

HAND SURGERY, THERAPY AND RHEUMATOLOGY

- THE INTERFACE



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The Interface

Team Work

- ⦿ Rheumatologist
- ⦿ Hand Surgeon
- ⦿ Hand Therapist
- ⦿ Radiologist
- ⦿ Psychologist
- ⦿ The Patient!



The Interface

◎ What is Hand Therapy?

- Undergraduate training in Occupational Therapy or Physiotherapy
- Postgraduate training in Hand and Upper Limb Rehabilitation, Master of Science (Hand Therapy)
- Hospital based work
- Associated with Plastics, Orthopaedics, Rheumatology clinics
- Private practice (generally associated with a Hand Surgeon)



The Interface

◎ What is Hand Surgery?



PRINCIPALS

Painfree anaesthesia

Minimally invasive incisions

Consideration of Anatomy and
Pathological processes

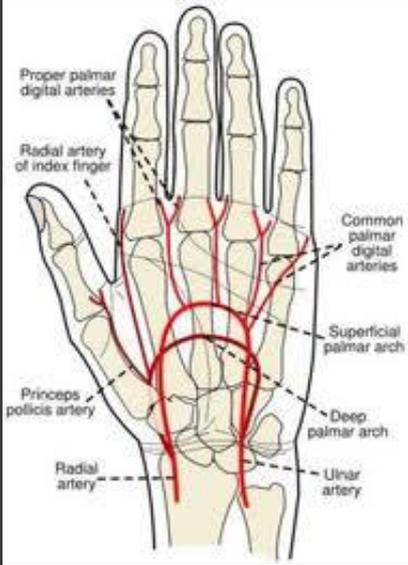
Early Protected Mobilisation

Troublefree recovery

Manage patients expectations

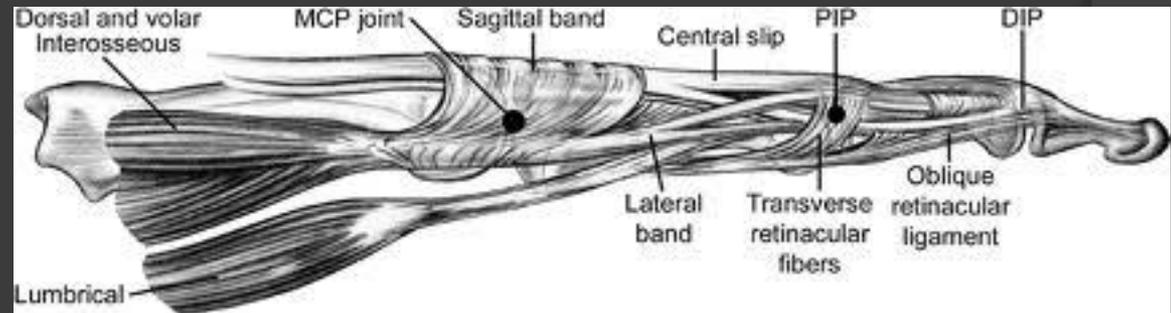
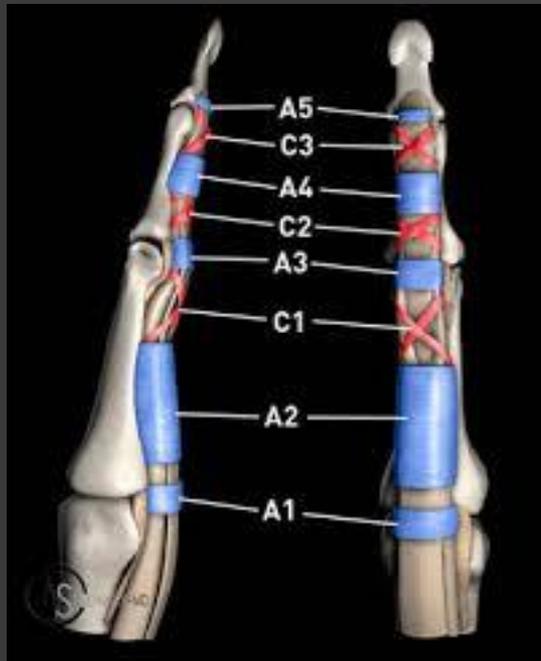
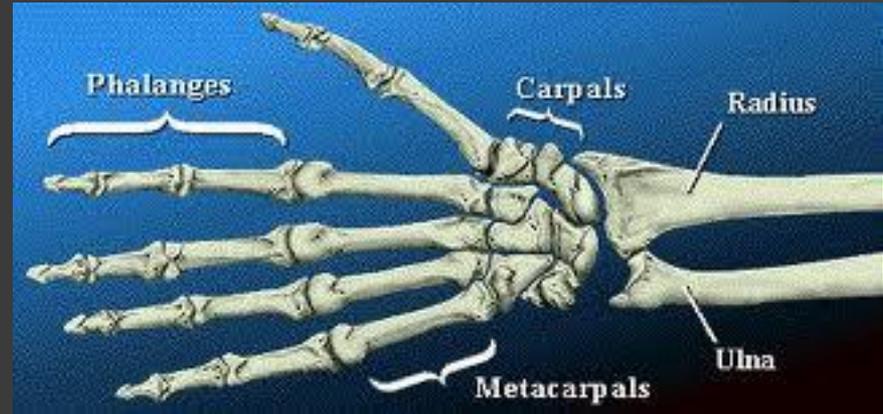
The Interface

ANATOMY



The Interface

ANATOMY



The Interface Overview

Common conditions referred to Hand Therapists and Hand Surgeons by Rheumatologists

- Rheumatoid arthritis
 - MCP joints*
 - PIP joints*
 - Thumb*
- OA *CMC joint*
 - IP joints*
- DIP ganglions
- Scleroderma
- Tenosynovitis- *Trigger finger / thumb / De Quervains*
- Carpal Tunnel Syndrome
- Dupuytren's disease

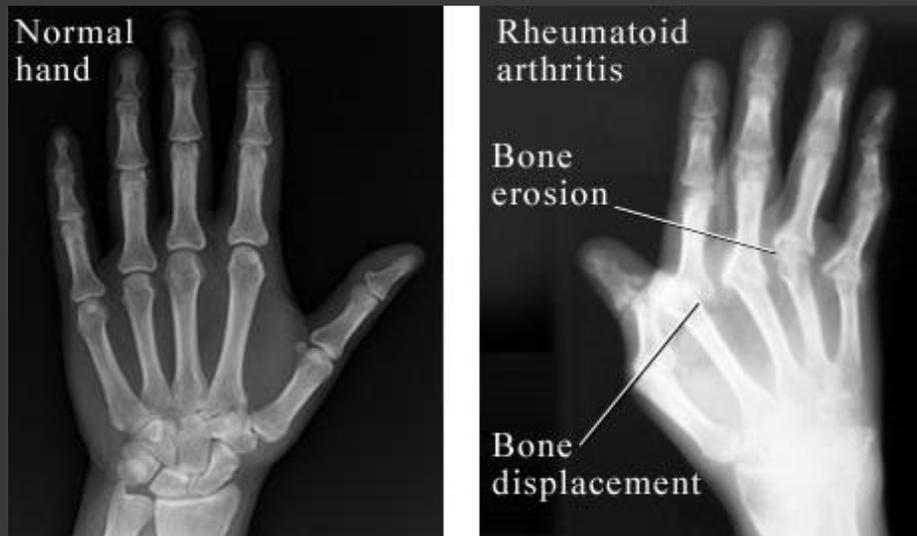


The Interface

RHEUMATOID ARTHRITIS

Assessment

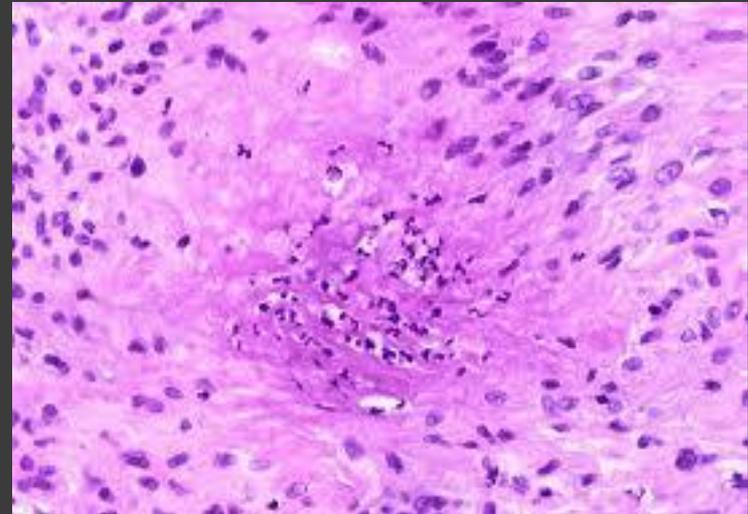
- Clinical
- Serological
- Radiological
- Functional



