

## Thumb Arthritis

### Summary

Thumb arthritis is a degenerative condition affecting the cartilage, bone, ligaments and muscles of the basal joint of the thumb, also known as the carpometacarpal (CMC) joint. A trial of nonoperative management is recommended for mild and moderate disease and has been shown to provide at least short-term pain relief in ~50% of patients. Surgery is an option if this fails or in severe disease.

### Definition

**Thumb arthritis is a condition affecting the cartilage, bone, ligaments and muscles** of the basal joint of the thumb. This joint is also known as the carpometacarpal (CMC) joint.

### Causes

The trapezium and metacarpal base are saddle shaped with different curvatures. This allows a wider range of motion but requires ligaments to maintain stability. **The thumb's mobility and use in almost all hand functions make it susceptible to injury, overuse and osteoarthritis.**

### Risk Factors

**Risk factors include age, body mass and being female. Genetic factors are also involved.** Other rare risk factors include rheumatoid arthritis, psoriasis and haemochromatosis.

### Symptoms

Symptoms include:

- **Thumb pain interfering with activities of daily living;**
- Increasing pain with thumb opposition or pinch (opening jars, using a key, carrying objects)
- Stiffness and pain at rest suggest severe disease.

**Carpal tunnel syndrome is common in people who have thumb CMC arthritis** and can be treated at the same time. De Quervain's can also be present and is more difficult to differentiate as it is in the same region.

## Diagnosis

**Thumb CMC arthritis is diagnosed with a combination of history, examination and x-rays.** Changes on x-ray are found in >10% of people aged  $\geq 60$  but only ~30% will be symptomatic. You are more likely to be symptomatic if the scaphotrapezial joint is involved. It is important to rule out other causes of thumb pain including triggering, inflammatory arthritis, gout or tendinitis.

Examination findings include:

- Prominence of the thumb base;
- Adduction deformity of the metacarpal;
- Compensatory hyperextension of the metacarpophalangeal (MCP) joint (leading to a Z deformity);
- Point tenderness over the CMC joint;
- Pain with axial grinding of the CMC joint;
- Reduced pinch strength.

## Treatment

**A trial of nonoperative management for at least 12 weeks is recommended for mild and moderate disease.** This includes;

- **Nonsteroidal anti-inflammatories** (NSAIDs: Ibuprofen or similar). A topical NSAID may have less side effects;
- **Activity modification** (Using devices such as jar openers to avoid loading the joint);
- **Splinting**;
- **Thenar muscle strengthening** (Splinting and exercises are best supervised with a hand therapist);
- **A cortisone injection.**

Cortisone injections have been shown to **provide at least short-term pain relief in ~50% of patients.** Combining this with the other nonoperative measures can increase success. Severe disease is less likely to respond but there are virtually no complications.

An **extension osteotomy of the metacarpal is a good option in mild disease that has failed nonoperative management.** It extends and abducts the metacarpal away from the volar trapezial joint surface, partially unloading the joint and increasing joint stability. It has been shown to provide pain relief in >80% of patients as well as increase grip and pinch strength.

**Trapeziectomy, ligament reconstruction and tendon interposition (LRTI) is the most commonly performed operation for moderate to severe disease.** Flexor carpi radialis is the most common donor tendon used to reconstruct the ligament which provides stability to the base of metacarpal and prevents it from subsiding into the void left by the trapeziectomy. Other options include trapeziectomy alone, which relies on haematoma and scar tissue to fill the void. Joint replacements have been available for 50 years with various implants available. All these procedures treat scaphotrapezial arthritis which is commonly present in severe disease.

Fusion of the thumb CMC joint is often performed in younger patients who require grip strength for their high demand work and hobbies, as we are not sure how long a trapeziectomy can last in this population. The MCP and interphalangeal joints can compensate for the reduced motion but they will have reduced opposition and an inability to lay the hand flat. Complications include progression to scaphotrapezoidal arthritis and non-union, however only a small percentage are symptomatic.

Analysis of all clinical studies found no difference between outcomes of the various techniques. >70% of patients get good relief from their pain which leads to improved function. Grip and pinch strength also improve. They did show an increase in complications with ligament reconstruction (20%) compared with trapeziectomy alone (10%). This is not consistent between all authors. **Joint replacements have more complications, with a high incidence of re-operation.**

### Prevention

A great resource is the Arthritis Australia website. A healthy lifestyle is the best way to prevent arthritis. Dietary supplements such as glucosamine, chondroitin, fish oil and turmeric are popular but the evidence supporting them is poor. Repetitive thumb movements that expose the thumb to greater than normal forces are associated with thumb CMC arthritis. Unfortunately, the thumb is used in almost all aspects of hand activities, making it difficult to avoid injury and overuse. The nonoperative measures outlined may reduce symptoms and slow progression enough that surgery is not required.

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