COMMON ELBOW INJURIES
In The Athlete
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COMMON SPORTS INJURIES of the ELBOW

Disclosure

Potential conflicts

- Zimmer – royalties, consultant
- Sbi – royalties
- Tenex – Medical director

1983
### COMMON SPORTS INJURIES of the ELBOW

#### OUTLINE
- Muscles/tendons
- Ligaments
- Articulation

#### COMMON SPORTS INJURIES of the ELBOW

#### QUESTIONS
- Diagnosis – how hard is it
- Does it have to be fixed
- Does technique matter
- How long to protect/ rehab
- If fixed, what can pt expect

#### COMMON SPORTS INJURIES of the ELBOW

**Muscles/Tendons**
- Biceps
- Triceps
- Epicondylitis
### BICEPS TENDON INJURY

**Partial Tear**

- **History - Presentation: acute/chronic**
  - Pain with repetitive rotation
- **Physical - Mild flexion weakness**
  - Moderate supination weakness
  - Crepitus may be present

### BICEPS TENDON INJURY

**Classification**

- **Musculotendinous - Rare**
- **Intratendinous - Rare**
- **Detachment**
  - partial - Uncommon
  - complete

### DISTAL BICEPS TENDON RUPTURE

**Diagnosis**

- **Clinical**
  - Weakness
  - Supination

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DISTAL BICEPS TENDON RUPTURE

QUESTIONS

- Diagnosis – how hard is it
- Does it have to be fixed? No and Yes (Obama)
  - Lose ~ 10 -15% flexion strength
  - Lose > 50% supination strength
Comparable clinical results

DISTAL BICEPS TENDON RUPTURE

QUESTIONS

- Diagnosis – how hard is it
- Does it have to be fixed
- Does technique matter
- How long to protect/rehab
  - Depends on security of repair
    - Immobilize: 3-4 days
    - Active assisted motion: 5-10 days
    - Against gravity: 10-21 days
    - Progress to full activity 1-4 months

QUESTIONS

- Diagnosis – how hard is it
- Does it have to be fixed
- Does technique matter
- How long to protect/rehab
- If fixed, what can pt expect
  - >90% are >90% normal

> 90% are >90% normal
### TRICEPS TENDON RUPTURE

#### QUESTIONS
- Diagnosis – Central attachment: MRI
- Does it have to be fixed - Yes
- How should it be fixed – Bone tunnels

#### QUESTIONS
- Diagnosis – Central attachment: MRI
- Does it have to be fixed - Yes
- How should it be fixed – Bone tunnels
- How long is the rehab period - 1 year!!
- What can pt expect - >90/90, if acute
### COMMON SPORTS INJURIES of the ELBOW

<table>
<thead>
<tr>
<th>Muscles/Tendons</th>
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</thead>
<tbody>
<tr>
<td>**• **Biceps</td>
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<tr>
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</tr>
<tr>
<td>**• **Epicondylitis</td>
</tr>
</tbody>
</table>

### Epicondylitis: Where are we, really?

#### QUESTIONS

- What are the trends
- What works?
- Anything new?

### Rx Trends

- Office or ASC
- Less Invasive – Quick Recovery
- Image Guidance - Ultrasound
- Validated Effectiveness
- Cost Effective
- Safe
## Epicondylitis: Where are we, really?

### Options

- Physical therapy (or leave it alone)
  - Eccentric exercise  
    *The Gold standard*
  - Effective – multiple sites (achilles)
  - Safe
  - Prolonged
  - Cost +/-

### Epicondylitis: Where are we, really?

<table>
<thead>
<tr>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Cortisone</td>
</tr>
<tr>
<td>Lateral epicondylitis: RCT, 165 pt ; FU = 1yr</td>
</tr>
<tr>
<td>- Eccentric exercises</td>
</tr>
<tr>
<td>VS</td>
</tr>
<tr>
<td>- Steroid injection</td>
</tr>
</tbody>
</table>

At one year the cortisone group statistically inferior

Coombes, et al JAMA, 2013

### Epicondylitis: Where are we, really?

<table>
<thead>
<tr>
<th>Platelet Rich Plasma (PRP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Current Concepts in Sports Med</td>
</tr>
<tr>
<td>Popularity based on safety and attractiveness</td>
</tr>
<tr>
<td>Not on the scientific evidence of effectiveness</td>
</tr>
</tbody>
</table>

Hall, et al; JAAOS, 2010
Epicondylitis: Where are we, really?

**Arthroscopy**
- Effective: 80 – 90%
  - Added value?
  - Cost effective?

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Epicondylitis: Where are we, really?

**Tx1**
- **Technique**
  - Can be in office
  - Local anesthetic
  - Approx 40 – 60 sec of energy

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**Effectiveness**

Koh, et al; AMJS, March, 2013

95% (19/20) patients satisfied
No device-related complications
No patient-related complications
**Epicondylitis: Where are we, really?**

<table>
<thead>
<tr>
<th>Tx1</th>
<th>Results – cost effectiveness?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Worker’s compensation analysis</td>
</tr>
<tr>
<td></td>
<td>- Tx1 vs Surgery</td>
</tr>
<tr>
<td></td>
<td>- Earlier return to work</td>
</tr>
<tr>
<td></td>
<td>- Less expensive than surgery</td>
</tr>
<tr>
<td></td>
<td>- Saving for definitive surgery ~ $16,000</td>
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**Epicondylitis: Where are we, really?**

<table>
<thead>
<tr>
<th>Time to intervention</th>
<th>Site of intervention</th>
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<tbody>
<tr>
<td>3 months</td>
<td>Office</td>
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<tr>
<td></td>
<td>ASC</td>
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**COMMON SPORTS INJURIES of the ELBOW**