The Interface

RHEUMATOID ARTHRITIS

Soft Tissues- Nodules



The Interface

RHEUMATOID ARTHRITIS

Flexor Tendons

- Carpal Tunnel Syndrome
- Flexor Tendon rupture



The Interface

RHEUMATOID ARTHRITIS

Extensor Tendons

- Wrist
- Rupture



The Interface

RHEUMATOID ARTHRITIS

Extensor Tendons



The Interface

RHEUMATOID ARTHRITIS

Extensor Tendons

- Rupture
- Tendon Subluxation



The Interface

RHEUMATOID ARTHRITIS

Joints

- MP

Ulnar Drift Deformity

Palmar Subluxation

Weak Grip and Pinch



The Interface

RHEUMATOID ARTHRITIS

Joints

- MP- Synovitis-destruction-replacement



The Interface

RHEUMATOID ARTHRITIS

Joints

- MP replacement

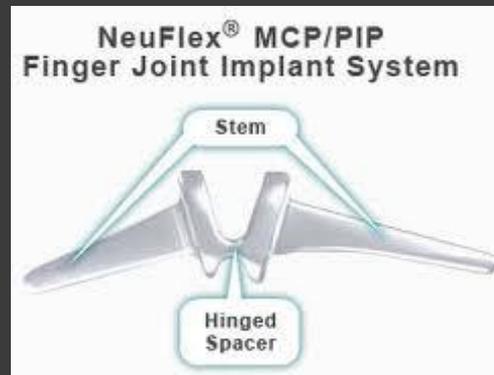


The Interface

RHEUMATOID ARTHRITIS

Joints

- MP replacement



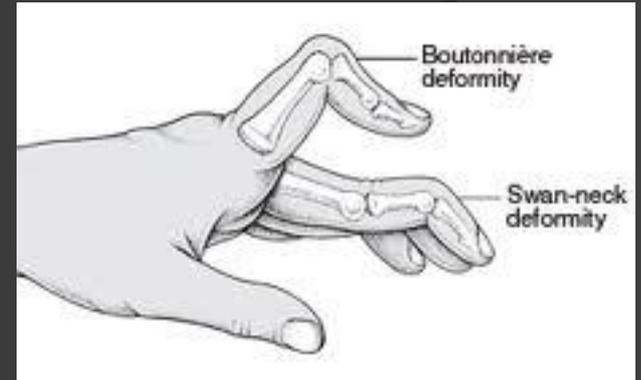
The Interface

RHEUMATOID ARTHRITIS

Joints

PIP – Boutonniere

- Soft tissue rebalance/fusion



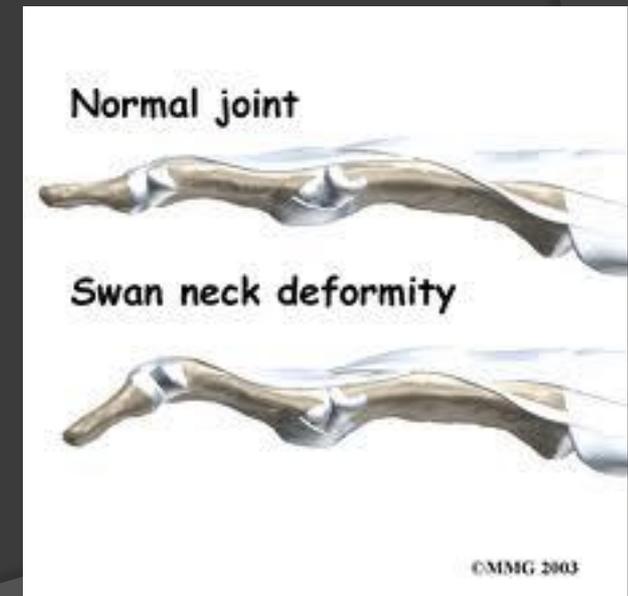
The Interface

RHEUMATOID ARTHRITIS

Joints

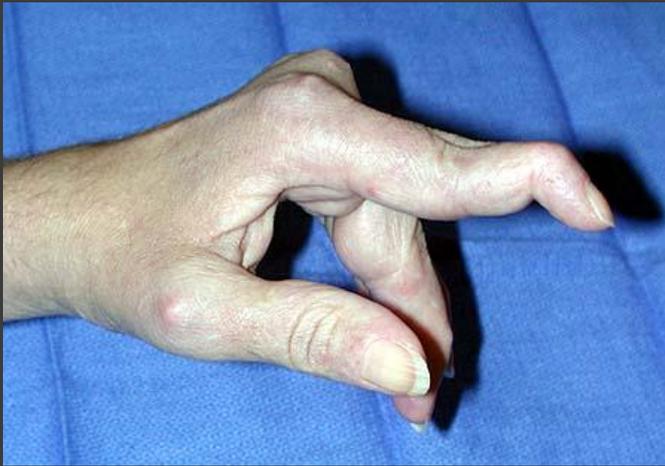
PIP and DIP – Swan neck

- Soft tissue rebalance/fusion



The Interface

Swan neck deformities



Boutonniere deformities



The interface - Rheumatoid thumb

Classification	Primary site of joint deformity	Deformity	Splint
Type 1 (Boutonniere)	MCP joint	MCP flexed IP hyperextended	Custom made thumb MCP joint extension immobilisation splint
Type 2	CMC joint	CMC flexed and adducted MCP flexed IP hyperextended	CMC and MCP extension immobilisation splint
Type 3 (Swan neck)	CMC joint	CMC subluxed, flexed and adducted MCP hyperextended IP flexed	CMC immobilisation splint with block to prevent MCP joint hyperextension
Type 4 (Gamekeeper's)	MCP joint	Laxity of UCL	MCP joint immobilisation splint
Type 5	MCP joint	MCP hyperextended IP joint flexed	Extension restriction splint
Type 6	General	Bone loss and loss of joint stability	CMC, MCP and IP splint as indicated

The Interface

RHEUMATOID ARTHRITIS

Thumb



The Interface

SPLINTS



The interface - RA

Conservative

- Splinting
- Education (joint protection)
- Heat (hot packs / wax baths)
- Gentle range of motion



The Interface - Treatment of RA

Splinting

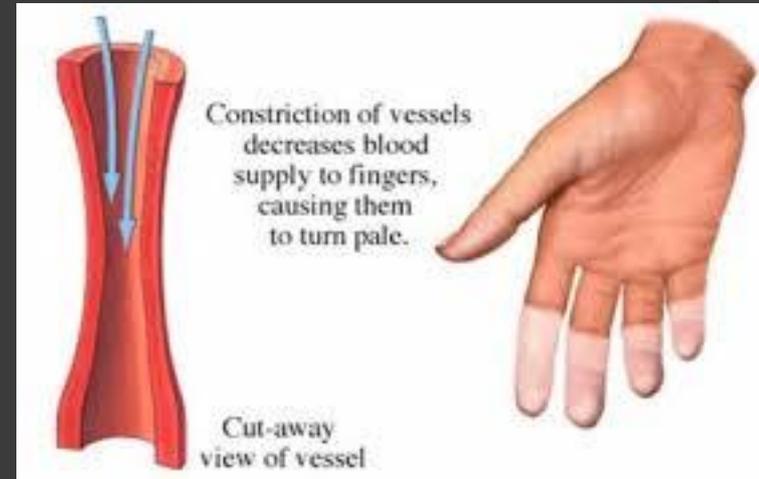
- ⦿ Anti-deformity Splints
- ⦿ Night resting splints



The Interface

VASCULAR

- Scleroderma
- Raynauds



The Interface

Scleroderma

- ◎ Skin care
- ◎ Hand and nail care
- ◎ Protection from heat and cold
 - Raynaud's phenomenon
- ◎ Housework and activities
- ◎ Exercises
- ◎ Splints



The Interface

PSORIATIC ARTHRITIS



The Interface

GOUT



The Interface

OSTEOARTHRITIS

- ⦿ Joints - CMC
- ⦿ Joints - MP
- ⦿ Joints - PIP
- ⦿ Joints - DIP



The Interface

● 1st CMC OA



The Interface

1st CMC OA



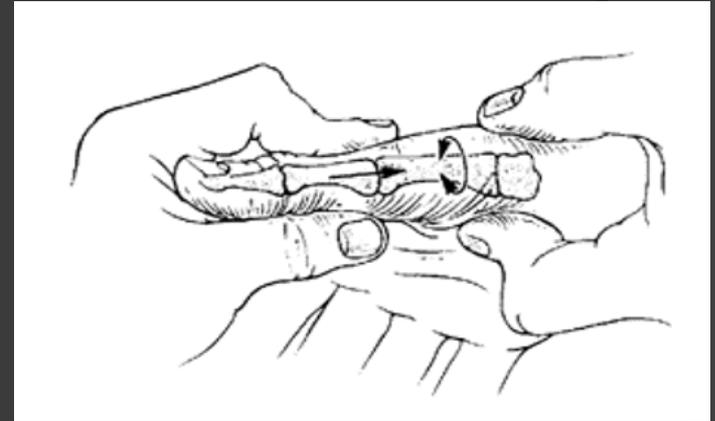
The Interface - Signs of thumb base OA

- Deformity
- Tenderness
- Stiffness
- Swelling
- Weak pinch and grip
- Poor function



The interface- CMC Assessment

- X-rays
- Reported history of pain and function
- Clinical assessment (palpation and grind test)
- Lateral pinch strength assessment



The Interface

Eaton Radiological Classification

- ◎ Stage 1 almost normal
- ◎ Stage 2 decreased Jt space
Osteophyte < 2mm
- ◎ Stage 3 Subluxation > 1/3
Osteophyte > 2mm
- ◎ Stage 4 ST/TT / IFcmc



