Peri-Navicular Arthrodesis as Treatment of Navicular Osteonecrosis

Jamal Ahmad, M.D.
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My disclosure is in the Final AOFAS Mobile Application. I have no potential conflicts with this presentation.
Navicular Osteonecrosis

- Also known as Muller Weiss disease (MWD)
- Leads to arthritis of the peri-navicular (PN) joints
  - Talonavicular (TN), naviculocuneiform (NC), & calcaneocuboid (CC) joints
- No current consensus regarding surgical treatment of MWD with PN arthritis
  - Isolated TN arthrodesis?
  - TN & NC arthrodesis?
  - Is bone graft necessary?
    - Autograft vs. allograft?
Purpose

- To assess long-term outcomes of surgically treating navicular osteonecrosis with a peri-navicular arthrodesis (PNA)

- My method of a PNA –
  - Arthrodesis of the TN, NC, & CC joints
  - Iliac crest bone autograft (ICBG)
Methods

- 10 patients with navicular osteonecrosis
  - January 2008 – February 2012
  - 1 treating surgeon (J.A.)
  - Etiologies included –
    - Trauma
    - Sickle-cell anemia
    - Steroid medication

Clinical assessment

- Foot & Ankle Ability Measures (FAAM)
- Visual analog scale (VAS) for pain
- Patient satisfaction
Operative Technique

- **TN & NC arthrodesis**
  - Dorsal incision from the anteromedial ankle to the 2\textsuperscript{nd} tarsometatarsal (TMT) joint
  - Plate & screw (ALPS, Biomet, IN)

- **CC arthrodesis**
  - Lateral incision from the fibula to the 4\textsuperscript{th} TMT
  - Plate & screw (ALPS, Biomet, IN) vs. staples (Stapilizer, Conmed, NY)

- **ICBG harvest**
  - Structural & morcelized
Post-Operative Treatment

- Non-weightbearing (NWB) x 6 weeks
  - 1st 2 weeks in a splint
  - Next 4 weeks in a short-leg NWB cast
- Progressive to full WB in a controlled ankle motion (CAM) boot x 6 weeks
- Gradual return to activity at 12-16 weeks
Pre-Operative Data

10 patients with osteonecrosis of 10 naviculae

Male : Female                                          3 : 7
Mean age in years (34 – 70 yrs)                    55
Right : Left                                                        4 : 6
Mean FAAM (range 20 – 62%)                  34/100
Mean VAS (range 4 - 10)                               8.2/10
Mean follow-up in months: 38 (20 - 70)
Mean FAAM (range 73 - 100%): 91.2/100, P < 0.05
Mean VAS (range 0 - 3): 1.3/10, P < 0.05

Patient Satisfaction:
- Excellent: 6/10, 60%
- Good: 3/10, 30%
- Fair: 1/10, 10%
Sequelae

- No patients developed –
  - Wound complications
  - Adjacent joint arthritis
  - Recurrent disease

- Complications
  - 1 of 10 with a delayed union of the PNA
    - Resolved at 8 months after surgery
  - 1 of 10 with a pulmonary embolus (PE)
Conclusion

- My method of a PNA to treat navicular osteonecrosis results in high rates of –
  - Bony fusion
  - Improved function
  - Pain relief
  - Patient satisfaction
References