Common Soft tissue problems
Upper Limb

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Common Conditions

- Golfers Elbow
- Tennis Elbow
- De Quervains tenosynovitis
- Trigger Digits
- Dupytrenc contracture
De Quervains Tenosynovitis

• Stenosing Teno-synovial inflammation of 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 Management

• 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 scar 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 tendon distal to pulley
- occurs most often in middle or ring fingers (occasionally 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 (occasionally 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 myofibroblast network
  • increase ration of type III to type I collagen

• **Residual stage**
  • myofibroblast disappear 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 management

- 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 palmar 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 strenuous 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 reattachment of muscle origin
  – often only a partial debridement of the FCR and the pronator 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