The Interface – 1st CMC

Conservative management - Splinting



The Interface

1st CMC OA

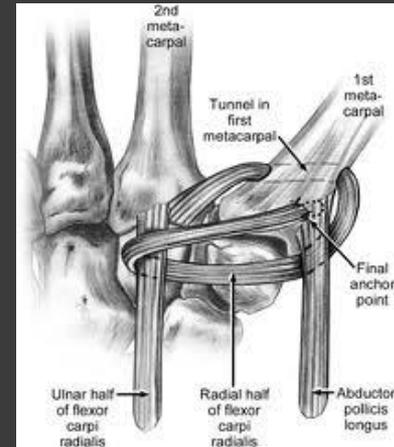
- Splinting
- Education (joint protection)
- Heat (hot pack / wax baths)
- Gentle range of motion
- Steroid Injection
- Surgery



The Interface

CMC joint surgical procedures

- ⦿ Ligament Reconstruction (LR)
- ⦿ MC osteotomy
- ⦿ CMC joint arthrodesis
- ⦿ Denervation
- ⦿ CMC joint replacement
- ⦿ Trapeziectomy +/- LR or TI or LRTI
- ⦿ Trapeziectomy (complete/partial) + interpositional arthroplasty



The Interface - Interposition Materials

Biological (Autograft / Allograft)

- FCR / PL
- Costochondral interposition graft
- Fascia Lata / Graft jacket (acellular dermis)

Prosthetic Material

- Silicone rubber button
- Gelfoam
- Gortex
- Polypropylene (Marlex)
- Polyurethane Urea (Artelon)
- Pyrocarbon- Ascension PyroDisk

-Tornier Pyrocardan

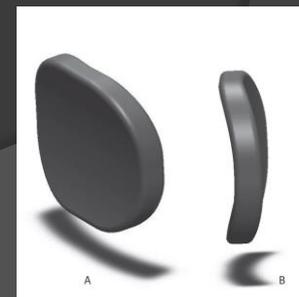
Artelon



PyroDisk



Pyrocardan



The Interface

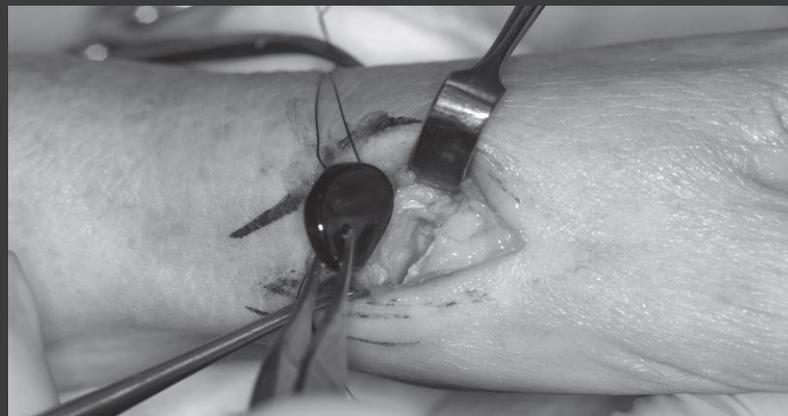
Pyrocardan CMC Interposition Implant

Indications

- Stage 1,2 and early 3 CMC OA (Eaton Classification)

Benefits

- Short term- Minimally invasive and short recovery period
- Trapezium preserving, offers greater salvage opportunities
- ?Long Term results



The Interface

Partial trapeziectomy and interposition with the Pyrocardan CMC joint implant.

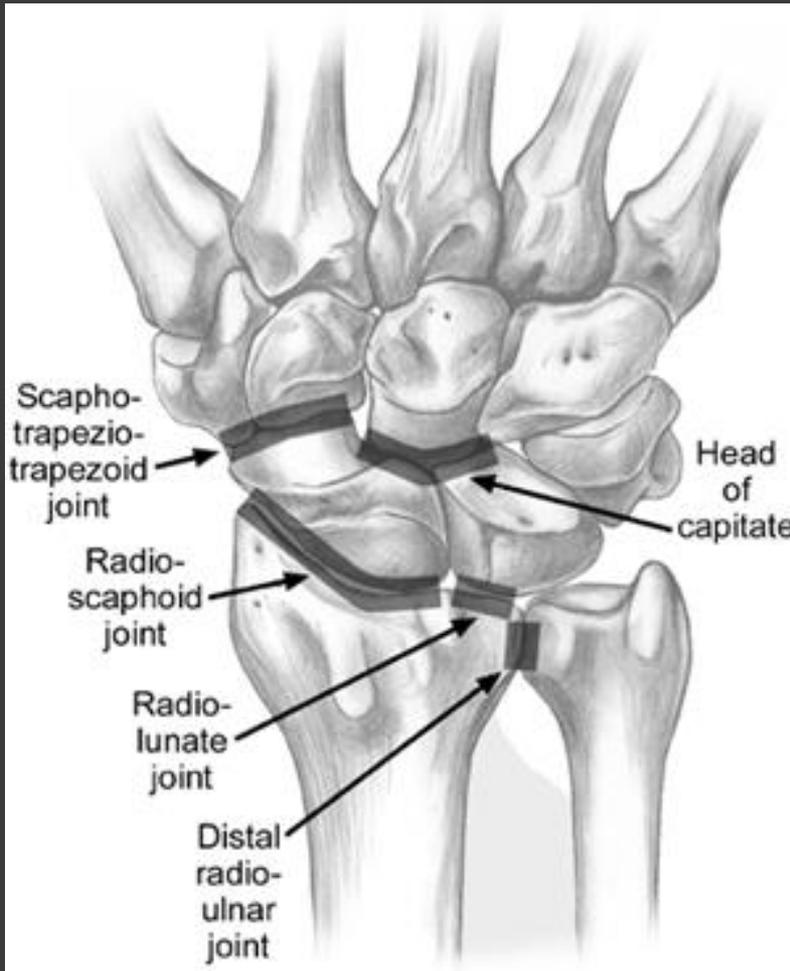
Pain/function score improved

Good overall satisfaction with procedure

Pinch strength comparable to traditional procedures

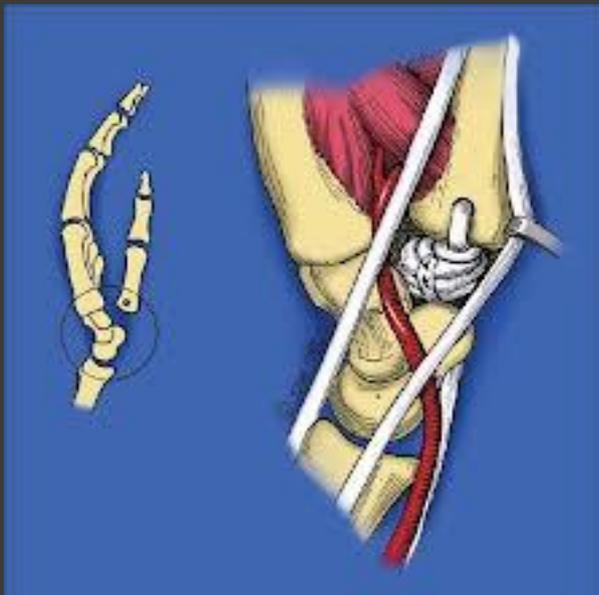


The Interface - STT joint OA



STT osteoarthritis

The Interface - PAN TRAPEZIAL OA



Trapeziectomy alone

Trapeziectomy + tendon interposition

Trapeziectomy + Suspension (APL or FCR)

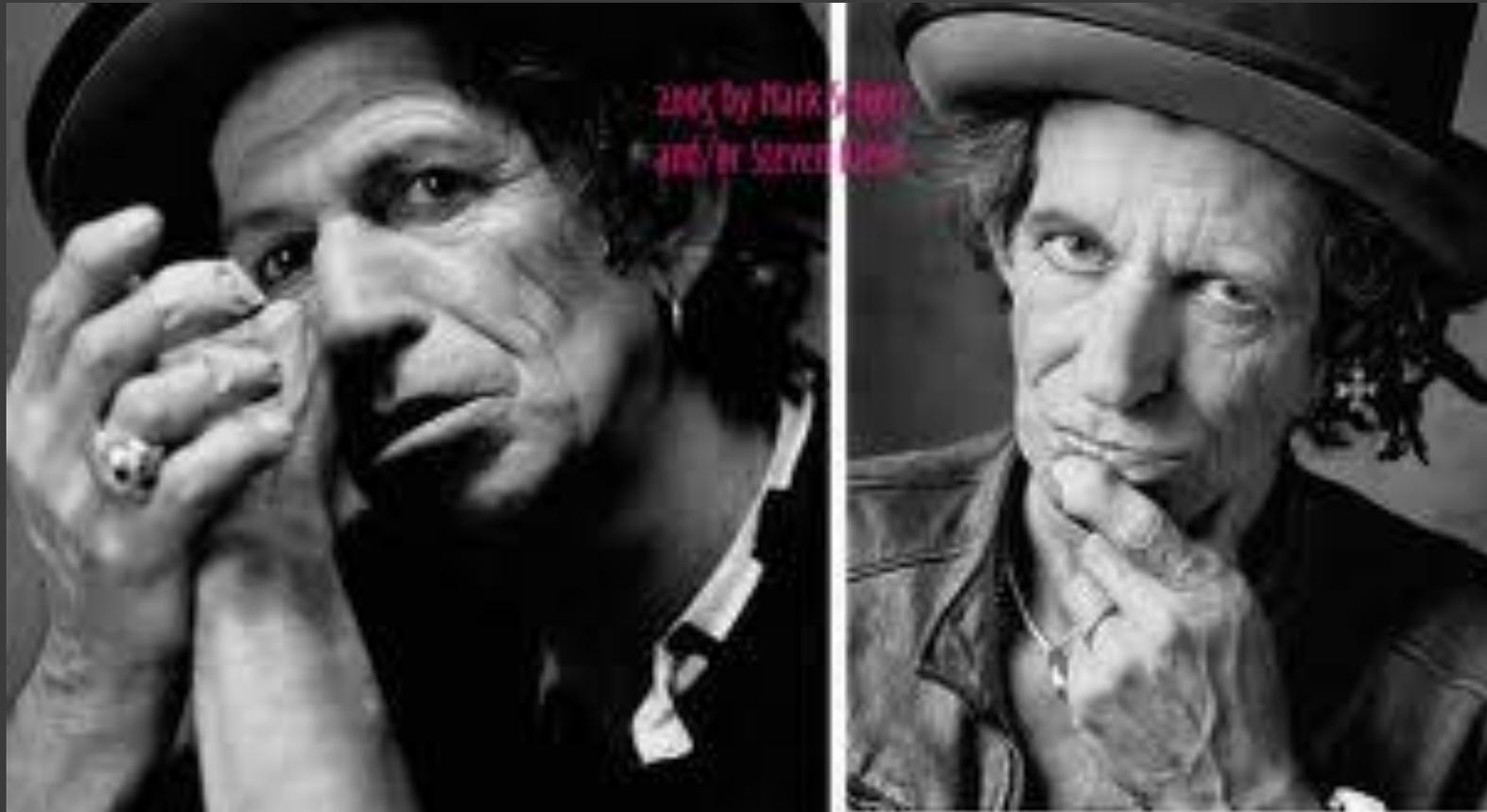
Results – Excellent Pain Relief
- Very Good Movement
- Good Functional strength

