Horizontal Instability of the Acromioclavicular Joint: A Systematic Review

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Disclosures

• Gianna M. Aliberti – nothing to disclose

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Introduction

- Acromioclavicular joint (ACJ)
  - Diarthrodial joint
  - Supported by the acromioclavicular (AC) and coracoclavicular (CC) ligaments
Introduction

- Injuries to the ACJ are common
  - Suspect in patients who present with shoulder pain in the region of the acromion and clavicle
  - Caused by a direct blow to the shoulder during contact sports or a fall on an adducted arm
Introduction

- AC ligament
  - Attaches acromion to the distal clavicle
  - Provides horizontal stability to ACJ
  - Injuries lead to horizontal instability (often neglected or underdiagnosed)

- Horizontal instability can cause poor patient outcomes in terms of pain and disability
Methods

- Systematic review using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines

- PubMed and Embase databases were searched for studies that investigated the diagnosis, treatment, and failure of operative management of acute and chronic AC separations

- Studies that did not specifically evaluate ACJ injuries, were not written in English, or were specific only to vertical instability of the ACJ were excluded
Results

- Initial literature search yielded 139 results
- After removing duplicates, 73 unique studies were identified
- Overall, 23 articles met inclusion criteria and were included in this systematic review
Results

- Difficult to diagnose horizontal instability using standard x-ray views
- To better evaluate horizontal instability, several x-ray views have been described:
  - Modified Alexander
  - Zanca
  - Axillary lateral
  - Supine dynamic lateral
- Dynamic views were shown in some cases to better detect horizontal instability

Grade III AC separation treated non-operatively:

Taub et al AJSM 2010
Minkus et al AOTS 2017
Saccomanno et al Joints 2017
Gastaud et al OTSR 2015
## Results

<table>
<thead>
<tr>
<th>Radiographic view</th>
<th>Description</th>
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<tbody>
<tr>
<td>Zanca</td>
<td>Patient’s arm hanging down with X-ray beam angled at 10-15° cephalad with 50% standard shoulder penetration</td>
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<tr>
<td>Axillary Lateral</td>
<td>Patient standing at 60° angle to the plate and forearm resting on head, with X-ray beam angled 30° caudal</td>
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<tr>
<td>Supine dynamic axillary lateral</td>
<td>Supine position with arm abducted 90° in the scapular plane, with arm in 60° of flexion, and with arm in 60° of extension</td>
</tr>
<tr>
<td>Modified Alexander</td>
<td>Arm is placed in a cross-body position and patient is positioned in a Y-view of the shoulder at a 45° angle to the detector</td>
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Tauber et al *AJS* 2010  
Minkus et al *AOTS* 2017
>60 published procedures for treating ACJ injuries

- Modifications to incorporate reconstruction of the AC ligaments showed improved patient outcomes
  - Additional AC joint suture cord cerclage
  - Combined AC and CC ligament reconstruction
  - Twin Tail TightRope triple button technique

Braun et al *OTSM* 2014
Martetschläger et al *AT* 2016
Results

- Failure after surgical stabilization of AC separation has been defined broadly in the literature
  - Loss of reduction leading to pain or dysfunction
  - Complete dislocation
  - Persistent instability of the ACJ
- Failure rates range from 15-80%

References
- Biggers et al. *COP* 2015
- Cook et al. *JSES* 2012
- Martetschläger et al. *AT* 2016
- Scheibel et al. *AJSM* 2011
- Tauber et al. *AJSM* 2016
- Weinstein et al. *AJSM* 1995
- Yoo et al. *AJSM* 2010
Conclusion

- There is no consensus regarding the best practices for diagnosis, evaluation, or treatment of acute or chronic horizontal ACJ instability.

- Horizontal instability injuries are often neglected or poorly understood, making diagnosis difficult and leading to high complication rates and failure after surgical stabilization.
Select References