

# Tendinitis of the Hand and Wrist

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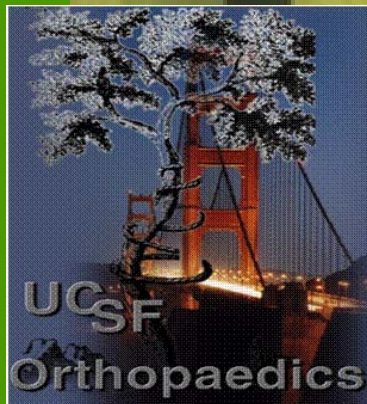
Chief Division of Hand and Upper  
Extremity Surgery

UCSF Medical Center

*Amy L. Ladd MD*

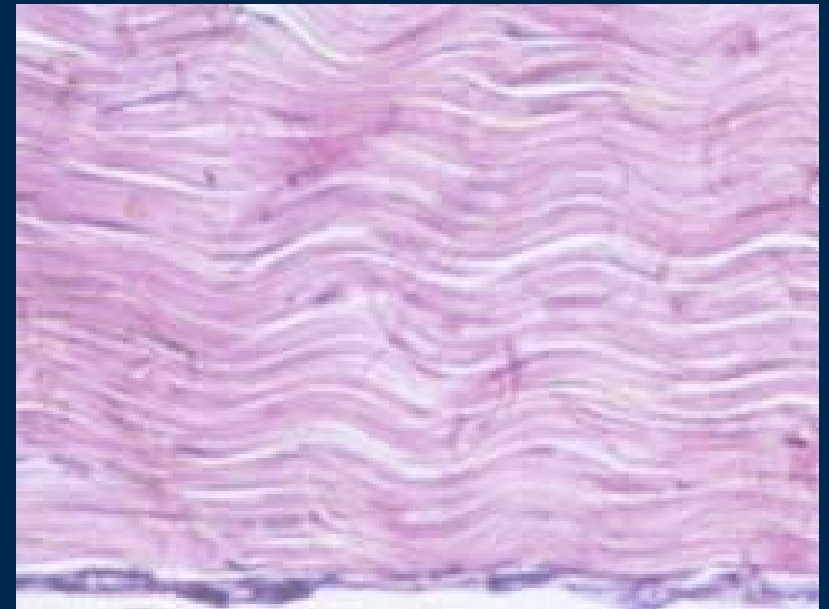
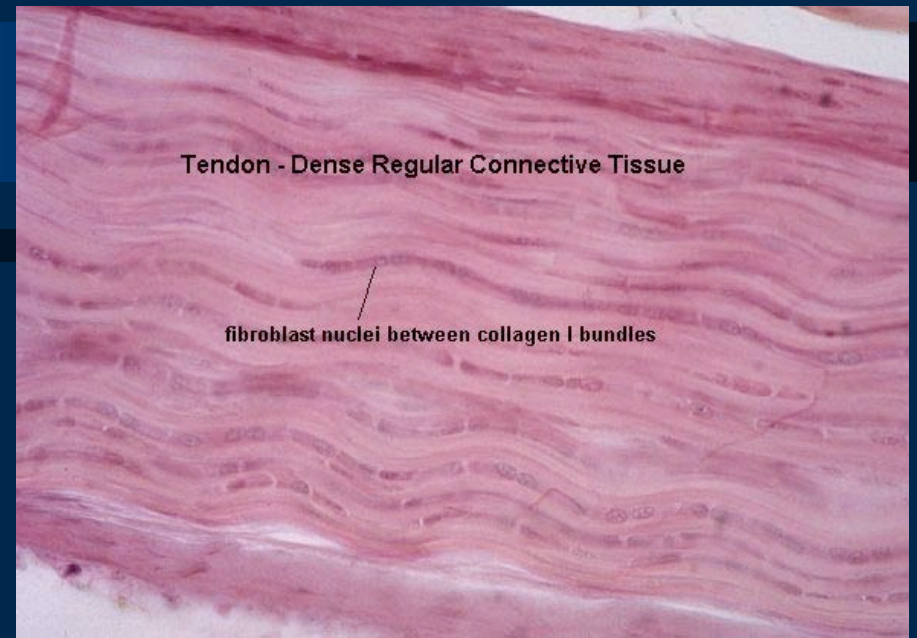
*Chief, Robert A Chase Hand & Upper Limb Center*

*Stanford University*



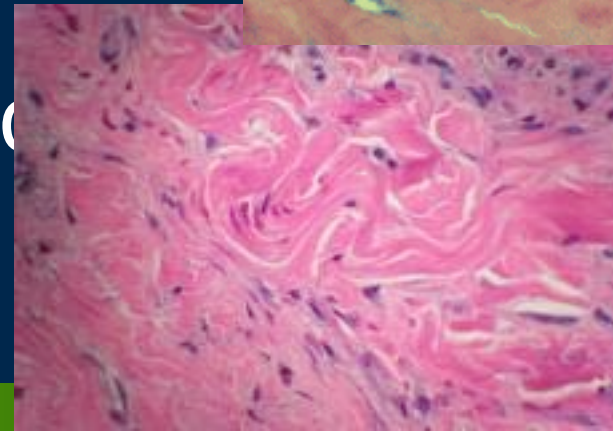
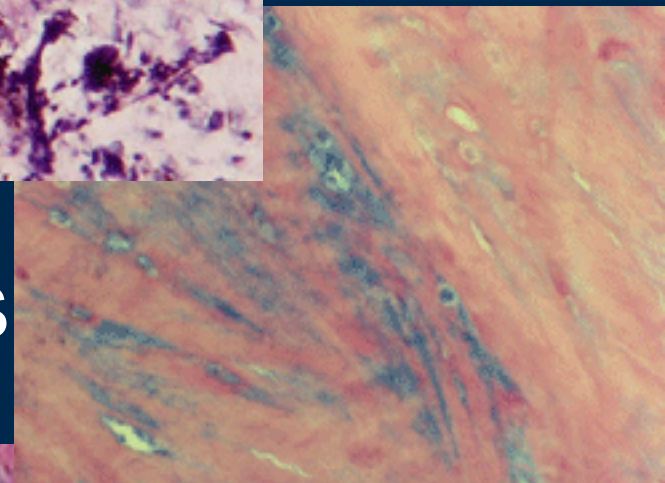
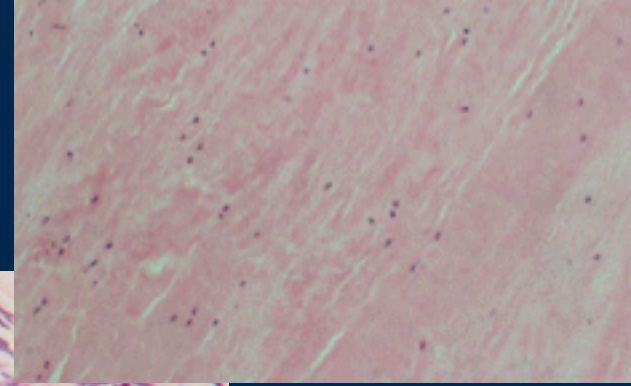
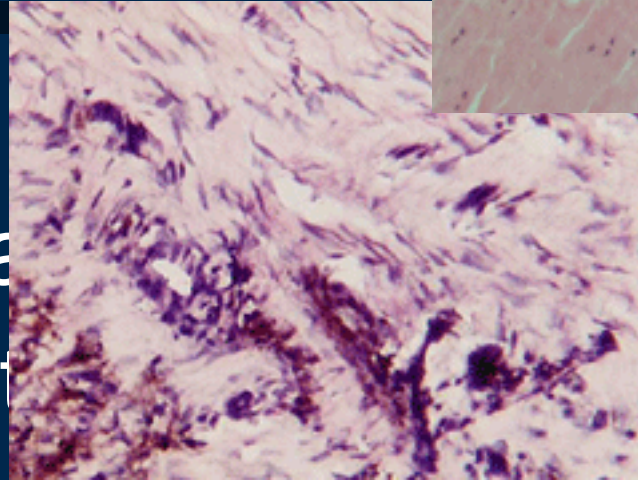
# Tendon

