

Common Hand Conditions

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Lister

Common Conditions

- Carpal Tunnel Syndrome
- Cubital Tunnel Syndrome
- Dupuytren's Disease
- Trigger Finger
- Arthritis in the hand

Carpal Tunnel Syndrome

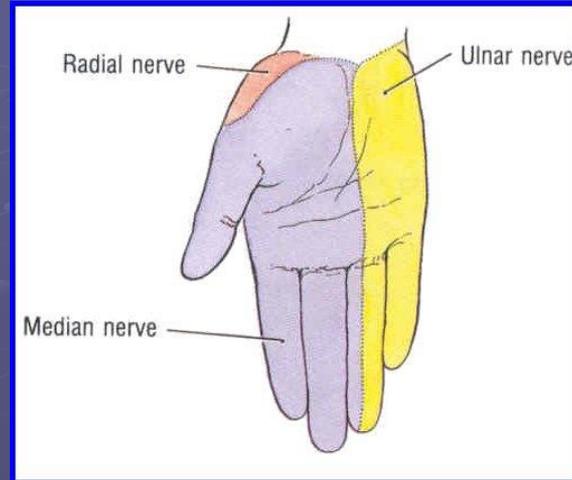
- One of the most common causes for presentation to a hand surgeon
- Common symptoms:
 - Pins and needles
 - Pain
 - Numbness
 - Reduced function
 - Tightness

What is it?

- Compression of the median nerve in the carpal tunnel
- Pressure on the nerve causes the symptoms

Median Nerve

- Anatomy
- Sensation
- Motor

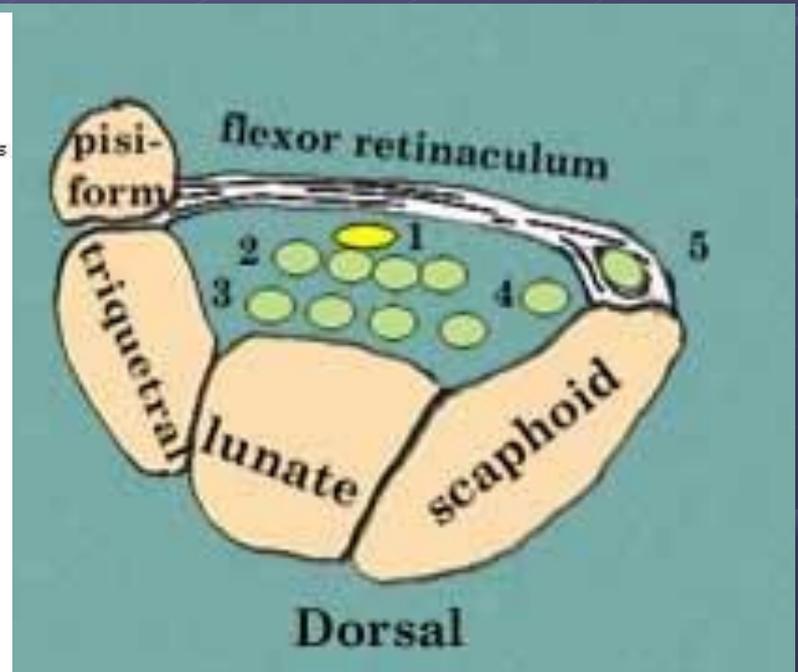
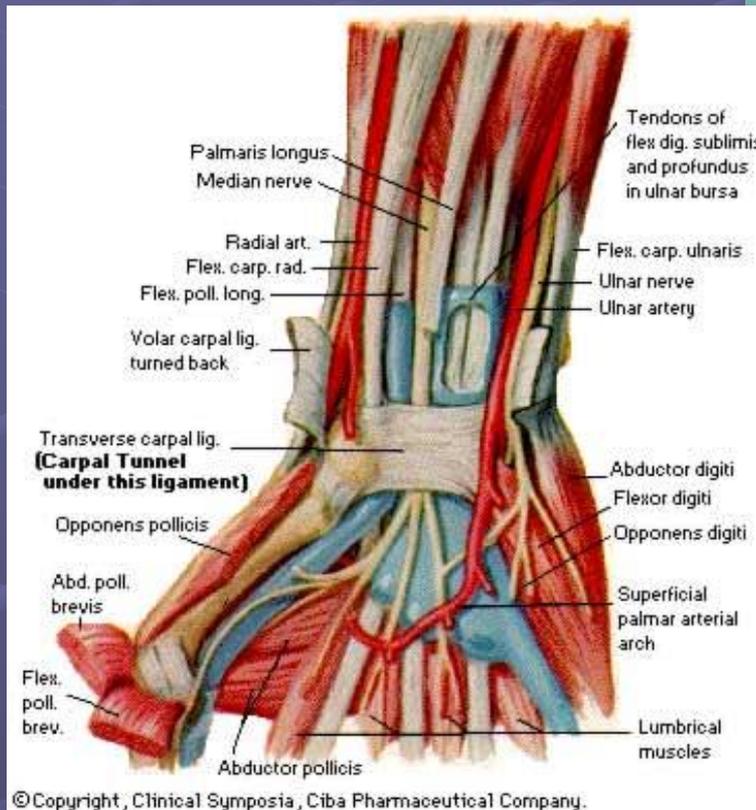


