

**Terms for First CMCJ of the Thumb**

- Thumb Carpo-metacarpal joint, (CMCJ)
- Thumb Trapezio-metacarpal joint (TMCJ)
- Saddle joint
- Basal joint

**Who gets first CMCJ OA?**

- Most common in women over 40 - it often happens in both thumbs
- See below for typical posture in different hands - with adduction contracture

**Anatomy of the Joint**

- It is a key joint of the thumb
- The joint is designed to give a large range of motion - but the tradeoff is that the joint suffers a lot of stress
  - Saddle-shaped joint
  - Most commonly involved arthritic joint in the hand

**3 Main ligament stabilizers**

- Volar, Beak ligament or anterior oblique ligament
  - Attritional changes in this ligament leads to destabilization of the 1st CMCJ causing degenerative changes
- Dorsal radial capsular ligament
- Lateral (ulnar) ligament

**Mobility may Sacrifice Stability**

- Because of its design, it tends to wear out and develop arthritis early in life
- The stability of the joint relies on the small ligaments, which permit motion but retain a close relationship between the saddle-shaped joint surfaces
  - If the ligaments loosen enough to allow too much sliding of the joint surfaces, a wearing down of the joint cartilage may occur leading to arthritis
The Degenerated Joint

• Over many years this imbalance in the joint mechanics can lead to damage on the articular surface. Since the articular cartilage cannot heal itself very well, the damage adds up. Eventually, the joint is no longer able to compensate for the increasing damage and the result is PAIN!

A degenerative joint is very painful

Why does CMCJ OA occur?

• Abnormal loads across the joint cause the articular cartilage to wear out
• It leaves bare bone ends rubbing on each other and causes pain
• This joint appears to be particularly prone to wear and tear from normal use of the hand.
• Many people appear to be predisposed to arthritis in this joint
Why Does this Occur Cont.

• The cause is often times unknown but can be related to use of the hands, and previous injury
• Repeated motions such as twisting, turning, or gripping objects with the thumb and fingers can worsen and or contribute to this condition.

Evaluation Techniques

• Tender to palpation at the CMC
• Pain complaints with forceful pinching
  - turning door key, opening jar, holding a cup or sewing
  - It also results in weakness of pinch
• Adduction-flexion deformity noted on exam of the thumb reducing the thumb index web angle
• Shoulder sign - radial prominence at base of thumb, from dorsal sublux. of MC on trapezium
• Grind test- axial loading + rotation of 1st MC on trapezium

Evaluation Continued

• Assess for crepitus
  - a noise when the joint is moved due to loss of articular cartilage
• Assess for other potential radial wrist problems:
  - Scaphoid Frx
  - deQuervains
  - S-L dissociation
  - Radial sensory n. disturbances
  - CTS
  - Trigger finger

Evaluation Radiographs

• Look for joint subluxation vs dislocation
• Radiographs
  - AP, oblique & lateral views
  - Robert pronated view - fully pronate forearm & internally rotate shoulder
  - Dynamic stress views
  - AP views of both 1st CMCJs while pressing the radial aspects of thumb tips together
Stages of Joint Destruction

- Stage one – synovitis without cartilage damage (hypermobility is occurring due to laxity of palmar oblique ligament)
- Stage two – beginning cartilage damage
- Stage three – Severe cartilage degeneration -
- Stage four – all surfaces of the trapezium are involved (pantrapezial OA)

Treatment

- Splinting is effective - shown via research
- Types of Splints:
  - Long - with wrist involvement
  - Short - MP free if it is stable
  - Hard
  - Soft

New Research

- Splinting The Degenerative Basal Joint: Custom-made or Prefabricated Neoprene
Long Oppenens

- Best with STT arthritis as CMCJ splinting alone will not relieve the symptoms

Splinting Demo’s

- Product utilized today is from one of our sponsors and is called x-lite:
  - Carol at Runlite USA
  - 888-6786548
  - www.runliteusa.com
  - Can order from Sammons Preston

X-Lite

- Airy and lightweight 100% cotton mesh base that is impregnated with a non-toxic resin base
- 100% cotton base provides "natural" opening for heat or fluids to escape
- Lightweight Material
  - Classic is the original X-lite material
  - Premium is thinner and has smaller openings
  - Finishing/edging tape
  - Fastening System (hook)

Treatment

- Steroid injections
  - When injected into the joint itself it can help relieve the pain.
  - Pain relief is temporary and usually only lasts several weeks to months.
- Mild anti-inflammatory medications, such as aspirin or ibuprofen
- Reducing the activity, or changing from occupations that require heavy repetitive gripping with the hand, may be necessary to help control the symptoms.
- Strengthening thenar muscles (controversial)

Modalities

- Parafin or moist heat - superficial heating
- Ultrasound - deep heating
  - Can use with biofreeze 80/20 for relief
  - Demo
  - Biofreeze
  - 1-800-biofreeze (1-800-246-3733)
  - www.biofreeze.com
Modalities Cont.

