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RETROSPECTIVE STUDY OF THE USE OF IMPLANTABLE ELECTRICAL STIMULATOR AND BMP-2 FOR HIGH RISK PATIENTS IN ANKLE ARTHRODESIS

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My disclosure is in the Final AOFAS Program Book.

I have a potential conflict with this presentation due to:

Consultant for Biomet

• No funds were received in support of this study
Compared Union rates and outcomes of ankle arthrodesis in high risk patients using standard arthrodesis protocol of internal fixation and bone autograft versus supplementation with implantable bone stimulator in conjunction with bmp-2
CRITERIA DEFINING PATIENT HIGH RISK

Based on presence of 2 or more:

- Diabetes
- Habitual tobacco and/or drug use
- Infection
- Immunosuppressive therapy
- Previous hx of non-union/malunion
- Talus AVN
- Obesity
- Psychiatric illness
Criteria for Complete Fusion

- Both Clinical and Radiographic
  - Bony trabeculation across the joint
  - Lack of motion across the joint
  - Significant decrease in pain
Preoperative radiograph of degenerative tibiotalar and subtalar joints
Same patient 11 weeks postoperative radiographs of ankle arthrodesis with hindfoot nail, internal bone stimulator and BMP-2 showing successful fusion.
RESULTS

- average age = 49.4 yrs
  - 36 ankles (6 lost to follow-up)
  - 29 high risk pts N=30 ankles
  - Bone stim/bmp-2 : 8/8  100% went on to successful fusion at avg 13 weeks
    - 3/8 were revision arthrodesis after failed standard tech
    - 0/8 postoperative infections
  - Standard technique: 19/22  86% went on to successful fusion at avg 28.5 weeks (p<0.05)
    - 8/22 infections = 36% requiring further procedures
    - Mann RA, et al. Foot and ankle Int. 1995: Reported 25% infection rate
    - Cooper PS, et al. Clin orthop rel res. 2001: Reported infection rates as high as 50%
  - 20.6 month average follow-up (from 2004 to 2011)
The adjunctive use of implantable bone stimulator and bmp-2 in conjunction with rigid fixation promotes increased union rates, expedites time to union and associated decrease infection rates in high risk patients.
REFERENCES

