Total Ankle Arthroplasty for the Treatment of Symptomatic Nonunion following Tibiotalar Fusion
Disclosures

- **William P. Huntington, M.D.**
  - My final disclosure is in the final AOFAS program book
  - I have no potential conflicts of interest with this presentation

- **W. Hodges Davis, M.D.**
  - My final disclosure is in the final AOFAS program book
  - I have a potential conflict of interest with this presentation due to:
    - Wright Medical: Consultant and royalties

- **Robert B. Anderson, M.D.**
  - My final disclosure is in the final AOFAS program book
  - I have a potential conflict of interest with this presentation due to:
    - Wright Medical: Consultant and royalties
Rationale/Background

- **Ankle Arthrodesis**
  - Mainstay of treatment for end stage ankle arthritis
  - Non-union rates: as high as 40% in some series

- **Revision arthrodesis is no piece of cake**
  - Complication rates 23-60%
  - Revision non-union rates of up to 23%

- **Significant long term sequelae after ankle arthrodesis**
  - Abnormal gait patterns/difficulty with uneven surfaces
  - Development of adjacent joint arthritis and need for further surgeries
Rationale/Background

- Total ankle arthroplasty has been proposed as a treatment option for the failed ankle arthrodesis
  - Hinterman et al *JBJS Am* 2009
  - Greisberg et al *Clin Orthop Rel Res* 2004

- Advantages
  - Restore pain-free ankle range of motion
  - Negate the long term sequelae seen with ankle arthrodesis

- Purpose of present study:
  - Evaluate the short-term outcomes associated with the take down of symptomatic nonunions of ankle arthrodeses and conversion to a fixed bearing, intramedullary total ankle arthroplasty
  - Propose that total ankle arthroplasty is a viable salvage option for the treatment of symptomatic nonunions following tibiotalar fusion.
Methods

- 5 patients retrospectively identified who underwent takedown of an aseptic, symptomatic nonunion of an ankle fusion and converted to a total ankle arthroplasty
  - Indications for arthrodesis: 2 post-traumatic OA, 2 RA, 1 i° OA
  - Average age at conversion: 62.2 years old
  - Average time between fusion and conversion: 1.7 years

- Prospectively evaluated at a minimum of 12 months from conversion (average follow-up: 21.3 months)

- **INBONE total ankle replacement** (Wright Medical Technologies, Inc. Arlington, TN)
  - Fixed bearing implant
  - Intramedullary implant
Methods

- **Evaluation**
  - Clinical evaluation
    - AOFAS ankle-hindfoot score
    - Foot Function Index
    - Patient satisfaction and VAS pain levels
  - Radiographic evaluation
    - Assessed for tibio-talar loosening and talar subsidence according to criteria proposed by Hintermann et al *Clin Orthop Rel Res* 2004

- **Complications**
Results

- Complications:
  - No intraoperative complications requiring additional procedures
  - 1 post-op complication: wound excoriation that resolved with local wound care

- AOFAS ankle-hindfoot score
  - Average: 82.6
  - Range: 66-90

- Foot Function Index
  - Average: 28.2%
  - Range: 7-49%

- VAS pain levels
  - Average: 31.1/100
  - Range: 16.2- 44.3
Results

- 4/5 very satisfied or satisfied with surgery
  - 1 dissatisfied patient has rheumatoid arthritis and takes daily narcotics because of her disease

- 5/5 would have the operation again

- No evidence of tibial/talar loosening or talar subsidence in any case at final follow-up

- No additional procedures have been required
Conclusions

- Total ankle arthroplasty with a fixed bearing, intramedullary implant for a symptomatic nonunion of an ankle arthrodesis is a viable treatment option that provides reliable short-term results.
References

- Atkinson HDE, Daniels TR, Klejman S, Pinsker E, Houck J, Singer S. Pre- and postoperative gait analysis following conversion of tibiotalocalcaneal fusion to total ankle arthroplasty. *Foot Ankle Int*. 2010;31:927-932.