Comparison of Treatment Outcomes Following Ankle Arthrodesis and 2 Generations of Arthroplasty

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AAOS Disclosures are listed for reference

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Some authors have any conflicts with this presentation
Methods – Recruitment and Enrollment

- Eligibility: 18-89 years old, ambulatory, not planning bilateral surgery, no RA, no other lower limb problem or recent surgery that would impair study ambulation measures.

- Surgeons performed both procedures and had a minimum of 5 years of experience performing each procedure.

- No limitations on implant devices used for arthroplasty.

- All surgeons employed a similar technique of rigid internal fixation for arthrodesis procedures.

- Patients completed surveys (SF-36, MFA, pain and satisfaction questionnaire) and wore a step monitor pre-surgery and post-surgery at 6, 12, 24, and 36 months.
Methods – Statistical Analysis

- Statistical method was linear mixed effects regression analysis.
- Models were repeated using 4 categories (arthrodesis, arthroplasty with DePuy Agility, Salto Talaris, and Wright Medical INBONE) instead of 2 categories.
- We used a second set of models to control for age and BMI (which differed in the two cohorts).
- Significance was established at p < 0.05.
Assessed for eligibility (n=474)

Excluded (n=106)
- Not meeting inclusion criteria (n=58)
- Declined to participate (n=45)
- Miscellaneous other reasons (n=3)

Enrolled

Enrolled in study (n=368)

Excluded (n=95)
- No surgery done (n=39)
- Non-compliant (n=12)
- Miscellaneous other reasons (n=44)
  (Personal choice, became ineligible, moved, etc.)

Active (n=273)

Allocation

Preference Arthrodesis (n=103)
Preference Arthroplasty (n=170)

Follow-Up

Completed Year 3 assessment (n=78)
- Did not complete study;
- Personal choice (n=13)
- Lost to Follow-up/unable to contact (n=7)
- Non-compliance (n=5)

Completed Year 3 assessment (n=151)
- Did not complete study;
- Personal choice (n=6)
- Lost to Follow-up/unable to contact (n=7)
- Non-compliance (n=5)
- Death (n=1)
Results

- Two hundred and seventy three participants, 103 who had arthrodesis and 170 who had arthroplasty, 98 Salto Talaris, 58 Agility Ankle and 9 Inbone II.
- One hundred ninety-five of the patients were from the primary center and 73 were from three other centers.
- There were no significant differences at baseline in MFA or SF-36, or step activity measures by surgery type.
Results

• Participants who received arthroplasty were older and had significantly lower mean BMI (p < 0.001) and had lower mean pain scores at baseline than those receiving arthrodesis (p=0.053 for arthroplasty vs. arthrodesis).

• Those undergoing arthroplasty had a higher study completion rate than those undergoing arthrodesis (89% vs. 76%).
Results: MFA Scores
Results: Pain Scores
Results: SF-36 Physical Function Scores
Summary

• There was significant mean improvement in all outcomes after surgery regardless of surgery type.

• Average follow-up improvement was significantly better with arthroplasty vs. arthrodesis in MFA (3.6 ± 1.6, p=0.023) and in PF (7.5 ± 2.9, p=0.0098).

• When considering those receiving a newer generation device, improved outcome from arthroplasty was more evident: average follow-up improvement was significantly greater for MFA (3.8 ± 1.7, p=0.031), PF (8.8 ± 3.3, p=0.0074), BP (7.3 ± 3.6, p=0.045), and pain score (0.8 ± 0.4, p=0.038).
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