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Carpal Tunnel

● Anatomy



Carpal Tunnel Syndrome

- Diagnosis on History and Examination
 - Provocative Tests
- Investigations
 - Nerve Conduction Studies
 - Ultrasound Scan

Investigations

● Median nerve ultrasound

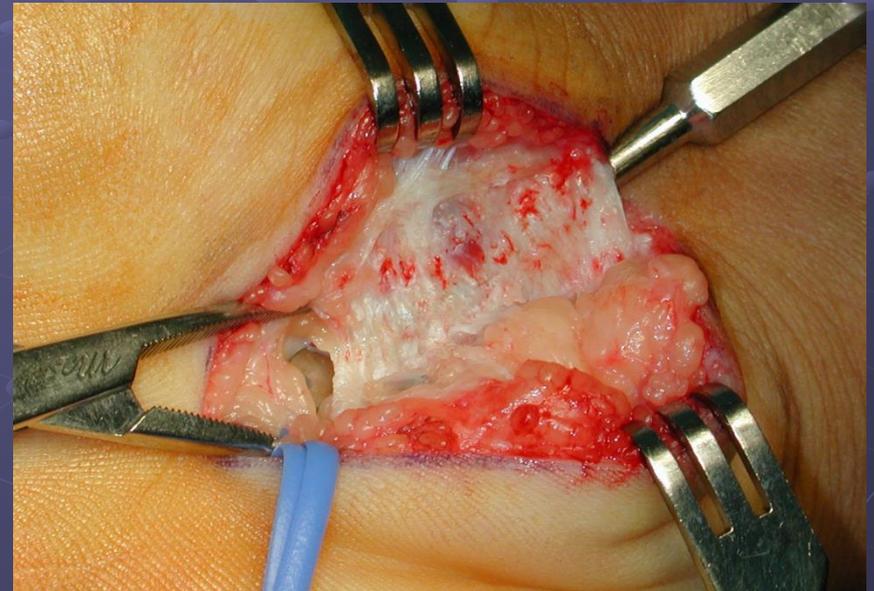
- Sensitive
- Nerve swelling $> 12\text{mm sq}$ diagnostic
- Anatomical variations can be detected

● NCS

- Still useful in some cases
- Considered Gold Standard by many

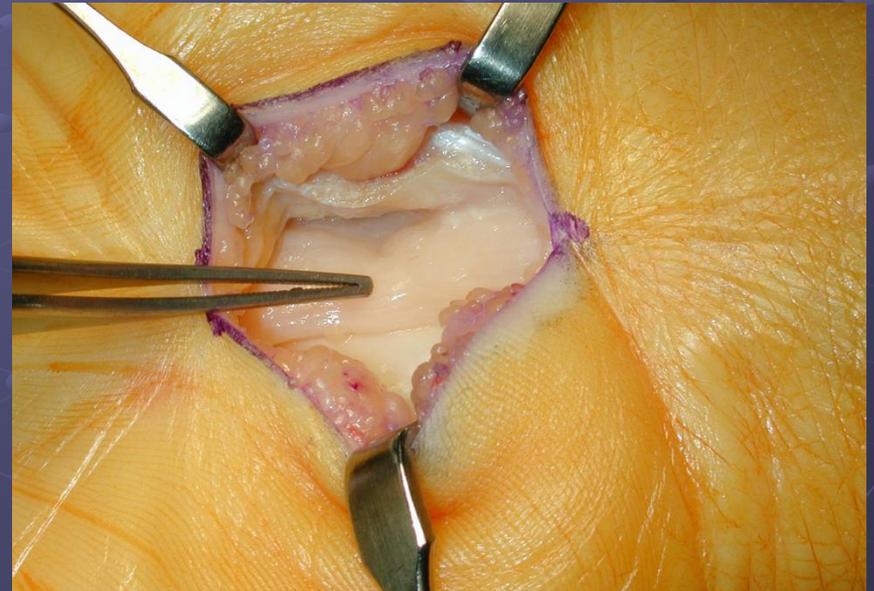
Carpal Tunnel Syndrome - Treatment

- Investigate and treat medical causes
- Splintage (to prevent hyperflexion at wrist particularly at night)
- Steroid injection into the carpal tunnel (therapeutic and diagnostic)



