SUBSCAPULARIS TEARS –
Indications? Open or arthroscopic?

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Anatomy
Muscular and tendinous insertions:
- Cranial 60%: tendinous insertion
- Caudal 40%: muscular insertion

Footprint
Ide et al. (2006) Arthroscopy
- „comma shape”
- b: anatomic neck
- b: Bare area
- A: 39.5 mm
- B: 16 mm
**Function**

- Internal rotation
- Adduction and abduction
- Depressor for humeral head
- Anterior part of force couples
  - Centering humeral head
- Static and dynamic stabilizer
- Stabilizes LHB

**Incidence**

**Isolated SSC-tears**
- 5.7% (Bennett et al. 2003)
- 4.9% (Lafosse et al. 2007)
- 5.3% (Nové-Josserand et al. 2012)

**Combined SSC/SSP-tears**
- 30% (Bennett et al. 2001)
- 29.4% (Barth et al. 2006)
- 30% (Bartsch et al. 2010)

**Etiology**

**Traumatic: isolated SSC #**
- Forced ERO and abduction
- Fall on hyperextended arm
- Ant-inf. Shoulder dislocation

**Degenerative: ant.-sup RC#**
- Medial lesion of pulley sling
- ASI
- Anterosuperior RC-Läsion
MECHANISM OF INJURY

Mechanism of Injury  

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>33</td>
<td>Hyperextension of the abducted arm 8</td>
</tr>
<tr>
<td></td>
<td>Forced external rotation of the abducted arm 10</td>
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<tr>
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<td>Fall on the backward outstretched arm 6</td>
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<td>Traumatic anterior dislocation 1</td>
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<td>Direct blow to anterior shoulder 2</td>
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<td>Motorcycle accident 1</td>
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<td>Not reproducible 2</td>
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Bartl, Habermeyer, 2010, AJSM,

Classifications

Diagnosis: MRI

- Localisation and extension of tear
- Retraction
- Atrophy and fatty infiltration
- LHB and pulley
### Indication

**Indications**

- Pain, loss of function
- Positive tests
- Mild SSC atrophy
- Fatty infiltration < grade III

**Contraindications**

- Cuff tear arthropathy
- High-grade atrophy of SSC
- Fatty infiltration > grade III

### Portals for SC reconstruction

- Posterior portal (A)
- Anterosuperior portal (E)
- Anterolateral portal (D)

### Arthroscopy

- SSC in neutral position and in Abd + IRO
- Identification of superolateral edge of the tear
- Static and dynamic evaluation of LHB + pulley
„Comma sign“

- Medial retraction of complete tears
- Torn medial pulley forms scar tissue at the superolateral edge of the tendon = „comma sign“

Lo et al. (2003) Arthroscopy

Classification

I partial rupture
II complete, 25%
III complete, 50%
IV complete, > 50%

Fox et al. (2003) Techn Shoulder Elbow Surg

Arthroscopic repair
Coracoplasty – when and how?

Normal coraco-humeral distance approx. 11mm
Correlation: reduced CHD <-> ant-sup pathologies
CP when ant-sup. pathology and narrowed interval

But: Personally I have never performed CP

Additional Pulley lesions

- Fraying
- Tear
  - anteromedial (AM)
  - posterolateral (PL)
- LHB instability
- LHB subluxation/ dislocation

Arthroscopic tenotomy
Tenotomy or Tenodesis?

- Tenotomy: good functional results

- but:
  - Often „Popeye Biceps“
  - Elbow: Pro-/Supination little weaker

Arthroscopic Tenodesis

Subpectoral tenodesis

Gill et al., JSES, 2001
Wolf et al., Arthroscopy, 2005
Mazzocca et al. et al. (2005) Arthroscopy
When do I open it?

Do Not Open
Alarm will Sound

Do not open with a blade

Open surgery: Complete SSC tears (4&5)

Chronic & complete SSC tears with high-grade retraction

Massive combined SSC + SSP tears in the younger P.

Advantages:
* time sparing,
* refixation of HAGL Lesion
* pec. major transfer can easily be added

Habermeyer et al., Schulterchirurgie, Elsevier, 2010

Rare: Isolated inferior SSC lesion

Traumatic isolated tear of caudal SSC
Easily overlooked

Thorough clinical, radiological and arthroscopic evaluation necessary

Open repair!

Achtnich, Hartnich/Müller, KSSTA, 2010
Results isolated SSC - arthroscopic

- Good short- and midterm results following arthroscopic repair of isolated SSC tears
- Small case series
- Constant: ~ 50-60 → ~ 75-85
- Small re-tear rate (< 10%)
- Remaining positive SSC tests in 13-25%

Open Repair of Isolated Traumatic Subscapularis Tendon Tears

Christopher Bartl MD, Markus Schreiber MD, Peter Nagy CS MD, Stefan Lichtenberg MD, and Peter Habermeyer MD
Investigation performed at the Department of Shoulder and Elbow Surgery, ATOS-Clinic, Heidelberg, Germany

- N=30; age 43y; Fup: 90%
- 7 grade II°; 11 III°; 12 IV° (Fox & Romeo)
- FU 46 months (25-72)
- Constant: 51p → ~ 82p
- Small re-tear rate (7%)
- Remaining positive SSC tests in 20%

Conclusion

**SUBSCAPULARIS TEARS – Indications?**
- Pain, loss of function
- especially in the young

Open or arthroscopic?

Partial tears – arthroscopic

Complete and chronic, retracted tears – u pick!
Thank you!

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