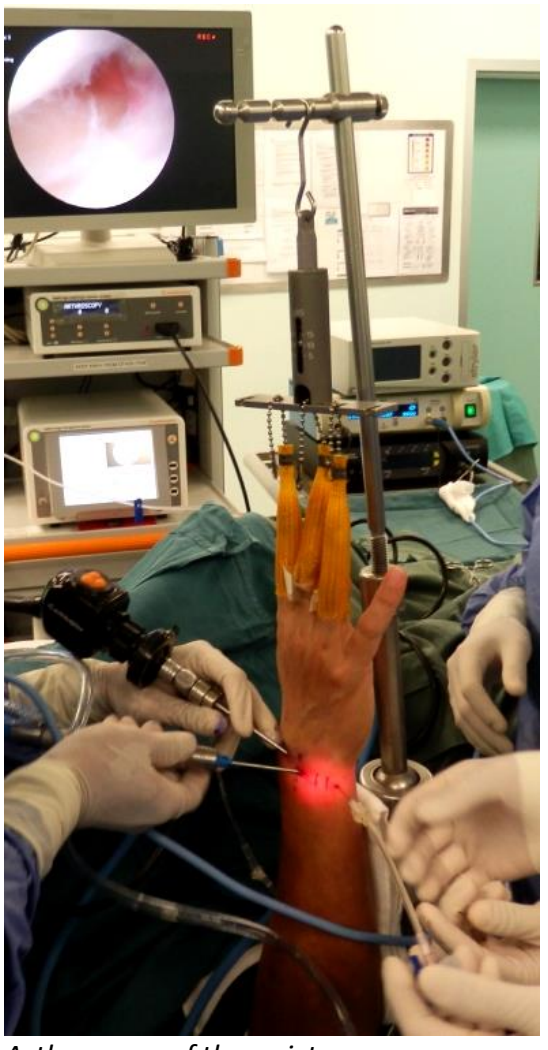
Arthroscopy of the Hand and Wrist

Arthroscopy is a minimally invasive procedure whereby a small camera is inserted through small incisions of a few millimeters each around a joint to view the joint directly. Other instruments can also be inserted into the joint to examine the joint, as well as to perform some therapeutic procedures, such as, debridement (cleaning up the joint in cases of tears or degeneration), synovectomy (removal of inflamed synovial tissue), repair of torn cartilage and ligamentous structures such as the triangular fibrocartilage complex (TFCC), thermal shrinkage of lax tissues, assist in reduction of fractures involving the joint, and bone grafting of non-union of certain fractures, especially the scaphoid (a wrist bone).