Carpal Tunnel Syndrome - Treatment

- Surgical Treatment = Carpal Tunnel Decompression
- Can be done under local anaesthesia
- Daycase procedure
- Can be done open or endoscopically



My Approach

- If muscle wasting needs CTD
- Severe symptoms and good clinical signs straight to surgery
- Moderate symptoms trial of steroid injections
- Vague or atypical symptoms investigate

Carpal Tunnel Steroid Injection

- Ulnar to palmaris longus
- Distal to proximal wrist crease
- In line with ring finger



Surgery

- LADC Procedure
- Endoscopic CTD falling out of vogue
- Redo procedures require GA
- Repeated recurrence requires vein graft, silicone wrapping procedures

Carpal Tunnel Syndrome

- Outcome usually very good depending on length and severity of symptoms
- Palmar scar settles well with time
- Main post-operative problem is pain in the palm (pillar pain) for 2-3 months

Cubital Tunnel Syndrome

- Cubital Tunnel Syndrome is the second most common nerve compression syndrome
- Common symptoms:
 - Pins and needles
 - Pain
 - Numbness
 - Reduced function

Ulnar Nerve

- Anatomy
- Sensation
- Motor

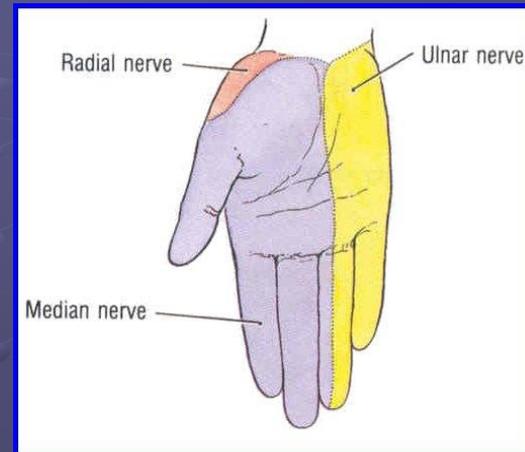
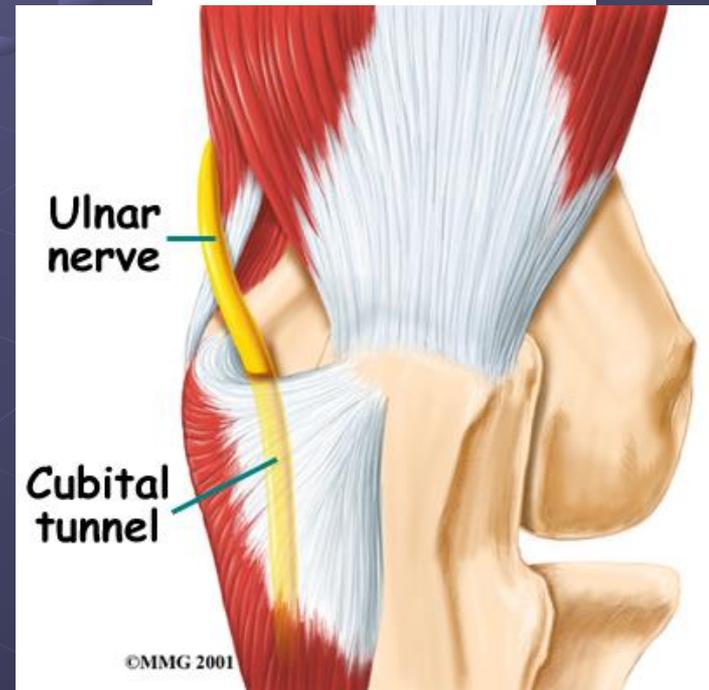
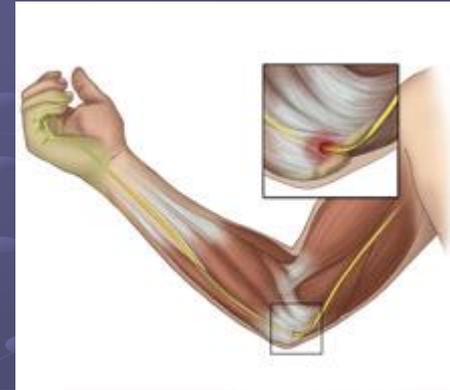


Fig. 55 Ulnar nerve signs (numbness and clawing).

