Traumatic multiple rib fractures: key health outcomes influencing rehabilitation and recovery from a patient perspective

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Background

Surgical fixation or conservative

Randomised Control Trials Outcomes
- Length of stay
  - Intensive care
  - Hospital
- Duration mechanical ventilation
- Cost
- Chest infections
- Failure rates
- Sf36 at 6 months

https://www.depuysynthes.com/hcp/cmf/products QS/MATRIX RIB Fixation System

Tanaka et al 2002
Ganetzky et al 2006
Marasco et al 2013
**Method**

Qualitative study

- Interpretative Phenomenological Analysis
- 15 participants, with at least 3 rib fractures
- One to one semi-structured interviews up to 9 months after injury

Themes identified subsequently mapped against WHO International Classification of Function, Disability and Health (WHO ICF)

WHO ICF Mapping and PROMs

- Pain
  - Intensity
  - Effective pain management

- Respiratory function
  - Breathing
  - Cough / sneeze
  - Aerobic capacity

- Emotional response
  - Attitude
  - Coping

- Support and relationships
  - Family
  - Friends
  - Healthcare professionals

- Lying
  - Transferring
  - Walking
  - Lying
  - Lifting

- Every day activities
  - Personal care
  - Daily routine
  - Return to work
    - Leisure
    - Sleep

- Healing

<table>
<thead>
<tr>
<th>WHO ICF Domain</th>
<th>Rib fracture participants</th>
<th>PROM WHO ICF mapping (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>b330 Energy and drive functions</td>
<td>87% (13/15)</td>
<td>✓</td>
</tr>
<tr>
<td>b34 Energy and drive functions</td>
<td>80% (12/15)</td>
<td>✓</td>
</tr>
<tr>
<td>b42z Emotional function</td>
<td>100% (15/15)</td>
<td>✓</td>
</tr>
<tr>
<td>b280 Sensation of pain</td>
<td>100% (15/15)</td>
<td>✓</td>
</tr>
<tr>
<td>b440 Respiration functions</td>
<td>100% (15/15)</td>
<td>✓</td>
</tr>
<tr>
<td>b445 Exercise tolerance functions</td>
<td>93% (14/15)</td>
<td>✓</td>
</tr>
<tr>
<td>a430 Structure of respiratory system</td>
<td>100% (15/15)</td>
<td>✓</td>
</tr>
<tr>
<td>d25z Carrying out daily routine</td>
<td>87% (13/15)</td>
<td>✓</td>
</tr>
<tr>
<td>d410 Changing basic body position</td>
<td>73% (11/15)</td>
<td>✓</td>
</tr>
<tr>
<td>d51z Maintaining a body position</td>
<td>80% (12/15)</td>
<td>✓</td>
</tr>
<tr>
<td>d420 Transferring oneself</td>
<td>73% (11/15)</td>
<td>✓</td>
</tr>
<tr>
<td>d430 Lifting and carrying objects</td>
<td>80% (12/15)</td>
<td>✓</td>
</tr>
<tr>
<td>d490 Walking</td>
<td>80% (12/15)</td>
<td>✓</td>
</tr>
<tr>
<td>d510 Moving around in different locations</td>
<td>67% (10/15)</td>
<td>✓</td>
</tr>
<tr>
<td>d510 Washing oneself</td>
<td>73% (11/15)</td>
<td>✓</td>
</tr>
<tr>
<td>d510 Remunerative employment</td>
<td>73% (11/15)</td>
<td>✓</td>
</tr>
<tr>
<td>d920 Recreation and leisure</td>
<td>80% (12/15)</td>
<td>✓</td>
</tr>
<tr>
<td>e350 Immediate family</td>
<td>87% (13/15)</td>
<td>✓</td>
</tr>
<tr>
<td>e355 Health professionals</td>
<td>73% (11/15)</td>
<td>✓</td>
</tr>
<tr>
<td>e357 Individual attitudes of healthcare professionals</td>
<td>73% (11/15)</td>
<td>✓</td>
</tr>
</tbody>
</table>

Factors with frequency ≥77% (10/15) or greater
Pain, breathing and emotional recovery are key health outcomes after traumatic multiple rib fractures.

Impact on breathing is specific to chest wall trauma when compared to orthopaedic major trauma, and not reflected in current PROMs.

A range of outcomes is needed to inform design of clinical services or research protocols meaningful to patients.