- Fibroblasts
  - Produce collagen
  - Parallel rows
- Healthy tendon
  - Long fibers
  - Smooth
  - Dense

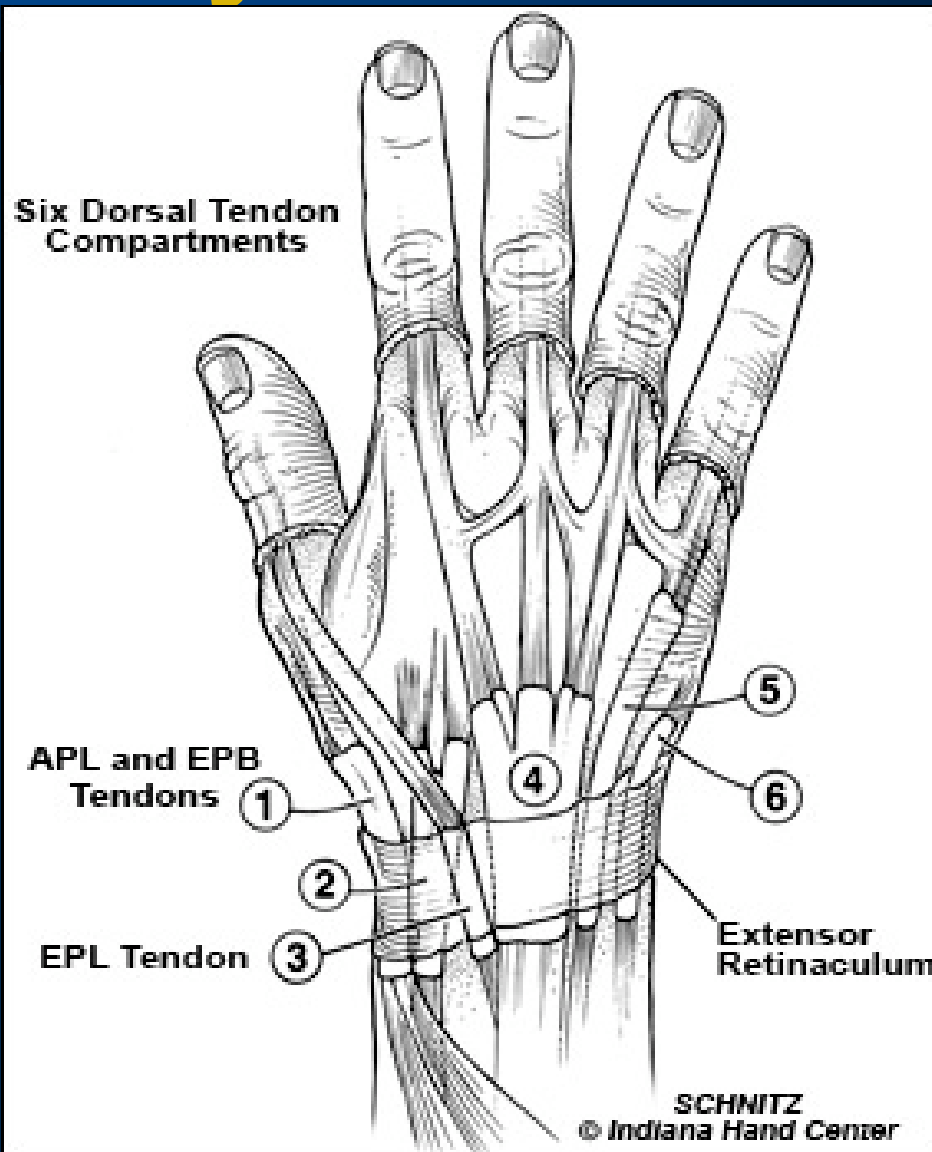


# - Opathy

- Gray, amorphous
- Disorganized collagen
- Capillary proliferation
  - angiofibroblasts
- fibrocartilaginous metaplasia
- Mucoid change
- Absent inflammatory cells
- **Degenerative**

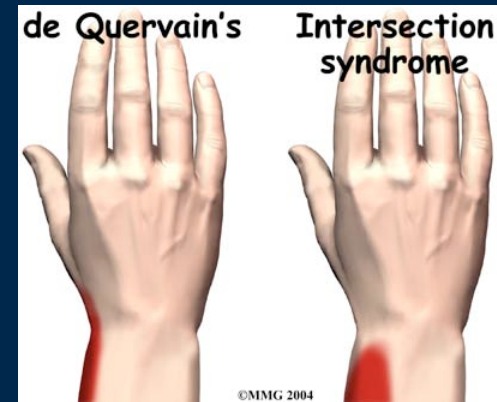


# Anatomy Review



# Tendonitis and Tenosynovitis

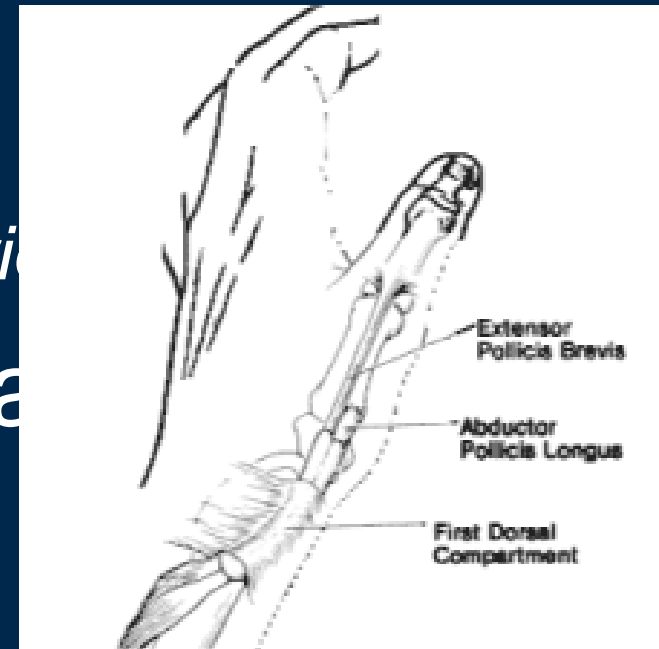
- De Quervain's stenosing tenosynovitis
- Trigger fingers and trigger thumb
- Intersection Syndrome
- Flexor carpi radialis tendinopathy
- Extensor carpi radialis tendinopathy