Cubital Tunnel

- Compression of the ulnar nerve within the cubital tunnel around the elbow



Cubital Tunnel Syndrome

- Diagnosis on History and Examination
- Investigations
 - Nerve Conduction Studies
 - Ultrasound Scan

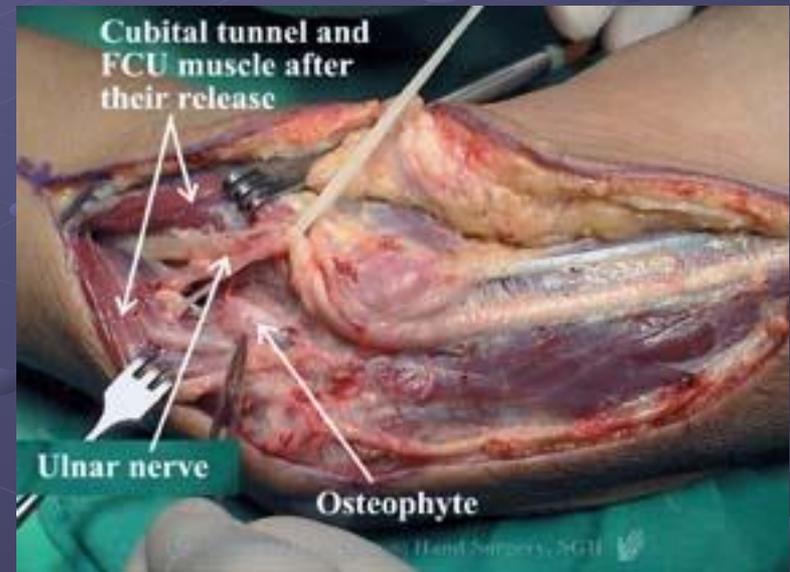
Cubital Tunnel Syndrome - Treatment

- Postural and activity modification
- Splintage and physiotherapy



Cubital Tunnel Syndrome - Surgery

- Surgical decompression – usually performed under General Anaesthetic
- Transposition of nerve
- Other procedures
- Overall good outcome



Dupuytren's Disease

- Overview
- Current Concepts
- Management
- Conclusion (Take home message)



Overview

- Earliest reference in surgical history to contracture of the palmar fascia by Felix Plater of Basel
- Henry Cline first dissected two hands in 1777, proposed palmar fasciotomy as surgical cure in 1787
- Baron Guillaume Dupuytren born in 1777 lectured extensively on the disease
- Dupuytren's Diathesis - Hueston



Dupuytren's Diathesis

- Young patient
- Strong family history
- Radial sided disease
- Extra-palmar disease
- High rate of recurrence
- Significant disability

Summary

Hypoxia

Localised
Ischaemia

Free Radicals

TIMP



Fibrosis



Fibroblast

Cytokines

TGF- β

GM-CSF

PDGF

bFGF

IL-1

TNF α



Persistence in
Dupuytren's

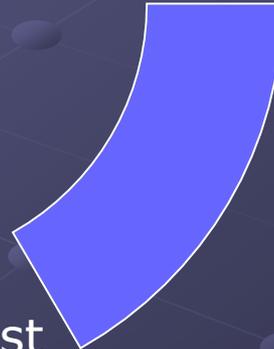
Apoptosis

TGF- β

Genetics

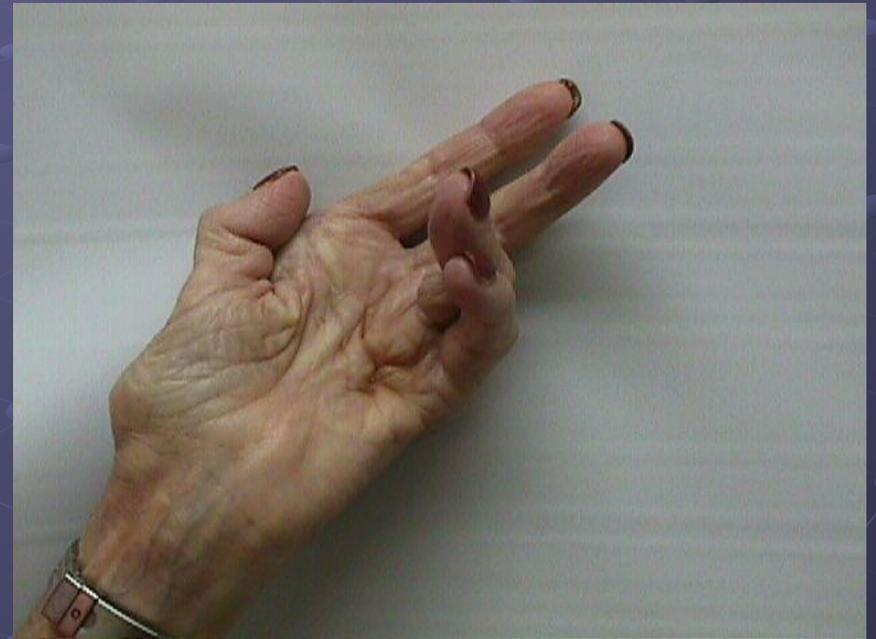


Myofibroblast



Management

- When is intervention indicated?
- What are the treatment options?