The Interface

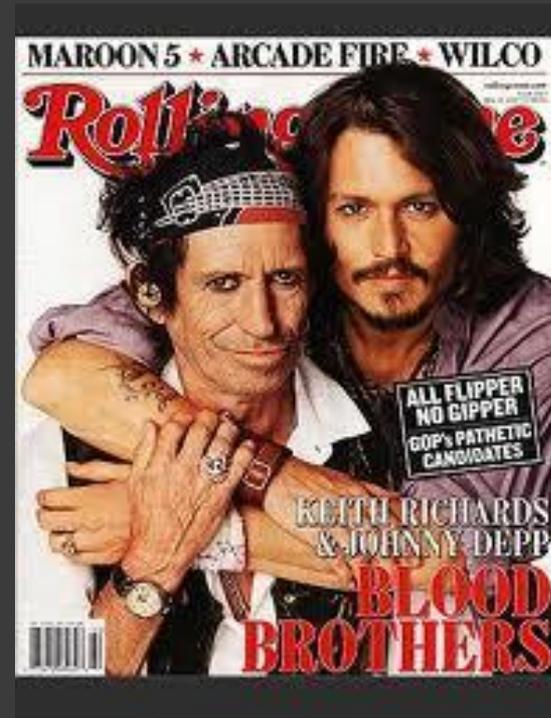


Andrew Cavallo and Jennifer Mathias Elgar Hill Plastic and
Hand Clinic

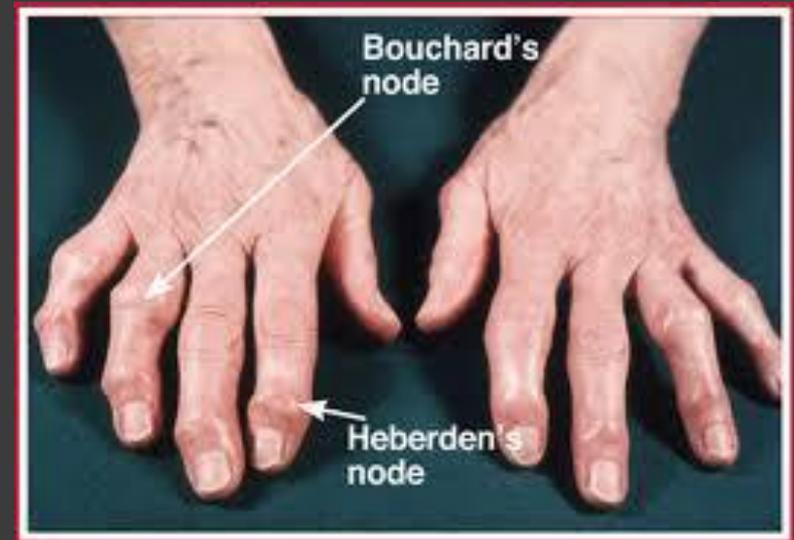
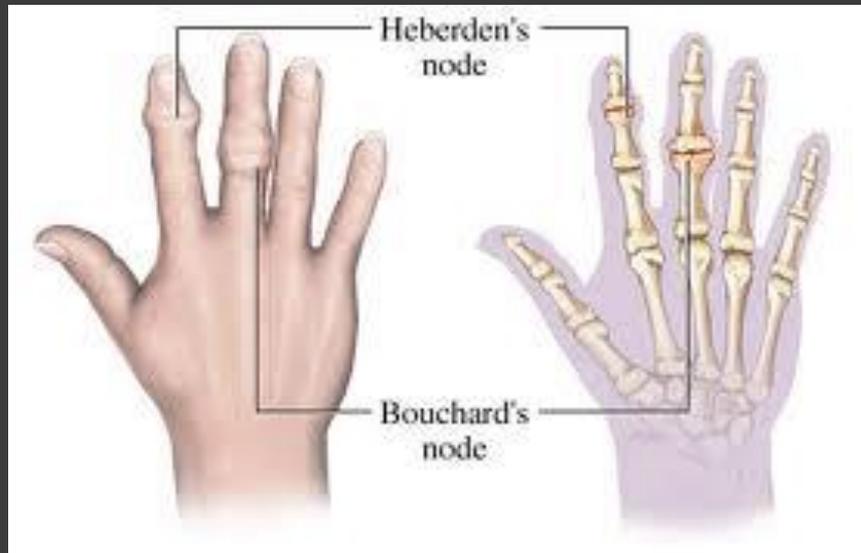
The Interface



The Interface



The Interface



PIP OA



The Interface

GANGLIONS in OA

● PIP (Dorsal)



The Interface – Signs of DIP joint OA

- Pain and swelling
- Enlargement
- deformity
- instability
- Heberden's nodes
- mucoid cysts



The Interface – Signs of DIP joint OA

DIP Fusion

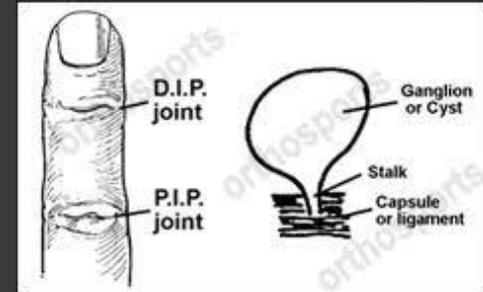
- Severe Pain
- Deformity
- Instability



The Interface

GANGLIONS in OA

● DIP (Mucoïd)