# De Quervain's Tenosynovitis

De Quervain's

- Fritz de Quervain (Swiss) 1886
- “Washer womans sprain”
  - Women 30-50 yrs
- New mothers
  - *golfers, skiers, briefcase carriers*
- Pain with pinching, grasping
- Dorsoradial wrist



# Anatomy/Histology

- First dorsal compartment: EPB, APL
- Variants
  - APL with multiple slips
  - EPB in separate compartment
- Myxoid



degeneration little

# Physical Exam

- Finkelstein's test
- Cyst at base of thumb
- Swelling, crepitus
- Catching, snapping
- Decreased pinch strength
- Numbness dorsal thumb





# Non surgical treatments

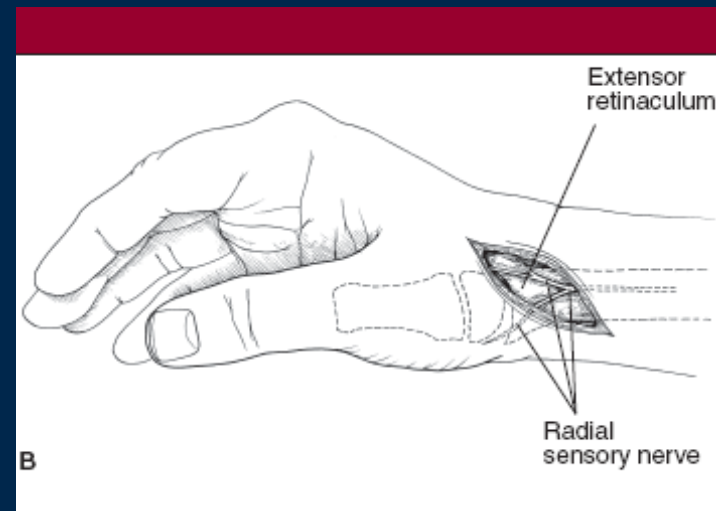
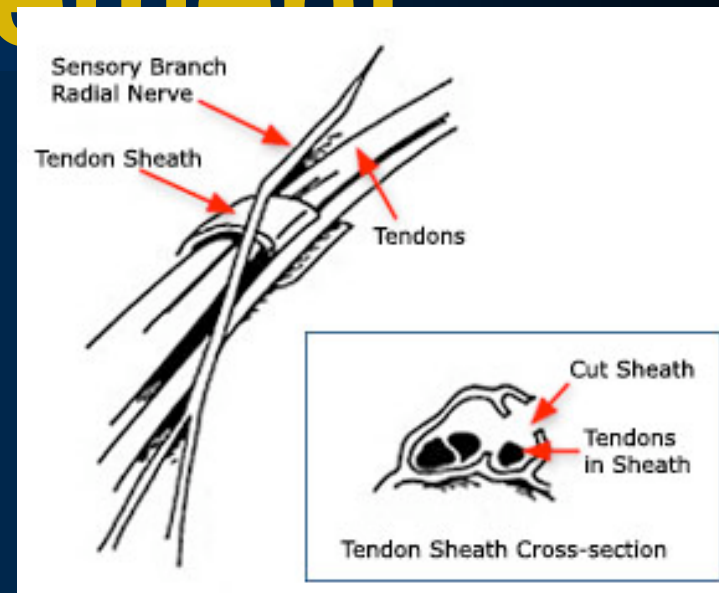
- Anti inflammatory meds  
NSAIDS (?)
- Wrist and thumb spica splint
  - Thumb a little flexed/abducted
- Injection
- Activity modification
- Oral steroids? No difference



# Surgical management

De Quervain'

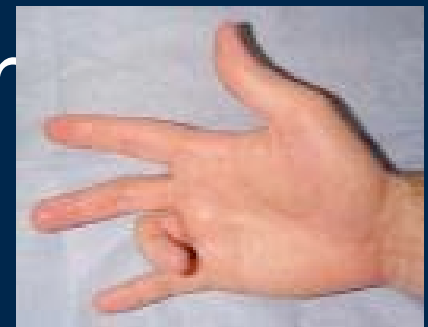
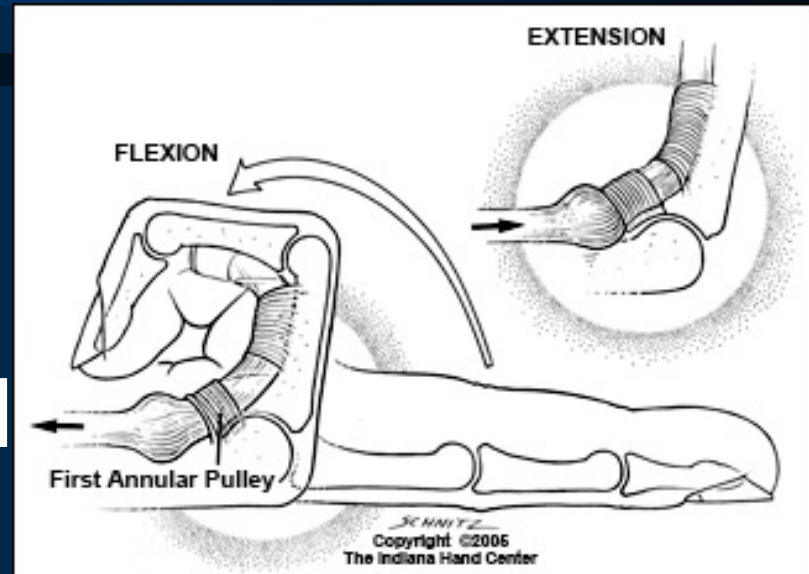
- First dorsal compartment release
- Preserve retinaculum - prevent tendon subluxation
- Protect radial sensory nerve
- Tendon subluxation, complex regional pain



# Trigger Fingers and Thumb

Trigger Finge

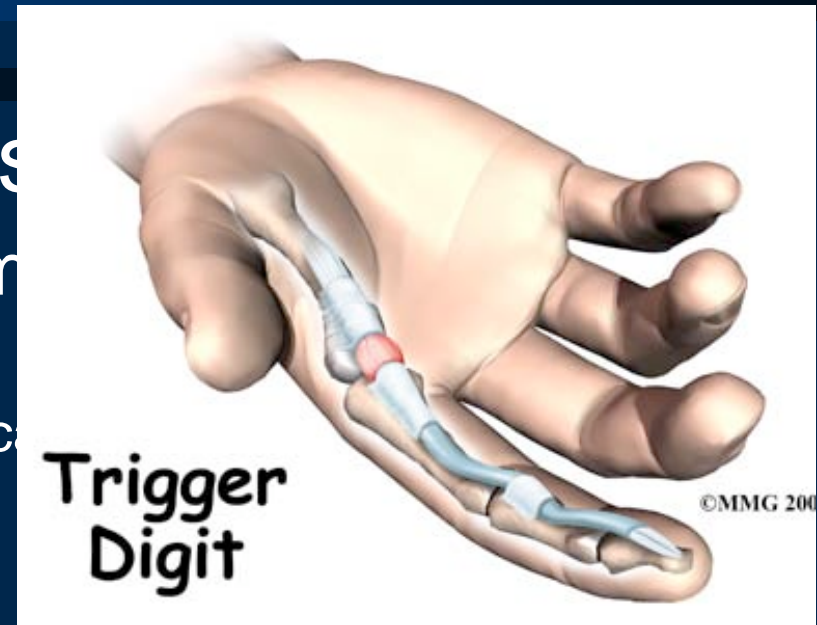
- Women (75%)
- Ages 52-62
- Most common ring M
- Thumb in children
- Stenosing tenosynovitis
- Thickened, inflamed A1 pulley
- Cycle: triggering, inflammation, swelling
- Can become locked



