Seat Belt Syndrome

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LEVEL I TRAUMA CENTER FOR CHILDREN

Cross your heart, not your fingers.
Objectives

• Understand the definition of the seat belt syndrome

• Recognize injuries associated with seat belt syndrome

• Review the diagnosis and management of Chance fractures

What Is The Seat Belt Sign?

• Contusions and/or abrasions on the anterior abdomen of a restrained occupant found after a motor vehicle crash
Seat Belt Syndrome

- Seat belt sign plus internal injury
  - Small bowel
  - Stomach
  - Colon
  - Spine fracture
**Incidence of Injury**

<table>
<thead>
<tr>
<th></th>
<th>No Seat Belt</th>
<th>Seat Belt</th>
<th>Seat Belt Sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any abdominal injury</td>
<td>10%</td>
<td>15%</td>
<td>64%*</td>
</tr>
<tr>
<td>Small bowel injury</td>
<td>2%</td>
<td>6%*</td>
<td>21%*</td>
</tr>
</tbody>
</table>

Relative risk of small bowel injury is x4.7 with seat belt sign

**Chance Fracture**
Chance Fracture

- First described by GQ Chance in 1948
- Caused by extreme flexion of spine
- Flexion – distraction about a fulcrum
- Bone fails before ligaments

Management

- Uncommon injury, opinions vary
- May initially be unstable, but hyperextension orthosis may be fitted after 2 weeks
  - Must have less than 15° kyphosis
  - Must have only partial ligamentous injury
  - Frequent failure with progressive kyphosis
- Operative indications
  - Significant ligamentous injury / instability
Management

<table>
<thead>
<tr>
<th>Management</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posterior spinal fusion</td>
<td>32</td>
<td>60</td>
</tr>
<tr>
<td>Extension cast</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>TLSO spinal brace</td>
<td>11</td>
<td>21</td>
</tr>
<tr>
<td>Corpectomy and fusion</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>None</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

Takeaway Message

• Seat belt signs are becoming more common
• Frequently associated with significant intra-abdominal and spine injury
• If consulted for management of Chance-type fracture, make sure trauma surgeons are involved and are evaluating the abdomen