Osteoarthritis in the hand

(Heberden's arthropathy)

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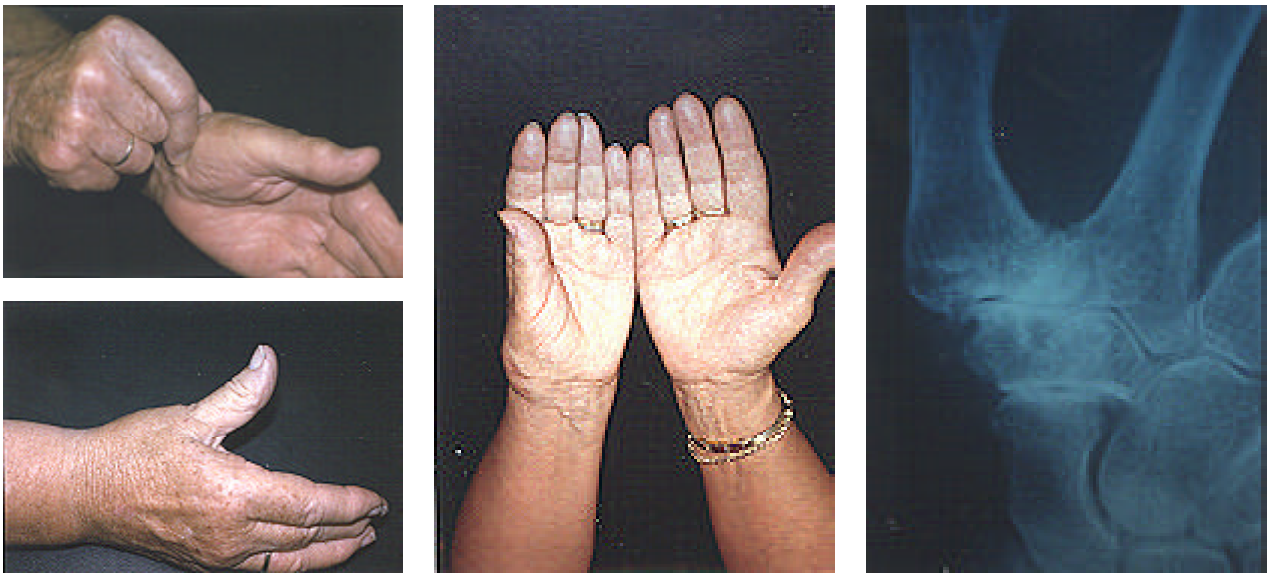
This is a common problem. It affects roughly half the adult population to some extent. Of this group approximately 10% will seek medical advice. Only one per cent are severely disabled by their disease.

In the hand the joints most commonly effected by osteoarthritis are the basal thumb joint and DIPJs. The PIPJs, thumb MCPJ and pisiform triquetral joint follow in order of frequency. Other joints are more rarely involved and these cases usually follow intra-articular fracture or trauma.

Basal thumb arthritis

Basal thumb joint arthritis is common, more so in women. It presents with localised pain in the base of the thumb. Patients usually localise this to the region just distal to the snuff box and volar to this. An exquisite catching pain is experienced when loading the thumb. This is particularly noticeable with twisting pinch grip. For example, undoing jars or using a tin opener. In addition the basal thumb joint is achy at the end of the day especially after hard manual work. This pain leads to exclusion of the thumb from grip, most detrimental to hand function. The severity of the symptoms vary, as they do in arthritis in other parts of the body. There is a general trend however for the initial presentation to be

Basal thumb arthritis – clinical appearance

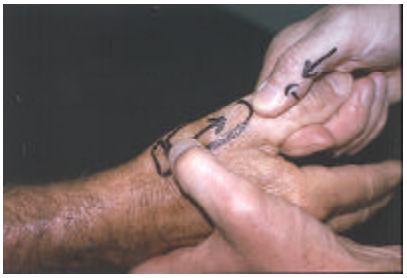


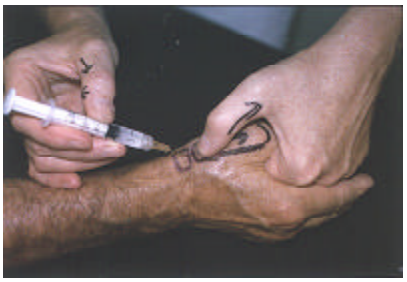
Top left: Site of pain.

Bottom left and middle: Demonstrating attempts to lay the hand flat. Inability to extend thumb metacarpal results in adducted thumb metacarpal and hyperextending MCPJ. Subluxation/dislocation of basal thumb joint precedes this – results in prominence of thumb metacarpal base.

Right: X-ray appearances pan trapezial OA – i.e. arthritis involving both basal thumb joint and scapho trapezial joint.

