Postoperative Protocol For Submuscular Transposition of Ulnar Nerve-- Dr. Trueblood

Indications: The ulnar nerve passes around the posterior aspect of the elbow before returning to the volar compartment of the forearm to run parallel with the median nerve. Elbow flexion and restrictive containment at the level of the elbow increases pressure across the ulnar nerve and may contribute to chronic injury to the nerve. This results in decreased function in both motion and in sensation. Dr. Trueblood will transpose the ulnar nerve to its lowest tension position, deep to the flexor-pronator mass of the elbow and directly adjacent to the median nerve, in revision cases where simple decompression of the ulnar nerve has not prevented worsening ulnar nerve function or in cases where the patient presents with significant intrinsic atrophy or secondary deformities of a high, ulnar nerve palsy (digital clawing, adductor atrophy, etc.).

Technique: A posteromedial approach to the elbow is made, half-way between the medial epicondyle and the tip of the olecranon. Full-thickness flaps are elevated off of the flexor-pronator origin and the posterior branch of the medial, antebrachial cutaneous nerve is identified, mobilized, and retracted out of the way for the duration of the case. The ulnar nerve is then identified on the medial border of the triceps and decompressed longitudinally from the arcade of Struthers to the FCU aponeurosis. Circumferential neurolysis of the ulnar nerve is then performed using a minimal-touch technique and the first motor branch to the FCU is mobilized for minimal restriction to anterior transposition. The medial, intermuscular septum is excised under direct visualization for at least 7cm above the medial epicondyle. A hemostat is then passed deep to the flexor-pronator mass and superficial to the capsular ligaments of the medial elbow. A z-shaped incision is then made to the full thickness of the flexor-pronator origin and the muscle belly is elevated distally off capsule and bone. The median nerve is directly visualized and the flexor-pronator origin is repaired in a lengthened position using interrupted #2 fiberwire, locked sutures. Skin is then repaired in layers and sterile dressings are applied. A well-padded, well-molded posterior mold splint is applied.

Postoperative Days 0-14
Goals:

- Protect the surgical repair
  - Postop, posterior mold splint.
  - Non-weight bearing to operative extremity
- Minimize swelling and digital stiffness
  - Elevation and ice encouraged for edema control.
  - Patient encouraged to move fingers through full range of motion 10x/hour.
Optimize patient pain control and independence within reasonable limits
  ○ May type, write, and use hands for limited assistance in daily activity. No lifting more than ¼ pound.
  ○ May not operate a motor vehicle or heavy machinery.

---1st PO visit 10-14 days---
☐ Assess pain control. Rx refills/ adjustments as needed.
☐ Review postoperative restrictions.
☐ No x-ray needed.
☐ Return visit in 4 weeks.
☐ Work Note: May type and write. May not operate motor-vehicle or medium machinery. No lifting, pushing, or pulling. Must wear splint at work. Non-weight bearing to operative arm.
☐ Expected Return to Unrestricted Work:
  ☐ Cognitive Work: 1-2 weeks
  ☐ Light Manual Work: 8 weeks
  ☐ Heavy Manual Labor: 12 weeks

Weeks 2-6
  ● 1-2x week/ 4 weeks
  ● Splinting: Off-the-shelf cubital tunnel splint to be worn at all times except during exercise.
  ● Initiate gentle AROM/AAROM of elbow, wrist, and hand. Gentle PROM of elbow and wrist. Aggressive PROM of digits if needed.
  ● Scar massage and modalities prn for improving tissue elongation
  ● If motor or sensory loss to ulnar hand, initiate NMES to first dorsal interosseous and thumb adductor muscles.

2nd postoperative visit at 6 weeks postop---
☐ Assess pain control. Rx refills/ adjustments to dosing as needed.
☐ Therapy Referral.
☐ Return visit in 6 weeks.
☐ Work Restrictions: May type and write. 20# weight-lifting restriction. No pushing or pulling.

Weeks 6-12
  ● 1-2x/ week for 6 weeks
  ● AROM/ PROM of shoulder, elbow, wrist, and hand
    ○ Add static progressive splinting in direction of maximal limitation at 8 weeks if:
      ■ elbow extension < -30°
      ■ elbow flexion <130°
      ■ wrist extension< 30°
■ Wrist flexion< 20°

- Strengthening
  - Grip strengthening at 6 weeks.
  - Pron/sup, wrist flexion and extension strengthening at 8 weeks.
  - RC and scapular stabilization strengthening at 8 weeks.
  - Advance to work conditioning when strength = 80% contralateral.

- Modalities prn
- HEP→ transition to HEP for non-manual laborers and retirees when independent with exercises and ROM within normal limits.

--final follow-up at 12 weeks postop--

- Pain assessment- VAS
- Functional outcome: DASH score
- Review