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Trigger Finger: Pearls and Pitfalls

Pre-, intra-, and post-operative management

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Outline

- Background
- Preoperative Considerations
- Intraoperative Considerations
- Postoperative Considerations

Trigger Finger (TF): Background

Stenosing Flexor Tenosynovitis

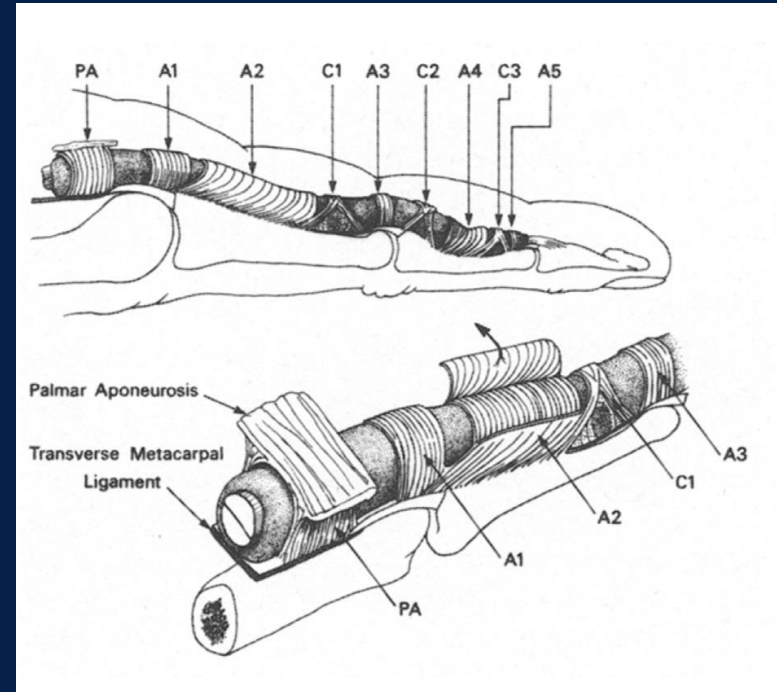
- Prevalence of 2.6% in general population
- Bimodal distribution, <8 and 40-50s
- RF and thumb most common
- W>M (adult)
- 4th leading cause of referral to hand therapy

- Open release has a 90-100% success rate

Pulley Finger

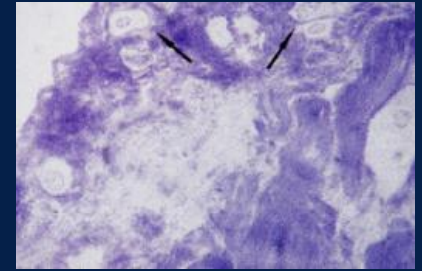
Anatomy

- Flexor tendon sheath
 - Membranous
 - Retinacular (pulley)
- A1 (9mm) A2 (17mm)
 - Distinct separation 95%, 0.4-4.1mm
- Radial digital nerve thumb
 - 2.19 mm deep



Manske, 1983
Doyle, 1990
Carrozella, 1989,

Pathophysiology



- Mismatch between the volume of the flexor tendon sheath and its contents
- Gliding through stenotic sheath → catching
- Power grip → increase loads at the distal edge of A-1
- Chronic friction → reactive intratendinous nodule
- Histology shows fibrocartilaginous metaplasia of pulley

Hueston and Wilson, 1972
Sampson, 1991

History and PE

- Pain
 - Palmar/MCP
 - PIP
- Swollen finger
- Clicking or locking of the finger
- +/- palpable nodule at distal palmar crease



Quinell Grades

Grade	
0	Normal movement
I	Uneven movement (<i>Pre-triggering</i>)
II	Actively correctable locking of the digit
III	Passively correctable locking of the digit
IV	Fixed deformity

Quinell, 1980

Diabetic Trigger Finger

- Prevalence 5% to 20% (2.6% in the general population)
- Lifetime incidence 10% (1-2%)
- multiple fingers, bilateral
- RF= age, duration of disease
- Effects of hyperglycemia on collagen metabolism and breakdown
- What about A1C? Is it a risk factor?
 - Controversial (Vance YES, Grandizio, and Chammas NO)
 - Duration >> control