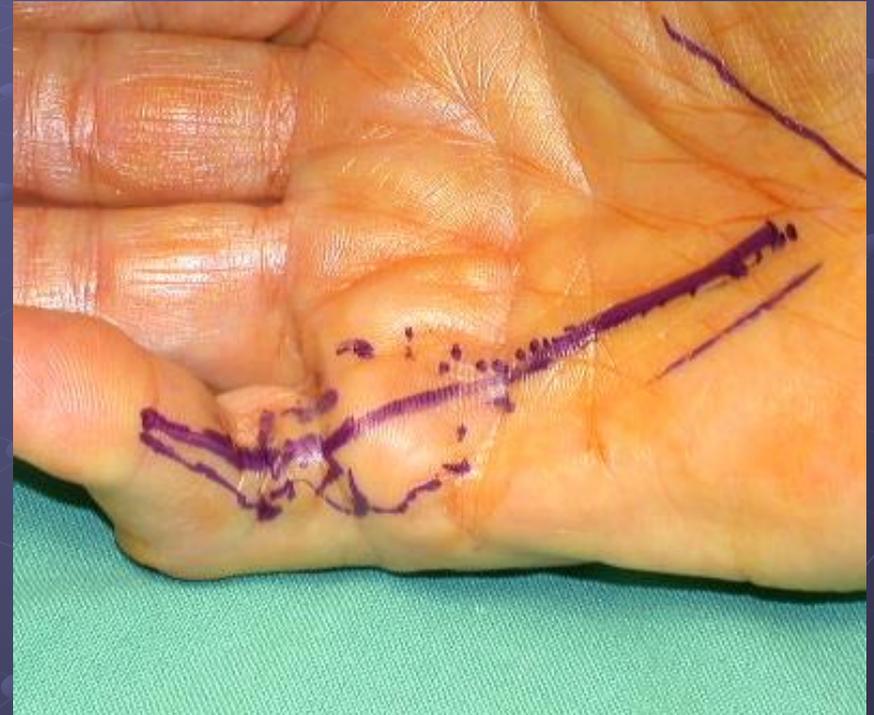
Typical Presentation

● History

- Contractures
- Nodules
- Hands and Feet
- FH, DM, Epilepsy, etc

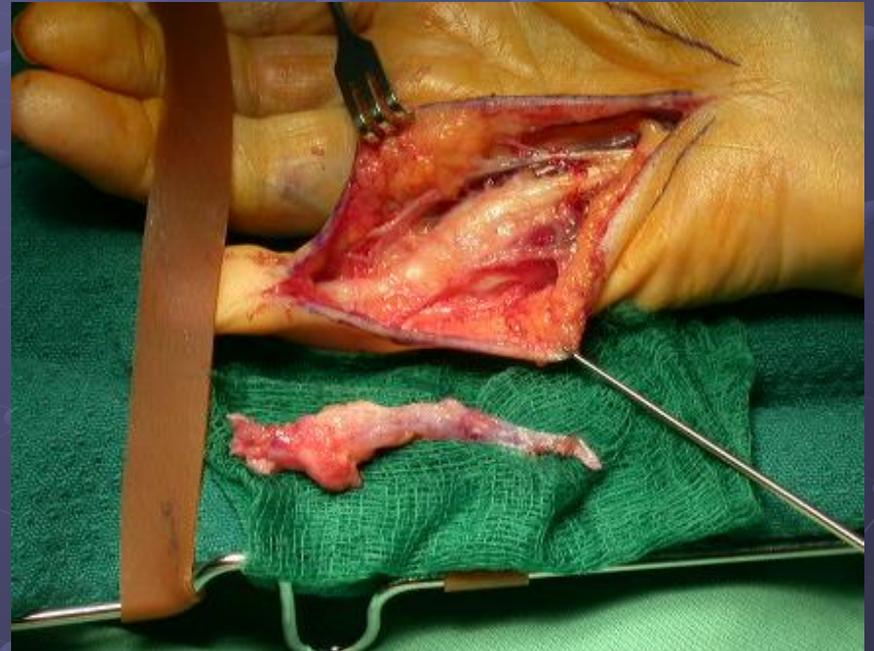
● Examination

- Palms
- Soles
- Other sites



When

- MCPJ contracture $> 30^\circ$ (Table-top test)
- Any PIPJ contracture
- (Painful nodule)



