Ankle Fusion Rates with Anterior Lock Plates: Is there a Difference Between Plating Systems?

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Augmented Ankle Fusion Rates with Anterior Lock Plates: Is there a Difference Between Plating Systems?

My disclosure is in the Final AOFAS Mobile App. I have no potential conflicts with this presentation.
Ankle Arthrodesis

- Bony consolidation of tibia & talus
- Eliminate pain in end-stage arthritis
- Arthroplasty salvage
Fixation Methods

- Plate and screw combination

- Plates
  - Anterior
  - Anterolateral
  - Posterior
  - Lateral

- Screws only
Ankle arthrodesis

• Objective:
  – Describe Fusion rates:
    • Anterior locking plates
      – Superior to screws alone (50-80%)

• Compare designs
  – Integra vs. Wright
Retrospective Study

• IRB- approved chart and radiograph review (2007-2013)

• **Inclusion:** Adult patients with ankle arthritis requiring primary ankle fusion.
  
  – Lag screw + anterior locking plate fixation
  – Integra and Wright Medical Technologies plates

• **Exclusion:** Concomitant subtalar joint fusion, lateral approach, fibular onlay technique, external fixation, revision surgery, minors.
Methods & Materials

• **Clinical measures**
  – Days to full weight bearing
  – Time to regular shoe wear
  – Time to physical therapy
  – Complication rates
  – Hardware removal rates

• **Radiographic measures**
  – Bony consolidation
    • (3 cortices)
  – Date of consolidation
  – Fusion positioning
    • Talocrural angle
    • Tibial axis-talar ratio Lateral dorsiflexion angle
Results

• 98% Union Rate
  – 47 out of 48 total cases

• No difference between plating groups regarding
  – Time to fusion
  – Days to WB
  – Time to shoe wear
  – Time to P.T.
  – Joint positioning

• Normal Talocrural angle= 66%
• Normal dorsiflexion angle= 87.2%
• Normal Tibial axis-talar ratio= 42.6
Results

- **Complications**
  - Non-union (1 pt./ WMT plate)
    - Required revision
  - Hardware removal (10 pts.)
  - Neurosensory disturbance (4 pts.)
  - Infection (4 pts.)
Discussion

• Locked plating yields successful fusion rates
• Limited comparison studies
• Multiple fixation options
• Largest reported cohort of ankle arthrodesis with anterior locking plate fixation to date.
Conclusion

• Ankle fusion rates are enhanced with the use of an anterior locked plate when compared to screw fixation alone.

• No difference in outcomes between WMT and Integra brand plates.
References

1. Agel J; Coetzee JC; Sangeorzan BJ; Roberts MM; Hansen ST Jr. Functional limitations of patients with end-stage ankle arthrosis. Foot Ankle Int. 2005 Jul;26(7):537-9.


