Complications after long posterior instrumentation in patients with cervicothoracic fractures related to ankylosing spine disease

Yohan Robinson,
Anna-Lena Raninen, Claes Olerud

Uppsala University Hospital
Sweden

EuroSpine Liverpool, ePoster
yohan.robinson@surgsci.uu.se
Background

- The biomechanical rationale of long posterior instrumentation is neutralisation of long lever arms.
- Associated soft tissue injury may lead to muscle necrosis.
- Posterior access traumatises additionally posterior erector spinae, trapecius and superior rhomboid muscles.
- Soft-tissue complications likely.
Patients and methods

41 patients with fractures of cervicothoracic junction treated between 2007 and 2011

age: 71±12 years
35 male

Ankylosing spondylitis
N=31

DISH
N=10
Patients and Methods

<table>
<thead>
<tr>
<th>Neurological deficit</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frankel A</td>
<td>6</td>
</tr>
<tr>
<td>Frankel B</td>
<td>0</td>
</tr>
<tr>
<td>Frankel C</td>
<td>4</td>
</tr>
<tr>
<td>Frankel D</td>
<td>1</td>
</tr>
<tr>
<td>Frankel E</td>
<td>30</td>
</tr>
</tbody>
</table>

- Surgical levels:
  - 5% occipitothoracic
  - 5% atlantothoracic
  - 90% axiothoracic

- Surgical time was 255 ± 90min [80; 488]
- bleeding 2128 ± 3005ml [300; 17000].
Operation details

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## Complications

<table>
<thead>
<tr>
<th>Complication</th>
<th>n</th>
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<tbody>
<tr>
<td>Wound infection</td>
<td>5 (12%)</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>3 (7%)</td>
</tr>
<tr>
<td>Tracheostomy</td>
<td>2 (5%)</td>
</tr>
<tr>
<td>Dural tear</td>
<td>1 (2%)</td>
</tr>
</tbody>
</table>
Neck pain

$\text{p}=0.32$
Arm pain

$p=0.73$
Discussion

• Wound infection rate in long posterior cervical fusions is higher after fractures than in cases with RA related instability
  » Robinson et al (CSRS-ES 2013)
  – soft tissue trauma associated with the fracture
  – Preexisting kyphosis with increases skin tension
  – Wide muscular exposure for long cervical stabilisation
  – More bleeding due to fracture and soft tissue injury
Discussion

• No mechanical complications were observed
• All fractures healed
• Only little pain was reported 1 and 2 years postop
Conclusion

• Despite serious complications is long posterior instrumentation still the method of choice in cervical fractures related to AS or DISH

• Careful surgical technique and soft tissue management can possibly minimise postoperative wound infections
Disclosures

• YR:
  – Consulting (DePuy Synthes, Medtronic)
  – Board membership (CSRS-ES, AOSpine)

• ALR:
  – None

• CO:
  – Consulting (DePuy Synthes, Medtronic)
  – Board membership (CSRS-ES)