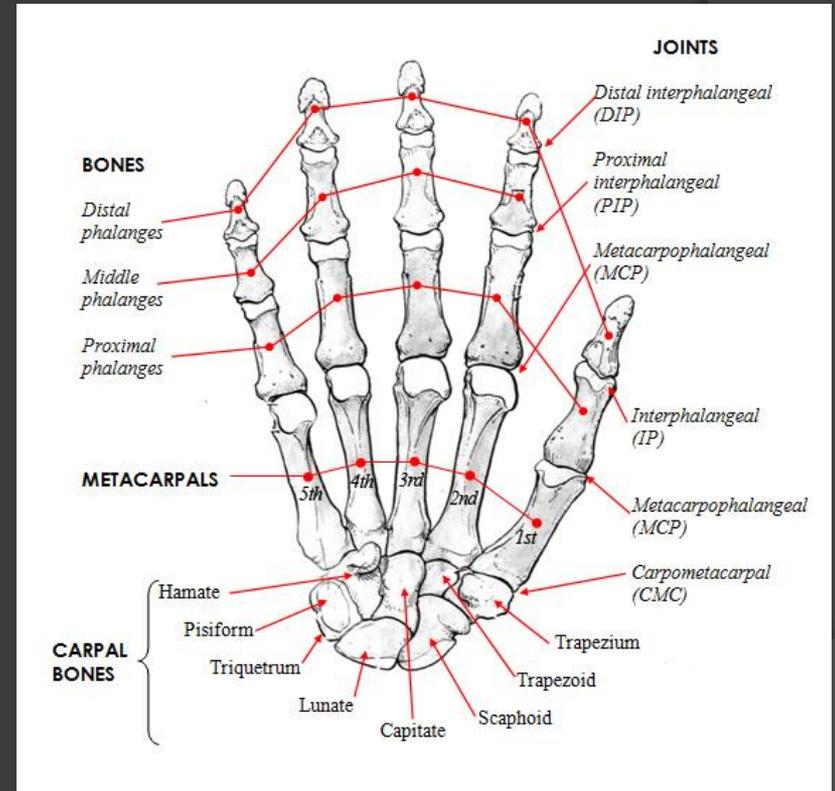


The Interface

Post Traumatic Arthritis

Digits

- ⦿ Joints –DIP
- ⦿ Joints – PIP
- ⦿ Joints – MP
- ⦿ Joints- CMC



The Interface

Post Traumatic Arthritis

Digits

- ⦿ Joints –DIP
- ⦿ Joints – PIP
- ⦿ Joints – MP
- ⦿ Joints- CMC



The Interface

Post Traumatic Arthritis

PIP Replacement



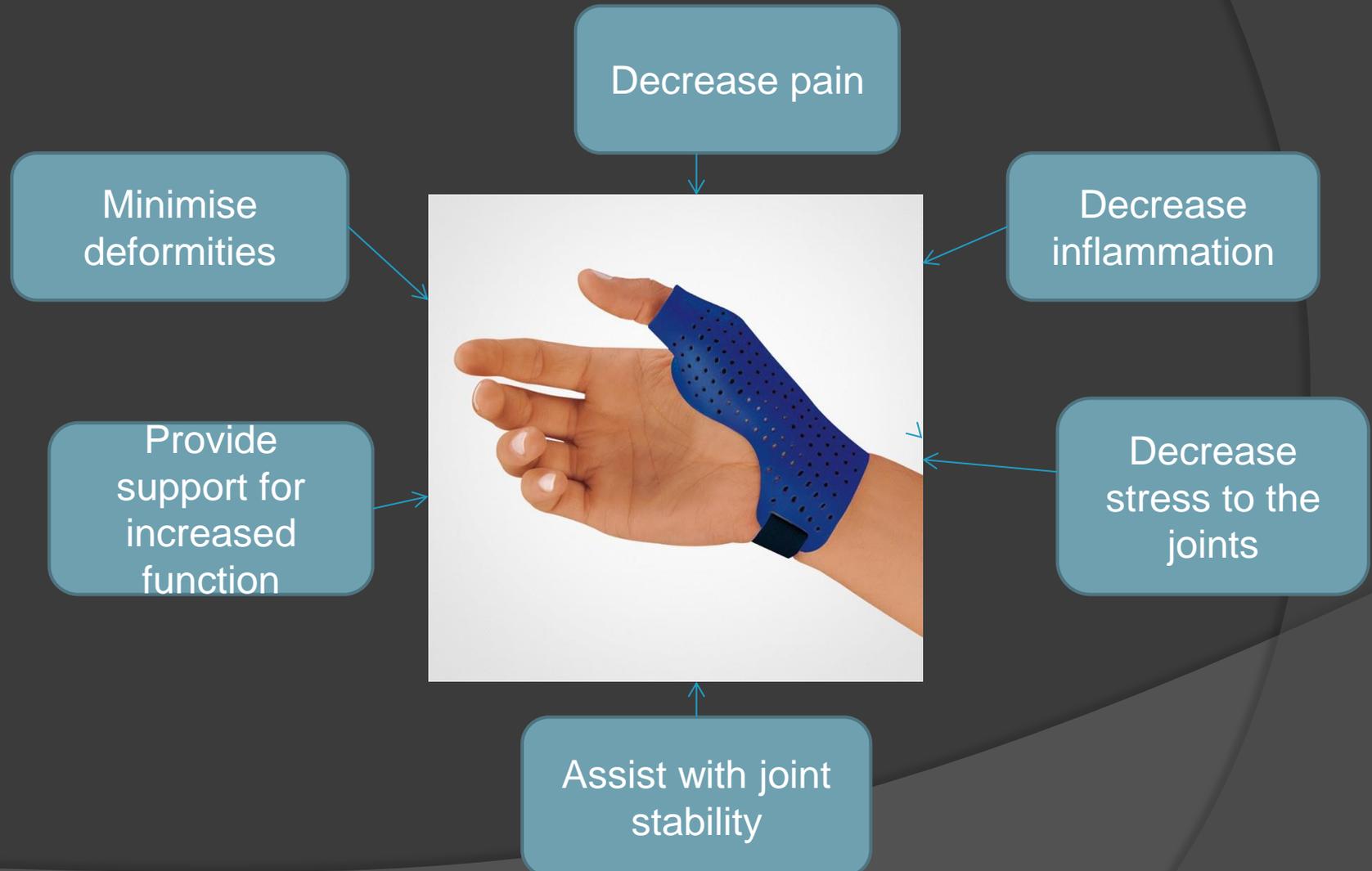
The Interface - IP Joint OA management

Conservative

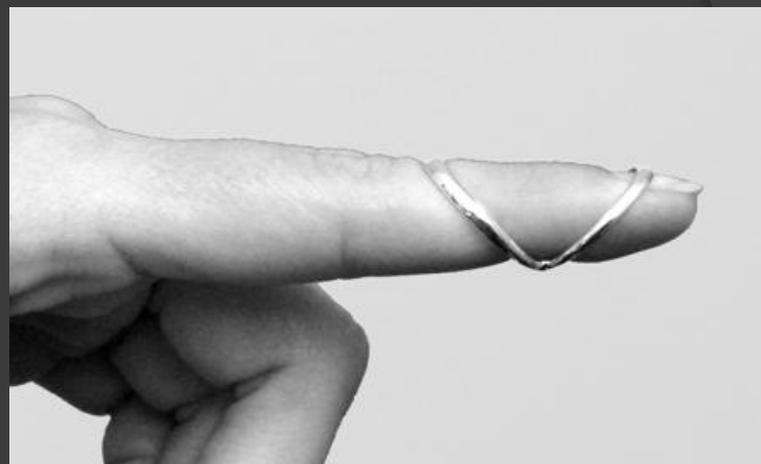
- Splinting
- Education (joint protection)
- Heat (hot packs / wax baths)
- Gentle range of motion



The Interface - Splinting for OA and RA

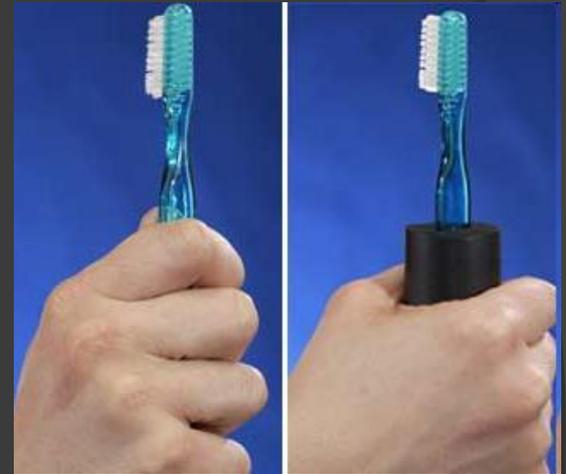


The Interface - Splints



The Interface - Joint Protection Principles

- Rest
- Spread the strain
 - use more joints to do work
 - use larger joints to do work
- Avoid gripping narrow and small objects
- Avoid deforming positions (RA)
- Energy Conservation



