Percutaneous screw fixation for carpal scaphoïd fractures: clinical results

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Scaphoid fractures

50-80% carpal bone fractures young & active individuals

Fall hand outstretched

Cast treatment:
Reliable
Inexpensive
Low complication rate (85 – 90% union)
Immobilization 6 to 14 weeks

(1) Acute fractures of the scaphoid bone: Systematic review and meta-analysis, S. Alshryda et al., The Surgeon, 2012
Scientific debate on the optimal treatment

For acute carpal scaphoid fracture not or minimally displaced
Operative VS conservative treatment
Still unresolved issue

Percutaneous screw fixation versus

RESEARCH ARTICLE
Comparison of Operative and Non-Operative Treatment of Acute Undisplaced or Minimally-Displaced Scaphoid Fractures: A Meta-Analysis of Randomized Controlled Trials

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We recommend that all active patients should be offered percutaneous stabilisation for fractures of the waist of the scaphoid.
Scaphoïd fracture

- Exclusion «old» fractures

- Exclusion Displaced >1 mm Other lesions

Acute fractures <1 mm No associated lesions

- Exclusion Orthopaedic treatment

Screw fixation
Monocentric observational retrospective study

On carpal scaphoïd screw fixation, not or minimally displaced, no associated lesions

- 10 years, 2008 – 2017
- Number of patients included: 155
- Follow-up time: 9 months (mean)
### Demographics

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Age</td>
<td>28 [22-41.3]</td>
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<tr>
<td>Male gender</td>
<td>84.7%</td>
</tr>
<tr>
<td>Right Handed</td>
<td>95%</td>
</tr>
<tr>
<td>Left trauma</td>
<td>67% *</td>
</tr>
<tr>
<td>Diabete mellitus</td>
<td>1.4%</td>
</tr>
<tr>
<td>Tobacco smoker</td>
<td>15%</td>
</tr>
</tbody>
</table>

*N = 155*
Causes

- Fall from heights: 26.4%
- Fall from a bike: 11.8%
- Fall from a motorcycle: 6.9%
- Car accident: 2.1%
- Sport trauma: 5.6%
- Other causes: 29.2%
- Not available: 17.4%
Timing

Time trauma – First consultation (days) : 3 [1-12]

Time trauma – Surgery (days) : 10 [6-24]
Imagery

Rx 32.6%

Rx + CT 51%

CT 2.1%

Rx + Scintigraphy 12.8%

Rx + IRM 0.7%

Rx + Scinti + IRM 0.7%
Fracture types – Schernberg classification

<table>
<thead>
<tr>
<th>Type</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>III</td>
<td>61.5%</td>
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<tr>
<td>IV</td>
<td>17.5%</td>
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<tr>
<td>II</td>
<td>10.9%</td>
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<tr>
<td>V</td>
<td>4.3%</td>
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<tr>
<td>VI</td>
<td>4.3%</td>
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<td>I</td>
<td>1%</td>
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</table>
Post-operative data

Below-elbow splinting (100%)
- With thumb (72.2%)
- Without thumb (11.6%)
- Not available (16.1%)

Duration (mean) : 4 weeks
Post-operative results

- J0: Trauma
- 4 weeks: Back to work
- 9 months: Follow-up

Union 95.5%
Pseudarthrosis 4.5%
Post-operative results

90% No pain

Mean flexion : 60°
Mean extension : 62°

Strenght injured hand /controlateral : 80%

Scapholunar angle 53,8°
Radiolunar angle 5,1°
Post-operative results

Nonunion
7/155 cases

Same as others except

Type of fracture
Fracture types – Nonunion

<table>
<thead>
<tr>
<th></th>
<th>III</th>
<th>61,5 %</th>
<th>25 %*</th>
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</thead>
<tbody>
<tr>
<td>IV</td>
<td>17,5 %</td>
<td>25 %</td>
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</tr>
<tr>
<td>II</td>
<td>10,9 %</td>
<td>37 %*</td>
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<td>V</td>
<td>4,3 %</td>
<td>12 %</td>
<td></td>
</tr>
<tr>
<td>VI</td>
<td>4,3 %</td>
<td>0 %</td>
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<tr>
<td>I</td>
<td>1 %</td>
<td>0 %</td>
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*Note: percentages may not sum up to 100% due to rounding.
Conclusion

Largest observational study

Indicating:
Reliable option
Low complication rate
Back to work
Back to activities

Multicentric RCT is needed
Merci pour votre attention
Thanks for your attention