Nonoperative Management

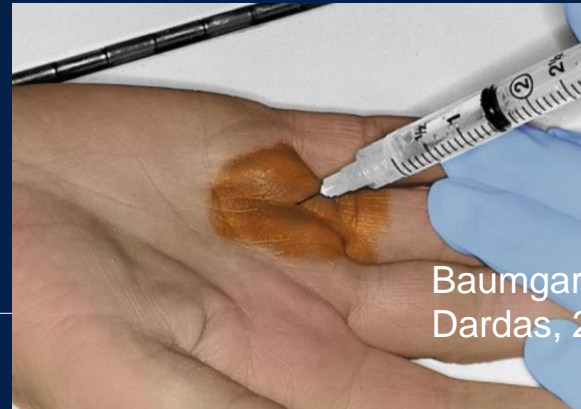
Grades 1-IV

- Activity modification
- NSAIDs
- Splinting
 - MCP, neutral to 10deg flexion
 - 72-77% success, **fulltime**, 6 weeks
- Injection



Corticosteroid injections

- Nondiabetic- 60% success rate after single injection
- Diabetic- 50-57% NIDDM, 32-44% IDDM
 - **Less efficacious if associated nephropathy or neuropathy**
- DM- transient hyperglycemia, 2-5 days
- Repeat injection, 39%



Baumgarten, 2008
Dardas, 2017

Ultrasound

- Thickening of both tendon and A1 pulley and bunching at trigger site
- Normal pulley <0.5 mm , >1-1.5 mm is considered abnormal
- Injection: 15% accuracy blind, 70% with ultrasound
- Trials comparing US to blind show **no benefit** with regard to pain or a decreased need for reinjection



TF and the PIP contracture

- Chronic inflammation of tendon → enlargement of tendon at A1
- FDS becomes shortened → PIP contracture
- Document preoperatively, discuss outcome
 - Require longer time until complete symptom relief
 - predictor of prolonged postoperative symptoms
- Less success with steroid injection

Lundin, JHSE 2012

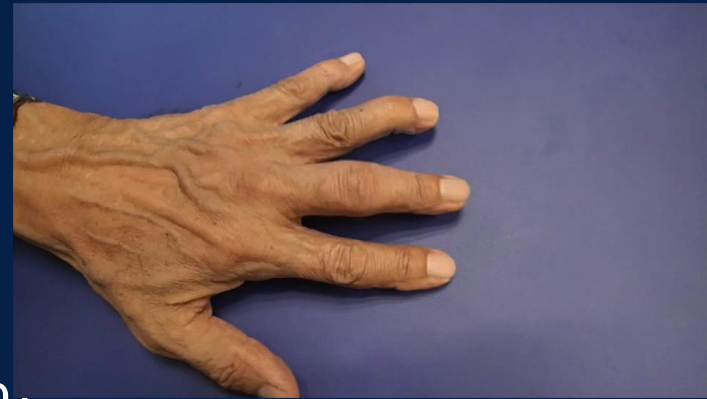
Baek, JHS 2019

Shinomiya, JHSE 2016

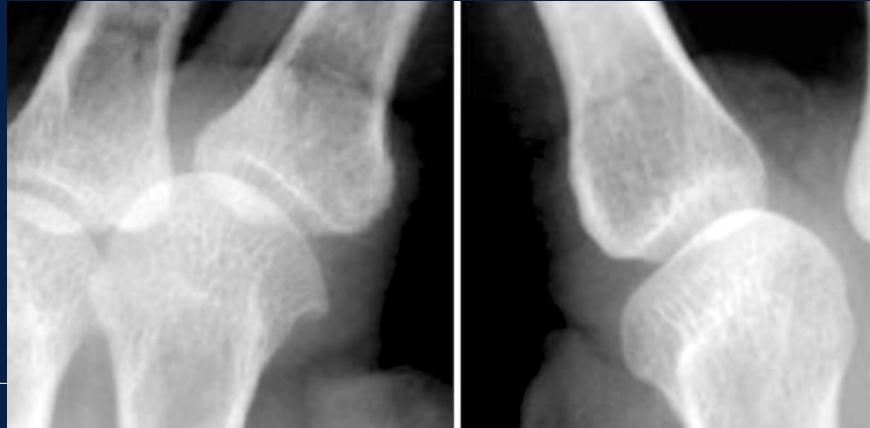
The snapping finger

Differential Diagnosis

- Sagittal band rupture
- Snapping lateral band (volar subluxation)
- Accessory collateral osteophyte
 - Typically IF/MF



Video from JHandMicrosurg 2015



Intraoperative Considerations

- WALANT
- Incision
- When to take a slip? A3?
- What about the frayed tendon?

