoot

Christopher B. Hirose M.D.
Wesley F. Flint MD
Michael J. Coughlin MD
Boise, Idaho
Locked Dorsal Compression Plate Arthrodesis for Degenerative Arthritis of the Midfoot

Dr. Hirose is a consultant for Arthrex
Dr. Flint: No conflicts to disclose
Dr. Coughlin is a consultant for Arthrex, Stryker, Integra

We received no financial assistance for this study
The Lack of Popularity of Midfoot Arthritis Surgical Treatment

- Midfoot arthrodesis remains a technical challenge
- The relative small number of publications reflect its unpopularity
- Multiple techniques have been reported, reflecting the difficulty of achieving a good result
Midfoot Arthrodesis Current Status

• No consensus on preferred approach …

• No consensus on methods of fixation…

• No consensus on bone grafting…
The purpose of this study is to describe the results of a dorsal fixed-angle locking compression plate in the setting of multiple-joint midfoot arthrodeses.
Methods

- Retrospective study
- 62 consecutive patients who underwent midfoot arthrodeses from June 2009 to May 2016
- A total of 184 joints were spanned by dorsal fixed angle locking compression plates
- Patients were followed for one year
Methods

• Locked plates
  – Either unilaterally or bilaterally

• Static dorsal compression

Angular locking

Extended

Statically Compressed
Methods

• Radiographs were read by two fellowship-trained surgeons to determine the time to fusion

• If union was indeterminate, a computed tomography scan was obtained, with the presence of 50% or greater bridging bone as the definition of fusion
Results

• 156/184 fused (83%)

• Average time to fusion was 19.6 weeks

• Complications included persistent numbness (10), wound infection (2), and deep venous thrombus (1)

• Average VAS score diminished from 5.9 to 1.7
Conclusion

- Dorsal fixed angle locking compression plate
- Fusion rates not any better, and comparable with the existing literature
- The results indicate room for improvement
Conclusion: Methods for Improved Results

• Design of advanced plating systems
• Uniform joint compression
• Biologic augmentation
• Increased joint surface area
Baxter JR, Mani SB, Chan JY, Vulcano E, Ellis SJ. Crossed-screws provide greater tarsometatarsal fusion stability compared to compression plates. Foot Ankle Spec 2015 Apr;8(2):95-100.