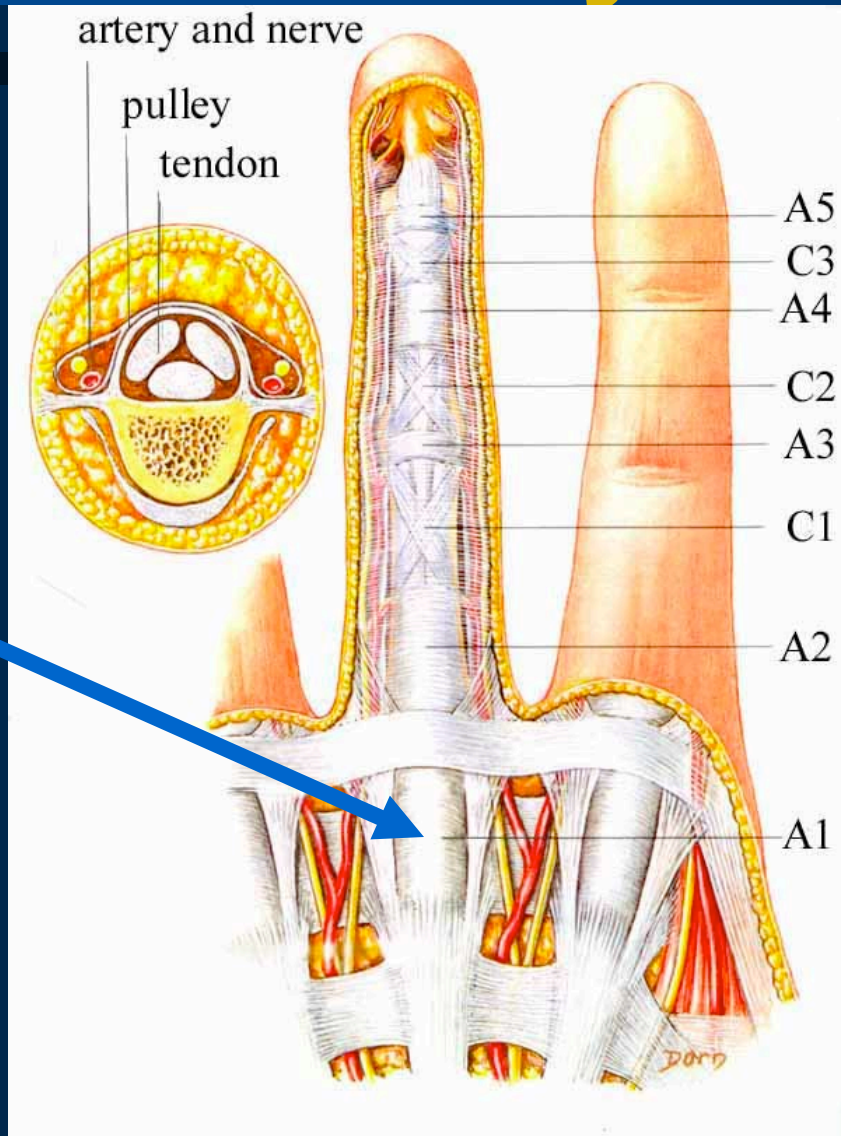
# Trigger Fingers and Thumb

Trigger Finge

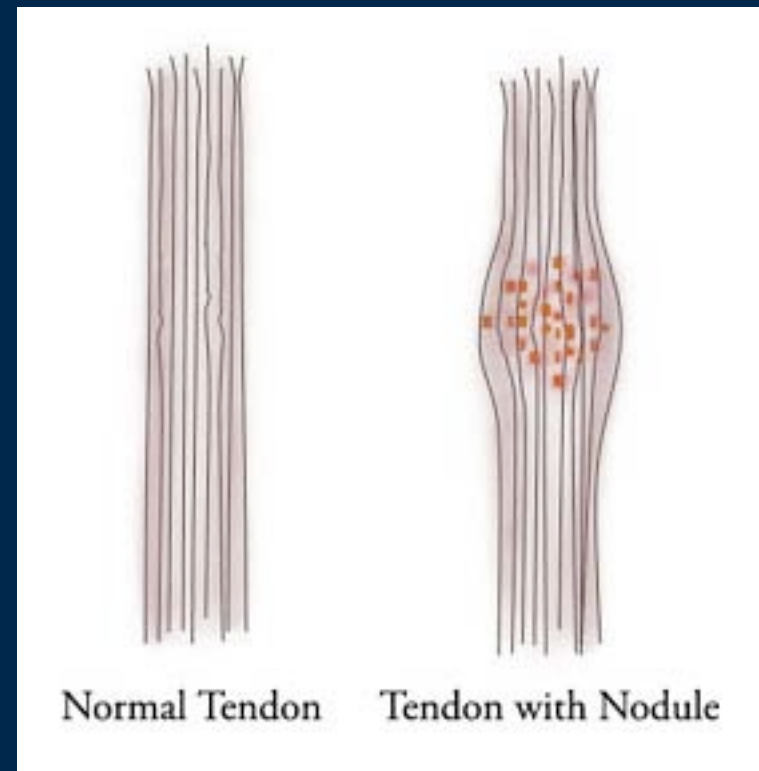
- Associated conditions
  - RA: true tenosynovitis, may see at FDS decussation
    - don't release A1 pulley - can cause bowstringing/subluxation
    - tenosynovectomy
  - DM: worse outcomes
  - Amyloidoses
  - CTS
  - Mucopolysaccharidoses
- A3 symptoms
  - **Bowlers**



