UCL Partial Tears and Non-operative Treatment

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Disclosure

1. Basic Science Support
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2. Consultant
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3. Royalties –
   1. Arthrex
   2. Book Author, Lead Player

Partial UCL Tears
Introduction

Successful non-op treatment
• Modify the factors leading to injury
• Promote healing
Partial UCL Tears

Overuse
- 14 yo male
- Began pitching at age 9
- Began curveballs at age 12
- Plays on 4 teams
- Plays year round

MCL Injuries in Young Throwers

Etiology

Abuse
- Reckless since believe that surgery can solve all problems

Partial UCL Tears

Etiology

- Overuse
- Abuse/Misperceptions
- Fatigue
- Pitching mechanics
- Modifiable
- If not addressed – cause failure of non-operative treatment
UCL Injuries in Young Throwers

Pathology

UCL Injury Pathology Spectrum
- Partial vs full thickness
- Location – prox, dist, midsubst
- Chronic vs acute changes

Mature Pitcher
Young Pitcher

Non-operative Treatment

- 31 throwing athletes with MCL injuries
- Nonoperative treatment
- Min 3 months’ rest with rehab exercises
- 42% return to previous level of competition
- Average of 24.5 weeks

Rettig et al AJSM 2001

Healing Potential

- Biologic treatment PRP
- Enhance healing with growth factor release from platelets
Treatment of Partial Ulnar Collateral Ligament Tears in the Elbow With Platelet-Rich Plasma

AJSM 2013

- 34 athletes (27 baseball; 2 pro, 11 college)
- Partial MUCL sprain
- Failed 2 months other treatment
- Single US guided injection PRP
- 88% RTP at 12 weeks
- Significant decrease valgus laxity

Retrospective

- 44 players (6 pro, 14 college, 24 HS)
- PRP for partial-thickness UCL tears
- 73% good or excellent
- 67% of pros returned to professional

Partial UCL Tears

Tear Location
- 22 proximal
- 7 distally
- 15 had diffuse signal

Timelines
- Ave start throwing program - 5 weeks
- Ave return to competition - 12 weeks
- No injection-related complications
Partial UCL Tears
Rational for non-operative treatment
• Correctible/improvable problems leading to injury
• Pathology discrete with healing capacity
• Biologic treatment
• Option of surgery remains

Partial UCL Tears
Case Example
• 18 yo pitcher
• Pain during senior year
• PE
  • Tender MCL
  • Positive moving valgus stress test

Partial UCL Tears
Case Example
• 18 yo pitcher
• Pain during senior year
• UCL tear
Partial UCL Tears
Case Example

• PRP injections x 3 separated by a wk
• In vitro studies demonstrate benefit of repeated dosing
• Frequency – convenient to office
• Ultrasound guidance
  • Exact localization

Partial UCL Tears
Case Example

After 2nd injection begin
• Aggressive strength and conditioning program
  • Shoulder, elbow, hip, core
  • 6 weeks begin throwing program
  • Pitching/throwing instruction
  • Appropriate intensity and volume
Non-op UCL Treatment

- ITP for 6 weeks
- 3 months before return to pitching
- Seasonal and career factors influence

Return-to-Play Outcomes in Professional Baseball Players After Medial Ulnar Collateral Ligament Injuries

Comparison of Operative Versus Nonoperative Treatment Based on Magnetic Resonance Imaging Findings

- Single organization, 5 year period
- 43 pro baseball players
- 8 complete tear by MRI => early surgery
- 35 partial (24 pitchers, 11 position players)
  - 7/35 decided early surgery
  - 26/28 treated non-op and RTP at same level

MRI Predictors of Failure in Nonoperative Management of Ulnar Collateral Ligament Injuries in Professional Baseball Pitchers

Salvatore Frangiamore, MD MS, T. Sean Lynch MD, Michael D. Vaughn, MD, Lonnie Solomon, ATC, Mark S. Schickendantz MD

2016 AOSSM Annual Meeting July 7, 2016
MRI Predictors

• Identify predictors for success or failure in non-operative management of UCL injuries in professional pitchers

• Retrospective chart review of UCL injuries in pitchers from 1 major league baseball organization from 2006-2015

Results

• 32 pitchers (mean age 22.3 years) evaluated

• 34% (11/32) failed non-operative management and required subsequent ligament reconstruction

Results: MRI Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Success (n=21)</th>
<th>Failure (n=11)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distal tear</td>
<td>4 (19.1%)*</td>
<td>9 (81.8%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>High grade tear</td>
<td>6 (28.6%)</td>
<td>8 (72.7%)</td>
<td>0.017</td>
</tr>
<tr>
<td>Chronic MRI findings</td>
<td>16 (80.0%)</td>
<td>3 (30.0%)</td>
<td>0.046</td>
</tr>
<tr>
<td>High grade &amp; distal tear</td>
<td>1 (4.8%)</td>
<td>7 (63.6%)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*Proximal tears 82% success with non-op
Final Thoughts

- The UCL is not the ACL of the elbow!!
- Partial UCL location very important
- Non-operative treatment can be successful in proximal injuries
- Consider PRP injection
- Comprehensive
- Throwing mechanics and volume

Thank you