Elbow UCL Tears w/ Dr. Erickson Podcast Notes

Epidemiology

- Baseball pitchers, gymnasts, javelin throwers, quarterbacks
- Most common cause of time loss in college pitchers

Anatomy

- Valgus instability
    - Main dynamic stabilizer is flexor-pronator mass
        - FCU may provide most significant contribution to resting valgus stress
    - Main static stabilizers- UCL and medial joint capsule
        - ULC is dynamic structure that hypertrophies w/ training
- UCL anatomy
    - Medial epicondyle - sublime tubercle
    - Anterior bundle (primary restraint)
        - Anterior band - primary valgus stabilizer from 30-90
        - Posterior band- primary stabilizer 90-120
    - Posterior
    - Transverse (variable presence)
        - Medial olecranon to inferomedial coronoid process (doesn't cross elbow)

Elbow throwing biomechanics

- Significant forces during late cocking and early acceleration phases
- Posterior band of anterior bundle of UCL is critical stabilizer (elbow flexed)
- Quarterbacks- flexes elbow more during cocking phase w/ abbreviated follow-through phase to avoid contact between hand + arm + another player
- Javelin throwers- prolonged acceleration phase
- Tennis serve- similar to baseball throw

History

- Duration of pain
- Location of pain (medial v posterior)
- Point in pitch where pain occurs
- Change in pitching velocity
- Pain during acceleration > pain during follow through
- Changes in stamina
- Ulnar n symptoms

- Previous injuries/ treatment

Physical examination

- Palmaris longus presence
- Shoulder ROM (GIRD)
- Elbow ROM
    - Flexion contractures / pain w/ terminal extension common secondary to posterior osteophytes
- Palpation (elbow 50-70 degrees flexion moves pronator mass anterior to UCL)
- Milking maneuver
    - Arm in cocked position, valgus stress applied by pulling down on thumb
- Valgus stress test
    - 23-30 flexion, forearm pronation, valgus force
    - Supine + prone
- Moving valgus stress
    - Arm in cocked position, valgus stress applied while elbow extended from 90 of flexion

Imaging

- X Ray- stress views- inc medial gapping
- MRI/ MRA
    - Bright high signal intensity on T2

Decision making principles

- Level of activity + desired level of play
- In season v off season / pre season

Non-Op Treatment

- Non-throwing athletes, non dominant elbow, partial tears
- Rest from pitching 2-3 months, ice, NSAIDs, night brace, therapy for flexor/pronator ROM
- PRP injections in young & skeletally immature athletes

Operative treatment

- Indications
    - Failure of non-op w/ dysfunction + persistent elbow pain + desire for high level competition
    - Complete UCL ruptures secondary to acute event
- Contraindications
    - Significant ulnotrochlear + radiocapitellar arthritis
    - Unable to complete post-op PT

Surgical techniques

- Direct repair
    - Some success w/ inferior results compared w/ reconstruction
    - 68% return to play vs 80% + w/ reconstruction
- Jobe
    - Flexor pronator mass detached from medial epicondyle , submuscular ulnar n transposition
    - Free tendon graft fixed in a figure eight fashion through bone tunnels

        - Graft sutured to itself
    - Rohrbough (docking)
        - Single humeral tunnel. 2 small tunnels made proximal using drill
        - Graft passed through drill holes made in ulna
    - Multiple techniques
        - Ulnar nerve management
        - Graft configuration
        - Graft attachment to ulna + medial epicondyle
    - Graft choices
        - Palmaris longus autograft, patellar tendon autograft, achilles auto/allograft

Post-op

- 1 week- immobilization
- Week 2-3, ROM in brace
- Weeks 4-8: slight strengthening
- Weeks 9-12: flexibility, proper throwing mechanics
- Weeks 14-26: restore throwing in a stepwise manner

Outcomes

- Pitchers maintain same strength or loose small amount of velocity

Sources:

- Erickson, B. J., Harris, J. D., Chalmers, P. N., Bach Jr, B. R., Verma, N. N., Bush-Joseph, C. A., & Romeo, A. A. (2015). Ulnar collateral ligament reconstruction: anatomy, indications, techniques, and outcomes. *Sports Health*, *7*(6), 511-517.
- DeLee and Drez Orthopaedics Sports Medicine: Principles and Practice