# Anatomy



## Mucinous degradation of tendon collagen

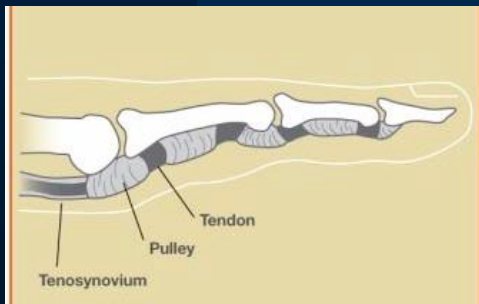
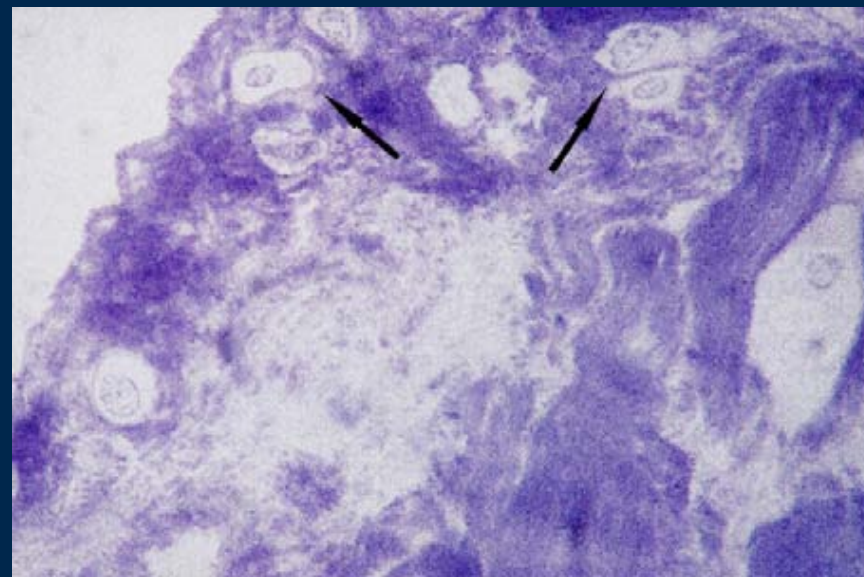
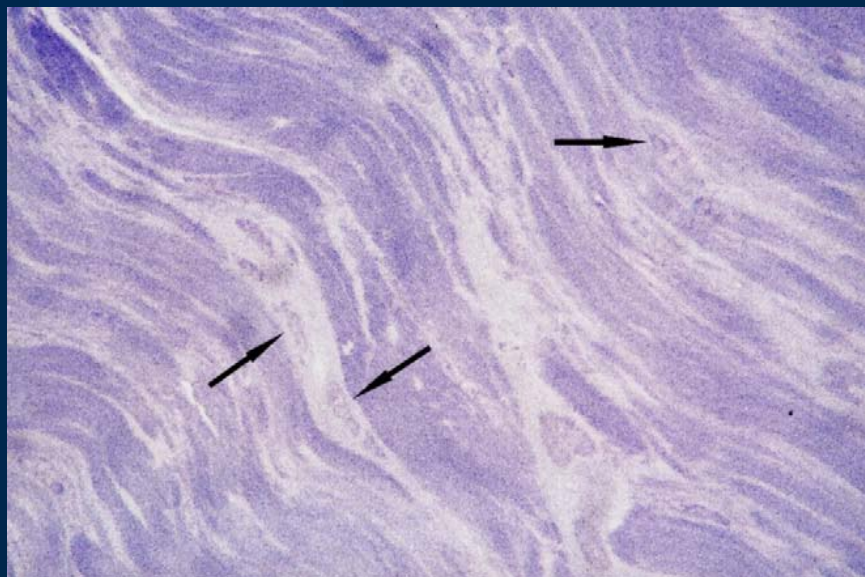


# Fibrocartilaginous metaplasia

Trigger Finge

## NORMAL PULLEY

## TRIGGER FINGER PULLEY



# Classification: Green's Trigger Finge

- I Pain and tenderness at A1 pulley
- II Catching of digit
- III Locking of the digit, passively correctable
- IV Fixed, locked digit

# Corticosteroid Injections

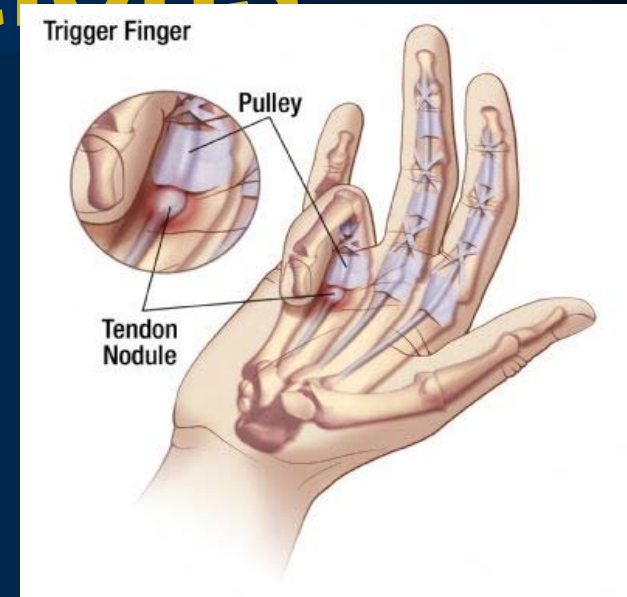
- Effective in 57% of patients (meta-analysis of 4 RCTs)
- Can be both therapeutic and diagnostic
- Up to 75-92% resolution in some studies





