Ankle Fusion Takedown to Total Joint Arthroplasty

Kaitie Ward R2
WSPMA Annual Conference
04/30/2017
No Disclosures
Literature Review

Ankle Arthrodesis = **Gold standard** for end stage ankle arthritis [1-3]

- Poor outcomes persist: [1, 2, 4, 5]
  - Infection
  - Nonunion
  - Malalignment
  - Adjacent joint destruction
Possible secondary interventions: [1,2,4-7]

- Revision arthrodesis
- Extension of the fusion mass
- Talar allograft
- Amputation
- Total ankle arthroplasty (TAA)
Sequelae of ankle arthrodesis

- Adjacent joint arthritis
- Subtalar joint
  - Negatively influence functionality and quality of life [4-6]
  - Decreased rate of successful fusion when compared to non-ankle arthrodesis [8].
- Pantalar joint arthrodesis is frequently poorly tolerated
  - Oxygen consumption equivalent to BKA [3,9,10]
Takedown Fusion to TAA=
Additional treatment modality with high patient satisfaction [1-3,5,6].
May be considered in:
- Absence of infection
- Appropriate bone quality [1,3]

More favorable outcomes:
- Definable source of pain
- Lower metabolic demand
- Advanced age
- Shorter duration of primary fusion
- Lack of fibular resection [2,5,6]
Case Series

To present ankle fusion takedown and conversion to arthroplasty as an additional alternative treatment option for unfavorable outcomes of ankle arthrodesis.
Methodology

- Retrospective chart review
- 2009-2015
- Mean follow-up=147 months
- Single surgeon
- 4 patients
- Demographics, comorbidities, procedure details, and complications were evaluated
- Assessment of ankle ROM, subjective pain levels, weight bearing radiographs and patient’s activity level
Procedures

- Ankle arthrodesis takedown and conversion to TAA performed by primary surgeon in 4 pts
- Indications:
  - Ankle nonunion
  - Increasing hindfoot pain
  - Subtalar joint arthritis
  - Decreased function
  - Malunion
- Traditional anterior approach
- Pre-operative imaging
- Previous joint location
- Osteotomy placement
- Sufficient medial and lateral malleoli for stability
- Implantation of a two-component constrained implant
### Results

<table>
<thead>
<tr>
<th>Age/Sex/Laterality</th>
<th>Comorbidities</th>
<th>Indications</th>
<th>Time from Arthrodesis (Months)</th>
<th>Subtalar Joint Arthrodesis</th>
<th>Complications</th>
<th>Final Follow-Up (Months)</th>
<th>Subjective Results</th>
<th>Objective Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>75/F/L</td>
<td>▪ Diabetes mellitus II</td>
<td>Ankle nonunion</td>
<td>11.3</td>
<td>No</td>
<td>Superficial wound dehiscence</td>
<td>66.8</td>
<td>▪ No pain</td>
<td>▪ Mild swelling, Incision healed</td>
</tr>
<tr>
<td></td>
<td>▪ Rheumatoid arthritis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>▪ Very pleased</td>
<td>▪ Ankles ROM= DF +10°, PF +25°</td>
</tr>
<tr>
<td></td>
<td>▪ Peptic ulcer disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>73/M/R</td>
<td>▪ Peptic ulcer disease</td>
<td>STJ DJD</td>
<td>144.7</td>
<td>Yes, concurrent</td>
<td>Superficial wound dehiscence with infection</td>
<td>3.9</td>
<td>▪ Mild pain</td>
<td>▪ Moderate swelling, Incision healed</td>
</tr>
<tr>
<td></td>
<td>▪ Hypertension</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>▪ Ankles ROM= DF +10°, PF + 25°</td>
</tr>
<tr>
<td></td>
<td>▪ Hyperlipidemia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>53/F/L</td>
<td>▪ Gastric ulcers</td>
<td>Ankle nonunion</td>
<td>32.4</td>
<td>Yes, subsequent</td>
<td>Hardware irritation</td>
<td>57.4</td>
<td>▪ Not tender over ankle</td>
<td>▪ Mild swelling, Incision healed</td>
</tr>
<tr>
<td></td>
<td>▪ Seizure disorder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>▪ Light touch sensation decreased</td>
</tr>
<tr>
<td></td>
<td>▪ Osteopenia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>▪ Ankles ROM= DF +0°, PF +20°</td>
</tr>
<tr>
<td></td>
<td>▪ Chronic Pain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Smoker</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60/F/R</td>
<td>▪ Fibromyalgia</td>
<td>Ankle nonunion</td>
<td>20.2</td>
<td>No</td>
<td>STJ arthritis</td>
<td>18.6</td>
<td>▪ Not tender over ankle</td>
<td>▪ Mild swelling, Incision healed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>▪ STJ ROM= Limited</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>▪ Ankles ROM= DF +5°, PF +20°</td>
</tr>
<tr>
<td>Average- 65</td>
<td></td>
<td></td>
<td>Average- 52.2</td>
<td>Average- 36.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Case Example

- 73 yo M
- 12 years s/p right ankle arthrodesis
Pre-Operative Ankle Views
Analysis & Discussion

- Complex patient factors for poorly tolerated ankle fusions
- Lack of consensus for treatment of STJ arthritis
- STJ pathology at some point in treatment course
- Salvage vs. fusion
- Fibular resection
Conclusion

- TAA may be utilized as a salvage procedure
- 4 patients with favorable outcomes
  - Average final follow-up of 36.7 months
- More studies needed
  - Staging vs unstaged?
References


Thank You