Ulnar Nerve Issues in the
THROWING ATHLETE

Jeffrey R. Dugas, MD
American Sports Medicine Institute
Birmingham, Alabama

WHAT is Ulnar Neuritis?
• Most commonly injured nerve at the elbow
• Compression can occur at multiple levels
  – Arcade of Struthers/Septum
  – Medial border of Triceps
  – Cubital tunnel
• In addition to compression, symptoms can be caused by friction and/or traction

Compression
• Can be caused by physiologic hypertrophy of the medial head of the triceps or the flexor carpi ulnaris in athletes
Compression

- Can be caused by thickening of the arcuate ligament (cubital tunnel)
- Can be caused by intrinsic lesions along the course of the nerve
  - Cysts, osteophytes, lipomas

Traction

- Medial instability leads to increased stress on medial soft tissues
- Nerve can undergo increased tensile stress as the medial joint space widens with increasing instability
- Combination of wrist extension, elbow flexion, and shoulder abduction (early phases of throwing motion) increases intra-neural pressure 6-fold compared to relaxed nerve

Friction

- Friction neuritis commonly due to subluxation or dislocation anterior to medial epicondyle
- Often due to congenital hyperlaxity
  - Systemic problem, not traumatic
What is Ulnar Neuritis?

- Insidious onset of pain along the medial elbow, often exacerbated by overhead activities.
- Intermittent paresthesias in the ring and little finger are common.
- Medial elbow tingling and aching pain may be present.
- Clumsiness or heaviness of hand and fingers, particularly during throwing.
- May be snapping or popping in those with unstable or subluxing ulnar nerve.

Physical Examination

- Tenderness along medial elbow along course of nerve, especially within cubital tunnel.
- Elbow Flexion Test
  - With wrist extended, hyperflex elbow and maintain flexion for 30 seconds.
  - Assess for pain, numbness, tingling.
- Critical to discern medial instability and flexor/pronator issues.

Physical Examination

- Manual palpation of nerve and assessment of mobility
  - Is the nerve stable or unstable?
- Tinel’s sign
  - Repeated compression/tapping nerve causes paresthesias in 4th/5th fingers.
Diagnostic Tests

- Plain x-rays should always be obtained
  - Generally negative for significant findings
- Stress x-rays
  - Helpful to rule out instability as cause but may be painful to execute (typically not used)
- MRI
  - Helpful to rule out flexor/pronator or UCL
- EMG
  - MAY be positive, but majority are non-diagnostic in athletes

Treatment

- NON-Surgical
- SURGICAL

Non-Surgical Management

- Rest from throwing/inciting stress
- Brief period of immobilization
  - 3-5 days
  - More Important if nerve is unstable
- NSAIDS
- When symptoms decrease/resolve, gradual return to activity
  - ROM, strengthening, endurance, competition
- SUCCESSFUL RETURN in 86-90% in first-time reporters.
Surgical Management

- Has evolved over nearly 100 years
  - In-Situ decompression without transposition
  - Medial epicondylectomy
  - Anterior subcutaneous transposition
  - Anterior intramuscular transposition
  - Anterior submuscular transposition

In-Situ Decompression

- Simple operation
- Low risk of damage to neural blood supply
- Low risk of scarring
- Good in general population with compressive symptoms
- NOT recommended for throwers because traction and friction not eliminated, and secondary nerve subluxation can occur.

Medial Epicondylectomy

- Relatively simple procedure
- Relieves traction by shortening course
- NOT recommended in throwers because the origin of common flexors is significantly altered
- Subsequent strength deficits
- Ulnar nerve destabilized, potential for direct trauma
- Heterotopic bone formation possible
- Recurrence rate highest with this procedure
Subcutaneous Transposition

- Simple procedure with little scar formation
- Little protection against direct trauma
  - More problematic in thinner athletes
  - Avoids any issues with muscular hypertrophy or fascial incision
- Potential for hypermobility of the nerve
  - Resultant symptoms similar to subluxing nerve
- Not recommended in most throwing athletes
  - Also not good for contact athletes

Intramuscular Transposition

- Significant scarring around nerve
  - May tether nerve
- Can cause traction neuritis or friction neuritis
- Not recommended in throwing athletes

Submuscular Transposition

- NOT RECOMMENDED for overhead athletes in dominant arm
- Flexor pronator muscle damage not acceptable
- Direct route for nerve
  - Prevents kinking, tension on nerve
- Protected from direct trauma
- Exposure allows inspection of UCL
Subfacial Transposition

- RECOMMENDED for throwing athletes
- Simple procedure
  - Includes excision of medial intramuscular septum
- Direct route
- No trauma to muscle
  - Scarring around nerve is possible but uncommon
- Ideal for athletes
- OUR PREFERRED TECHNIQUE
  - Have used intermuscular septum as sling recently

Rehabilitation

- Immobilization at 90 degrees of flexion for 3-5 days
  - Hand/wrist exercises allowed during this time
- Passive and active assisted ROM initiated with progression to full ROM by 4-6 weeks at the latest
- Strengthening at 4-6 weeks once ROM full
  - Careful with flex/pronator strengthening
- Throwing program at 8-12 weeks post-op
- Usually return to competition by 3-4 months
  - Position-dependent

Ulnar Neuritis in Kids

- Most common in 11-14 year old pitchers
- Treatment is rest from throwing and short term immobilization
- Gradual return to throwing
- Rarely transposition necessary to alleviate symptoms
Ulnar Symptoms with UCL

- Up to 40% of athletes with UCL pathology who present for evaluation have some history of ulnar neuritis.
- Decision to perform ulnar nerve transposition at the time of UCL surgery should be based on history and physical examination.
- Tend to avoid UNT in repair/IB if no significant symptoms.

Summary

- Relatively common problem
- Generally managed non-surgically with rest, short term immobilization, gradual return to throwing.
- Unstable nerve, recalcitrant cases can be successfully treated with transposition.
  - EMG best diagnostic test, but frequently negative.
- Return to throwing expected by 3-4 months after surgical correction.

THANK YOU