TF Release: WALANT

- High quality care
- Total cost
 - Faster, saves money
- Patient satisfaction

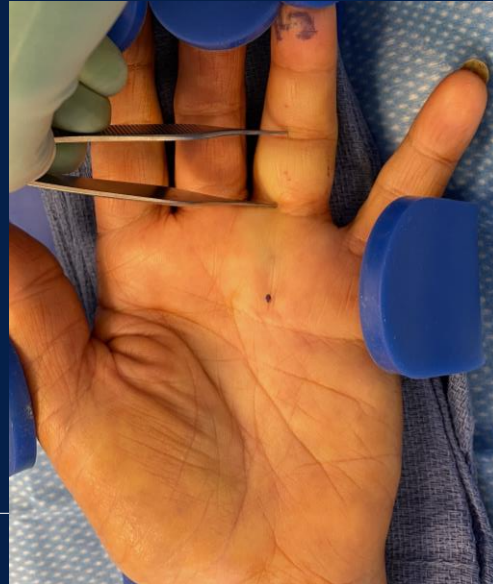
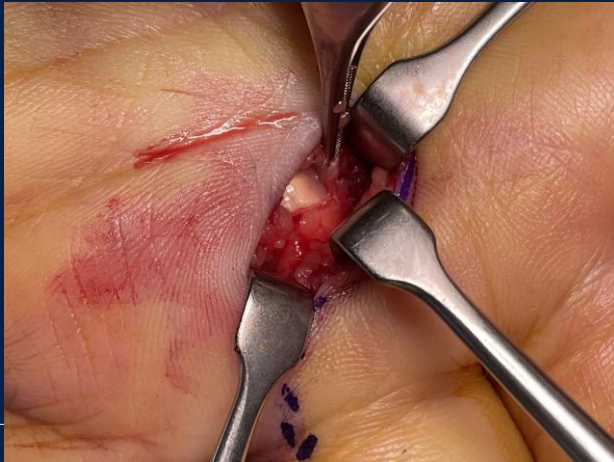


Kamal, ASSH 2019

Trigger Finger

Incision

- Distance between the digital-palmar and PIP crease = distance of the proximal edge of the A1 flexor pulley from the palmar digital crease



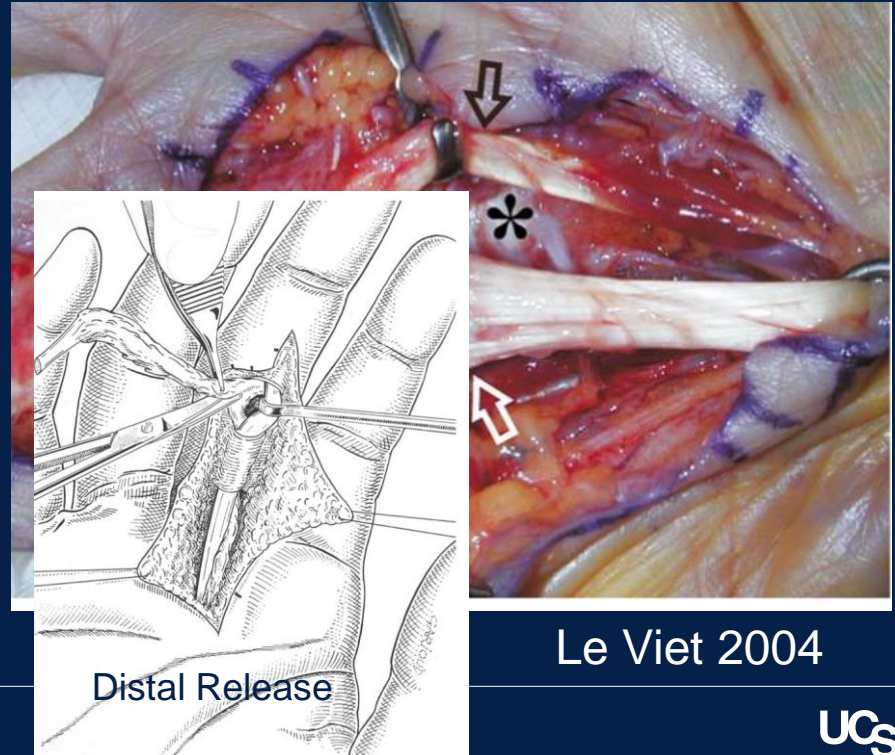
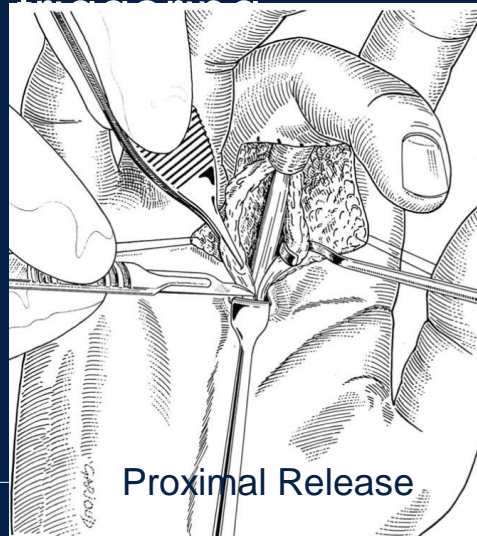
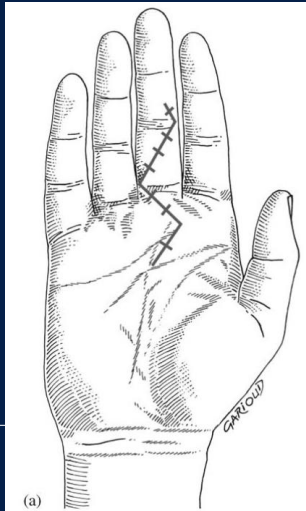
Wilhemi 2001

