Common Soft tissue problems Upper Limb

Dr Anu Dhir MB.,BS. MRCS

P. Ofori-Atta MB.ChB. FRCS

June 2010

Common Conditions

- Golfers Elbow
- Tennis Elbow
- De Quervains tenosynovitis
- Trigger Digits
- Dupytrens contracture

De Quervains Tenosynovitis

- Stenosing Teno-synovial inflammation of the the first dorsal compartment containing:
  - abductor pollicis longus
  - extensor pollicis brevis
- Women 30 – 50 years
- Racquet sports
- Causes:
  - Idiopathic
  - Repetitive strain
  - Post trauma
  - Post partum

Clinical Diagnosis

- Symptoms
  - Wrist pain – radial side
- Examination
  - Swelling and palpable thickening of fibrous sheath
  - sharp tenderness over styloid process of radius
  - Finkelstein test
    - ulnar deviate wrist with thumb clenched in fist
    - tenderness over 1st dorsal compartment at level of radial styloid
- If there is doubt Roberts view radiograph may help look at the CMC joint

Conservative Management

- Wrist splint, thumb spica
- NSAIDs
- Steroid injection into 1st dorsal compartment
- Physiotherapy

Surgical Mangement

- surgical release of 1st dorsal compartment
- complications
  - failure to recognize and decompress EPB or APL lying in separate subsheath
  - injury to sensory branch of radial nerve
  - nerve entrapment / neuroma formation
  - tendon instability
  - tendon adherence
  - scar RELATED SYPTOMS

Surgical technique

- GA vs LA
- Incision: transverse, oblique or longitudinal incision
    - Longitudinal - lower risk of radial sensory neuropathy
    - oblique incision - allows for extended distal exposure
    - Transverse - higher risk of injury to superficial radial nerve
- Identify superficial branches of the radial nerve and move away from first compartment tendon sheath
    - may become trapped in sacr tissue if left adjacent to tendon sheath

Surgical technique

- decompression of first dorsal compartment:
  - directly visualize the distal edge of the first compartment
  - open thickened sheath with longitudinal incision through the central aspect of compartment roof, thus freeing the involved tendons
  - NOTE:
    - leave equal halves of the tendon sheath (on either side of the tendons) to avoid postoperative instability
    - preserving retinacular flaps will help to prevent prolapse w/ wrist flexion or extension
  - search for anatomic abnormalities, and release more tendon sheath if necessary
    - must have positive identification of the EPB (5% absent)
    - possibility of separate fibroosseous canal for EPB tendon
    - multiple slips of APL tendon are common

Surgical Technique

- determine any instability
  - flex and extend the wrist, and note if there is a tendency for subluxation
  - if subluxation is present, then loosely oppose the edges of the tendon sheath w/ a horizontal mattress suture
  - it is permissible for these flaps to gap open if tendon stability has been restored