Incorrect



Correct

Joint Protection Principles

Activity Of Daily Living (ADL) Devices



Incorrect



Correct



Joint protection

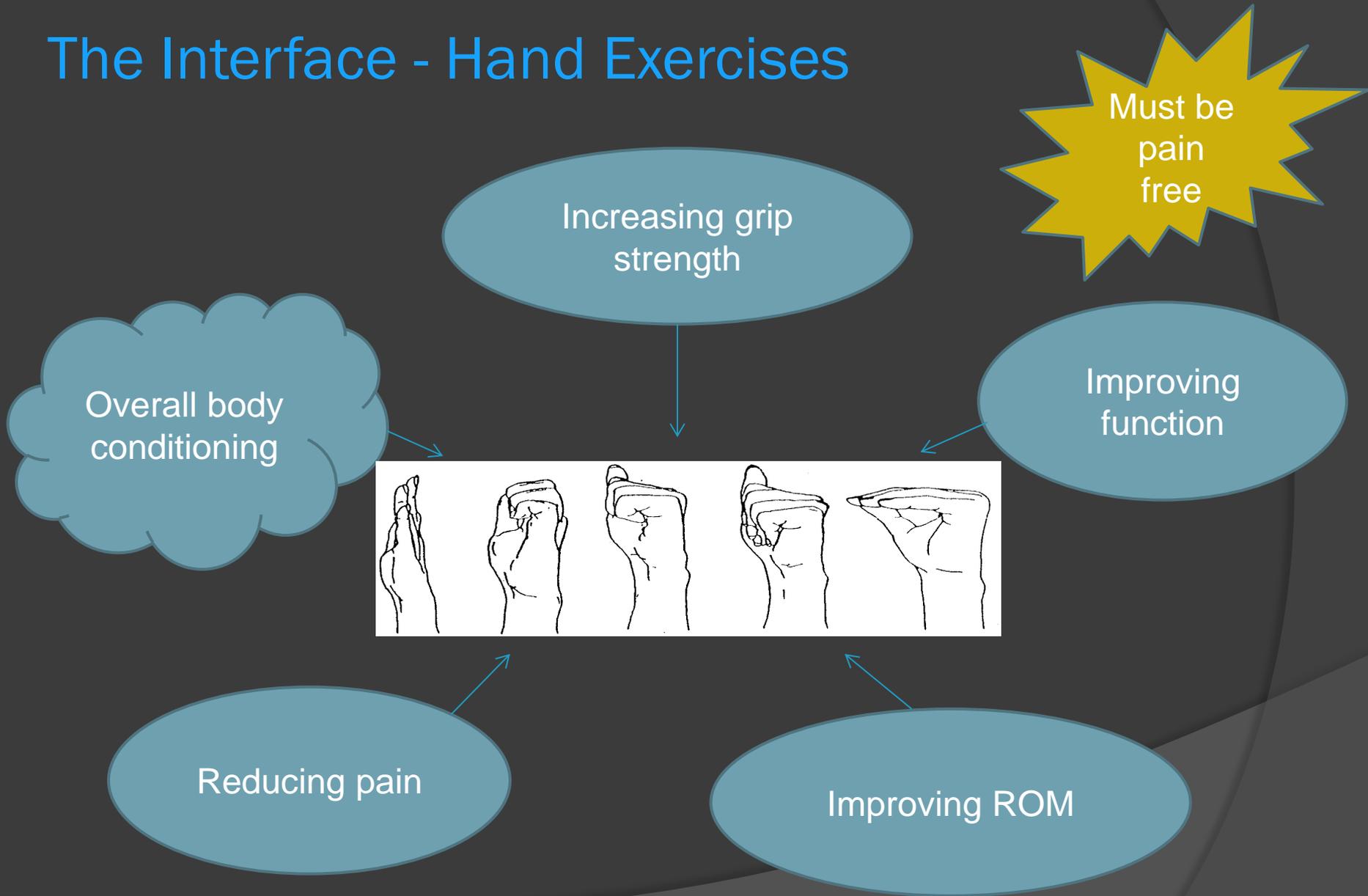
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graph TD; A[Joint protection] --> B[Pain free exercises]; B --> C[Splinting]; C --> D[Increased Function];
```

Pain free exercises

Splinting

Increased Function

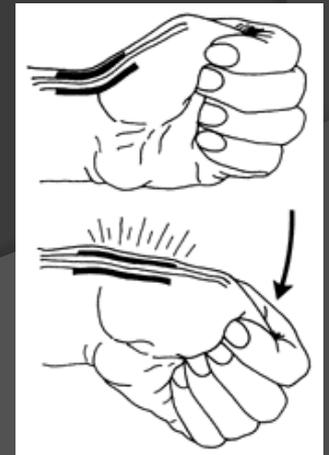
The Interface - Hand Exercises



The Interface

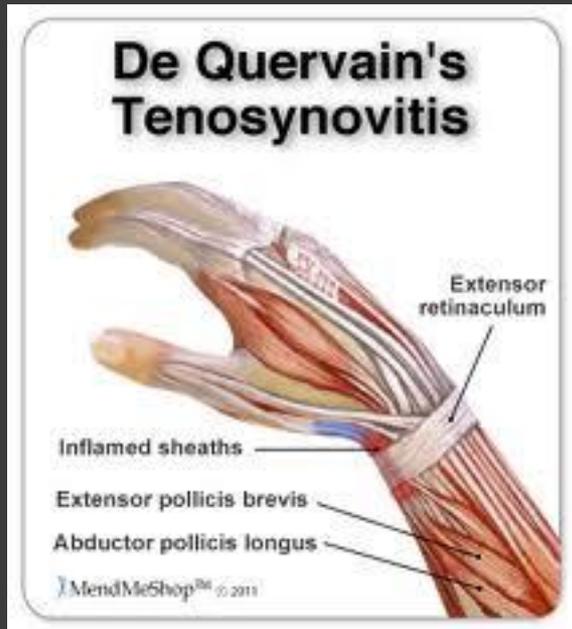
De Quervain's Tenosynovitis

- Compression of the APL and EPB within the 1st dorsal compartment
- **Finklestein's test** - ulnar deviation of the wrist with the thumb adducted



The Interface

DEQUERVAIN'S TENOSYNOVITIS



The Interface

De Quervain's Tenosynovitis

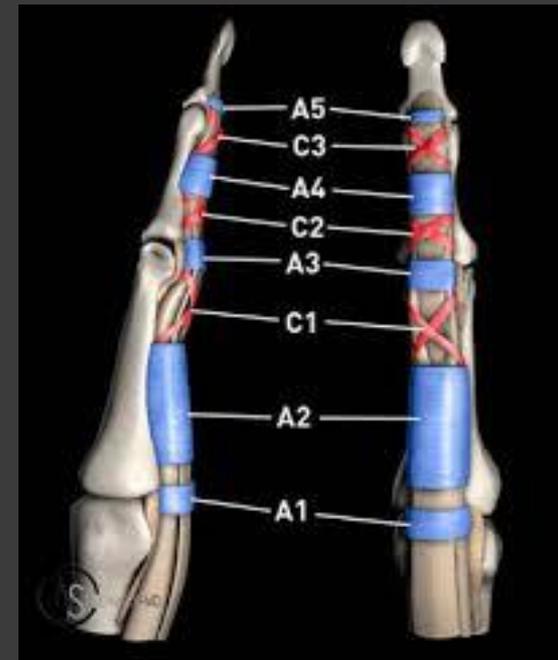
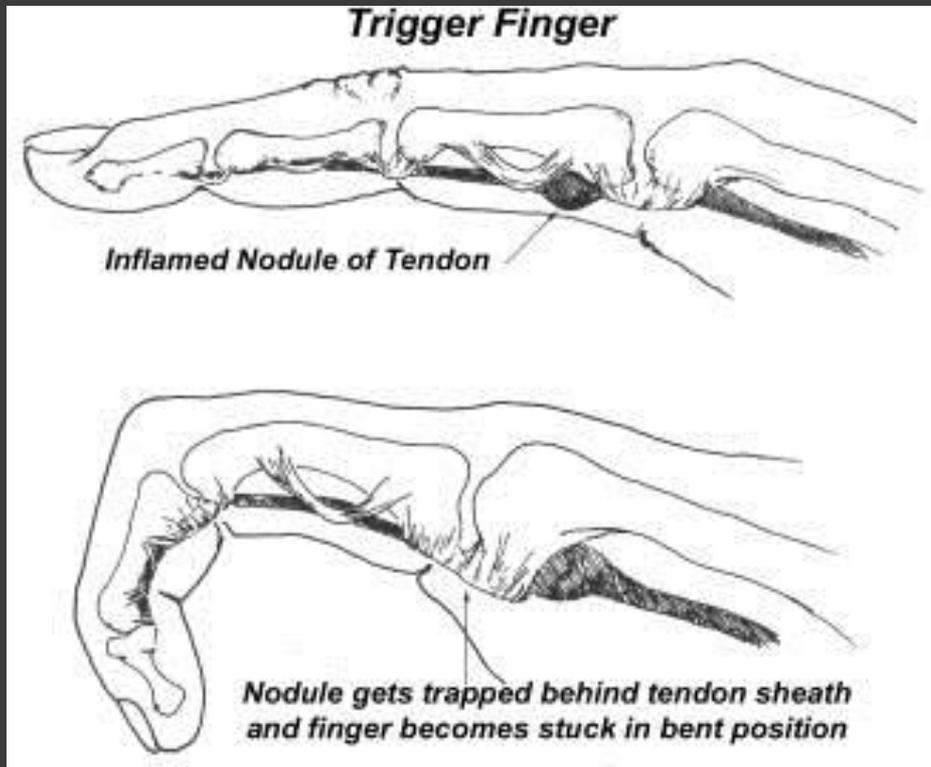
Treatment

- ⦿ Splinting
- ⦿ Cortisone injection
- ⦿ Iontophoresis with dexamethasone
- ⦿ Surgery



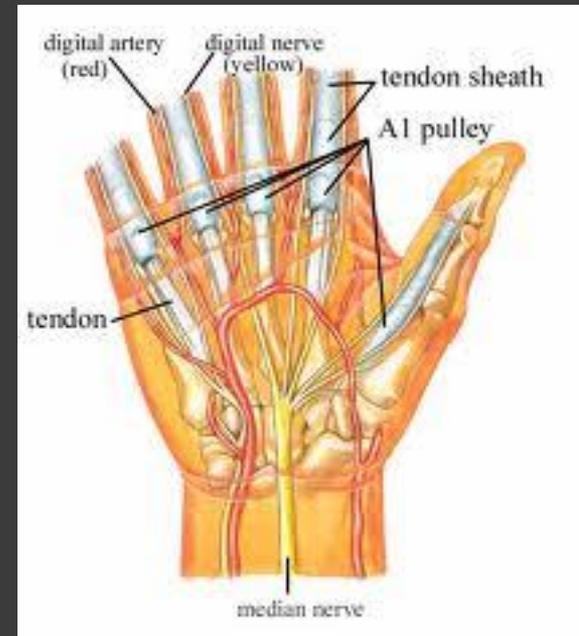
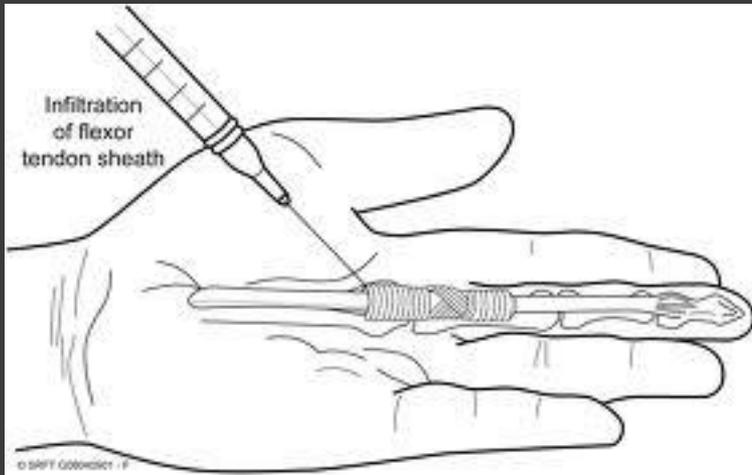
The Interface

TRIGGER FINGER



The Interface

TRIGGER FINGER



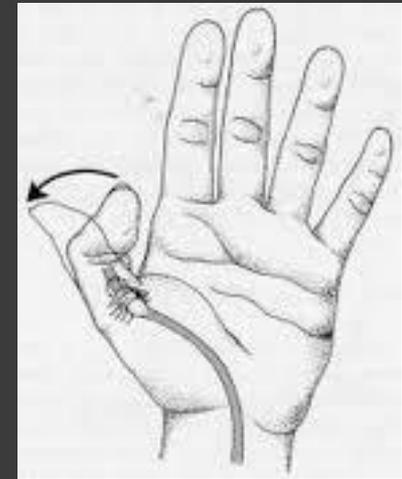
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TRIGGER FINGER



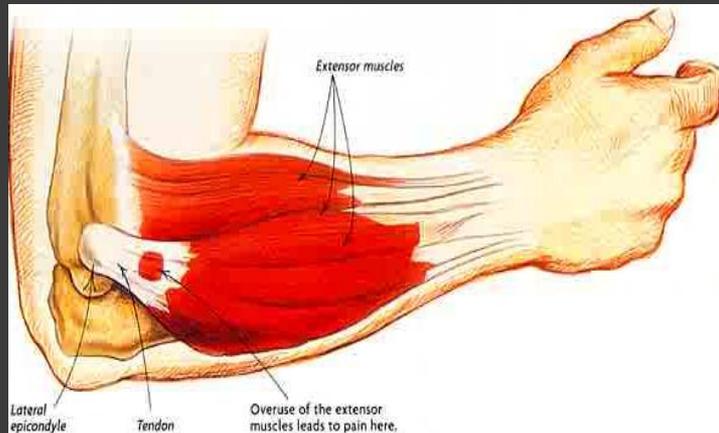
The Interface

TRIGGER THUMB



The Interface

Lateral Epicondylitis (tennis elbow)



- Pathology at the common extensor origin (lateral epicondyle)
- ECRB tendon involved (Also EDC 30%)
- Dominant arm more involved (2:1)
- Peak incidence in the fourth decade
- More prevalent in occupation (70%) as compared to sports

The Interface

Treatment Modalities

Immobilisation, Ultrasound, Splinting (proximal brace and/or wrist brace), Laser, Education, Transverse Friction Massage, Electrotherapy, Oral NSAIDS, Topical NSAIDS, CSIs, Mobilisation, Botox, Extracorporeal Shock Wave Therapy, Ice, Stretching, Strengthening, Phonophoresis, Iontophoresis, Wait and See, Activity Modification, Elbow Joint Mobilisation, Cervical Spine mobilisation, Acupuncture, Myofascial Release, Ergonomic Adjustments, Autologous Blood Injection (ABI), GTN, etc, etc, etc....



The Interface Rehabilitation

Establishing what phase of injury the pt is in

- 1) Reactive
- 2) Degenerative



Rehab Principles

- Reduce pain (topical steroids, iontophoresis or cortisone injection)
- Unload tendon (Load management – education, rest, postural advice, splinting)
- Facilitate tendon adaptation, strengthening and stretching

The Interface

Degenerative Group

Prolotherapy (Proliferative Injection Therapy):

