Comparison of Outcomes between two different 3 component TAA: The Hintegra and Mobility

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AOFAS DISCLOSURE SLIDE FORMAT

NO CONFLICT TO DISCLOSE

< Comparison of Outcomes between two different 3 component TAA: The Hintegra and Mobility>

< Hong-Geun Jung, MD PhD>

My disclosure is in the Final AOFAS Mobile App.

I have no potential conflicts with this presentation.
Introduction

Superiority of an implant design over another cannot be determined. A few studies compared the differences in TAA implant.

HINTegra
- designed at 2000
- talar wings replace both facet
- pyramidal peaks on tibial side
- oval holes on both components

VS

MOBILITY
- designed at 2003
- conical stem on tibial component
- central sulcus on talar component
- Two fins on talar component

- Hintermann et al., CORR, 2004
- Choi et al., JBJS Br, 2013
Introduction

• Hypothesis
  – Different design, Different outcome

• Purpose of this study
  – Compare the clinical, radiological outcomes and complications of TAA with two different 3 component implants; Hintegra and Mobility
Materials and Methods

• Retrospective review
• Minimum 2 years follow-up
• Clinical evaluation
  – VAS pain score
  – AOFAS score
  – Satisfaction: Very satisfied/Satisfied/Unsatisfied/Very unsatisfied
• Complications
  – Three grades evaluation
  – Failure: defined as the need of major revision
    ① Exchange of any component
    ② Fusion
    ③ Amputation

<table>
<thead>
<tr>
<th></th>
<th>HINTEGRA</th>
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<tbody>
<tr>
<td></td>
<td>- 21 ankles, 20 patients</td>
</tr>
<tr>
<td></td>
<td>- First half of study period</td>
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<tr>
<td></td>
<td>MOBILITY</td>
</tr>
<tr>
<td></td>
<td>- 33 ankles, 33 patients</td>
</tr>
<tr>
<td></td>
<td>- Latter half of study period</td>
</tr>
</tbody>
</table>

- Glazebrook et al. FAI, 2009
- Sproule et al. FAI, 2013
Radiological evaluation

- **Varus / Valgus Ankle**: $> 10^\circ$
  ① Tibial axis-talar dome angle
  ② OR Tibio-calcaneal angled

- **Tibia component Mal-position**: Varus / Valgus: $\gamma > 5^\circ$
  : Angle between the axis of the tibial component stem and the tibia shaft
  - Rippstein et al., JBJS Am, 2011
  - Sproule et al., FAI, 2013

- **Component Migration**
  - Tibia: $\Delta \delta > 5^\circ$, Talus: $\Delta \varepsilon > 5^\circ$
  - Bonnin et al., CORR, 2011
  - Choi et al., BJJ, 2013
Demographic data

- **F/U period**: Ave 28.3 mo, Ave 26.6 mo
  - \( P = 0.08 \)
- **Sex (M : F)**: 12 : 9, 16 : 17
  - \( P = 0.53 \)
- **Age at op**: Ave 61.8 YO, Ave 65.6 YO
  - \( P = 0.51 \)
- **BMI (kg/m\(^2\))**: Ave 27.0, Ave 26.6
  - \( P = 0.50 \)
- **Diagnosis**
  - HINTEGRA (21 ankles)
    - Idiopathic OA: 7, 35%
    - Post-traumatic OA: 13, 65%
  - MOBILITY (33 ankles)
    - Idiopathic OA: 7, 21%
    - RA: 4, 12%
    - Post-traumatic OA: 22, 67%
  - \( P = 0.153 \)
- **Combined procedures**
  - Achilles lengthening (11:3), Lateral sliding calcaneal osteotomy, …
Outcomes

**VAS**
- HINTEGRA: 8.3, 7.9, P = 0.284
- MOBILITY: 2, 2.7

**AOFAS**
- HINTEGRA: P = 0.655
- MOBILITY: 44, 47, P < 0.001

**Satisfaction**
- HINTEGRA
  - Very satisfied: 7 (33%), P = 0.284
  - Satisfied: 12 (57%)
  - Unsatisfied: 2 (9.5%)
  - Very unsatisfied: 0 (0%)

- MOBILITY
  - Very satisfied: 7 (23%), P = 0.853
  - Satisfied: 18 (58%)
  - Unsatisfied: 6 (19.4%)
  - Very unsatisfied: 0 (0%)

**Ankle ROM**
- HINTEGRA
  - Dorsiflexion: 33°, 38°, P = 0.148
  - Plantarflexion: 3°, 10°, P = 0.222

- MOBILITY
  - Dorsiflexion: 10°, 13°, P = 0.018
  - Plantarflexion: 32°, 41°, P < 0.001

**Radiographic outcome**

<table>
<thead>
<tr>
<th></th>
<th>HIntegra</th>
<th>Mobility</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osteolysis</td>
<td>4 (19%)</td>
<td>4 (12%)</td>
<td>0.697</td>
</tr>
<tr>
<td>Heterotopic ossification</td>
<td>7 (33%)</td>
<td>5 (15%)</td>
<td>0.180</td>
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</table>
## Complications

<table>
<thead>
<tr>
<th>Low grade Cx</th>
<th>Hintegra</th>
<th>Mobility</th>
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<tbody>
<tr>
<td>Intra-operative malleolar fracture</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Skin problem</td>
<td>2 (10%)</td>
<td>7 (21%)</td>
</tr>
<tr>
<td>Total</td>
<td>2 (10%)</td>
<td>9 (27%)</td>
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<thead>
<tr>
<th>Medium grade Cx</th>
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<tbody>
<tr>
<td>Neuralgia</td>
<td>3 (14%)</td>
<td>5 (15%)</td>
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<tr>
<td>Impingement</td>
<td>8 (38%)</td>
<td>3 (9%)</td>
</tr>
</tbody>
</table>

Postoperative Fracture                 | 1 (3%)     |          |
Mal-alignment                          | 0          | 0        |
Migration                              | 0          | 2 (6%)   |
Total                                  | 14 (67%)   | 11 (33%) |

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<tr>
<th>High grade Cx</th>
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<tbody>
<tr>
<td>Insert dislocation</td>
<td>0</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Deep infection</td>
<td>1 (5%)</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Total</td>
<td>1 (5%)</td>
<td>2 (7%)</td>
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</table>
Discussion

• Range of motion
  Dorsiflexion ↓ in HINTEGRA
  Why? Minimal tibia resection ↓↓
    Achilles percutaneous lengthening ↑

• Malleolar fracture *versus* Mal-alignment
  – Affected by the shape of cutting zig
    - Choi et al., JBJS, 2013

• Ankle impingement
  - Significant difference of *incidence and pattern*:
    8 Hintegra vs. 3 Mobility
    (Bony impinge)  (Soft tissue impinge)
Conclusion

• TAA with HINTEGRA or MOBILITY
  – Both showed favorable outcomes without significant difference
  – Complication: different patterns and incidences
    • malleolar fracture: Mobility
    • ankle impingement: Hintegra

  Technical attention according to each total ankle system should be needed.
References


