Shoulder Injuries in Sports

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SHOULDER GIRDLE

Courtesy of Lajtai G, Klagenfurt, Austria
### CC AND AC JOINT

#### NEUROVASCULAR STRUCTURES

### WHAT IS FREQUENT IN SPORTS?

- Shoulder dislocations and instability (80%)
- SLAP and biceps lesions
- AC joint dislocations
- „rotator cuff lesions“

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SHOULDER STABILITY
- Tennisball on coin

ANATOMY
IGHL
- always present
- consists of:
  - anterior band
  - axillary recess
  - posterior band

O’Brien, Saunders: 1990
Malicky DM, JSES: 2002

CLINICAL PRESENTATIONS
- Acute dislocation
- Chronic instability

TREATMENT ACUTE: CLIN & ALWAYS X RAY
- CAVE: axillary nerve / vascular injury!!!

Protzman RR, JBJS Am, 1980.
OPEN REDUCTION

- fracture of the surgical neck of the humerus
- fracture dislocation
- locked dislocation
- "neuro"-vascular injury

WHICH THERAPY?

RECURRENT: NATURAL HISTORY
(F-UP 25 J)

Which 50% - 60% should we operate?

Hovelius LM, JBJS Am; 2008

OSTEOARTHRITIS

After 25 years follow up:

- One dislocation 17%
- Repetitive dislocations 30%
  -> more than one relux.
- Surgical Stabilization 21%

Hovelius L. JSES: 2009
TREATMENT CHRONIC INSTABILITY

ARTHROSCOPIC
- Standard therapy
  - Bottoni CR, AJSM: 2006
  - Rhee YG, AJSM: 2006
  - Tjumakaris FP, CORR: 2006
  - redislocation rate up to 67%
  - Burkhart SS: Arthroscopy: 2000
  - Tauber M: JSSE: 2004

OPEN
- detachment and reattachment of the subscapularis muscle - > partial insufficiency
- loss of ER
- redislocation rate <4%
- Bottoni CR, AJSM: 2006
- Tjumakaris FP, CORR: 2006
- Rhee YG, AJSM: 2006

What are the Pejorative Prognostic Factors?...

Who are the High Risk Patients?...

Age at Surgery < 20 years

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Redislocation rate (%)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 20</td>
<td>95</td>
<td>McLaughlin [77]</td>
</tr>
<tr>
<td>20–30</td>
<td>79</td>
<td>Wiberg [108]</td>
</tr>
<tr>
<td>30–40</td>
<td>66</td>
<td>Ryll [88]</td>
</tr>
<tr>
<td>40–50</td>
<td>65</td>
<td>Simonet [93]</td>
</tr>
<tr>
<td>&gt; 40</td>
<td>10</td>
<td>Hovelius [42]</td>
</tr>
</tbody>
</table>

Contact or Forced-Overhead Sports

- Lafosse L, RCO: 2000
- Pagnani M, AJSM: 1996
- Roberts S, JSES: 1999
- Torchia M, Arthroscopy: 1997
RISK FACTOR FOR RECURRENCE

Level of Sport Practice [Competition]

- Competition: 50%
- Recreational or no sports: 15%

Lafosse L, RCO: 2000
Roberts S, JSES: 1999
Balg F, JSES: 2007

HUMERUS BONE LOSS
ENGAGING HILL SACHS LESION

ENGAGING HILL SACHS LESION

GLENOIDAL AND HUMERAL BONE LOSS
GLENOIDAL AND HUMERAL BONE LOSS

LOW RISK FOR RECURRENCE
-> ARTHROSCOPIC REFIXATION

HIGH RISK FOR RECURRENCE

LATARJET

... A critical glenoid defect
Stabilizing Mechanisms of Latarjet-Procedure

- Glenoid plasty
- Sling effect
- Capsular imbrication

Yamamoto N. Annual Meeting AAOS FEB 25-28, 2009

Treatment and My Results

- 12 months

Treat and My Results

- try conservative
- if surgery, try "off season"
- 12 shoulders in 12 players
- 12 months follow up
- failure = 1 ice hockey (8.3%), Bankart
- return to full competition within 3 months
- return all to the same level

What is Frequent in Sports?

- Shoulder dislocations and instability
- SLAP and biceps lesions
- AC joint dislocations
- “rotator cuff lesions”

LHB = A Major Cause of Pain

- Proximal desinsertion (SLAP)
- Tenosynovitis
- Hypertrophy
- Delamination
- Pre-rupture
- Subluxation
- Dislocation
PROXIMAL INSERTION: SLAP LESIONS

Snyder S, Arthroscopy: 1990
Maffet MW, AJSM: 1995

PULLEY LESIONS

... may be because of evolution of humans!

CHANGE OF ORIENTATION

STRESS ON PULLEY \rightarrow LESION OF BICEPS
HYPERTROPHY → ENTRAPMENT

= causes pain and blocks movement

REPAIR THE SLAP II LESIONS?

-> 50% probability to fail

Boileau P, AJSM: 2009

TREATMENT AND RESULTS

• try conservative

• if surgery, try „off season“

• Return to full competition within 3 months after shoulder surgeries in soccer

Hart D, KSSTA: 2013

WHAT IS FREQUENT IN SPORTS?