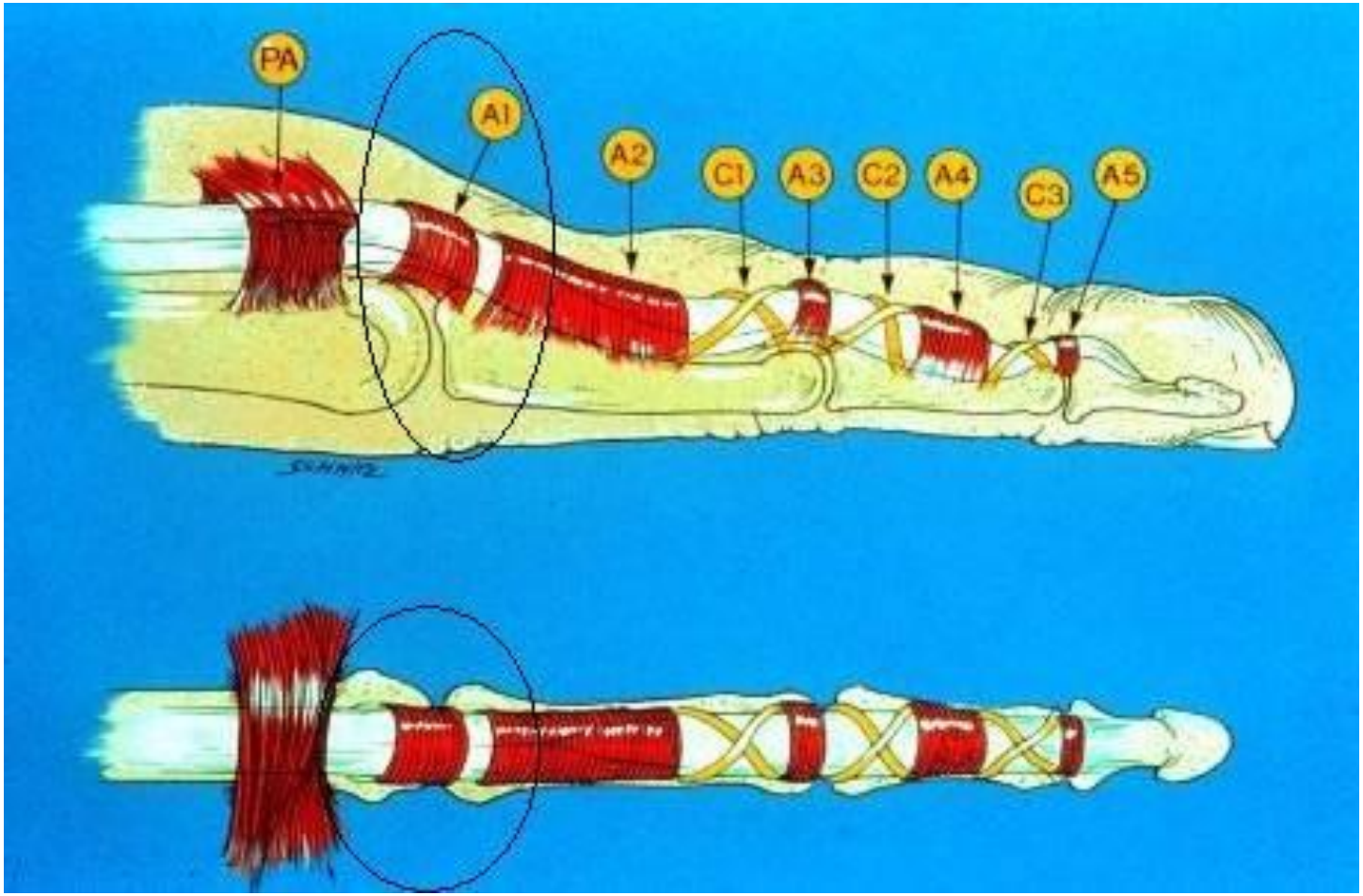
- rongeur bony prominences
- start early ROM of thumb, but with wrist splinted in 10 deg of extension for 2 weeks to prevent volar tendon prolapse

Trigger Finger

- localized tenosynovitis of superficial and deep flexor tendons adjacent to A1 pulley at a metacarpal head
- inflammation causes nodular enlargement of tedon distal to pulley
- occurs most often in middle or ring fingers (occassionally in thumb)
- associated with rheumatoid arthritis, gout, diabetes, amyloidosis

Pulleys of the digits

REFERENCE:



Anatomy

- average length of A1 pulley is 1 cm
- proximal edge of the A1 pulley lies about 2 cm from the proximal finger crease
- Note:
  - proximal phalangeal crease lies over the mid portion of the proximal phalanx
  - A2 pulley begins and ends in the proximal half of the proximal phalanx

Symptoms

- occurs most often in long or ring fingers (occassionally in thumb)
- produces a painful clicking as inflammed tendon passes through constricted sheath as finger is flexed and extended
- digit may lock in flexion, extension, or may be arrested in the middle range

Examination

- tender nodule over metacarpal head
- active movement - determine if the patient can flex and extend the digit past the triggering point w/o assistance
- passive movement - true triggering is present when locking occurs as the digit is passively taken through the ROM
- PIP/DIP flexion contracture may develop with chronic triggering

Non operative management

- Night splintage
- NSAIDs
- Steroid injection
  - best initial treatment for fingers, not for thumb
  - up to 3 injections
  - care in diabetics