Basal thumb joint – examination and injection techniques





Top: Examination – grind test.

Above: Injection basal thumb joint.

fairly florid with troublesome inflammatory pain. This phase may last a year or more. It then either burns itself out leaving the basal thumb joint stiff, subluxed but relatively painfree or continues to be painful, significantly limiting hand function. It is not uncommon for the initial presentation of pain to be precipitated by either a fall on the hand or wrench to the thumb. Although a fracture maybe also present this is uncommon, and the pain is usually due to a stir up of the arthritis made symptomatic by the injury. This has implications for ACC status. The patient, who has often been asymptomatic prior to this incident, is clear in their mind that the problem is of traumatic origin and are unhappy to be denied ACC cover. The characteristic radiological appearance is the final arbiter in this debate. This group of patients who become symptomatic following a fall are often incarcerated in a series of plasters being mistakenly treated for a scaphoid fracture. The pain from the stirred up basal thumb joint takes a long time to settle and it is thought that the nonexistent fracture has not yet united. Hence the series of plasters. Remember that scaphoid fractures predominantly involve young males and are high energy injuries. Basal thumb arthritis in stark contrast is the domain of maturing women!

Examination findings

Pain is localised to the base of the thumb. The outward appearance in the early stages of the disease is unremarkable. As the disease progresses the base of the thumb metacarpal subluxes dorsally and is prominent just distal to the snuff box. As the basal thumb joint becomes more subluxed and stiff the thumb metacarpal becomes fixed in adduction (tucked into the palm). As this happens the only way the thumb can be carried away from the palm (to allow grasp) is to hyper extend at the MCPJ. In time the MCPJ becomes painful due to the hyper extension. This zigzag collapse of the thumb into a swan neck configuration represents end stage disease.

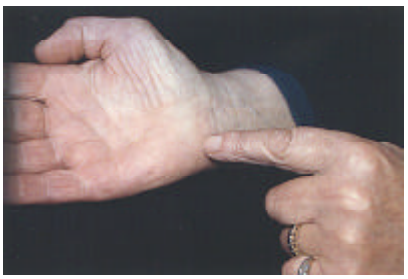
Grind testing the basal thumb joint reproduces the exquisite catching pain the patients experience on loading the thumb and is pathognomonic of basal thumb arthritis. This test is performed by grasping the involved thumb with the examiner's hand as if to 'shake the thumb'. Whilst longitudinally compressing the basal thumb joint the examiner's other hand cradles the wrist and the examining thumb of that hand forcibly relocates the subluxed thumb metacarpal base. This manoeuvre is exquisitely painful in basal thumb arthritis and can be compared with the opposite side (which may be involved to lesser degree).

Pinch grip can be measured with a pinch meter and the degree of pain elicited noted. In severe disease pinch strength is significantly reduced.

Key points

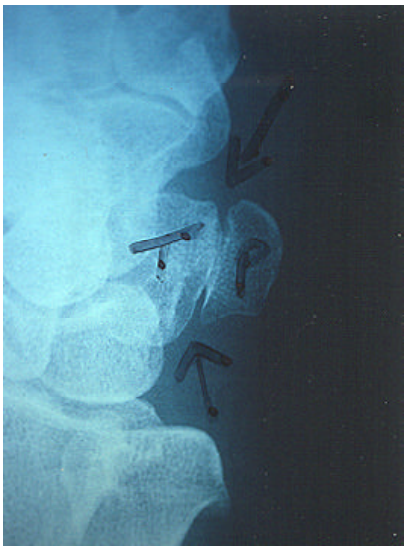
- Basal thumb joint most commonly affected.
- Beware of mistaking basal thumb arthritis (predominantly affecting mature women) with scaphoid fracture (young males) post-injury.
- Intra-articular steroid injection in the inflammatory phase often gives dramatic and lasting relief.
- Surgery reliably salvages those with persistent limiting pain.
- Watch out for incipient flexor tendon rupture and low ulnar nerve compression in pisiform triquetral arthritis.

Pisiform triquetral OA



Above: Clinical 'Point Pain' with pisiform triquetral OA – watch out for: ulna n, flexor tendon rupture associated with this.

Right: Radiological appearances on oblique lateral view.



Radiological features

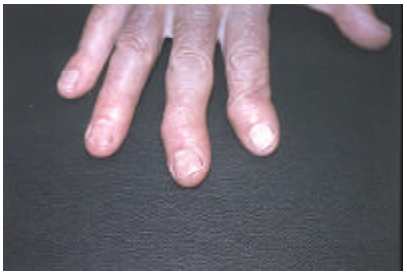
X-ray changes trail the clinical symptoms. Initially subtle joint widening may be present indicating an effusion. As the disease progresses the joint space narrows and the thumb metacarpal base subluxes. Ultimately the joint demonstrates all the end stage features of osteoarthritis with sclerosis of the joint margins, osteophytes and cyst formation with loss of joint space. If conservative treatment has failed and surgery is being considered it is important to note whether the arthritis involves only the basal thumb joint or is 'pan trapezial' involving both STTJ and CMCJ. The surgical choices are narrower in pan trapezial disease.