• Shoulder dislocations and instability (80%)

• SLAP lesions and biceps lesions

• AC joint dislocations

• „rotator cuff lesions“
AC-JOINT DISLOCATION: TREATMENT

<table>
<thead>
<tr>
<th>conservative</th>
<th>conservative</th>
</tr>
</thead>
<tbody>
<tr>
<td>?</td>
<td>operative</td>
</tr>
<tr>
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OPERATIVE VS CONSERVATIVE

PROBLEM: INSTABILITY VERTICAL AND HORIZONTAL

- ...over 80 techniques in the world that address only the vertical instability

OUR CONCEPT OF RECONSTRUCTION

- If the indication is given....
- Reconstruction vertical and horizontal.
- ...reconstruction of both ligaments = AC lig. and CC lig.
BERNESE BIPOD TECHNIQUE

BIPOD Arthroscopic Acromioclavicular Repair Restores Bi-Directional Stability

J De Beer, M Schaer, K Latendresse, MA Zumstein

Cape Shoulder Institute, Platekloof, Cape Town, South Africa
Department of Orthopaedic Surgery and Traumatology, Inselspital, University of Bern, Switzerland

SHOULD WE OPERATE?

- I-II -> conservative (20% problems in II)
- III -> cosmesis, horizontal instability
- IV-VI -> surgery

- Preserve the function of the AC
- Anatomical repair in CC reconstruction
- Anatomical repair in AC + CC not sign.

RESULTS BIPOD REPAIR

- 1 infection, debrided
- No clinical failure
RADIOGRAPH. PRELIM. RESULTS

- Radiographic
  - Vertical stability
    - Intact CC distance to CTRL side (10%) = 82%
    - Loss of reduction (11-25%) to CTRL = 18%
    - Loss (26-100%) to CTRL = 0%
  - Horizontal stability (Alexander view)
    - Subluxation = 9%
    - Luxation = 0%

WHAT IS FREQUENT IN SPORTS?

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MRI FINDINGS

<table>
<thead>
<tr>
<th></th>
<th>During (n=20)</th>
<th>After the Career 6.8 y (n=20)</th>
<th>21 y (n=17)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abnormalities in the throwing shoulder</td>
<td>95%</td>
<td>95%</td>
<td>100%</td>
</tr>
<tr>
<td>Average/shoulder (range)</td>
<td>7 (0-12)</td>
<td>5 (0-11)</td>
<td>6 (2-11)</td>
</tr>
<tr>
<td>* ns ns ns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abnormalities in the non-throwing shoulder</td>
<td>85%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Average/Shoulder</td>
<td>3</td>
<td>4</td>
<td>5 * = sign.</td>
</tr>
</tbody>
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SUPRASPINATUS IN OVERHEAD ATHLETES

- Tendinopathy
- Partial articular tear

Jost B, Zumstein M, Gerber C, CORR: 2005
**MRI FINDINGS: SUPRASPINATUS IN THROWING SHOULDERS**

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<th>After the Career (n=17)</th>
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<td>Tendinopathy/Partial Tears</td>
<td>85% ns</td>
<td>85% ns 94%</td>
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**MRI FINDINGS: SUPRASPINATUS IN THROWING SHOULDERS**

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<th></th>
<th>During (n=20)</th>
<th>After the Career (n=17)</th>
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</thead>
<tbody>
<tr>
<td>Normal</td>
<td>3 ns</td>
<td>3 ns 1</td>
</tr>
<tr>
<td>Tendinopathy</td>
<td>9 *</td>
<td>3 ns 6</td>
</tr>
<tr>
<td>Partial Tear</td>
<td>8 *</td>
<td>14 ns 10</td>
</tr>
<tr>
<td>Full Thickn. Tear</td>
<td>0 ns</td>
<td>0 ns</td>
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</table>

* = sign.

**PARTIAL TEARS SSP**

- Intratendinous 10%
- Superficial 5%
- Articular 85%

**SHOULDER PAIN**

- Pain (n=11)
  - 3-tendon RC abnorm. n=10
- No pain (n=19)
  - 3-tendon RC abnorm. n=1
  - SSP abnorm. n=14

-> SSP not a predictor for pain

Jost B, Zumstein M, Gerber C, CORR: 2005
NEVER OPERATE IMMEDIATELY...

First always conservative treatment:
- Rest, NSAID, physiotherapy
- ISP is the most important depressor!!!
- If Surgery “off season”

- CAVE traumatic transmural rotator cuff tears (esp. SSC) !!!

TAKE HOME MESSAGES: INSTABILITY

- IGHL and bony congruency are the most important stabilizers
- High recurrence rate in the young active, overhead athlete -> no arthroscopic Bankart procedure!!!
- Latarjet in athletes -> best results with no increased OA in long term follow up

TAKE HOME MESSAGES: BICEPS

- Try conservative
- If Surgery “off season”
- SLAP at the proximal insertion
  — Refixation -> stiff and 50% failures
  — Arthroscopic Biceps tenodesis
- Pulley
  — Arthroscopic Biceps tenodesis

TAKE HOME MESSAGES: AC

- Try conservative
- If Surgery, try “off season”
- Best results in our hands with reconstruction of both planes (vertical and horizontal)
TAKE HOME MESSAGES: ROTATOR CUFF

- try conservative
- if Surgery, try „off season“
- Partial lesions of the supraspinatus are rarely painful in athletes
- Overhead sports do not predispose to rotator cuff lesions

VERY IMPORTANT POINT

THE DOCTOR

THANK YOU FOR YOUR ATTENTION!

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