Pi2 Implant for TMC joint Arthritis:

Experience at 10 years and 200 implants

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COI Arthrex / Wright Medical (Medical Education - No Royalties)
- TM late stage Arthritis : Dell 3 or 4
- TM early stages 2 : Dell 1 or 2
- Peri-trapezium arthritis
- Revision : prosthesis
Material & Method

- March 2008 - Sept 2018 208 implants

- Systematic review : M1 - M3 - M6 - M12 .. each 2 years

- Standardized pre / postoperative assessment
Material & Method

- 208 implants
  - march 2008 / sept 2018 (10.5)

- inclusion criteria
  - no previous / additional surg. - FU>5

- follow up
  - 7.3 years (5.0-10.2)

- reviewed
  - 78 pat. / 84 Pi2 / 94 op. (lost 10)

- sex ratio
  - M 6 - F 72 (1/12 = 7.7 vs 82.3%)

- Age
  - 66.3 (29.3 - 86.2)

- Activities
  - ret 58 - sed 10 - man 8 - n.a. 2

- Dominant hand
  - 48 / 84 (57.1%)

- Dell stages
  - 0-2* I-14* II-31* III-26 IV-11
Surgical Technique
Surgical Technique
Post Operative Cares

- Day 0 : splint

- Day 15 : auto hand therapy : Kapandji test - 5 series - 20 times

- Day 28 : RX-clinical control / splint removal

NO REEDUCATION NEEDED
Surgical Technique

KEY POINTS

- Very careful monobloc trapezectomy
  SOFT TISSUE +++

- Partial trapezoidectomy (2 mm)
  MEDIALISATION

- Dorsal suture of the capsula ++++
  DORSAL DISLOCATION

- Palmar tendinoplasty (1 strip APL)
  PALMAR DISLOCATION
# Results

## Clinical Results

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Preoperative</th>
<th>Controlateral</th>
<th>Postoperative</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion MP</td>
<td>42 (30-75)</td>
<td>59 (30-80)</td>
<td>51 (35-85)</td>
<td>+ 9°</td>
</tr>
<tr>
<td>Extension MP</td>
<td>12 (0-55)</td>
<td>6 (0-20)</td>
<td>8 (0-40)</td>
<td>- 4°</td>
</tr>
<tr>
<td>Flexion IP</td>
<td>41 (20-75)</td>
<td>62 (35-80)</td>
<td>56 (30-80)</td>
<td>+ 15°</td>
</tr>
<tr>
<td>Extension IP</td>
<td>6 (-15 / 10)</td>
<td>16 (0-25)</td>
<td>11 (-5 / 25)</td>
<td>+ 9°</td>
</tr>
<tr>
<td>Grasp</td>
<td>19.8 (11-41)</td>
<td>29.8(24-44)</td>
<td>26.2 (17-48)</td>
<td>6.6</td>
</tr>
<tr>
<td>Pinch</td>
<td>3.4 (2.0-8.1)</td>
<td>6.2 (3.6-7.8)</td>
<td>5.4 (3.4-9.2)</td>
<td>2.0</td>
</tr>
<tr>
<td>VAS - acute</td>
<td>7.1 (4.4-9.1)</td>
<td>-</td>
<td>1.9 (0.5-4.4)</td>
<td>- 5.2 (- 73%)</td>
</tr>
<tr>
<td>VAS - chronical</td>
<td>3.2 (1.2-5.0)</td>
<td>-</td>
<td>0.4 (0.0-2.1)</td>
<td>- 2.8 (- 92.5%)</td>
</tr>
<tr>
<td>Quick DASH</td>
<td>63.2 (31.8-77.2)</td>
<td>-</td>
<td>16.2 (9.1-27.2)</td>
<td>- 47.0 (-74%)</td>
</tr>
</tbody>
</table>
Clinical Results

No infection

No SDRC (age - C. vitamin)

Satisfaction: satisfied or very satisfied : 79/84 = 94.0%

2 revisions (persistent pain)

Return to full activities : 68/84 = 81.1%
Clinical Results

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Complication : DISLOCATION
- 2 cases 2008
- 1 case 2013
Clinical Results

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Satisfaction: satisfied or very satisfied : 79/84 = 94,0%

2 revisions (persistent pain)

Return to full activities : 68/84 = 81,1%

Complication : DISLOCATION
- 2 cases 2008
- 1 case 2013
- (2 case 2018) … 2 revisions
Clinical Results

5 dislocations / 208 implants (2.4%)

4 reoperated (1.9%)
Clinical Results

Improvement in mobility / strength

No major aggravation of MP hyperextension
Radiological Results

Bone remodeling
- scaphoid  30 / 84 (36%)
- M1       58 / 84 (69%)
- bipolar  26 / 84 (31%)

Doesn’t influence pain / clinical result / satisfaction
Radiological Results

3 ans
Discussion

Pi2 compared to trapezeectomy / prosthesis

Mono technique series ++++++++ 

Comparative series: Alligand-Perrin (RCO 2010)
- same results on pain relief
- better results on satisfaction / return to activities
- 0 / 36 dislocation
**Discussion**

**Dislocation**
- main problem in all series

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alligout</td>
<td>2010</td>
<td>0.0%</td>
</tr>
<tr>
<td>Colgate-Stone</td>
<td>2011</td>
<td>30.0%</td>
</tr>
<tr>
<td>Maru</td>
<td>2012</td>
<td>33.0%</td>
</tr>
<tr>
<td>Szalay</td>
<td>2013</td>
<td>8.6%</td>
</tr>
<tr>
<td>Cheval</td>
<td>2013</td>
<td>30.4%</td>
</tr>
<tr>
<td>van Aaken</td>
<td>2016</td>
<td>62.0%</td>
</tr>
<tr>
<td>Agout</td>
<td>2016</td>
<td>4.6%</td>
</tr>
<tr>
<td>Present serie</td>
<td>2019</td>
<td>2.4%</td>
</tr>
</tbody>
</table>

* absence de ligamentoplastie
* abord dorsal
Revision surgery
- second problem in all series

* Alligout 2010 0,0%
* Maru 2012 33,0%
* Cheval 2013 4,0%
* van Aaken 2016 26,6%
* Agout 2016 0,0%
* Present serie 2019 1,9%
Discussion

Pi2 compared to trapezectomy / prosthesis

Mono technique series ++++++++  

Comparative series: Alligand-Perrin (RCO 2010)
- same results on pain relief
- better results on satisfaction / return to activities
- 0 / 36 dislocation
Conclusion

Adaptative and Free interposition = NO LOOSENING

Unsealed ceramic = EVERLASTING IMPLANT

4 surgical key points : MANDATORY +++

Learning curve

Same clinical results c/o trapezectomy or prosthesis

Reliable at 10 years
Conclusion

Main interest of the Pi2
Conclusion

Main interest of the Pi2

LAST SURGERY?
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