Dual Plating with Bone Block Arthrodesis of the First Metatarsophalangeal Joint: A Clinical Retrospective Review

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Introduction

- 1st MTP Arthrodesis with bone block indicated for:
  - Hallux rigidus w/ shortened 1st ray
  - Severe & recurrent hallux valgus
  - Rheumatoid arthritis
  - Failed first MTP implants

- Technique for fusion
  - Screws, Pins, Plates, Combo + ICBG (auto or allo)
  - In situ fusion
Technique & Purpose

• Dual plates
  • Two 90/90 plates that accept both multiplanar locked and non-locked screws
  • Placed on dorsal-medial & dorsal-lateral surface of 1st MTP

• PURPOSE
  • Retrospectively review the results and functional outcomes of interpositional grafting and arthrodesis of the first MTP joint using two plates in a 90/90 configuration
Method

• Query patient database for 1\textsuperscript{st} MTP fusion w/ intercalary graft 2011 - 2013

• Physical examinations reviewed for
  • Pain
  • Motion
  • Time to union
  • Complications

• Radiographs examined for
  • Union (3 bridging cortices)
  • Time to union
  • Hardware failure
Surgery

- Flat cuts to prepare joint
- Distraction, intercalary graft placements and reduction
- Application of 90/90 plates
Case
Results

• 8 patients, n=11 feet
• Mean age 61±10.5 years
• Average f/u 12.6±7.8 months
• Overall union rate 90.9%
• Average restoration of 1.1cm length
• Average time to fusion 10.7±1 weeks
Results

• No hardware failure
• 87.5% satisfied
• AOFAS score
  • 44.50±9.43 (range 32 to 60) → 87.75±6.18 (range 76 to 96) (p < 0.0001)
• Complication rate 18.2%
  • Superficial wound infection (1)
  • Non-union (1)
    • Required ROH and a revision fusion
Discussion

• 90/90 plating
  • Theoretically more strength
  • More screws in all segments of fusion
Conclusion

Our results show that arthrodesis of the first MTP joint with two 90/90 plates and restoration of length using an interpositional graft is highly successful, with excellent patient satisfaction and functional outcomes.