How

● Conservative

- Reassurance
- Splintage
- ?Steroid injections

● Surgical

- Fasciotomy
- Fasciectomy
- Dermofasciectomy
- Collagenase injections



Collagenase - MOA

- ⦿ Collagenase clostridium histolyticum consisting of a purified mixture of 2 collagenases (AUX-I and AUX-II)
- ⦿ Preferential cleavage of fibrillar collagen types (I and III) that characterise Dupuytren's cords
- ⦿ Proven safety and efficacy in a number of multicentre studies (JOINT I and II, CORDLESS)

Collagenase - Administration

- Outpatient procedure in sterile environment
- Injection into Dupuytren's cord
- Return at 24-48 hours for rupture of cord following LA administration
- 50% require post-rupture dressings and splintage



Collagenase - results

- CORDLESS Study – 3 year data (J of Hand Surg Am January 2013)
- 1080 joints treated
- 65% of joints corrected had a durable correction (35% recurrence rate – 27% for MCPJs and 56% for PIPJs)
- 7% required surgical correction

Collagenase - results

- Early results are encouraging
- Complications infrequent but include flexor tendon rupture
- Up to 8 injections safe but patients do develop antibodies (but no allergic reactions so far)

Post-op/Collagenase

- Splintage

- Complications

- Recurrence

Conclusions - Take Home Message

● Surgery is indicated when:

- MCPJ contracture $> 30^\circ$ (Table-top test)
- Any PIPJ contracture
- (Painful nodule)

● High rate of recurrence in Dupuytren's Diathesis

Collagenase – Next Steps

- Will I do it – Yes
- Getting CCGs to commission the procedure
- Cost implications – 1 vial costs £700 therefore expensive treatment and for disease affecting multiple digits surgery is more cost effective

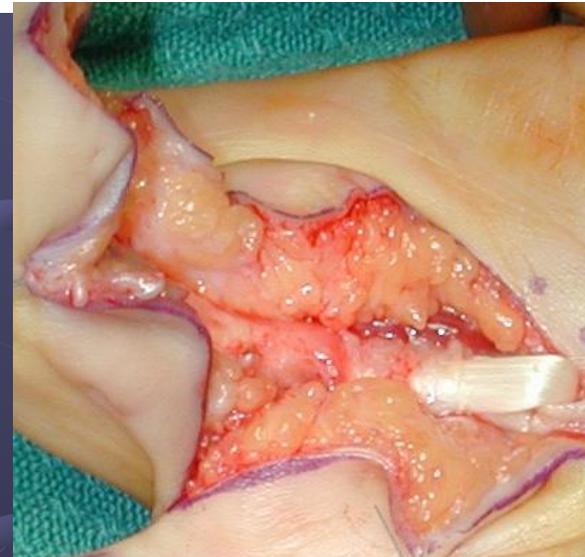
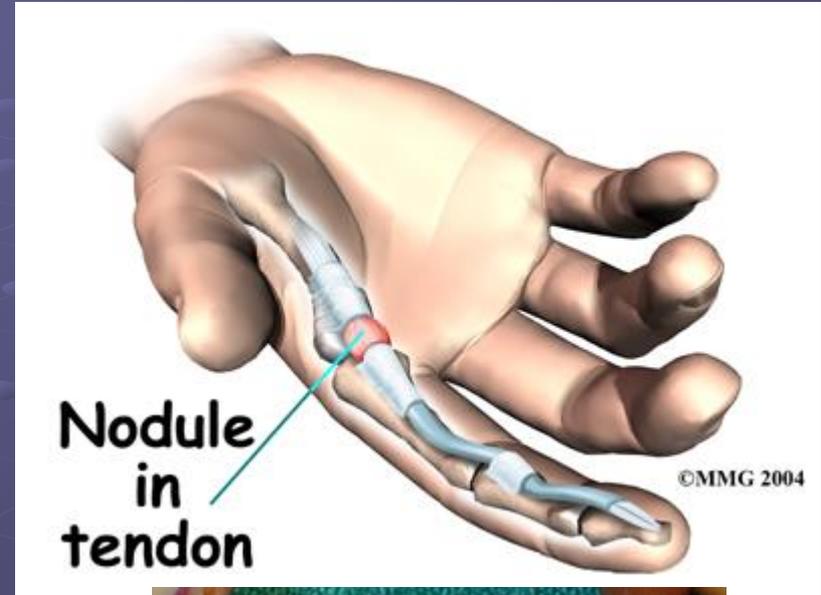
Trigger Finger

● Common symptoms:

- Pain
- Locking
- Clicking
- Reduced function
- Tightness
- Reduced movement
- Stiffness