Operative management

- surgical debridement and release indicated in recalcitrant cases
- straight or transverse incision
- postoperative
  - early passive and active ROM 4 times a day
  - if patient does not have full ROM at first post-op visit then send to physiotherapy

Surgical technique - finger

- local anesthesia - allows patient to actively flex & extend digit to verify complete release

- **incision** - transverse 15 mm incision is made over the affected metacarpal neck
- further blunt dissection to spread subcutaneous tissue and palmar fascia to expose flexor tendons and sheath
- Note: incision must not violate distal palmar flexion crease
- spread through the plamar fascia with a dissecting tonsil and apply to small blunt retractors to expose the tendon

Surgical technique - finger

- **identify the digital nerves**
  - nerves lie on either side of the tendon sheath;
  - usually radial nerve is more vulnerable
- **transection of pulley**
  - essential to identify the demarcation between the A1 and A2 pulleys
  - insert probe into this interval, and then it proximally underneath the A1 pulley
  - A1 pulley should be split longitudinally along radial aspect of pulley (in index, long, & ring fingers but along ulnar aspect of little finger)
  - release only enough pulley, to allow full active motion without triggering
  - at the end of the procedure, move the finger to ensure that there is no more triggering
  - Note that if a nodule is present, a piece of the tendon sheath may need to be excised to allow passage of the tendon;

Surgical technique - thumb

- **anatomy:**
  - A1 pulley: spans the MP joint, approximately 8 mm in width
    - FPB inserts just proximal to this pulley and the adductor pollicis inserts distal to the A1 pulley
  - oblique pulley: located over the mid aspect of the phalanx, approximately 10 mm in width
    - note that the adductor pollicis partially inserts into the oblique pulley
  - A2 pulley located at the most distal aspect of the proximal phalanx, and is 9 mm in width and it may partially span the thumb IP joint

Surgical technique - thumb

- **Incision**
  - proximal edge of the flexor pollicis longus sheath annulus is directly deep to the MP flexion crease of the thumb
  - a transverse incision should be made at the MP flexion crease or just distal to it
  - radial nerve lies close to deep layer of dermis at flexion crease
  - radial nerve can be injured by blunt dissection more proximally where it diagonally crosses thumb flexor sheath

Dupuytrens Disease

- rare genetic hand condition characterized by contractures of the fascia of the hand
- autosomal dominant with variable penetrance
- 5-7th decade of life with 2:1 male to female ratio
- high incidence in HIV patients and those of northern european and Celtic descent
- associations:
  - alcoholism, diabetes, epilepsy, COPD
- ectopic manifestations:
  - Lederhose disease (plantar fascia), Peyronie's disease (dartos fascia of penis), Garrod disease (knuckle pads)

Pathoanatomy

- fascial involvement (bands) forms pathologic cords
- **spiral cord**
  - clinically the most important as is made up of the:
    - peritendinous aponeurosis
    - spiral band
    - lateral digital sheath
    - Graysons ligament
  - travels under the NV bundle, displacing it volar, and putting the NV bundle at risk during surgical resection
- central cord, lateral cord, retrovascular cord abductor digiti minimi cord

Histopathology

- Proliferative stage
  - hypercellular with a predominance of large myofibroblast
  - very vascular with many gap junctions
  - minimal extracellular matrix
- Involutional stage
  - dense mypfibroblast network
  - increase ration of type III to type I collagen
- Residual stage
  - myofibroblast disapear leaving fibrocytes as the predominate cell line

Symptoms

- mild to moderately painful nodule in palm of hand
- patients may present with a fixed flexion deformities in the MP, PIP, and rarely the DIP joints
- occurs most often in the ring and little fingers, and is bilateral in 45%

Examination

- **Palm:**
  - fibrous nodules appear over pretedinous band
  - involvement often begins w/ thickening of pre-tendinous cord over 4th ray

- **MP joint:**
  - MP contracture may be caused by pretendinous cord contracture or by contracture of spiral band
  - abduction may be limited as natatory ligament becomes contracted;