Ligaments
- MCL
- LCL

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MCL Deficiency at the Elbow

QUESTIONS

• Etiology? Spectrum
  • Single event; trauma
  • Repetitive; throwing

QUESTIONS

• Diagnosis – how hard is it

QUESTIONS

• Does it have to be fixed
  – Only one study
  – 45% heal without surgery

Rettig, A; Am J Sp M: 2001
MCL Deficiency at the Elbow

Technique: MUCL Docking concept preferred

QUESTIONS
- When to operate
- How to fix it
- Has the rehabilitation program changed?
  - No, still 12 months (10 - 12)
- Expected outcome
  - Athlete: 70%
  - Non-athlete: 90%

COMMON SPORTS INJURIES of the ELBOW

Articular
- Plica
- Osteophyte
- Articular - OCD
<table>
<thead>
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<tr>
<td><strong>Plica</strong></td>
</tr>
<tr>
<td>• Snapping easy</td>
</tr>
<tr>
<td>– Rolls over the head in flexion (60 deg)</td>
</tr>
<tr>
<td>– Snaps back when going into extension</td>
</tr>
<tr>
<td><strong>BUT</strong></td>
</tr>
<tr>
<td>• May mimic epicondylitis !!!</td>
</tr>
</tbody>
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COMMON SPORTS INJURIES of the ELBOW

Articular
- Plica
- Osteophyte - impingement

COMMON SPORTS INJURIES of the ELBOW

Impingement
- Symptoms – extension pain
- How much should be removed

COMMON SPORTS INJURIES of the ELBOW

Rationale
- Valgus
  - Olecranon
  - MCL

Sensitivity
3 mm resection med corner increases lig strain!!
COMMON SPORTS INJURIES of the ELBOW

Articular

• Plica
• Osteophyte
• Articular - OCD

Osteochondritis of the Elbow

QUESTIONS

• When to treat
• How to treat
• When can pt return to sport

How to Rx

• Intact cartilage – drill

• Flap – sew back down

• Detached – graft/ micro fx
Osteochondritis of the Elbow

QUESTIONS

- When to treat
- How to treat
- When can pt return to sport
  - When healed
  - When asymptomatic with progressive sports related activity

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Osteochondritis of the Elbow

Beware!

- Do NOT allow mechanical Sx to persist

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Radial Head Fracture in the Athlete

- This is an unexplored question with an unknown answer
Radial Head Fracture in the Athlete

- What to do – Fix if you can

- What not to do? Excise if MCL deficient

- What not sure of? If can’t fix, excise or replace
### Fracture of the Radial Head

<table>
<thead>
<tr>
<th>Author</th>
<th>Yr</th>
<th>No</th>
<th>FU/yr</th>
<th>Sat/%</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morrey</td>
<td>1976</td>
<td>34</td>
<td>20</td>
<td>88</td>
<td>all Type III</td>
</tr>
<tr>
<td>Wallenbeck</td>
<td>1997</td>
<td>27</td>
<td>17</td>
<td>81</td>
<td>III,IV- poorer</td>
</tr>
<tr>
<td>Janssen</td>
<td>1998</td>
<td>20</td>
<td>23</td>
<td>95</td>
<td>all Type III</td>
</tr>
<tr>
<td>Sanchez-Sotelo</td>
<td>2000</td>
<td>10</td>
<td>5</td>
<td>90</td>
<td>all type IV</td>
</tr>
</tbody>
</table>

- Madrid Study – 26 pt < 40 y/o
  - Mason II - 6
    - III – 20
  - F/U 25 yr (15 – 35)
  - Pain: o, mild – 23/26
  - Satisfactory – 91%

  Antuna et al, JBJS, 2010

### Radial Head Fracture in the Athlete

- Little direction from the literature when stratified by age and activity

Under investigation
COMMON SPORTS INJURIES of the ELBOW

Summary
- Spectrum of pathology
- Reliable rx options
- Know when to refer
- Know what to refer
- Know to whom to refer

Thank You

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COMMON SPORTS INJURIES of the ELBOW
Injuries to the Throwing Athlete

Summary

- Spectrum of pathology
- Reliable rx options
- Requires expertise

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In The Athlete
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Mayo Clinic
ARthroscopy of the Elbow
Osterchondritis Dissecans

SUMMARY

Repair vs reconstruction:
If tissue adequate – repair
Use #5 non-absorbable suture

Collateral Ligaments and Elbow Instability

Considerations
• Repair vs reconstruction:
  If tissue adequate – repair
  Use #5 non-absorbable suture

Osteochondritis of the Elbow

TREATMENT LOGIC

OCD
Lesion

Stable

Yes

No

Can Reattach

Stable Rim

Yes

No

Leave/Drill

Reattach

Remove

Cartilage Transplant
ARTHROSCOPY of the ELBOW
Osteochondritis Dissecans

TREATMENT

- Type I: stable = Rest
- Type II -
  - Loose body, smooth bed: excise
  - Detached, rough bed: debride
# TENDONOPATHY at the ELBOW

## Rationale for this Treatment/Study

<table>
<thead>
<tr>
<th>Ultra sound Dx/Rx</th>
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<tbody>
<tr>
<td>• Accurate diagnosis, localization</td>
</tr>
<tr>
<td>– Improves with experience</td>
</tr>
<tr>
<td>• Intervention - Indications</td>
</tr>
<tr>
<td>– Alternate to steroid injection</td>
</tr>
<tr>
<td>– Alternate to surgical intervention</td>
</tr>
<tr>
<td>• Unique attribute</td>
</tr>
<tr>
<td>– Removal of diseased tissue</td>
</tr>
<tr>
<td>Major advance – if safe and cost effective</td>
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</tbody>
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**Major advance – if safe and cost effective**