TOTAL ANKLE ARTHROPLASTY: TOMODENSITOMETRIC EVOLUTION OF THE PERIPROSTHETIC CYSTS AT 4-YEARS APART AND ASSESSMENT OF THE SURVIVAL CURVES AT 13-YEARS FOLLOW-UP

Docteur Julien Lucas y Hernandez, CHU Pellegrin - Bordeaux - FRANCE
INTRODUCTION

1. A step more physiological

2. Protection of adjacent joints

3. Preservation of range of motion
   TAR or Fusion ?
Third Generation TAR

- 5-year survivorship, in situ TAR: 70% to 98%
- Significant increase in the AOFAS score (AOFAS, Kofoed, Foot Function Index)
Serious Concern

Mid term large periprosthetic cysts in every TAR

Mean F-up : 6.7 years ± 3 months

- Functional results
- Survival curve
- Glazebrook complication classification

Survival at 5 years : 72.3%

2012 STUDY


- Registre NZ 202 cas et 45 non déclarés

Mean F-up : 6,7 years ± 3 months

<table>
<thead>
<tr>
<th>Before</th>
<th>après</th>
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<tbody>
<tr>
<td>AOFAS</td>
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RADIOGRAPHS AND CT-SCAN ANALYSIS

Rodriguez protocol

Mean F-up: 6.7 years ± 3 months

93% of cysts found were Type A (<200 mm²)

80% of cysts A were lower than 100 mm²

93% of cysts found were Type A (<200 mm²)

80% of cysts A were lower than 100 mm²

Our 2014 study

change of at least one metal component  75.4%
MATERIALS & METHODS

2012 cohort: 68 patients / 42 Ct scan
59 ± 11 years
Mean F-up: 13 years ± 6 months
Classic F-up and new CT-scan

- Carbioceram™ (DLC) stainless steel implant
- Bone-implant interface: alumina
- A dual-curvature PE insert and
- A spherical tibial component

A (0-200 mm²),
B (200-400 mm²),
C (more than 400 mm²)
## RESULTS

### Clinical

<table>
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<tr>
<th>Parameter</th>
<th>2012</th>
<th>2016</th>
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<tr>
<td>AOFAS</td>
<td>33.6 ± 13.4</td>
<td>77.6 ± 15.4</td>
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<td>R.O.M</td>
<td>23.1 ± 9.5</td>
<td>28.4 ° ± 10.8</td>
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<td>5-year survival</td>
<td>75.4%</td>
<td>82.7%</td>
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Change of at least one metal component: 2 fusion, 1 talar revision.

### Radiological

- 22% of all cysts increase in volume +47%
- Cysts Type A (<200 mm²): 93% vs. 90.6%
- Type A less 100 mm²: 80% vs. 80%
Stability of the cysts in number
- Small caliber: type A
- Volume of type A decrease
- 22% of cysts increase slightly

no preoperative CT

phenomena of complex reworking of the subchondral bone

- over-estimation by osteoarthritis
- New protocol with preoperative scan
No talar cyst was found in patients who underwent subtalar arthrodesis.

subtalar arthrodesis would allow a partial revascularization of the talus.

DISCUSSION
Survival curve is a statistic curve and need F-up to be reliable

5-year survival
change of at least one metal component

Our study 82.7%
with a mean F-up = 13 years ± 6 months

<table>
<thead>
<tr>
<th>STAR</th>
<th>Name</th>
<th>Country</th>
<th>Year</th>
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<th>10y survival</th>
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Mean F-up = 3.8 y
Mean F-up = 9.1 y
Mean F-up = 6.3 y

Change of at least one metal component

Survival curve is a statistic curve and need F-up to be reliable
DISCUSSION

Survival curve is a statistic curve and need F-up to be reliable

5-year survival with a mean F-up = 13 years ± 6 months

Our study 82.7%

change of at least one metal component

Lost of f-up?

Lost of f-up?

Lost of lost

Lot of lost

Register incomplete

Mean F-up = 4 y

Median F-up = 2.3 y

Methodological weaknesses

No clinical assessment

Mean F-up = 3.2 y

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<tr>
<th>Device Type</th>
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<th>Year</th>
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Lost of f-up?

Mean F-up = 4 y

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Mean F-up = 3.2 y

Survival curve is a statistic curve and need F-up to be reliable

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Mean F-up = 4 y

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Methodological weaknesses

No clinical assessment

Mean F-up = 3.2 y
Third generation mobile bearing.

- Carbioceram™ (DLC) stainless steel Implant
- bone-implant interface: alumina
- a dual-curvature PE insert and a spherical tibial component
- Chrome Cobalt implant
- hydroxyapatite and porous titanium
- flat tibial component
HYPOTHESIS

Cysts development

- PE wear debris
- Chrome / cobalt particles
- Titanium particles

- design

- Tribology stainless steel / Carbioceram
  Friction coefficient

- bone-implant interface : alumina
CONCLUSION

Cysts are less frequent and smaller
Cysts stay stable 4 years apart

5-year survival 82.7%

ROM and AOFAS stable 4 years apart

STRENGTH

Over time tomodensitometric study
F-up of 13y

• Tribology ?
• Design ?
• Both ?