Proximal interphalangeal joint arthroplasty with TACTYS® implant: clinical and radiological outcomes at a mean follow-up of 5 years

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E. Gaisne, T. Loubersac, A. Griffart, P. Bellemère*

* P. Bellemère has a conflict of interest with Stryker
<table>
<thead>
<tr>
<th><strong>Arthrodesis / Denervation</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>✔️</td>
<td>✗</td>
</tr>
<tr>
<td>Pain Relief</td>
<td>ROM</td>
</tr>
<tr>
<td>Satisfaction</td>
<td></td>
</tr>
<tr>
<td>Long term results</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Silicone spacers</strong></th>
<th></th>
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<tbody>
<tr>
<td>✔️</td>
<td>✗</td>
</tr>
<tr>
<td>ROM</td>
<td>Rupture</td>
</tr>
<tr>
<td></td>
<td>Clinodactyly</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Tactys®</strong></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>✔️</td>
<td>✗</td>
</tr>
<tr>
<td>Encouraging results at short-term</td>
<td>Medium/Long follow-up ?</td>
</tr>
</tbody>
</table>

→ De Georges. B - *Hand Surg Rehab 2018*
→ Athlani. L - *Hand Surg Rehab 2016*
→ Griffart. A – *Hand Surg Rehab 2019*
Introduction

Primary Objective
Analyze clinical and radiological results of this prosthesis at 5 years

Secondary Objective
Compare results between 2 & 5 years

Hypothesis: TACTYS® implant is enable to maintain a functional ROM and force to daily activities at medium-term
Tactys® implant

Tactys operative technique – Stryker
Clinical & Radiological datas

- VAS
- Q-DASH
- PRWE
- Satisfaction

- ROM
- Clinodactyly
- Grip Strength
- Pinch Strength
Population characteristics

40 Patients – 49 prosthesis

Age (y) 68.9 (56 to 89)

Gender
M 6.3%
F 78.7%

Etiology

Primitive 79.6%
Trauma 40.8%
Rheumatoid 6.1%
Revision 4%

Clinodactyly (°)
Radial/Ulnar 11.2 / 13.5
Global 6.8
## Subjective clinical results

### PRWE

<table>
<thead>
<tr>
<th></th>
<th>Pre-op</th>
<th>2y</th>
<th>5y</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean (/100)</strong></td>
<td>58.6</td>
<td>30</td>
<td>31.9</td>
</tr>
<tr>
<td><strong>IC 95%</strong></td>
<td>52.7 – 64.5</td>
<td>20.8 – 39.1</td>
<td>24.1 – 39.7</td>
</tr>
</tbody>
</table>

- 26.7 pts

**Comparison**

- Pre-op vs. 2y: p<0.001*
- Pre-op vs. 5y: p<0.001*
- 2y vs 5y: p=0.214

### Q-Dash

<table>
<thead>
<tr>
<th></th>
<th>Pre-op</th>
<th>2y</th>
<th>5y</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean (/100)</strong></td>
<td>58.4</td>
<td>30.5</td>
<td>35.1</td>
</tr>
<tr>
<td><strong>IC 95%</strong></td>
<td>52.7 – 64</td>
<td>22.4 – 38.6</td>
<td>27.8 – 42.4</td>
</tr>
</tbody>
</table>

- 23.3 pts

**Comparison**

- Pre-op vs. 2y: p<0.001*
- Pre-op vs. 5y: p<0.001*
- 2y vs 5y: p=0.797
Subjective clinical results

**VAS**

<table>
<thead>
<tr>
<th></th>
<th>Pre-op</th>
<th>2y</th>
<th>5y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (/100)</td>
<td>6.68</td>
<td>1.64</td>
<td><strong>1.33</strong></td>
</tr>
<tr>
<td>IC 95%</td>
<td>6.17 – 7.19</td>
<td>1.09 – 2.18</td>
<td>0.81 – 1.84</td>
</tr>
</tbody>
</table>

- **5.35**

**Satisfaction**

- Excellent → **32.6%** \((n=16)\)
- Good → **20.4%** \((n=10)\)
- Average → **24.4%** \((n=12)\)
- Poor → **22.4%** \((n=11)\)

Statistical correlation 2y vs 5y

- Pre-op vs. 2y: \(p<0.001^*\) ❯
- Pre-op vs. 5y: \(p<0.001^*\) ❯
- 2y vs 5y: \(p=0.087\)
### Clinodactyly

<table>
<thead>
<tr>
<th></th>
<th>Pre-op</th>
<th>2y</th>
<th>5y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (°)</td>
<td>6.8</td>
<td>2.2</td>
<td>2.4</td>
</tr>
<tr>
<td>IC 95%</td>
<td>4.4 – 9.3</td>
<td>0.6 – 3.8</td>
<td>1.2 – 3.6</td>
</tr>
</tbody>
</table>