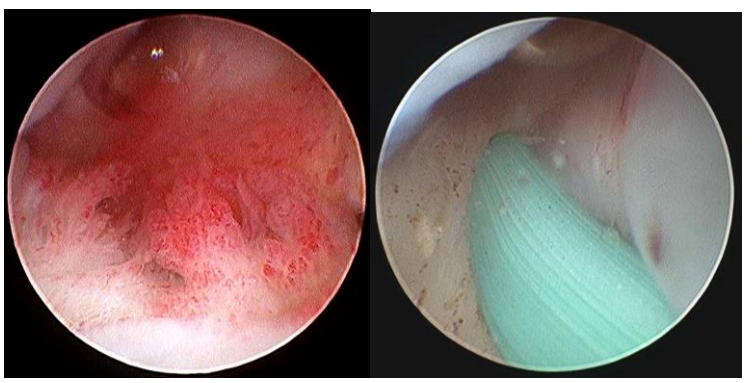


Arthroscopy of the wrist

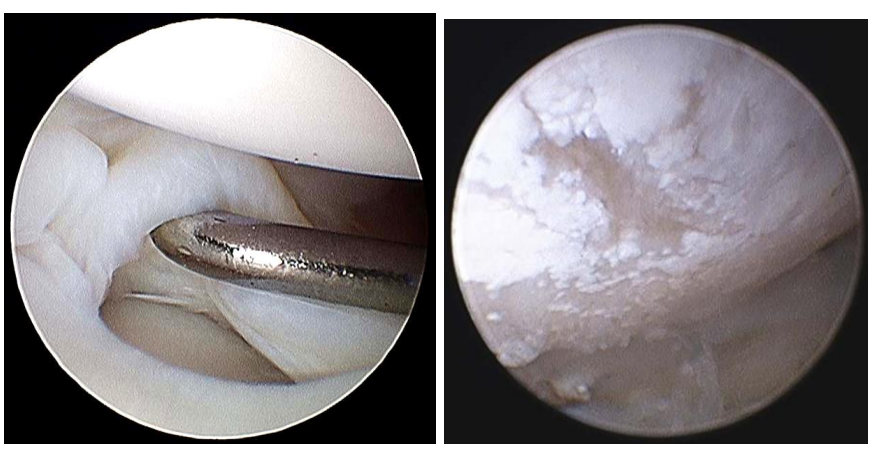
Arthroscopy has been performed in the large joints such as the knee and shoulder for many years. Similarly, in the wrist, arthroscopic procedures has been commonly done for a few decades. However, arthroscopy of the small joints of the hand, such as the carpometacarpal joint (CMCJ) of the thumb base, and the metacarpophalangeal joints (MPJ) of the thumb and fingers are not so common. A traction tower is used to apply a traction force to distract the joint space, and normal

saline is pumped into the joint, so that the scope can be introduced and treatment instituted.

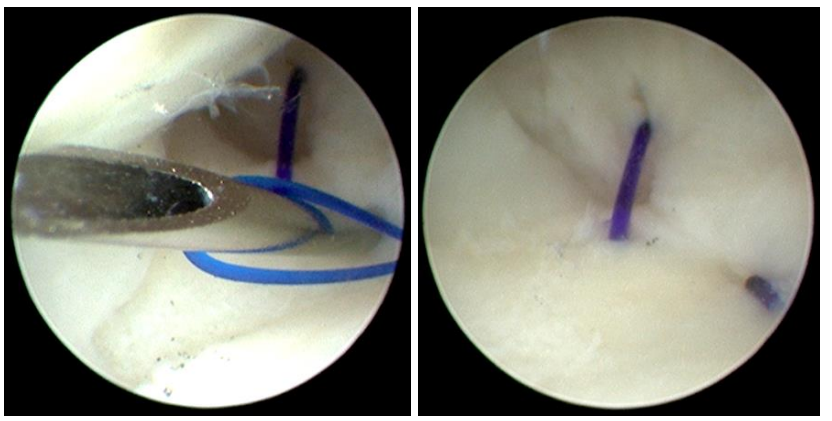
Arthroscopy of the wrist:



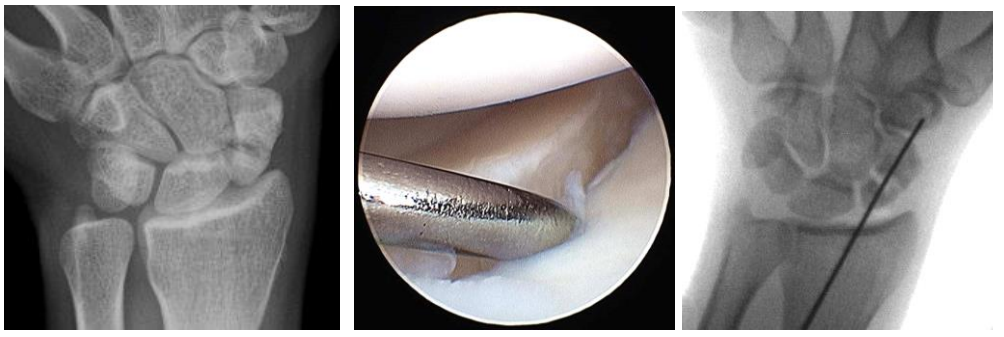
Synovitis (inflammation of the synovium) treated with radiofrequency ablation.



