Flexor Tendon Reconstructions and Salvage Procedures
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I. Pre-op Planning
   a. Delay in presentation due to missed injury
   b. Condition of the wound
   c. Presence of bone and joint injuries
   d. Presence of nerve and vascular injuries
   e. Medical condition of patient

II. Surgical Decision Making
   a. Quality of fibro-osseous tunnel
   b. Status of critical pulleys
   c. Muscle-tendon excursion and length

III. Surgical Choices
   a. Direct repair after stretching of proximal tendon-muscle unit
   b. Direct repair after lengthening of the muscle-tendon unit at the muscle tendon junction
   c. Direct repair with Z-lengthening of the tendon proximally in the palm
   d. Immediate tendon grafting (interposition vs. distal juncture of FDP)
   e. Superficialis finger
   f. Staged reconstruction

IV. Direct Repair Approaches
   a. During first several weeks after an acute injury, direct repair is possible
   b. Direct repair after stretching
      i. Retrieve proximal tendon
      ii. 5 minutes manual tension
      iii. Deliver through fibro-osseous tunnel
      iv. Multiple repair techniques
   c. Direct repair with lengthening of muscule-tendonous junction
      i. Lengthening in forearm
      ii. One centimeter of length can be achieved
      iii. Can reinforce with sutures
   d. Direct repair with Z-lengthening in the palm
      i. Repair distal tendon first
      ii. Assess cascade of the digit
      iii. Z-lengthen in palm, proximal to fibro-osseous canal but distal to carpal tunnel
      iv. Return normal length – tension relationship
V. Immediate Tendon Grafting
   a. Indications
      i. Appropriate digit
         1. Minimum scar bed
         2. Good skin
         3. Adequate vascularity
         4. One digital nerve
      ii. Good passive ROM
   b. Technique
      i. Excise scar, preserve pulley, proximal motor
      ii. Donor tendons
         1. Palmaris
         2. Plantaris
         3. Toe extensor
         4. Superficialis small
   c. Healing Grafts
      i. Remains alive except center
      ii. Tenoblast proliferation
      iii. Acts as strut for cells from stump
   d. Rehabilitation
      i. Immobilize 3-4 weeks
      ii. Early controlled immobilization

VI. Superficialis Finger
   a. Indications
      i. Significant damage to FDP
      ii. DIP joint damage
      iii. Compromise of fibro-osseous canal distal to PIP joint
      iv. Damage to A-4
   b. Function of digit provided by FDS alone
   c. May be combined with FDP tenodesis of DIP fusion

VII. Flexor Tendon Staged Grafting
   a. Indications
      i. Digit
         1. Failed repair
         2. Scarred bed, loss of A-2, A-4 pulley
         3. Adequate vascularity
         4. Adequate sensation
      ii. Good passive ROM
   b. Technique Stage I
      i. Excise tendons
      ii. Reconstruct pulleys
      iii. Secure Hunter rod distally
      iv. Passive slide proximally
c. Technique Stage II
   i. Allow 3 months between stages
   ii. Expose digital, proximal juncture
   iii. Harvest graft
   iv. Attach distally
   v. Adjust tension proximally

d. Rehabilitation
   i. Immobilized 3-4 weeks
   ii. Controlled mobilization

e. Complications Stage I
   i. Synovitis – rest, NSAID
   ii. Infection – remove implant, antibiotics
   iii. Loss fixation – repair
   iv. Bowstring – reconstruct pulley

f. Complications Stage II
   i. Rupture – early, repair
   ii. Intrinsic plus – excise lumbrical
   iii. Flexion deformity – capsulotomy, pulley reconstruction
   iv. Adhesions – tenolysis
References: