Needle Aponeurotomy: A Wide-Awake First Step Approach

Keith Denkler, M. D.
Associate Clinical Professor
Plastic Surgery
University of California San Francisco
Limited Fasciectomy
Wide-awake, using lidocaine with dilute epinephrine
Surgery is the best option to achieve long term straight fingers with the least chance of recurrence. However

- There can be significant complications of surgery and a long rehabilitation.
- Stage IV disease is very difficult to treat with surgery (Stage IV is loss of extension greater than 135 degrees)
- Patients can end up worse, even if the surgery is a success.
Complications of Dupuytren’s Surgery

Meta-Analysis of the last 20 years of primary surgical fasciectomies:

Abstract, submitted to ASPS Seattle 2009

- Thousands of published surgeries
- 3.4% Digital nerve injury in primary
  - Sennwald 27% in repeat operations
- Digital vessel injury/hematoma 2.1%
- Infection or Wound healing complications 22%
- Stiffness 10%
- Flare Reaction and RSD 9%
Fasciotomy is not new, and excellent results in severe Dupuytren’s were achieved as early as 1884.
Traditionally fasciotomy has been limited to the elderly and done proximal to DPC, for fear of spiral nerves.

Some fasciotomy patients have excellent results long-term:
- Rowley JHS (Br) 1984

**Needle Aponeurotomy (NA)**
- Uses distal to proximal release with 25 gauge needle
- Superficial wheal of local anesthesia
- Deep penetration to nerve can be felt by patient as electric shock when doing NA over a nerve
- Developed by rheumatologists (Lermusiaux)
  - Repeat treatments and office visits are part of the procedure
Why Did We Stop Doing Fasciotomies?

- Was it too dangerous?
  - Too many complications
    - Not in my experience
- Was it because it did not work?
  - Physical therapy and splinting can help keep it straight
- Was it because of rapid recurrence?
  - Yes, this can happen. But how often?
  - Let the patient choose the second step
    - Repeat fasciotomy or open surgery
  - Second step can be years down the road
A Severe Dupuytren’s After Surgery

- At one year F/U
- Comp. by 10 days hosp. for “pain control” and 1 yr. severe RSD
- Performed by fine surgeon at an excellent institution
This is the Other Hand! What to do?

- Left little finger
  - Total loss of 210 degrees of extension
    - Loss 60 MCP
    - Loss 90 PIP
    - Loss 60 DIP

- What do you offer her? Surgery? Pre-op blocks?
Result Immediately After Needle Aponeurotomy

- Local anesthesia with epinephrine
- Immediate Result
- Patient had no recurrence of RSD
Technique in Severe Stage IV

- Ulnar nerve blocks at the wrist allow for forced extension of finger and intrinsic muscles.
- Infiltration of local anesthetic with epi over cords and at PIP joint.
- 18 g. needle release of cords proximal to distal palmar crease.
- PIP joint approached by 18 g. needle release of central cord just distal to PIP joint.
Technique in Severe Stage IV

- PIP joint transverse cuts at dorsal line.
  - If disease is on that lateral side
- Release little finger abductor
- Release of natatory cords
- Forceful extension to complete break of cords
- Injection of Cortisone (Kenalog) into lumps and thickened areas
Traditional NA Technique Over Nerves

- Distal to proximal technique with 25 gauge
- Do initial wheal with 30 gauge needle
- “electric shock” if felt deep and hits nerve
Central Cord Release

- Safe central release over PIP joint, not lateral near nerves 18 g needle
- Go in at 45 degree or less angle
- Difficult in severe PIP contractures
- Break cord with forced extension
Needle Aponeurotomy
Study Population

- In office procedures 2005-2009
- 163 consecutive digits with new primary stage IV disease
- No previous surgery or aponeurotomies
- Follow-up available on 153 digits (94%)
- Results of other digits not included (only Stage IV)
- Patients: 113 males, 20 females
- Average age 66; Median age 67
Average Extension Loss Pre-Procedure

- Average Loss MCP joint extension -65 degrees
- Average loss PIP joint extension -74 degrees
- Average Loss DIP joint extension -10 degrees
- Average total Loss of Extension -149 degrees
Results: 153 Stage IV Digits
Average 8 Months F/U

- Average loss extension MCP -11 (from -65)
  - Gain 54 degrees
- Average loss extension PIP -38 (from -74)
  - Gain of 36 degrees
- Average loss extension DIP -3 (from -10)
  - Gain of 7 degrees
- Total extension gain 95 degrees
Patient showing slightly better than average result
Patient with slightly worse than average result
Complications Out of 153 Digits

- No chronic numbness, nerve injury or pain
- No RSD or CRPS (0/153)
- Large skin tears in 4 patients (required skin grafts at PIP joint: 3/4 lost to infection)
  - One graft infection led to osteomyelitis and amputation at PIP
- One infection in absence of skin tear
- 1 patient developed a chronic sinus tract
- 1 patient developed stiffness of PIP joint flexion and 3 patients had stiff DIP joints
- Minor skin tears were sutured
Long-term Results

13 months F/U

19 months F/U

23.5 months F/U

17 months F/U
Conclusions

- Needle fasciotomy is a safe and effective procedure for Dupuytren’s contracture.
- Results in 153 cases show good improvement, low complication rate.
- Worthwhile to consider as a “first step” in treatment of Dupuytren’s.
Thank you!