Ulnar Nerve Release
Transposition

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Ulnar Nerve Entrapment
Cubital Tunnel Syndrome
Guyon’s Canal Syndrome

Anatomy
The role of the cubital tunnel in tardy ulnar nerve palsy

Feindel, W. & Stratford, J.

Canadian J. Surg. 1:287, 1958

Feindel & Stratford

Described new syndrome:
- Idiopathic
- Non-traumatic
- No cubitus valgus

Cubital Tunnel Syndrome

- Arcade of Struthers
- Intermuscular septum
- Osborne's fascia
- Medial Epitrochlearis
- Two heads of FCU
Cubital Tunnel

- Flexion stretches nerve & changes canal contour from ovoid to elliptical
- Nerve elongates 2-3 cm
- Decreased vascularity

Cubital Tunnel Syndrome

- No defined cause
- Sustained elbow flexion
- Repetitive elbow flexion
- Musicians
- Throwing athlete

Cubital Tunnel Syndrome

- Variable complaints
  - Medial elbow pain
  - Sensory symptoms in small & 1/2 ring fingers
  - Weakness
Cubital Tunnel Syndrome

- Loss of dexterity in hand function
- Dystonia in musicians

Exam
- Tender nerve
- Positive Tinel’s
- Subluxation / dislocation
- Positive elbow flexion test
Cubital Tunnel Syndrome

- Exam
  - altered 2 point discrimination
  - weakness of intrinsics
  - positive Wartenburg’s sign
  - positive cross finger test
  - weak pinch
  - dynamic nerve entrapment

Treatment
- behavioral modification
- avoid inciting activity
- Splint: ante-cubital fossa
- Elbow pad-rotate

Surgical indications
- persistent symptoms
- weakness
- intrinsic wasting
Cubital Tunnel Syndrome

- Extensive differential diagnosis
- EMG/NCS

Surgical Alternatives

- Cubital tunnel release-in situ
- Cubital tunnel release and anterior transposition
  - Subcutaneous
  - Subcutaneous with fascial sling
  - Intramuscular
  - Submuscular
Subcutaneous Transposition

In-Situ Cubital Tunnel Release

- 2-3 cm incision posterior to epicondyle
- Pick up nerve posterior to intramuscular septum
- Less likely to find branches of MACN
- WALANT in thinner patients

Ulnar Nerve Decompression at the Cubital Tunnel

Manske, PR, Johnston, R, Pruitt, DL, Strecker, WB
Ulnar Nerve Decompression at the Cubital Tunnel

- 26 patients
- Mild symptoms
- Symptom improvement in 85%
- Complete symptom resolution 77%
- Short follow-up

Which is the best surgical alternative

- In-situ decompression
- Transposition
Algorithm
- Same extensive nerve release in both groups
- In-situ decompression
  - Site of static entrapment
    - Flexor carpi ulnaris fascia-between 2 heads
    - Osborne's fascia
    - Arcade of Struthers
  - Stable nerve
- Submuscular transposition
  - All others

Decompression vs. Transposition
- 65 patients/70 procedures: 43 female, 22 male
- Average age 42 years
- Failed non-operative Rx
- Post-operative
  - Interview
  - Physical exam
  - Outcome questionnaire
- Similar cohort of transposition

Decompression vs. Transposition
- Statistically groups identical:
  - Age
  - Sex
  - Co-morbidity
  - Severity of disease
Decompression vs. Transposition

- Complete f/u 63 of 70 cases
- Length of f/u: 3.15 years
- Results
  -81% satisfactory objective outcomes (McGowan grading)
  -Subjectively 91% patients satisfied

Results (continued):
- Improvement statistically significant in all cases
- Equal outcomes in function, symptoms and leisure activities
- Higher incidence of work difficulty after transposition

Decompression vs. Transposition

- Transposition
  -Wound numbness: 77%
  -c/o weakness: 92%
- Decompression
  -Wound numbness: 35%
  -c/o weakness: 59%
Post-Op Therapy
- Encourage early active, active-assisted, and passive elbow flexion, extension, and pronosupination to prevent elbow stiffness
- More rapid recovery after in-situ release

Complications of Ulnar Nerve Release
- D. Zheng, MD Philip Blazar, et al
- ASSH podium presentation September 30, 2016

Methods
- 421 patients
- Acute trauma
- Revision surgery
- Neoplasia
- < 18 years of age
- Misaligned or miscoded procedure
- Follow-up < 3 months
- 234 patients
- 247 cubital tunnel surgeries
- 157 in situ
- 90 transposition
Results

- 247 cubital tunnel surgeries
  -19 complications (7.7%)
  -14 secondary surgery (5.7%)

- 90 ulnar nerve transpositions
  - 11 complications (12.2%)
    - 9 persistent or recurrent cubital tunnel syndrome (10.0%)
    - 1 requiring revision transposition
    - 1 postoperative infection (1.1%)
    - 1 requiring reoperation
    - 1 MACN injury (1.1%) repair intraoperatively
  - 10 secondary surgeries (11.1%)

- 157 in situ cubital tunnel releases
  - 8 complications (5.1%)
    - 3 ulnar nerve instability (1.9%)
      - 2 requiring transposition
    - 2 persistent or recurrent cubital tunnel syndrome (1.3%)
      - 2 requiring transposition
    - 2 postoperative infection (1.3%)
      - 0 requiring reoperation
    - 1 postoperative seroma (0.6%)
      - 0 requiring reoperation
    - 4 secondary surgery (2.5%)
Discussion

- Most common complications following in situ cubital tunnel release
  - ulnar nerve instability
  - persistent or recurrent cubital tunnel syndrome
  - infection
- Most common complication following ulnar nerve transposition
  - persistent or recurrent cubital tunnel syndrome
- Short-term complication rates of cubital tunnel surgery are low, but significantly higher for ulnar nerve transposition than in situ cubital tunnel release
- Secondary surgery rate after cubital tunnel surgery was low overall, but again significantly higher for ulnar nerve transposition than in situ cubital tunnel release

Cubital Tunnel Syndrome

- In-Situ Decompression is procedure of choice if nerve stable
- Transpose nerve in patients with Ehlers-Danlos