# Surgical Indications

- Multiple trigger digits
- Fixed digit
- Failed conservative management

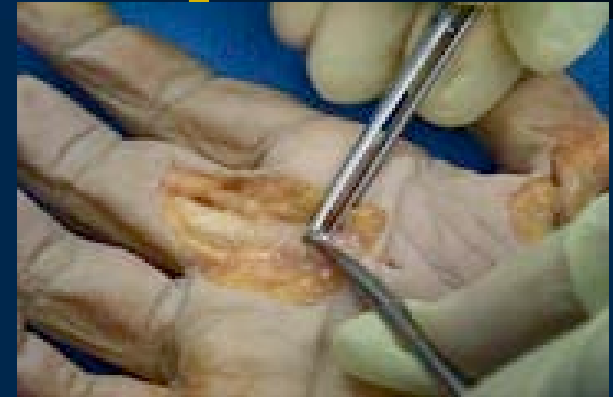


# Percutaneous vs. Open

- Open

<10% recurrence

Remove diseased tenosynovium



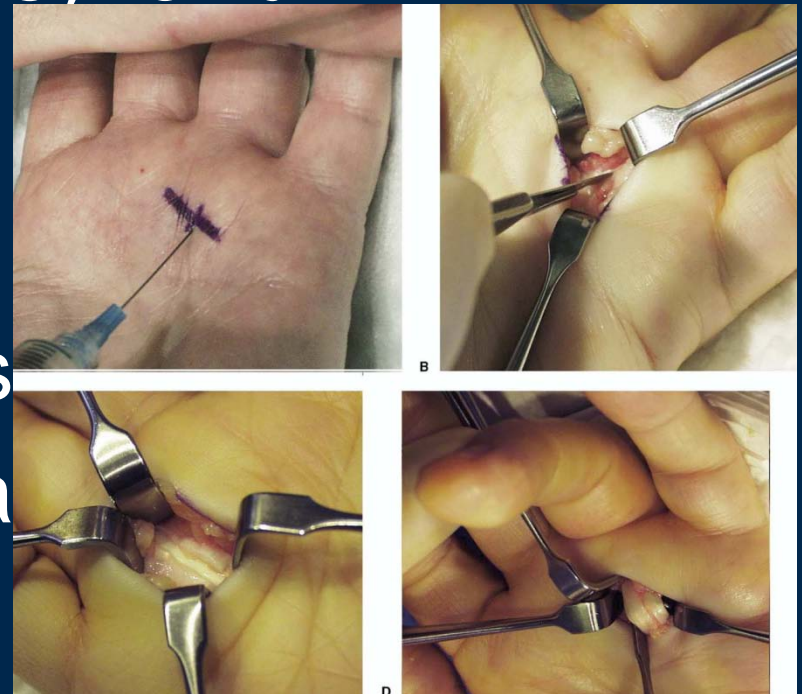
- Percutaneous

18 gauge needle

Higher risk of neurovascular

injury, incomplete release

Faster return to work



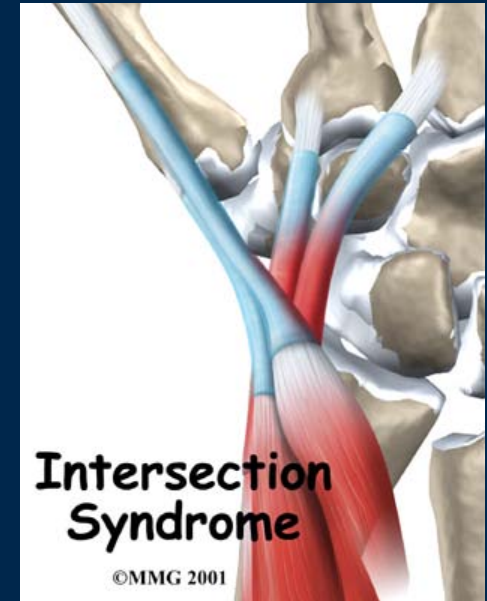
# Intersection Syndrome

- 1st and 2nd extensor compartments
  - APL/EPB
  - **ECRL/ECRB**
- Bursitis, crepitus with flexion/extension
- Overuse syndrome
- Weightlifters,



# Intersection Syndrome - Treatment

- NSAIDs, rest, splints
- Injection
- Surgical release :  
second extensor  
compartment 4-5 cm  
proximal to wrist joint,  
debridement of inflamed  
bursae,



**(2008 ASSH SAE qn 63)**

**Flexor carpi radialis tendinitis is most frequently related to:**

- A. DeQuervains tenosynovitis**
- B. Scapholunate advanced collapse**
- C. Scaphoid fracture**
- D. Scaphotrapezial arthrosis**
- E. Carpal tunnel syndrome**

# Flexor Carpi Radialis

FCR

## Tendinopathy

- Women > Men, 50s
- Overuse, idiopathic, basal arthritis, trapezium degeneration, post-traumatic
- FCR occupies 90% of the tendon sheath space





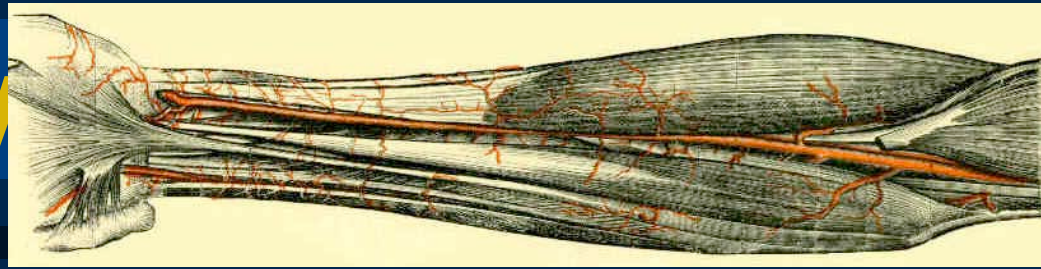
# Physical Exam

- Pain in volar wrist crease over scaphoid tubercle
- Swelling, tenderness to palpation
- Pain with resisted wrist flexion and radial deviation
- Inject steroid into FCR sheath for therapeutic and diagnostic
- Caution if FCR frayed/damaged
- Associated median n irritation





# Surgery



FCR

- Try rest, splint immobilization, injection
- If unsuccessful, release and debride FCR
- Dangers: palmar cutaneous branch of the median nerve, lateral antebrachial cutaneous nerve, superficial radial sensory nerve
- Complete release, debridement, and excise osteophytes or ridges

(2008 ASSH SAE qn 63)

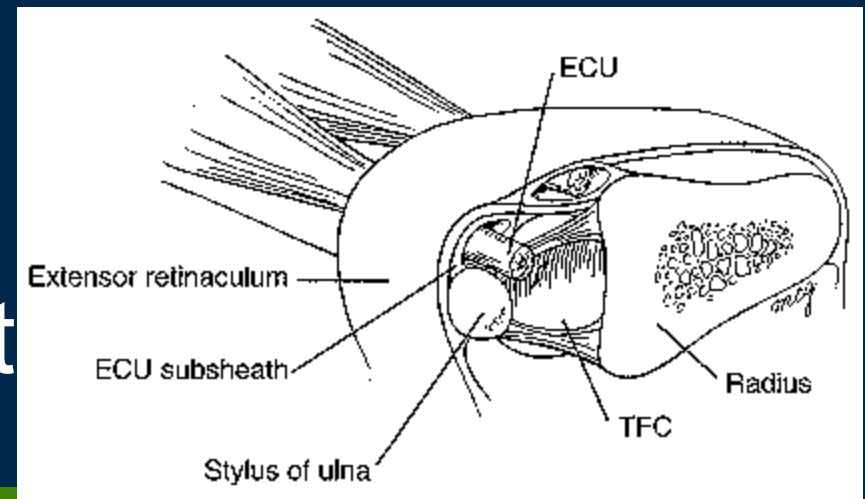
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# Extensor Carpi Ulnaris Tendinitis

ECU

- 6th extensor compartment
- Annular ligament tight fibro-osseous sheath over groove in ulna
- May see synovial RA
- Common in athletes
- Conservative



# Flexor Carpi Ulnaris Tendinitis

FCU

- Chronic repetitive trauma
- May be bilateral
- Pain with resisted wrist flexion and ulnar deviation
- Calcific tendinitis: painful, see on xray (mid supination view)
  - See most at insertion of FCU onto pisiform