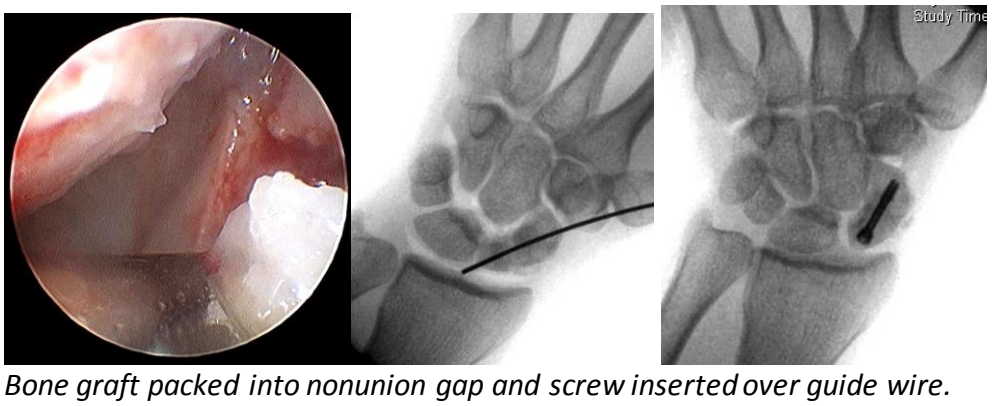
Arthroscopic findings of central tear of the TFCC and gouty deposits



Arthroscopic repair of TFCC tear using needles and suture.



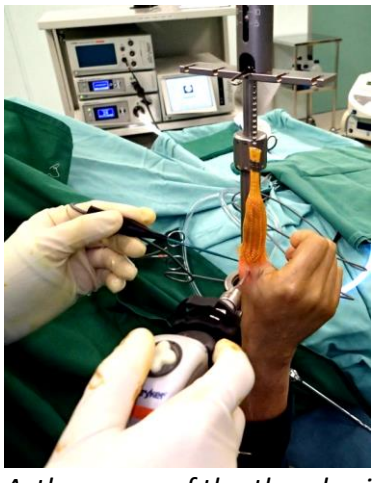
Nonunion of scaphoid confirmed on arthroscopy, debrided, and fixed with guide wire.



Bone graft packed into nonunion gap and screw inserted over guide wire.

Arthroscopy of the thumb

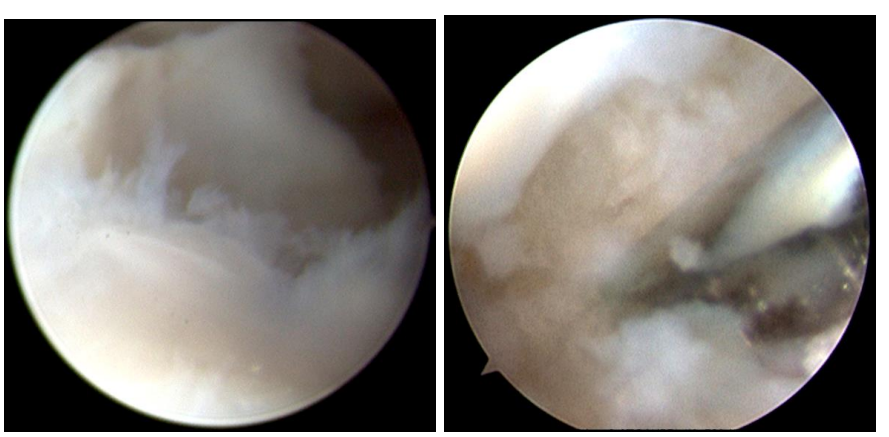
Arthroscopic assessment of the thumb can be done for both the CMC (basal) joint, and the MPJ. Debridement, synovectomy, and removal of loose bodies can be done. Radiofrequency thermal shrinkage of the ligaments can also be done for instability of the joint with associated pain.



