Partial trapeziectomy and interposition with the Tornier Pyrocardan TMC joint implant: short term follow-up

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TMCJ Procedures...

- Ligament Reconstruction (LR)
- MC osteotomy
- TMCJ arthrodesis
- Denervation
- TMCJ replacement
- Trapeziectomy +/- LR or TI or LRTI
- Trapeziectomy (complete/partial) + interpositional arthroplasty
Interposition Materials

**Biological (Autograft / Allograft)**
- FCR / PL
- Costochondral interposition graft
- Fascia Lata / Graftjacket (acellular dermis)

**Prosthetic Material**
- Silicone rubber button
- Gelfoam
- Gortex
- Polypropylene (Marlex)
- Polyurethane Urea (Artelon)
- Pyrocarbon (Ascension PyroDisk)
- **Pyrocarbon (Tornier Pyrocardan)**

Pyrocardan TMC Interposition Implant

Indications

- Stage 1, 2 and early 3 TMCJ OA (Dell/Eaton Classification)

Benefits

- Minimally invasive and short recovery period
- Trapezium preserving, offers greater salvage opportunities
Study Criteria

Inclusion criteria

- Tornier Pyrocardan TMCJ implant
- Victorian based
- Minimum 3 months post-op
- Included concurrent pathology (MCPJ OA)
- Included concomitant procedures (STT arthrodesis / ST implant)
Bellemere et al (2011)

Pyrocardan implant: free pyrocarbon interposition for resurfacing trapeziometacarpal joint

L’implant Pyrocardan : interposition libre en pyrocarbone pour resurfaçage de l’articulation trapézométacarpienne

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- Pain (VAS mean, resting Yes/No)
- PRWHE ( /100) & DASH (QuickDASH) (/100)
- Satisfaction (4 point ordinal scale)
- Grip Strength & lateral pinch kgs)
- Adverse Effects (Yes / No)
Methods

• Ethics approval (Southern Health)

• Obtained all patients in Victoria (Tornier)
  – N= 15 by 4 Hand Surgeons

• One-off clinical assessment / interview

• Review of case notes
Results - Demographic

86.7% of population included (13/15)

<table>
<thead>
<tr>
<th></th>
<th>Victorian</th>
<th>Bellemere et al</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>13</td>
<td>27</td>
</tr>
<tr>
<td>Age</td>
<td>57 (48 – 69)</td>
<td>58 (40 – 71)</td>
</tr>
<tr>
<td>Sex</td>
<td>M 30.8%, F 61.5%</td>
<td></td>
</tr>
<tr>
<td>W / C</td>
<td>30.8%</td>
<td>-</td>
</tr>
<tr>
<td>Dominant</td>
<td>61.5%</td>
<td>48%</td>
</tr>
<tr>
<td>F/up (months)</td>
<td>6.9 (3 – 15.3)</td>
<td>16.6 (12 – 27)</td>
</tr>
<tr>
<td>Stage (I-IV)</td>
<td>Stage 2 (61.5%)</td>
<td>Stage 2 (100%)</td>
</tr>
<tr>
<td></td>
<td>Stage 3 (15.4%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stage 4 (23.1%)</td>
<td></td>
</tr>
</tbody>
</table>
DASH change

DASH

Baseline Post surgery final f/up
### Results - Pain

#### PRWHE

<table>
<thead>
<tr>
<th>Rate Your Pain:</th>
<th>None</th>
<th>Worst</th>
</tr>
</thead>
<tbody>
<tr>
<td>At rest</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>When doing a task with a repeated wrist/hand movement</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>When lifting a heavy object</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>When it is at its worst</td>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How often do you have pain?</th>
<th>Never</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>

- Mean pain VAS (0-10)
  - Victorian = 4.1 at 6.9 months
  - Bellemere = 1.6 at 16.6 months
Results – Functional Scores

- PRWHE:
  - Victorian: 35.5
  - Bellemere: 12.9

- QuickDASH:
  - Victorian: 23.4
  - Bellemere: 10.1
Results - Strength

Grip Strength:
- Victorian: 20.6
- Bellemere: 25

Lateral Pinch:
- Victorian: 4.4
- Bellemere: 6.7
- Trapezeotomy + IA: 4.8
- Trapezeotomy: 4.3
## Results - Satisfaction

<table>
<thead>
<tr>
<th></th>
<th>Very Satisfied and Satisfied</th>
<th>Quite Satisfied (Neutral)</th>
<th>Dissatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victorian</td>
<td>10 (77%)</td>
<td>3 (23%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Bellemere</td>
<td>27 (100%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

Fisher’s Exact, $p=0.03$
6 months post-op
Proportion with continued pain

- Victorian = 23.1% (6.9m f/up)
- Bellemere = ?
- Trapeziectomy & IA = 10.2% (12m f/up)
- Trapeziectomy = 9.7% (12m f/up)
Adverse effects

• Victorian
  – 1/13 = 7% dislocation
  – Nil CRPS, infection or other complication

• Bellemere
  – None
    • Selection bias?
Discussion

- Pain/function score improved
- Pinch strength comparable to traditional procedures

Limitations
  - short follow up
  - no baseline data / change scores
Acknowledgements

• John Crock
• Anthony Berger
• Warwick Wright
• Dan Purcell