Posttraumatic radioscapholunate fusions: long-term clinical and radiographic results

B. Degeorge, D. Montoya-Faivre, G. Dautel, F. Dap, B. Coulet, M. Chammas
Posttraumatic radiocarpal osteoarthritis
intraarticular incongruence (Die punch)
articular cartilage impaction

Surgical treatment after failed medical management:
Wrist denervation
Cartilage graft
Wrist arthroplasty
Partial radiocarpal fusions: RSL ++
Based on poor clinical outcomes after RSL fusions:

- low range of motion
- osteoarthritis rates up to 100%
- non-unions rates up to 29%

Additional procedures

- distal scaphoid excision
- excision of the triquetrum
Objective: compare the long-term clinical and radiographic outcomes of 1) RSL fusion alone with consecutive 2) DSE and 3) ET in patients with posttraumatic osteoarthritis.
Bicentric study (Montpellier & Nancy), from 1995 to 2015
Posttraumatic partial radiocarpal fusions

85 patients

- 11 TWA
- 64 RSL
- 29 isolated RSL
- 23 RSL + DSE
- 12 RSL + DES + ET

10 lost to follow-up

Follow-up: 9.3 years (1-21.4)
Mean age: 53 years
# RSL fusions + DES + ET
Clinical evaluation:
  Pain: VAS
  Wrist motion
  Grip strength
  Functional scores

Radiographic evaluation:
  Osteoarthritis: STT / midcarpal joint
  Non-union
Mean VAS 1.8 at rest, 4.1 during activity.
73% were satisfied or very satisfied with the procedure.

<table>
<thead>
<tr>
<th></th>
<th>RSL</th>
<th>RSL + DSE</th>
<th>RSL + DSE + ET</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion</td>
<td>21.7 ± 12.2</td>
<td>26.9 ± 12.4</td>
<td>21.3 ± 11.9</td>
<td>0.249</td>
</tr>
<tr>
<td>Extension</td>
<td>27.6 ± 11.8</td>
<td>27.8 ± 13.2</td>
<td>37.5 ± 18.3</td>
<td>0.077</td>
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<tr>
<td>Radial deviation</td>
<td>11.0 ± 9.3</td>
<td>13.5 ± 8.6</td>
<td>10.3 ± 6.2</td>
<td>0.562</td>
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<tr>
<td>Ulnar deviation</td>
<td>19.1 ± 6.9</td>
<td>18.8 ± 8.9</td>
<td>20.0 ± 9.5</td>
<td>0.946</td>
</tr>
<tr>
<td>Grip strength</td>
<td>22.1 ± 9.8</td>
<td>33.1 ± 13.3</td>
<td>28.3 ± 13.9</td>
<td><strong>0.005</strong></td>
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</tbody>
</table>
### Results

<table>
<thead>
<tr>
<th></th>
<th>RSL</th>
<th>RSL + DSE</th>
<th>RSL + DSE + ET</th>
<th>p</th>
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<tbody>
<tr>
<td><strong>Osteoarthritis</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>STT</td>
<td>62 %</td>
<td>4 %</td>
<td>8 %</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>midcarpal</td>
<td>42 %</td>
<td>26 %</td>
<td>50 %</td>
<td>0.469</td>
</tr>
<tr>
<td>total</td>
<td>72 %</td>
<td>30 %</td>
<td>58 %</td>
<td>0.010</td>
</tr>
<tr>
<td><strong>Non-union</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>31 %</td>
<td>17 %</td>
<td>13 %</td>
<td>0.037</td>
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</tbody>
</table>
Survival rate: 85% (13 total wrist fusion)

<table>
<thead>
<tr>
<th></th>
<th>TWF (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSL</td>
<td>12</td>
</tr>
<tr>
<td>RSL + DSE</td>
<td>11</td>
</tr>
<tr>
<td>RSL + DSE + ET</td>
<td>25</td>
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<tr>
<td>p</td>
<td>0.549</td>
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</tbody>
</table>
Our study:

Long term results: 9.3 years of average follow-up
Largest clinical series / bicentric
Posttraumatic osteoarthritis

Similar results / literature BUT:
High midcarpal osteoarthritis rate
Satisfactory global survival rate

Reliable alternative to other surgical procedures
Distal scaphoid excision:

- Decrease STT osteoarthritis
- Increase radiocarpal fusion
- Do not increase midcarpal osteoarthritis
- Do not improve motion
Excision of the triquetrum:
Higher midcarpal osteoarthritis rate
Lower survival rate
Do not improve motion

Alternative to DRUJ arthroplasty
RSL fusion for radiocarpal osteoarthritis

ALWAYS practice distal scaphoid excision
- High satisfaction rate
- Decrease STT osteoarthritis
- Improve fusion

Avoid to excise the triquetrum
Thank you for attention