- **Cold Laser**
  - [www.laserhealthproducts.com](http://www.laserhealthproducts.com)
  - Phone: 727-804-7754
  - Fax: 727-865-2040
  - Demo: Nancy

- **Electrical Modalities:**
  - TENS
  - High Volt

More Modalities

- When joints are hot and inflamed, applying cold can decrease pain and swelling.
- Bag of frozen vegetable works great!

Iontophoresis

- Iontophoresis - alternative to cortisone injections
- Dex applied over the CMCJ to reduce inflammation in the joint and secondarily reduce pain
- Iomed - various electrodes

24 Hr. System

- Companion 80 is a 24-hour controlled power iontophoresis system with the battery onboard.
- Companion 80 is an excellent drug deliver choice when:
  - the patient's skin is hypersensitive to direct current
  - the patient's time is limited for a 10 to 20 minute iontophoretic treatment in the clinic

Iontophoresis

- IOMED
- 1-800-621-3347
  - [www.iomed.com](http://www.iomed.com)
  - cs@iomed.com

Call to get a free CD to learn application; product info. and protocols

Programs developed to acquire a system are available

Ionto Facts vs Fiction

- Lidocaine (for numbing) is the only approved medication for ionto
- HOWEVER - iontophoresis is a system that delivers ionic medications and can be used with many compounds
  - Dex - swelling and pain
  - Acedic acid - calcium deposits
  - Sodium Choride - scar
  - List on the CD-ROM
Treatment Continued
• A topical analgesic, such as biofreeze may be helpful for joint tenderness
• Biofreeze – home application to manage painful joints – excellent follow-up technique
• Rub out pain Massage the soft tissue around the damaged joint – can use prossage heat Demo techniques
  - 1-800-biofreeze (1-800-246-3733)
  - www.biofreeze.com

Joint Protection
• Avoid small pinch – especially lateral pinch as this exacerbates the joint subluxation
• Use whole hand or arms when possible

Adaptive Equipment
• Pens to enlarge grip
• Ring pen
• Other devices to avoid small pinch force

Household Equipment

Kitchen Equipment

Adaptive Equipment
• Chabier Enterprises Corp.
  - 1-509-547-8200
  - www.unstix.com
• For coffee filters and page turning!
• Need gadget – very inexpensive $1.50
Taping

- Demo

Surgical Options

- Soft tissue reconstruction alone for stage one
  - For instability with no articular changes
  - FCR to reconstruct the beak lig.
  - Used in early destruction of first CMCJ
    - Stage One
    - Described by Eaton and Littler

Therapy

- 4 weeks cast
- Apply thermoplastic splint
- ROM with focus on MP/IP
- 6 - 8 weeks AROM of the CMCJ
- Resistive exercise at 12 weeks

Surgical Options

- Arthrodesis (stage 3 and 4)
  - for young high demand patients (laborer)
    - 20% failure rate.
- Total joint arthroplasty (stage 3 and 4)
  - Constrained ball & socket design - wear rates of 34% at 5yrs.
  - Less constrained designs in development.
- Silicone Swanson prosthesis (stage 3 and 4)
  - Problems:
    - implant subluxation & dislocation
    - rapid wear
    - silicone synovitis (50% of long-term cases showed this)

Ceramic ball arthroplasty

Silicone implant completed
LRTI

- Ligament Reconstruction Tendon Interposition (LRTI)
- Many variations of this procedure exist - will review this procedure type
- JBJS Feb. 2004 - ? Value of interposition arthroplasty vs lig. reconstruction alone
Ligament Reconstruction
Tendon Interposition
• 4 weeks cast removed
• Thumb spica splint made – use for 2 more weeks
• Begin opposition exercises and AROM exercises
• PROM begins at 6 weeks
• Strengthening at 8 weeks
Expect PAIN!!!
Disclaimer

• The author and EHT have taken all steps to ensure the modalities, treatments, wound care, and protocols are current.
• This course is for educational purposes only and it is the responsibility of the health care worker or individual to ensure treatment is appropriate and within his/her licensure guidelines.
• Always consult the manufacturer for guidelines for equipment application of any equipment you use or order.