Distal Trigger Finger

- Persistent triggering after A1 release?
- Consider A3 and FDP tendon bunching
- Incision over PIP and proximally

Taking the Ulnar Slip

- RA
- Pediatric trigger finger
- Persistent trigger finger



Postoperative Considerations

Success rate

- Open
 - 77% in diabetics, 94% in nondiabetics (not statistically significant...)
- Percutaneous
 - 2 year f/u, recurrence DM (25%) vs non (14%) Huang
 - 1 year f/u, no recurrence anyone Saremi

Postoperative Considerations

Complications

- Range from 11-43%
- Minor: scar pain, tenderness, extensor lag, cellulitis, recurrence of triggering
- Major: bowstringing, digital nerve injury, deep infection, synovial fistula

Turowski 1997

Thorpe 1988

Vaes 1998

Will 2010

Major Complications

- Infection
 - Flexor tenosynovitis
- Flexion contracture
- Persistent Trigger
- Nerve injury
- Synovial fistula
- Bowstringing

Postop Flexion Contracture

- MF is most common
- 90% of postop PIP contractures can be managed nonoperatively
- Early OT referral
 - Orthoses- static, dynamic (LMB)
- Operative
 - FDS excision (preop) for a severe contracture
 - Check-rein ligament release (unpredictable)

Lim, JHSE 2007
Moriya JHS 2005
Bruinjzeel JHS 2012

The persistent TF

- Consider injection
- OT, including iontophoresis
- If persists, revision surgery with FDS slip excision

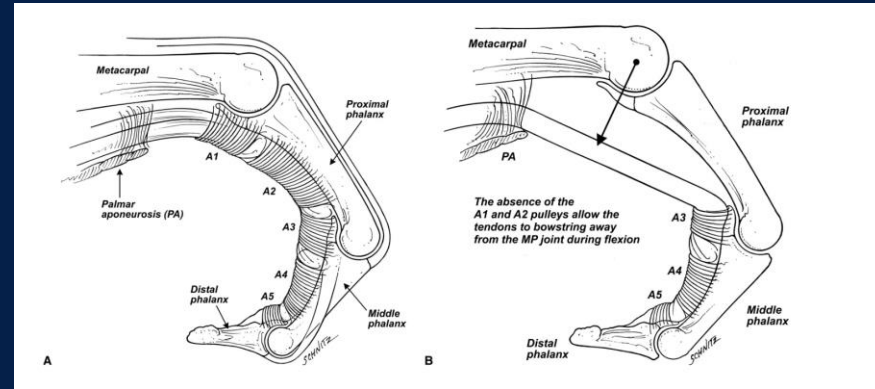
Infection

- Early antibiotics
- OR for I and D



Bowstringing

- A2 pulley compromise → Increased distance from tendon from the MCP joint axis of rotation → Increased moment arm
- Increases work of finger flexion



Factors Causing Prolonged Postoperative Symptoms
Despite Absence of Complications After A1
Pulley Release for Trigger Finger

Jong Hun Baek, MD, PhD,* Duke Whan Chung, MD, PhD,* Jae Hoon Lee, MD, PhD*

JHS, 2019

- 109 patients, with single or multiple TFR
- Defined “prolonged symptoms as >8 weeks
- Factors assessed: duration of preop symptoms, # of injections, preop flexion contracture of PIP, multiplicity, occupation, DM2, other coexisting hand conditions, and fraying/partial tear of tendon
- Results: 19.3% showed prolonged postoperative symptoms. RFs include duration of preop sx, preop PIP contracture, and fraying of tendon

Trigger Finger Wrap Up

Overall Pearls and Pitfalls

- Most of the discussion comes in preop
 - Make sure it's the right diagnosis!
 - Consider dynamic ultrasound if questioned
 - Document preoperative PIP contracture
 - Discuss risks for prolonged recovery
 - duration of symptoms, PIP contracture, and fraying or partial tear of the flexor tendon (intraop)
 - Diabetes
 - Note severity of disease, PIP contracture

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