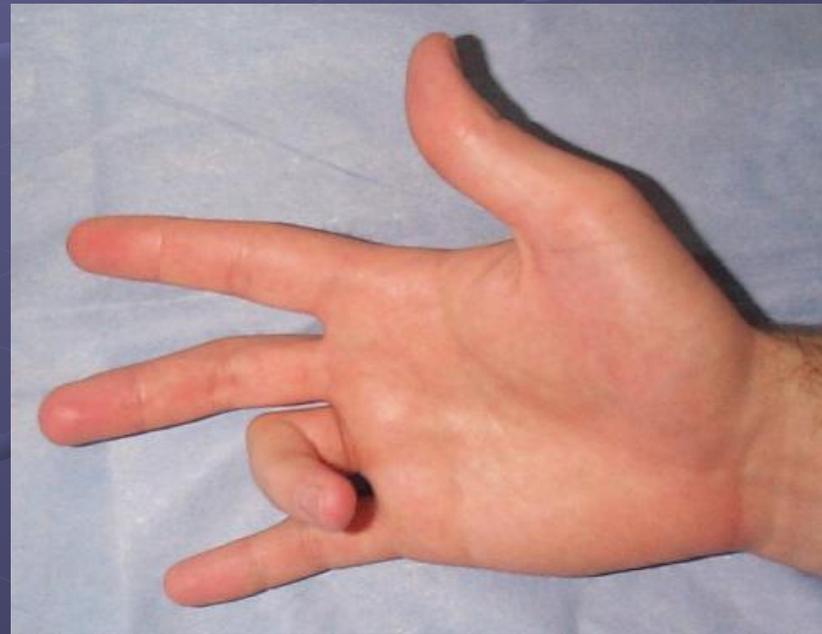
Trigger finger/thumb – What is it?

- Catching of the tendon underneath the tendon pulley
- Can involve any finger or thumb



Trigger Finger

- Diagnose on history and examination
- Investigations
 - US



Trigger Finger – Management

- Management of co-existent medical conditions
- NSAIDS
- Splintage and physiotherapy
- Steroid injections

Trigger Finger Steroid Injections

- Up to 70% cure rate with 2 steroid injections
- Thumb responds better than other digits

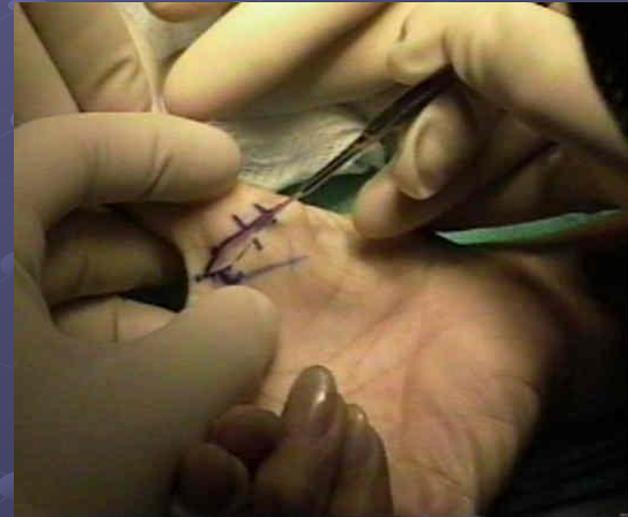
Trigger Finger

- Inject into flexor aspect through MCPJ crease
- Through tendon sheath and withdraw and check not in tendon
- Make sure no resistance to injection



Trigger Finger - Surgery

- Usually performed under local anaesthetic
- Daycase type procedure
- Overall good outcome with very low recurrence rate



Arthritis of the Hand

- OA is the most common disorder of connective tissue affecting the joints in humans
- Insidious, slowly evolving disorder of the articular cartilage occurring over decades, which becomes symptomatic in the 6-9th decades
- Disorder of articular cartilage and subchondral bone

Hand Arthritis

● Clinical Features

- Pain
- Stiffness/ Restriction of movement
- Deformity
- Loss of function
- Intermittent course
- Swelling
- Crepitus
- Late instability

Hand Arthritis

- Caused by a complex interplay of:
 - genetic predisposition
 - hormonal and metabolic influences
 - patterns of joint usage
 - local mechanical stresses
 - Pre-existing joint disease
 - Incidents of cartilage damage
 - AGE

Other Causes of Hand Arthritis

- Rheumatoid Arthritis

- Gout

- Psoriatic Arthritis



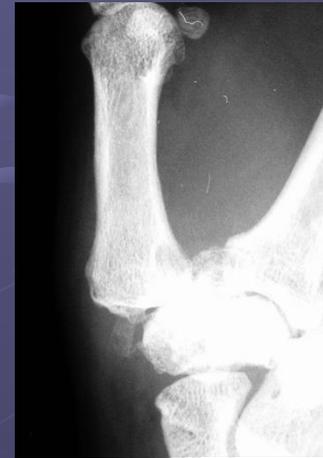
Joint Replacements in the Hand

- History
- Newer Types of Implants
- Thumb CMCJ
- PIP joints
- MCP joints



Thumb base (CMCJ) Osteoarthritis

- CMCJ of thumb is the commonest joint in hand requiring surgery for osteoarthritis (although DIPJ most commonly involved joint overall)
- F>M
- Usually trapeziometacarpal joint but may be pan-trapezial
- Differential diagnosis includes STT joint OA, De Quervain's and radiocarpal OA



