A Multi-Center, Retrospective Study on Early Weightbearing for Modified Lapidus Arthrodesis

Mark A. Prissel, DPM
Bradly W. Bussewitz, DPM
Sean T. Grambart, DPM
Christopher F. Hyer, DPM, MS
A Multi-Center, Retrospective Study on Early Weightbearing for Modified Lapidus Arthrodesis

Our disclosures are in the Final AOFAS Mobile App. There is no potential conflict with this presentation.
Statement of Purpose

• Several authors have advocated modifications to the Lapdiius arthrodesis to limit complications (1-15).

• With improved fixation constructs, surgeons have challenged the need for prolonged non-weightbearing (7-15).

• These improved constructs may allow earlier weightbearing (WB), without increased nonunion risk.

• To evaluate this, a large multi-center study was performed.
Inclusion Criteria

• Consecutive patients with modified Lapidus arthrodesis performed from 1/1/2007 – 12/31/2008 at participating centers.

• Exclusion criteria:
  – Revision 1st tarsometatarsal arthrodesis
  – Osteomyelitis
  – Hardware removal prior to fusion
Patient Demographics

- 367 patients met inclusion criteria
  - 183 early WB (≤ 21 days)
  - 184 delayed WB (> 21 days)

- Demographic data collected:
  - Age, sex, BMI, diabetes, nicotine use
  - Days to WB, fixation construct
  - Use of bone graft, post-op immobilization
  - Radiographic union
Overall Nonunion Results

• 24 nonunion in 367 patients (6.5%)
  – 13 early WB nonunion (7.1%)
  – 11 delayed WB nonunion (6.0%)
  – (p=0.663)
Time to WB Results

• Patients with early WB compared to delayed WB no difference in:
  – Age (p=0.066)
  – BMI ($\chi^2(1)=0.46$, p=0.498)
  – Nicotine use ($\chi^2(1)=1.84$, p=0.176)
  – Diabetes ($\chi^2(1)=1.71$, p=0.191)
Fixation Construct Results

- Locking plate & compression screw nonunion regardless of time to WB (3 of 101, 3.0%)
  - Statistically superior to non-locking plate & compression screw (3 of 11, 27.3%) (p=0.024)
  - Statistically superior to three compression screws (12 of 115, 10.4%) (p=0.031)
  - Insufficient volume to statistically evaluate various fixation constructs between early & delayed WB groups
Demographic Results

• Patients with either union or nonunion no difference in:
  – Age (p=0.595)
  – Sex (p=0.901)
  – BMI ($\chi^2(1)=0.13$, p=0.724)
  – Nicotine use (p=0.190)
  – Diabetes (p=0.993)
Conclusions

- Early WB did not increase the risk of nonunion (p=0.663).

- Compression screw and locking plate resulted in the lowest nonunion rate (3.0%).
Conclusions

- Largest multi-center study evaluating WB following modified Lapidus arthrodesis.
- Only large study to directly compare early and delayed WB groups.
- Further study is warranted to directly compare various compression screw and locking plate techniques for superior construct with early WB (i.e. dorsal plating, plantar plating, medial plating, intra-plate compression techniques).
References