- *Autologous Blood Injection (ABI)*

Thought to trigger inflammatory cascade and healing by either:

- i) ? mediators in the blood itself or
- ii) the injection itself

No difference between ABI and Saline (*de Vos et al, 2010*)

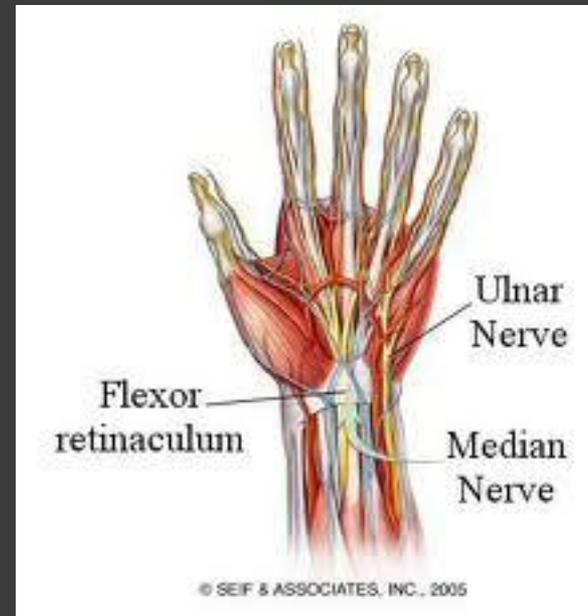
- *High Volume Injections (HVI) – 20-30mls saline*

Developing Evidence

The Interface

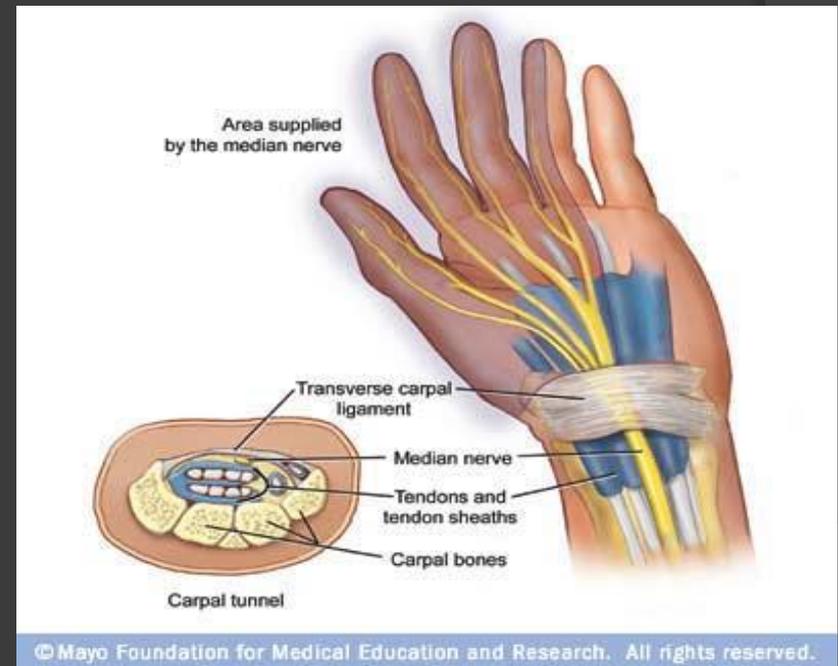
NERVE COMPRESSIONS

- Carpal Tunnel
- Guyons Tunnel
- Cubital Tunnel



The Interface - Carpal Tunnel Syndrome

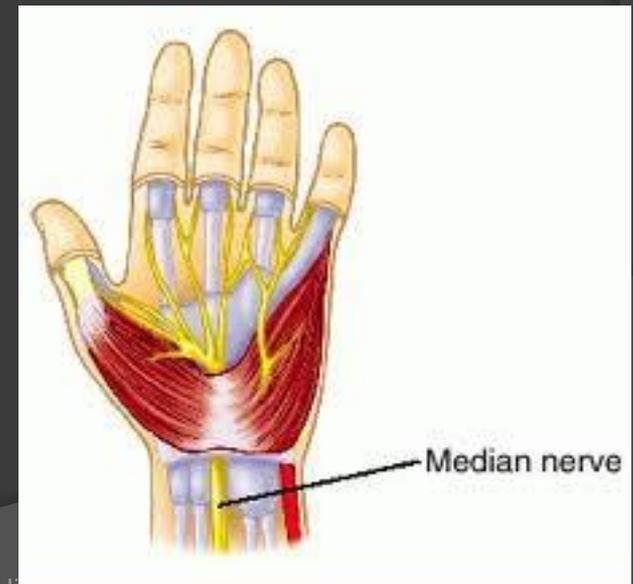
- Caused by compression of the median nerve at the wrist-many aetiologies
- Nocturnal paraesthesia in median innervated digits
- (also daily when holding phone/steering wheel/brushing hair)
- Wasting of APB



The Interface

CARPAL TUNNEL SYNDROME

- Tinel's Test
- Phalens Test -variants
- NCS-amplitude
latency
action potential
velocity



The Interface - Carpal Tunnel Syndrome

Conservative Treatment

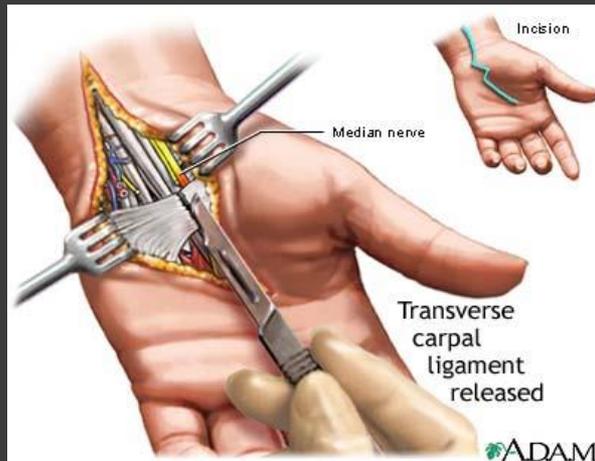
- Splinting overnight



The Interface - Carpal Tunnel Syndrome

Treatment

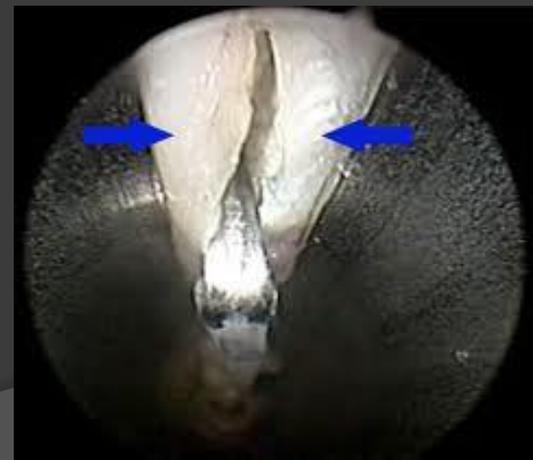
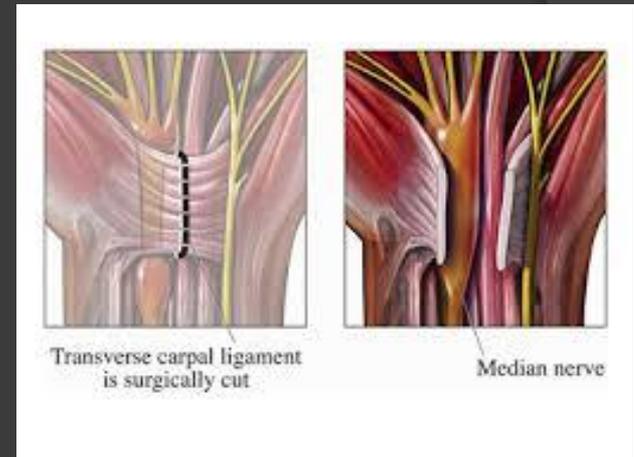
- Surgical decompression open



The Interface - Carpal Tunnel Syndrome

○ Treatment

- Splinting overnight
- Surgical decompression - endoscopic



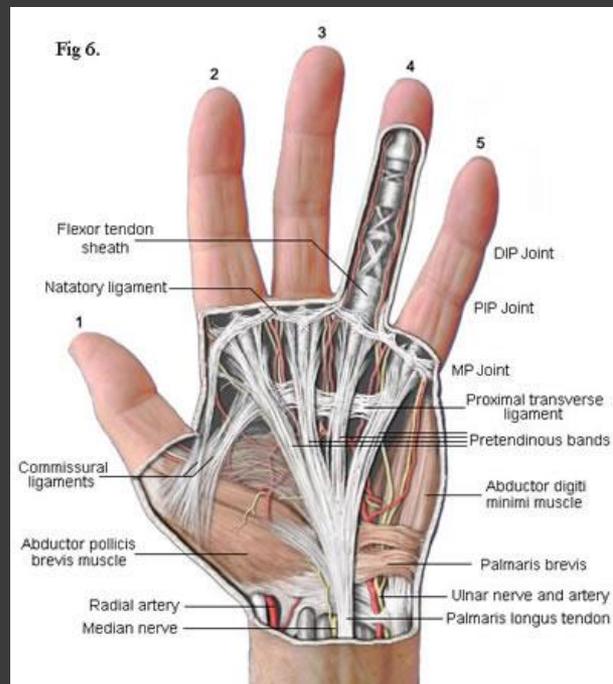
The Interface

◎ DUPUYTRENS CONTRACTURE



The Interface

◎ DUPUYTREN'S CONTRACTURE



Superficial fibromatosis affecting the palmar fasciae

The Interface - Dupuytren's contracture

History

- Felix Platter 1614
- Astley Cooper 1822
- Von Dupuytren 1832



Features

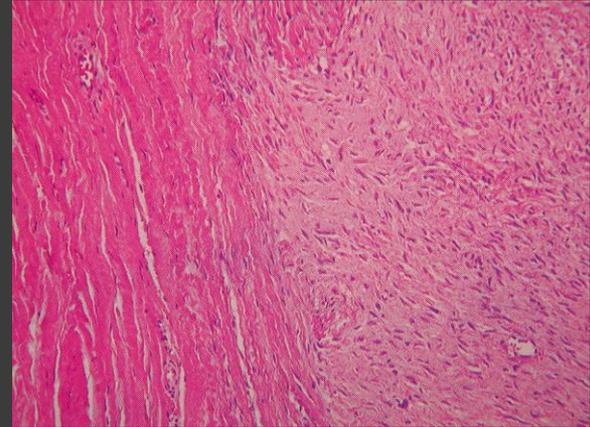
- Palmar pitting
- Nodules
- Cords
- Contractures



The Interface - Dupuytren's contracture

AETIOLOGY

- ⦿ Genetic - autosomal dominant Celtic
 - HLA B 27
- ⦿ Diabetes
- ⦿ Epilepsy ? Medication
- ⦿ Trauma
- ⦿ Alcohol-? coincidence



ASSOCIATIONS

- ⦿ Garrod's Pads 40%
- ⦿ Lederhosen's Disease 15%
- ⦿ Peyronie's Disease 5%



The Interface - Dupuytren's contracture

Surgery indicated

- ⦿ when MCP joint contracture reaches 30°
- ⦿ when PIP joint starts contracting
- ⦿ triggering



The Interface

DUPUYTRENS CONTRACTURE

Minimal Surgical Approaches

Percutaneous Needle Aponeurotomy (+- Fat Injections)

Cord Fasciotomy

Segmental Fasciectomy



The Interface

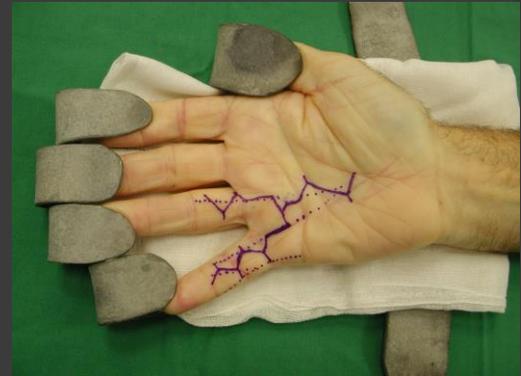
DUPUYTRENS CONTRACTURE

Less Minimal Surgical Approaches

Digital Fasciectomy

DermoFasciectomy +/- Skin Graft

Total Fasciectomy



The Interface

DUPUYTRENS CONTRACTURE

Collagenase

Inject

