Common Elbow Injuries in the Thrower

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Goals

• Review throwing mechanics

• Discuss common elbow injuries to include conditions, signs to watch for, treatment

• Some prevention from physician perspective
My Past Experience
Pitching Sequence
Cocking Phase—Early
Cocking phase—Late

THE CENTER IS YOU

Cayuga Medical Center
Sports Medicine and Athletic Performance
Acceleration Phase
Follow Through
Elbow Anatomy
Little Leaguer’s Elbow

- Chronic elbow pain and instability in young throwers
Little Leaguer’s Elbow

- Repetitive throwing stress to the elbow
- Injury
  - Ligaments
  - Medial epicondyle
  - Avulsion fractures
Epicondyles

- The epicondyles appear at 5 years of age in female and 7 years of age in male.
- They usually fuse at 14 years of age for the female and 17 years of age for the males.
Little Leaguer’s Elbow
Little Leaguer’s Elbow

Figure 1

Fatigue fracture
Widened epiphyseal line
Stress

Displaced medial epicondyle fracture.
Causes of Little League Elbow

- Regular pitching with arm fatigue
- Competitively pitching for 8 or more months
- Averaging more than 80 pitches/appearance
Causes of Little League Elbow

• Type of pitch thrown versus number of pitches.
  – Breaking pitches
  – Fastballs
Clinical Findings

- Swelling on medial elbow
- Tenderness
- Decrease in active/passive range of motion
- Instability with stress testing (valgus)
Treatment

- If widening of the epiphyseal line
  - Rest with gradual return to throwing
  - Interval throwing program
- If fracture with displacement
  - <5 mm immobilization
  - >5 mm surgery
  - Resume progressive activities at six weeks
Ulnar collateral ligament
Ulnar Collateral Ligament

Figure 11-10. Diagram of the medial aspect of elbow, showing components of the medial collateral ligament.
Ulnar Collateral Ligament

- Late cocking phase
- Acceleration phase
- UCL is the primary restraint
Clinical Findings

• Swelling on medial elbow
• Tenderness
• Decrease in active/passive range of motion
• Instability with stress testing (valgus)
Ulnar Collateral Ligament injury
Ulnar Collateral Ligament

- Non-Surgical
  - Relative rest
  - Stretching exercises
  - Anti-inflammatory medications
  - Physical therapy
  - Progressive return to throwing
  - Kinetic chain rehab/Whole body
- Surgical “Tommy John”
  - Reconstruction using tendon graft
Valgus Extension Overload Syndrome

- Cocking phase
  - Early
  - Late
- Acceleration phase
- Release
- Follow through
Valgus Extension Overload Syndrome

• Pain during later pitching phases
  – Late cocking phase and later
VEO Clinical Findings

- Flexion Contracture
- Pain over olecranon—the tip of the elbow
- Reproducible tenderness with forced extension and stress test
Treatment VEO
VEO Treatment

- Rest
- Stretching exercises
- Physical therapy
- Interval throwing program
- Surgery
  - Large osteophytes, loose bodies, UCL
What About the Compression Side?
Osteochondritis Dissecans

- Overuse compression forces on the capitellum
- Results in separation and fragmentation of articular surface and underlying bone
Radiographs

Clinical Findings

- Pain with activity
- Lateral aspect of the elbow
- Tenderness over the radiocapitellar joint
Surgery

- Various methods
- Seek someone who does this often

Treatment

• Depends on MRI
  – Nonsurgical 6 months of elbow rest
  – Progressive throwing program
  – Surgical if unstable lesion
Prevention

- Age specific pitch count
- Pitch types
- Body mechanics
- Strength and conditioning

Pitch Counts

• 9-10 year old pitchers:
  50 pitches per game
  75 pitches per week
  1000 pitches per season
  2000 pitches per year

• 11-12 year old pitchers:
  75 pitches per game
  100 pitches per week
  1000 pitches per season
  3000 pitches per year

• 13-14 year old pitchers:
  75 pitches per game
  125 pitches per week
  1000 pitches per season
  3000 pitches per year

www.usabaseball.com
Pitch Type

- Four hundred and seventy-six young (ages 9 to 14 years) baseball pitchers were followed for one season
  - Curveball was associated with a 52% increased risk of shoulder pain
  - Slider was associated with an 86% increased risk of elbow pain

Pitch type vs. pitch count

• Biomechanical data does not support the theory that curveball increases risk
• Association
  – good, successful pitcher who pitches too much.
What I Recommend

• Basic skills before
• Fastball pitching mechanics before
• Changeup pitching mechanics before
• Breaking pitches
  – Curves
  – Sliders
Mechanical Flaws

- Excessive push off the rubber
- Premature forward flow of body weight
- Over striding (greater than 90% of height)
- Poor trunk position
- Stride leg deviation from the center line
- Unstable landing base from a poorly planted, outwardly rotated heel
Strength and Conditioning

- Essential for all throwers
- Year-round approach/Cross train
- Flexibility arm, shoulder, back, legs
- Strength focus on rotator cuff, scapular stabilizers, and wrist
- Kinetic Chain “whole body”
- Power from legs and trunk (core/leg strength)
- Cardiovascular Conditioning
Conclusion

• Watch for fatigue
• If you have pain, lose accuracy or velocity see a sports medicine physician
• Youth pitchers limited no more than 8 months
• Pitch count limits
• Avoid multiple teams
• Good throwing mechanics
• Avoid pitcher-catcher combinations
• Have fun and play other sports