Technique Video Presentations

Ankle Fusion Tips and Tricks

Panelists:

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Arthroscopic Assisted Ankle Arthrodesis

1) History of Arthroscopic Assisted Ankle Arthrodesis
   a) Schneider, D. Arthroscopic Video Journal, 1983
   b) Morgan, CD. Jefferson Orthop JL 16:50, 1987
   c) Wide expansion in the early 1990’s

2) Advantages of Arthroscopic Assisted Ankle Arthrodesis
   a) Shorter operative time
   b) Minimizes surgical trauma to soft tissues
      i) Decreased blood loss
      ii) Decreased post-operative pain
   d) Minimize or eliminate hospital stay
   e) Likely shorter time to union
   f) Preserves anatomy, including fibula

3) Contraindications to Arthroscopic Assisted Ankle Arthrodesis
   a) Irreducible varus or valgus
   b) Broad based avascular necrosis
   c) Significant bone loss
   d) Previous attempt at fusion
   e) History of septic arthritis (relative contraindication)

4) Published results of Arthroscopic Assisted Ankle Arthrodesis
   a) Myerson (CORR 1991) – fusion at avg. 8.7 weeks vs. 14.5 weeks for open technique
   b) O’Brien (FAI 1999) – 84% (16/19) fusion
   c) Winson (JBJS-Br 2005) – 91.4% (96/105) fusion at avg. 12 weeks
   d) Ferkel (FAI 2005) – 97% (34/35) fusion at avg 12 weeks
   e) Gougoulias (FAI 2007) – 97% (76/78) fusion at avg 12.5 weeks

5) Technique
   a) Equipment
      i) Non-invasive distracter
      ii) Well leg holder from the fracture table
      iii) 2.9 or 4.0mm scope
      iv) 3.5 or 4.0mm shavers
      v) 4.0mm round bur
      vi) Curved curettes, elevators, graspers
b) Set-up and position
   i) Standard arthroscopy position with non-invasive distraction
   ii) Drape out iliac crest if using autograft

c) Hip Graft
   i) 3-4cm incision depending on patient size
   ii) Expose only the top of the crest
   iii) Trephine reamer system is used to harvest between tables
   iv) Have assistant close as you start the arthroscopy

d) Joint preparation
   i) Standard arthroscopic exam of joint
   ii) Debridement of cartilage
      A) I prepare the medial gutter, but not the talo-fibular articulation
      B) Larger shavers are useful as they clog less often
      C) Curved curettes and a wooden handled elevator are useful
      D) Do not neglect the anterior portion of the joint
   iii) Decortication
      A) Remove a millimeter or two of subchondral bone with the bur
      B) Create “spot welds” by burying the bur

e) Bone grafting
   i) With the joint prepared, remove the arthroscopic instruments and the distractor
   ii) Expand the medial portal to about twice its size and slightly expand the lateral portal
   iii) Place a lamina spreader without teeth in the lateral portal to distract the joint
   iv) Insert the bone graft working from back to front and from lateral to medial
      A) I like to do this step out of the distractor to prevent over stuffing the joint
      B) I do not usually find it necessary to place additional graft from the lateral side

f) Fixation
   i) Position joint appropriately
   ii) Provisionally fix with a Steinman pin
      A) Allows confirmation of position of fusion
      B) Provides a guide for screw placement
   iii) Large fragment screws using a lag technique
      A) 1st medial – from anterior and distal into the antero-medial talus
      B) 2nd medial – from posterior and proximal into the postero-lateral talus
      C) 3rd lateral – from just anterior to fibula into centro-medial talus
   iv) Final x-rays


g) Post-op Protocol
   i) Well padded cast placed day of surgery
   ii) Usually done as an outpatient procedure
   iii) F/U @ 2 weeks for cast change, suture removal, and recast
   iv) F/U @ 6 weeks for cast off and x-rays
   vi) Air Cast Boot with progressive weight bearing based on healing
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(n)
1. **Indications**
   a. Degenerative arthritis
   b. Inflammatory arthritis
   c. Neuromuscular issues

2. **Surgical approach**
   a. Anterior
   b. Posterior
   c. Lateral

3. **Instruments**
   a. Osteotomes
   b. Curettes
   c. Drill bits

4. **Positioning**
   a. Supine
   b. Lazy lateral
   c. Prone

5. **Joint Preparation**
   a. Debride
   b. Decortication/subchondral preparation
   c. Feathering
   d. Drilling

6. **Fixation**
   a. Screws only
   b. Plates
      i. Anterior
      ii. Lateral
   c. Combination
   d. IM fixation

7. **Post-op Protocol**
   a. Bulky Jones splint x 2 wks
   b. SLNWBC x 4-6 wks
   c. CAM w/ WBAT x 4 wks
   d. Regular shoe