# Lateral & Medial Epicondylitis

# LATERAL EPICONDYLE

**ANCONEUS**



**ECRB**



**ECU**



**EDC**



**EDQ**

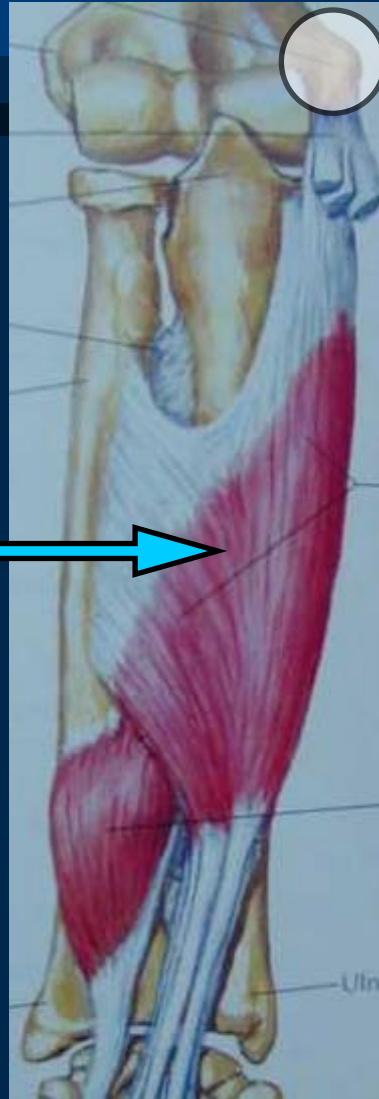


# MEDIAL EPICONDYLE



**PT**

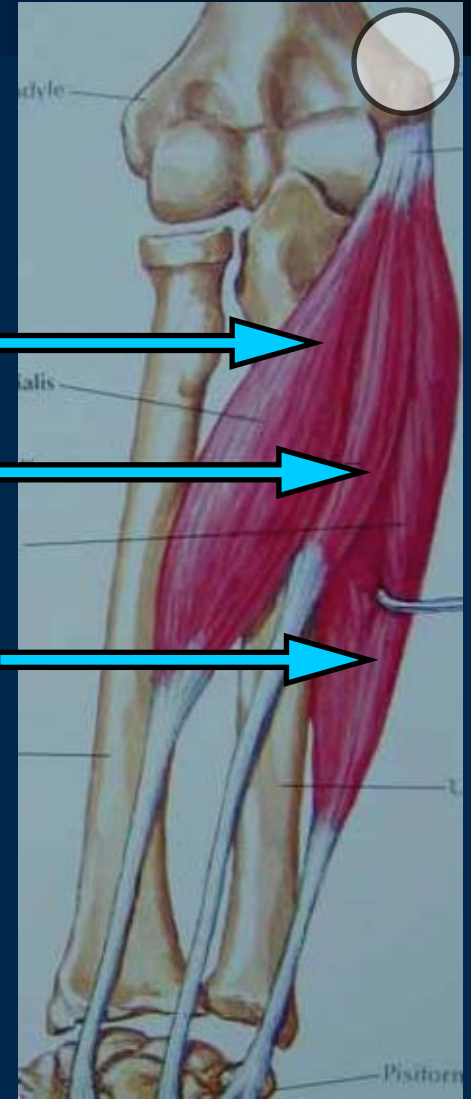
**FDS**



**FCR**

**PL**

**FCU**



**deep**

**intermediate**

**superficial**

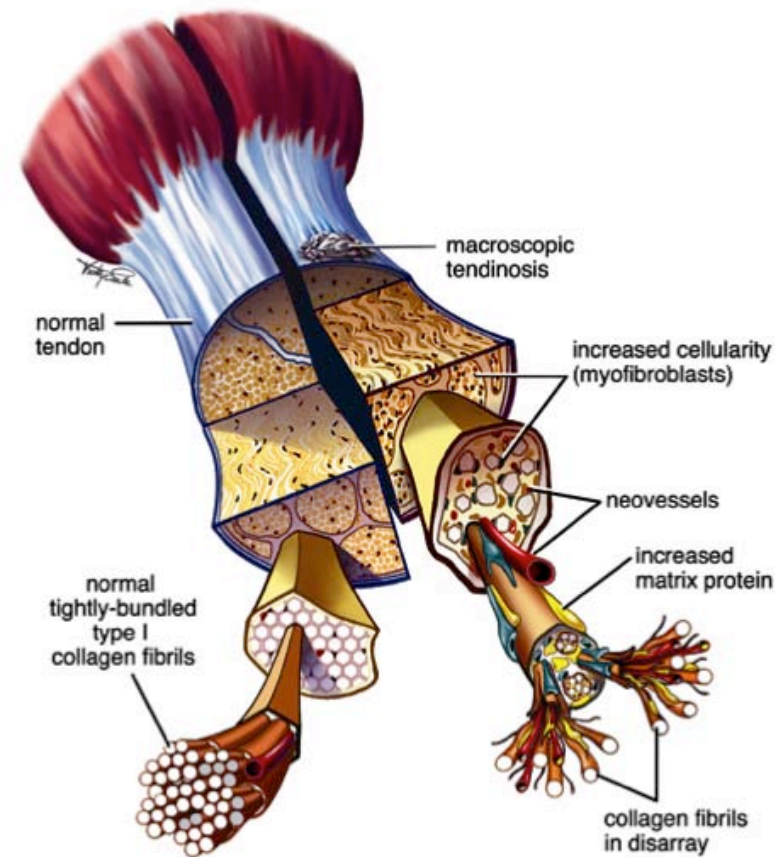
# Pathophysiology

- Tendinitis=Inflammation of the tendon (rare)
- Tendinopathy=Any pathological process of the tendon
- Tendinosis=Degeneration of the tendon (common)



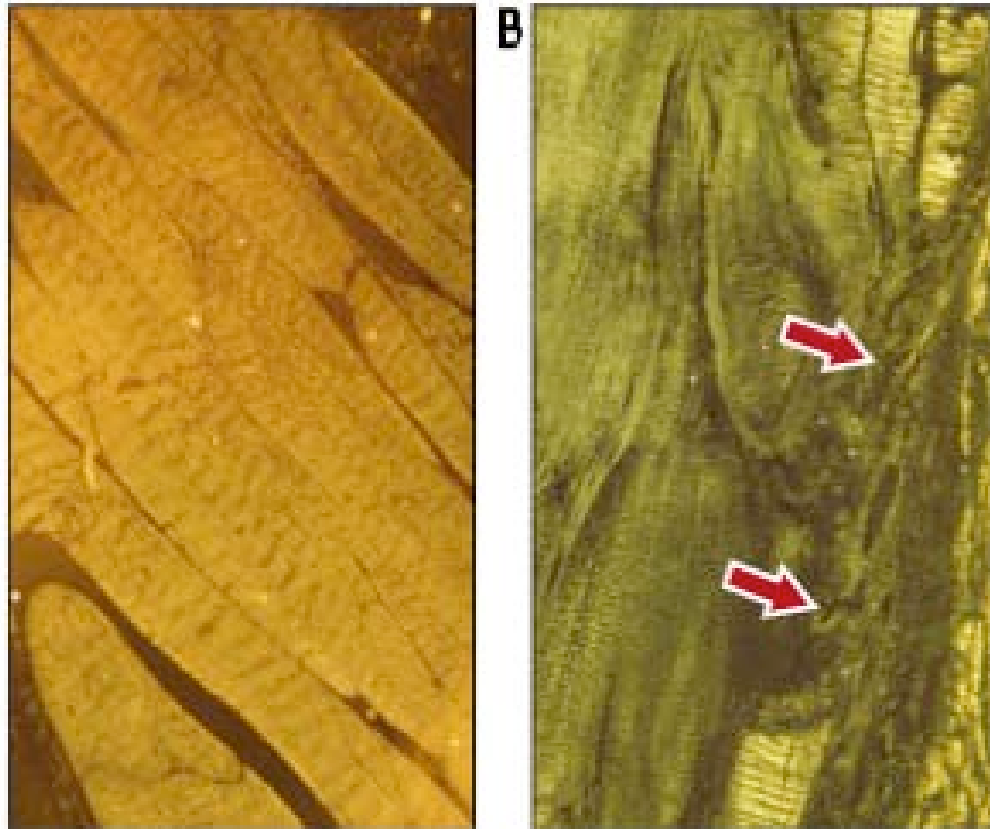
# Pathophysiology

- Disorganized collagen
- Mucoïd degeneration
- Neovascularization
- Tenocyte metaplasia
- **NO INFLAMMATORY CELLS**