Arthroscopy of the thumb, similar to arthroscopy of the MPJ of the finger.

Arthrosocpic view of the thumb MPJ showing fissuring and degeneration of the cartilage

Arthroscopy of the finger MPJ



Osteochondral flap in MPJ of a middle finger, debrided with a shaver arthroscopically.

Conclusion

Many procedures can now be done for the wrist and small joints of the hand through small incisions with the help of the arthroscope. This type of minimally invasive procedures has the potential for better assessment of the pathology, minimal soft tissue damage, and faster recovery. However, open surgery may still be required in certain cases.

Joint replacement in the hand and wrist

Finger and wrist joints can become stiff and painful due to the following reasons:

1. ***Osteoarthritis***
   This is due to degeneration (wear and tear), usually occurring in the 50's and above. The joints become more swollen with bone spurs, and pain, stiffness and deformity.

Middle finger deformity due to osteoarthritis.

2. ***Rheumatoid arthritis (RA)***

   This is due to an autoimmune inflammatory disease affecting all the joints of the body, result in loss of cartilage, damage to ligaments and tendons, and deformities. With newer drugs and treatment protocols, control of this disease is very effective, and deformities are less common.

Joint destruction due to RA, affecting the wrist joint and finger joint

3. ***Post-traumatic arthritis***

   Fractures with or without dislocations of the wrist or finger joints can result in damage to the joints, causing early degeneration. With better techniques and implants, intraarticular fractures of the wrist and finger joints can be better treated with fewer complications. However, not all joints can be restored, and some may still develop post-traumatic arthritis.

Post-traumatic arthritis of the wrist. Another patient with fracture-dislocation of the index finger joint resulting in arthritis, with stiffness and pain.

Treatment of Arthritis

Nonsurgical treatment

Arthritis can be treated non-surgically with pain medication, anti-inflammatory medication, and splinting to rest the affected joint, as well as hand therapy.

Surgical treatment

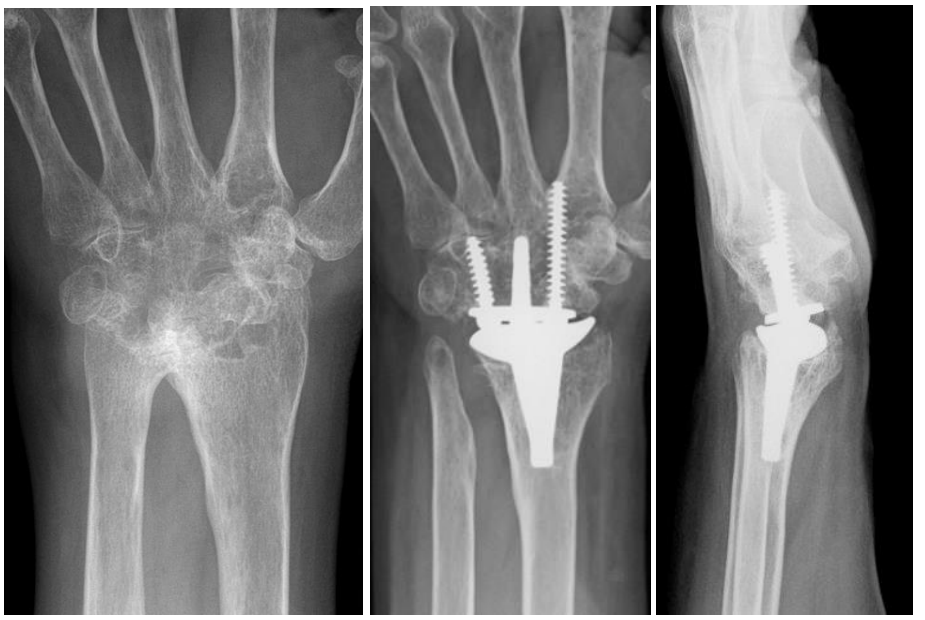
However, when the pain and deformity becomes more severe, and affects daily function, surgery is to be considered. Surgery can be divided into 2 main groups: joint fusion, or joint replacement. Joint replacement has the advantages of preserving joint motion, and reduction of pain. However, it may require revision or conversion to fusion after 10-20 years, if it wears out. Joint fusion is more permanent, and usually does not require revision. However, the joint becomes permanently fixed without any movement in that joint, which can sometimes affect function.