Nerve Block/"Manipulate"/Rupture

Splint



The Interface

DUPUYTRENS CONTRACTURE

Collagenase - Problems

Not yet TGA approved

?\$1300 out of pocket per injection

Only One cord treatable per month

Post “op” pain, swelling, haematoma

?Long term results



The Interface

DUPUYTRENS CONTRACTURE

Collagenase

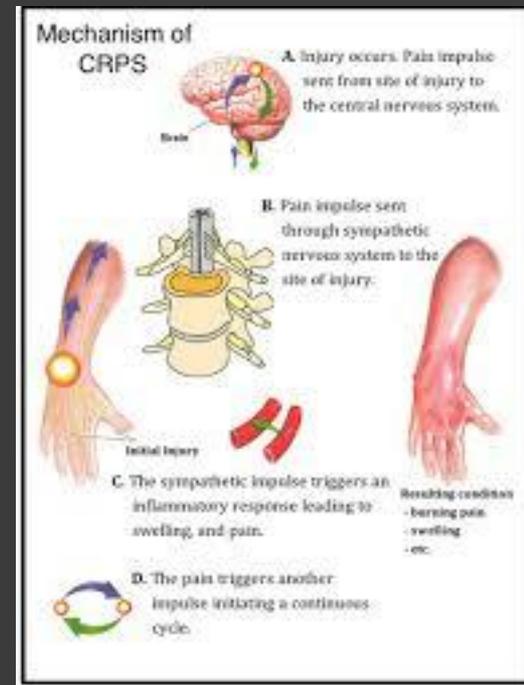
Oh No ! Tendon Rupture

What does it mean?



The Interface

COMPLEX REGIONAL PAIN SYNDROME



The Interface

HAND INFECTIONS

- Septic Arthritis
- Suppurative Tenosynovitis
- Deep Space infection



The Interface

Perioperative Management of Medications

Prednisolone

Methotrexate

Allopurinol



The Interface



Thankyou.

The Interface

Any Questions?



General Joint Protection Principles

Respect Pain

- Stop activities before the point of discomfort
- Decrease activities that result in pain lasting more than 1-2 hours
- Avoid activities that put strain on painful or stiff joints
- Wrist splints may decrease pain during activities with RA
- Thumb CMC splints may decrease pain with OA

Balance Rest and Activity

- Rest before exhaustion
- Take frequent short breaks
- Avoid activities that cannot be stopped
- Avoid staying in one position for a long time
- Alternate heavy and light activities
- Take more breaks when inflammation is active
- Allow extra time for activities, avoid rushing
- Plan your day ahead of time
- Eliminate unnecessary activities

Exercise in a Pain Free Range

- Maintain muscle strength
- Maintain joint ROM
- Initiate warm water pool exercise programs
- Exercises are specific to each potential deformity
- AROM without pain

Avoid Positions of Deformity

- Use stable joint positions
- Avoid bent elbows, knees, hips, and back while sleeping
- Practice good posture during the day
- Use proper work heights
- Specific to each potential deformity

Reduce the Effort and Force

- Avoid excessive loads with carts
- Ask for help
- Use appliances and assistive devices
- Keep items near where they are used for easy flow of work
- Use prepared foods and freeze leftovers for an easy meal
- Avoid low chairs
- Maintain proper body weight
- Reduce trips up and down stairs-complete work on each floor
- Use other parts of the body (example: foot pedal on trash can)
- Use energy conservation principles to manage fatigue

Use Larger/Stronger Joints

- Slide heavy objects on kitchen counters
- Use palms instead of fingers to lift or push
- Carry a backpack instead of a handheld purse
- Keep packages close to the body-use two hands
- Push doors open with side of body instead of the hands