Examination

- **PIP joint:**
  - central cord is in continuity with pretendinous cord
  - spiral cord can manifest as an extension of pretendinous cord through spiral band or at musculotendinous junction of intrinsics

- **vascular:**
  - Allen's test may reveal sluggish filling on either side of the affected digit

Conservative mangement

- Generally ineffective
- steroid injections in nodules that are not associated with a cord can slow progression of disease

Surgery

- Indications:
  - 20 to 30 deg flexion contracture in MP joints
  - any degree of flexion contracture of PIPJ is indication for surgery

Surgical technique

- **Regional plamar fasciotomy**
  - favoured surgical treatment
- Segmental aponeurectomies
- Total palmar fasciotomy
- Open palm technique of McCash
  - Considered by some to be procedure of choice in older patients who are at risk for stiffness
  - leaving wounds open helps obtain early motion and has lowest rate of complications

Post-operative

- active motion at day 5
- night-time extension brace worn for 6 months

- Complications:
  - Haematoma (common)
  - Recurrence (50% long term)

Tennis Elbow

- Aka lateral epicondylitis
- Repetitive strain or tendinosis
- Pathology:
  - commonly origin of the ECRB displays abnormal vascular proliferation and focal hyaline degeneration
  - may involve EDC
  - peak incidence 30 – 60 years

Symptoms

- Pain over lateral epicondyle
- Point tenderness over the lateral epicondyle – a prominent part of the bone on the outside of the elbow
- Painful gripping and wrist
- Pain during activities involving wrist extension (e.g. pouring fluid from a vessel, lifting with the palm down)
- Morning stiffness

Examination

- ROM of wrist and elbow
- Motor strength of ECRL/ECRB, EDC
- Elicit tenderness:
  - greatest tension is elicited with the elbow in extension, forearm in pronation, and wrist in flexion
- Maudsley's test
- Cozen’s test
- LA injection test

Investigations

- Radiograph - rule out radial head fracture
- MRI – fluid at ECRB origin

Conservative Management

- Activity modification
  - reduce stenuous activities for at least 6 weeks
  - grasp objects in supination not pronation
- Wrist splint
- NSAIDs
- Steroid injection
- Blood injection

Surgical management

- elevation of the ECRB at the midportion of lateral epicondyle
- incision: 3-4 cm longitudinal incision just anterior to lateral epicondyle
- fascia overlying the posterior edge of the ECRL is incised and elevated to expose the ECRB
- ECRL sharply dissected off the anterior ridge and displaced anteromedially to expose the ECRB

Surgical Management

- degenerated tissue is excised
- normal tendon should not be debrided
- defect between the ECRL and the extensor aponeurosis is firmly repaired

- complication:
  - Postero-lateral instability

Golfer's Elbow

- inflammatory condition
- repetitive strain
- may begin as a microtear between the pronator teres and the FCR
- Male to female 2:1
- often associated with ulnar neuritis

Examination

- tenderness over the origin of the forearm flexors
- pain on resisted wrist flexion or pronation
- weak grip strength
- concomitant cubital tunnel signs may be present
- LA test

Investigations

- Radiographs – calcification at flexor origin
- MRI – assessment of anatomy in difficult cases

- Nerve conduction studies and electromyography for concomitant unlar neuritis

Conservative management

- Activity modification
- NSAIDs
- Wrist splints
- Counter force brace
- Steroid injections

Surgical management

- debridement with release of flexor pronator origin or reattachement of muscle origin
  - often only a partial debridement of the FCR and the prontator teres origin will be required
- partial cortical shaving of the medial epicondyle helps promote healing
- ulnar transposition may be required with concomitant ulnar neuritis

Surgical technique

- incision: 3- to 7-cm incision just anterior to the medial epicondyle
- identify posterior division of the medial antebrachial cutaneous nerve
- identify common flexor pronator
- identify and protect ulnar nerve
- incise flexor pronator fascia with a rim of superficial fascia preserved on the medial epicondyle for later repair

Surgical technique

- Identify lesion and excise
- Protect AOL for elbow stability
- anterior cortex is roughened with a curette or by drilling multiple small holes to increase the blood supply
- common flexor pronator origin is then repaired to the superficial fascia with interrupted sutures