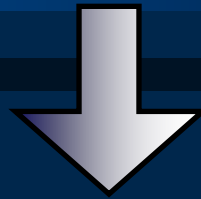


# Histopathology

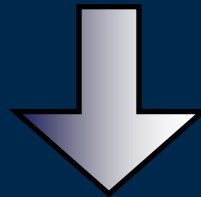
Figure 1: Courtesy of S. F. Bonar, MD



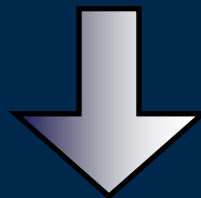
**Mechanical Overload**



**Microtearing**  
(single episode)



**Degeneration**  
(lack of stimulation = catabolism)



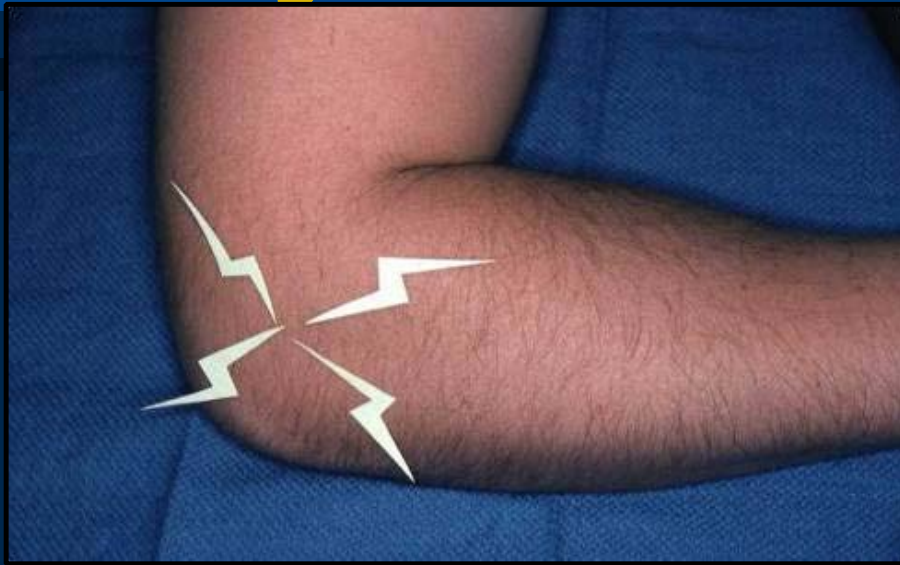
**Partial Tendon Failure**

# Epicondylitis

Lateral (tennis) / Medial (golf) - 20:1

- Age 30 - 50
- Onset following forceful, repetitive motion (?)
- Often NOT tennis or golf
- Ache in region of lateral / medial epicondyle - may be poorly localized

# Physical Exam-Lateral



pain centered at lateral epicondyle

**\*3rd finger test**

**\*wrist ext/sup**

**\*grip strength**

pain distal to lateral epicondyle c/w radial tunnel syndrome



# Physical Exam-Medial

Medial Epicondylitis



©MMG 2001

pain centered at medial epicondyle

**\*wrist flex/pro**

# Lateral Epicondylitis

## Treatment - Initial

- Activity Modification
- Counterforce Brace / Strap
- Wrist Extension Splint
- Heat / Massage / Therapy
- NSAIDs?



# Lateral Epicondylitis Treatment - Injection



**Steroid vs. Autologous  
Blood**



# Lateral Epicondylitis

## Treatment - Surgery

\*resistant 1%

\*fail 6-12m trial

\*multiple procedures:

-detachment

-reattachment

-cut ecrb

-open vs arthroscopic

\*4-8month recovery



**2008 ASSH SAE qn 72)**

**Extracorporeal shock wave therapy (ESWT)  
for lateral elbow pain:**

**A. Dramatically improve symptoms for a long  
period of time**

**B. Dramatically improve symptoms for a  
short period of time**

**C. Moderately improve symptoms for a long  
period of time**

**D. Moderately improve symptoms for a short  
period of time**

**E. Provide little or no benefit**

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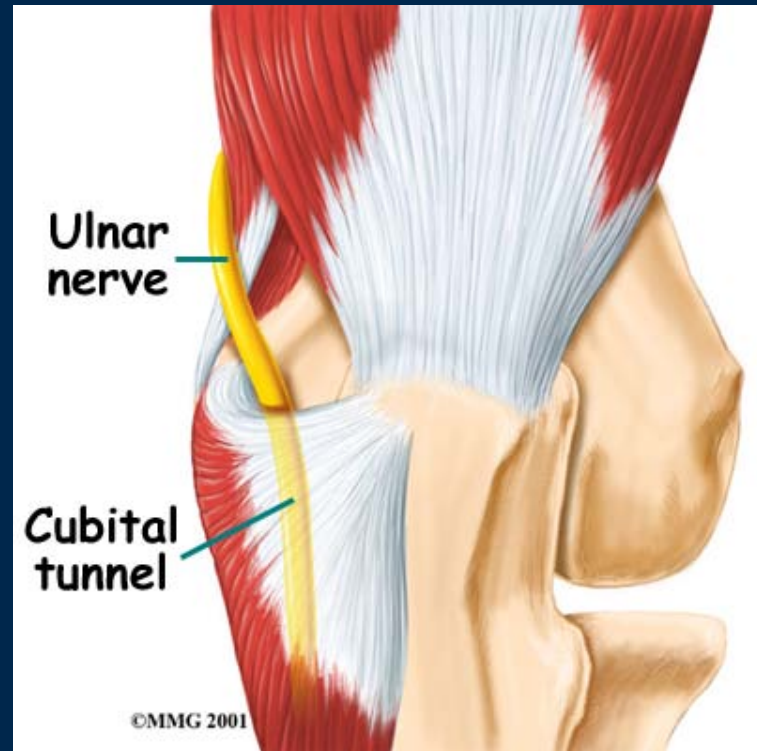
**D. Moderately improve symptoms for a short  
period of time**

**E. Provide little or no benefit**

# Medial Epicondylitis

## Treatment

- Same as lateral epicondylitis
- Beware of neurovascular bundle if considering injection



# Epicondylitis:

- Lateral > Medial, “middle age”
- Repetitive motion
- Tendinopathy, **NOT** an inflammatory process
- Conservative treatment
- **ECCENTRIC** training  
(mechanotransduction)

# THANK YOU