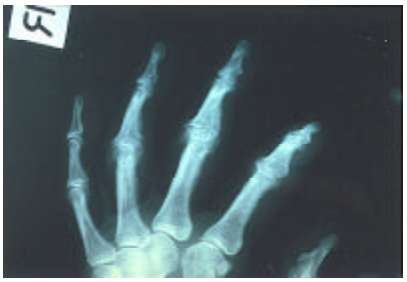
Treatment

In the early stages when the patient first presents with pain and often subtle radiological changes it is possible to settle the pain with an intra-articular steroid injection. This may be repeated once or twice over a twelve month period if symptoms recur. This allows the natural history in that particular patient to declare itself. In other words it will become apparent whether it is going to burn itself out or continue to be painful and limit function.

Injection of this joint is quite straightforward despite its size. It is necessary to distract the joint by grasping the thumb with the nondominant hand and pulling longitudinally. The thumb of the distracting nondominant hand can palpatate the base of the thumb metacarpal allowing one to visualise (in the mind's eye) the saddle-shaped basal thumb joint. A fine needle is then inserted into the joint with the dominant hand whilst the nondominant maintains traction. The line of needle insertion parallels the saddle slope of the trapezium. From the insertion point just proximal to the base of the thumb metacarpal angling distally approximately 30°. A very definite sensation of popping into the joint is experienced. The steroid mixed with some local anaesthetic is then injected. It should run in easily as this is an empty space. If it does not then the needle is not in the joint and needs to be re-situated. This joint accepts one to one-and-a-half cc of fluid, it is clear when the joint is distended with fluid. Keep pressure over the injection site for a minute or two after injection to prevent extravasation of steroid into the soft tissues. This results in steroid atrophy of fat and skin pigment and is ugly. End stage disease is reliably managed surgically. The options are trapeziectomy, basal metacarpal osteotomy and fusion. Replacement for this joint is so far unreliable. Trapeziectomy gives reliable relief of pain and therefore an improvement in strength. It is particularly useful in pan trapezial OA. Although a fusion may give better strength than a trapeziectomy the downside of being unable to retract the thumb and therefore lay the hand flat is a significant problem. Trapeziectomy allows for a functional range of basal thumb motion. Osteotomy is best for those with radiologically early changes who remain symptomatic.

Heberden's arthropathy





Top Left: Clinical appearance Heberden's nodes.

Middle: X-ray appearance OA DIPJ PIPJs.

Bottom left: Clinical consequence of stiff PIPJs. Difficulty grasping insulin pen.

Above: Mucous cyst – common association of Heberden's nodes.

DIPJ arthritis

The knobbly often deformed distal interphalangeal joints (Heberdens nodes) are pathognomonic of this. This usually begins with an inflammatory painful phase which burns itself out leaving the joints surprisingly comfortable despite their appearance. Intra-articular steroid injection in the inflammatory stage can be helpful. On the rare occasion that these joints do remain painful they can be fused surgically.

Mucous cysts or ganglia arising from the arthritic distal joint area

more common problem associated with Heberden's arthropathy. These often distort the nail secondary to pressure on the nail bed. These frequently require surgical excision. Recurrence is less likely if the associated osteophytes around the stalk of the ganglion are excised along with the ganglion.

PIPJ arthritis

As with osteoarthritis at the DIPJ the complaint is often initially inflammatory pain with the subsequent stiffness and deformity limiting hand function. The disease often picks out random joints in distinction to rheumatoid arthritis which usually is more symmetrical in its presentation. Anti-inflammatory medication and an occasional intra-articular steroid injection are helpful in the inflammatory phase. Surgical choices for the recalcitrant painful joint are either replacement or fusion.

Replacement usually resolves pain and preserves some movement. Fusion limits range of motion and therefore grasp but is durable. Ultimately the choice is determined by the occupational/recreational demands of the patient.

Pisiform triquetral arthritis – an unusual arthritis

Arthritis in this joint presents classically with localised pain over the ulna side of the heel of the hand. It is one to watch out for as it may present with insidious rupture of the flexor tendons to the ulna digits or ulna nerve compression (it forms the ulna boundary to Guyons canal through which the ulna nerve passes into the hand). An oblique lateral X-ray profiling this joint gives confirmatory radiological evidence to the clinical diagnosis. Excision of the pisiform in those patients whose symptoms warrant it is reliable.