Tenolysis: Surgeon Prospective
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BACKGROUND

- Restoration of digital function and range of motion remains one of the most difficult challenges in hand surgery
- Substantial advances in last 50 years
- Residual dysfunction is not uncommon

ADHESIONS

- Proper function requires smooth gliding
  - Tight pulley system
  - Over bone
  - Under skin
  - Between FDS/FDP
- Tendon surface Injury
  - Laceration
  - Surgery
  - Crush
  - Infection
  - Fractures
PREOPERATIVE CONSIDERATIONS

• Examination
  • Passive motion > Active motion
  • Full passive ROM
  • Healed fractures
  • Non-arthritic joints
  • Stable soft tissue envelope
  • Well motored, intact tendons
  • Complaint, motivated patient

• Access to an experienced therapist
• Active participant in AROM/PROM modalities with failure to progress

CONCOMITANT PROCEDURES CAN COMPROMISE OUTCOME

• Osteotomies
• Tendon surgery
• Pulley reconstruction
• Capsulectomy
• Contracture release

TIMING

• General guideline indicating 3-6 months
  ALLOWS
  Assessment of patient commitment
  Elongation of adhesion
  Maturation of soft tissue

INFORMED CONSENT

• Realistic goals
• Risks
• Intraoperative findings may alter plan
  Devascularized tendon
  Pulley rupture
  Tendon rupture
ANESTHESIA

- Local Anesthesia with IV sedation
  - Allows assessment of lysis and tendon integrity
- Tourniquet paralysis
  25-30 min
  Deflate and re-inflate
  Inflate mid-forearm then release proximal tourniquet (*Strickland 1985*)
- General or Axillary block
  Extensive dissection
  Restless, anxious patient
  Wrist or palmar incision “Traction flexor check” (*Whitaker JH, Strickland JW 1977*)
  - Injection of local with epinephrine
    Safe
    Bloodless field
    No use of tourniquet
    No IV sedation necessary

TECHNIQUE

- Wide exposure of flexor tendon system
- Volar Zig-Zag (*Bruner*)
  Midlateral
  - Start in unaffected zone
  Tendon borders
  Critical annular pulleys
  Neurovascular bundles
- Raise both tendons en bloc
- Lyse adhesions between FDS/FDP
- Sacrifice FDS slip as needed
- Dissection to free tendons from pulley system
  Knee Arthroscopy blades (*Schreiber*)
  Meals tenolysis knives
  Modified #69 Beaver blade (*Stern*)
  Suture Technique
  - Widening pulley
  Pediatric Urethral Dilators (*Strickland*)
- Access your work
  Pull through proximally
  Active patient participation
  Joint contractures

- Tendon System Health

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Scar filled gap
>30% tendon lost
Pulley system
Staged Reconstruction with silicon

**ADJUNCT MODALITIES**

- Steroid preparations to bathe tendon bed
  - Minimal evidence
  - Risk v. Benefit
- Interpositional devices
  - Mechanical barriers
  - Cellophane, polyethylene film, silicone sheeting, paratenon, amniotic membrane, gelatin sponge, etc.
  - Mixed results
- Indwelling Catheter
  - Local anesthesia
  - Risk infection
  - Oral analgesia sufficient

**POSTOPERATIVE REGIMEN**

- Critical Importance
- Postoperative program dictated by intraoperative findings
  Essential to maintain close relationship with therapist
  Tendon quality, vascularity, intraoperative AROM/PROM
- Timing
  Delay for soft tissue edema
  Immediate motion to prevent adhesions

**RESULTS**

- N=78 (All tendons protected for 5wk) (*Foucher 1993*)
  - TAM improved 135 → 205 in 84%
  - No improvement in 4
  - Worse in 9
  - 2 tendon ruptures
- 50% improvement in 64% of tendons (*Strickland 1989*)
  - 20% no improvement
  - 8% tendon rupture

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