- 9.2°

**Pre-op vs. 2y**: p<0.001*  
**Pre-op vs. 5y**: p<0.001*  
**2y vs 5y**: p=0.273

### ROM PIP

<table>
<thead>
<tr>
<th></th>
<th>Pre-op</th>
<th>2y</th>
<th>5y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (°)</td>
<td>43</td>
<td>56</td>
<td>46</td>
</tr>
<tr>
<td>IC 95%</td>
<td>37 - 49</td>
<td>48 - 64</td>
<td>39 - 53</td>
</tr>
</tbody>
</table>

- 10°

**Pre-op vs. 2y**: p=0.005*  
**Pre-op vs. 5y**: p=0.758  
**2y vs 5y**: p=0.009*
# Objective clinical results

## Grip

<table>
<thead>
<tr>
<th></th>
<th>Pre-op</th>
<th>2y</th>
<th>5y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (KgF)</td>
<td>14.3</td>
<td>18.6</td>
<td>13.9</td>
</tr>
<tr>
<td>IC 95%</td>
<td>11.8 – 16.9</td>
<td>16 – 21.1</td>
<td>11.4 – 16.3</td>
</tr>
</tbody>
</table>

- 0.4 KgF

- Pre-op vs. 2y, p<0.001*
- Pre-op vs. 5y, p=0.658
- 2y vs 5y, p=0.001

## Pinch

<table>
<thead>
<tr>
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<th>Pre-op</th>
<th>2y</th>
<th>5y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (KgF)</td>
<td>3.7</td>
<td>3.8</td>
<td>3</td>
</tr>
<tr>
<td>IC 95%</td>
<td>3 – 4.5</td>
<td>3.1 – 4.4</td>
<td>2.4 – 3.6</td>
</tr>
</tbody>
</table>

- 0.7 KgF

- Pre-op vs. 2y, p=0.075
- Pre-op vs. 5y, p<0.134
- 2y vs 5y, p=0.404
Radiological results

- "Stress-Shielding" aspect
  - 11 prosthesis (22.4%)

- Peri-prosthetic ossifications
  - 4 prosthesis (8.1%)

- Implant loosening
  - 5 prosthesis (10.2%)
Complications

Early complications
- 1 RSDS
- 1 Scar revision
- 1 Osteophytic resection

Swan Neck deformity
- 17 Prosthesis → **34.6%**
  → 7 Revisions

Stiffness
- 1 Ablation
- 3 Teno-arthrolysis

Late complications
- 5 Loosening

Results

49 Prosthesis
68.9m Follow-up
Complications

**Survival rate at final follow-up:** 67.2 %  
(95% CI 67.46-87.62)

**Revision rate at final follow-up:** 34.6% → 17 prosthesis at 35m (1 to 91m)
**Objectives I & II**

Clinical and radiological criteria at medium-term follow-up are encouraging but with an *alteration of strength and mobility over the time*.

**Discussion**

<table>
<thead>
<tr>
<th>Method</th>
<th>Material</th>
<th>Initial ROM</th>
<th>Final ROM</th>
<th>Time Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shirakawa. K</td>
<td>Silicone</td>
<td>-24°</td>
<td>31°</td>
<td>In 7y</td>
</tr>
<tr>
<td>Jennings. CD</td>
<td>Metal</td>
<td>-8°</td>
<td>56°</td>
<td>In 2y</td>
</tr>
<tr>
<td>Linscheid. RL</td>
<td>Metal</td>
<td>-7°</td>
<td>40°</td>
<td>In 5y</td>
</tr>
<tr>
<td>Murray. PM</td>
<td>Pyrocarbon</td>
<td>-36°</td>
<td>31°</td>
<td>In 6y</td>
</tr>
</tbody>
</table>

**Hypothesis**

« *a fonctionnal ROM and force* »

**Useful daily PIP ROM**

<table>
<thead>
<tr>
<th>Method</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hume. MC</td>
<td>16 to 93°</td>
</tr>
<tr>
<td>Bain. GI</td>
<td>33 to 86°</td>
</tr>
</tbody>
</table>
Clinodactyly

Complications

Swan-neck deformity

Griffart. A Athlani. L

Tactys = stability over the time?

Hume. MC

Less than silicone spacers?

Murray. PM Wagner. ER

INCONSTANT ++
SR at 5y from 69 to 89%

Hume. MC

Revision factors?
→ Implant - Approach - Finger

Bain.GI

Dorsal approach?
→ Multifactorial

Good tolerance in our study
TACTYS® Implant is a useful alternative for treating PIP arthritis with satisfying functional results at medium-term follow-up.