CMCJ Osteoarthritis

- Management

- Non-operative

- Activity modification
- Splintage (rigid and soft splints), NSAIDs
- Conservative therapy relieves symptoms in 67% of Eaton I and IIs and 54% of Eaton III and IVs after 6 months
- CMCJ steroid injection

CMCJ Osteoarthritis

- Management

- Operative

- If conservative measures fail
- Options include:
 - Arthrodesis
 - Hemiarthroplasty
 - Silicone spacer
 - Total joint arthroplasty
 - Trapeziectomy +/- suspension procedure



CMCJ Osteoarthritis

- Trapeziectomy +/- suspension procedure
- 90% of patients experience symptomatic relief
- May take 3-6 months for patients to experience benefits from surgery



CMCJ Replacement

- However at recent hand meetings more surgeons reporting better results with newer implants
- Small numbers and significant debate
- Still discussion about what to do for the young patient with CMCJ OA
- Some proponents for CMCJ replacement using a prosthesis that can be salvaged by a trapeziectomy



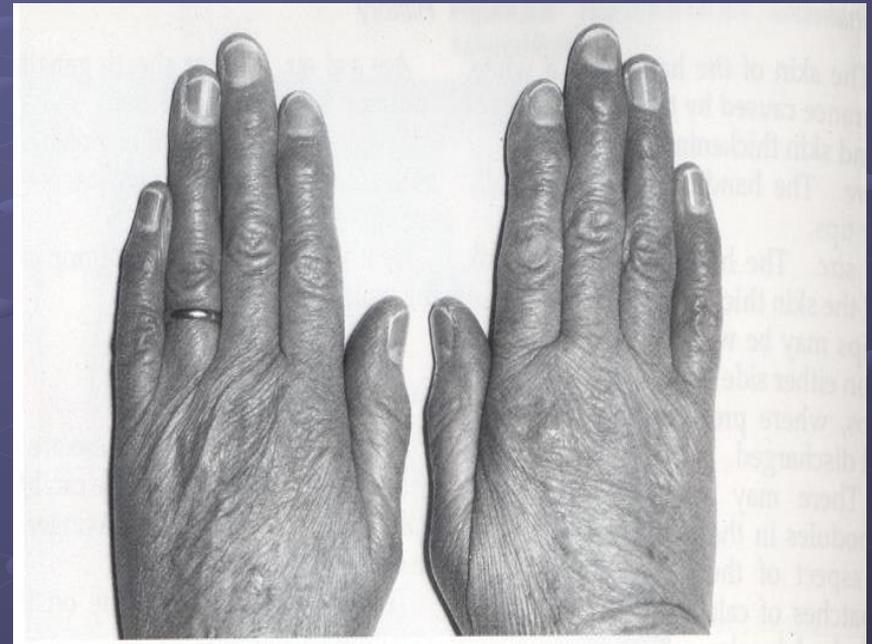
Osteoarthritis of the Hand

● Distal Interphalangeal Joint

- Mucous cyst excision
- Arthrodesis

● Proximal Interphalangeal Joint

- Arthrodesis
- Arthroplasty



Historical Perspective

- Swanson started using silicone arthroplasties for patients with RA in 1962
- Silicone arthroplasty has a well-established role in MCPJ and PIPJ joint replacements in severe RA



Newer Types of Implants

- Improvements in Swanson's original silicone design
- Titanium implants with improved osseointegration
- Pyrocarbon implants with graphite core



Pyrocarbon Implants

- Coated in pyrolytic carbon with mechanical properties between graphite and diamond
- Elastic modulus similar to cortical bone
- Minimal wear or wear debris and no inflammation
- 70% 16 year implant survival



PIPJ Replacement

- PIPJ replacement most commonly performed after OA
- Swanson introduced a constrained PIPJ replacement in 1968
- Evidence emerging for the effective use of pyrocarbon implants in PIPJ replacement (Beckenbaugh J of Hand Surg Am 2007; McGuire J of Hand Surg Eu July 2012)



MCPJ Replacement

- Swanson established the role for MCPJ replacement in RA – remains procedure of choice due to the nature of the disease and its impact on the soft tissue supporting the joint
- Emerging evidence that pyrocarbon implants have a role in MCPJ replacement in OA and selected cases of RA (Beckenbaugh J of Hand Surgery Dec 2007)



Questions