Certain patients and conditions may not be suitable for joint replacement, such as those with poor ligament or tendon quality, imbalance of the joint, or poor bone stock. Certain joints are also not suitable for joint replacement, such as the last joints of the fingers.

Joint replacement Surgery

Joint replacement is now done for the wrist, finger, and distal radioulnar joint (the joint responsible for forearm rotation). Surgery is done with special instruments and implants, and involves cutting away the diseased joint, and replacing with a metal component that is fixed into the bone, with an intervening polyethylene (plastic) component.

1. Wrist joint replacement

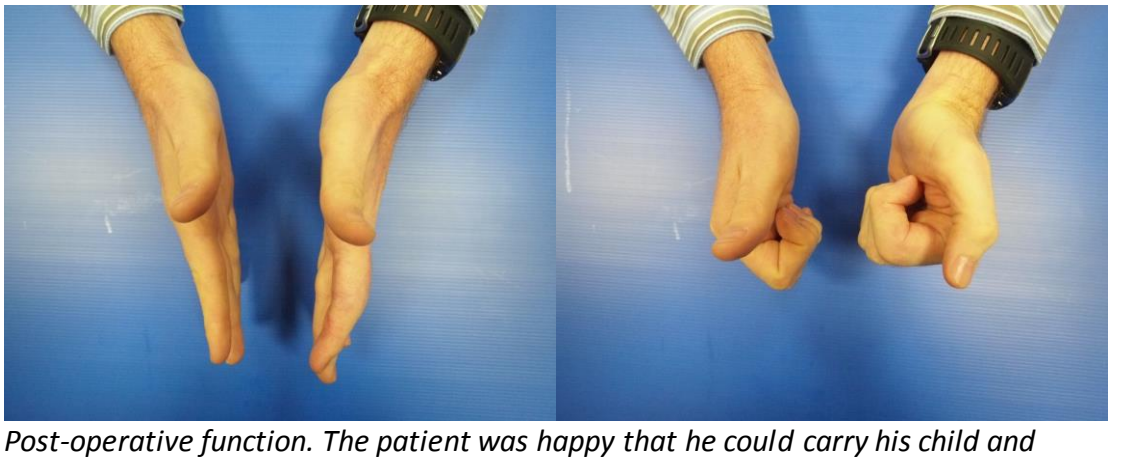


Wrist replacement in a rheumatoid arthritis patient, preserving motion and removing the pain associated with the motion.

2. Finger joint replacement

Proximal interphalangeal joint replacement for the rheumatoid arthritis (shown earlier in this article).

Xrays of post-traumatic joint replacement using a different implant.



Post-operative function. The patient was happy that he could carry his child and throw and catch a ball.

3. Distal radio-ulnar joint (DRUJ) replacement

Injuries to this joint is difficult to manage. Should arthritis occur, replacement can give good relief of pain and restore forearm rotation.

Multiple procedures for pain and instability of the DRUJ (arrow), for which a total joint replacement was done, giving pain relief and stability, allowing patient to return to her work.

Conclusion:

Joint replacement of the finger or wrist joints can restore function and alignment by correcting the deformity, reduce the pain and at the same time preserve motion.

However, a proper assessment is required to determine if a patient is suitable for this procedure. The alternative procedure of a joint fusion may sometimes be better