DR. JAMES LEDGARD
Hand, Wrist and
Reconstructive Plastic Surgeon

ROYAL
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Wrist Arthritis

Definition

Arthritis of the wrist is a **degenerative condition affecting the cartilage, bone and ligaments causing pain and dysfunction**.

Causes

Osteoarthritis (OA) is commonly caused by previous trauma. The most common causes are a scaphoid fracture that failed to heal or an injury to the ligament between the scaphoid and lunate.

Carpal bones only move when compression forces are applied as they don't have tendon or muscle attachments. The proximal and distal row are tightly bound by strong ligaments and the three bones within each row move together. When an injury occurs, **the balance is lost** and the **carpal bones move into abnormal positions**, the most common being a dorsal intercalated segment instability deformity (DISI). The **abnormal position and movement of the bones causes** a pattern of **OA** that starts between the radius and scaphoid, then develops between the proximal and distal row, then finally involves all joint surfaces. The terms scaphoid non-union advanced collapse (SNAC wrist) and scapholunate advanced collapse (SLAC wrist) are used to describe these patterns.

Inflammatory arthritis and pseudogout (calcium pyrophosphate disease (CPPD)) **are other common causes of wrist arthritis**.

Risk Factors

OA can be found on 5% of all wrist x-rays with **age being the strongest risk factor**. SNAC wrist consistently develops 5-10 years after scaphoid non-union. The development of arthritis after scapholunate injury is less likely with SLAC wrist developing in <20% of cases.

Symptoms

Symptoms include:

- Pain and stiffness, usually worse at the end of the day, after use;
- Symptoms often develop gradually but may be precipitated by an injury or activity;
- Dysfunction interfering with activities of daily living;
- An acute flare suggests an inflammatory cause or CPPD.

Diagnosis

Wrist OA is **diagnosed with history and examination. X-rays confirm the pattern** of disease and often the cause. It is best to have standardised views with the shoulder abducted 90º and the elbow flexed 90º so abutment of a long ulna can be excluded. Calcification of the triangular fibrocartilage complex (TFCC) suggests CPPD. MRI can help confirm cartilage quality in joints that appear preserved on x-ray.

Examination findings include:

- Tender swelling of the affected joints;
- Reduced range of motion;
- Reduced grip strength;
- The distal radio-ulnar joint is checked as involvement adversely affects outcomes.

Treatment

A trial of nonoperative management 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**;
- Rigid **splints** can be useful for pain relief, but neoprene may be better tolerated;
- 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.

If nonoperative measures fail then surgery should be considered. The procedure is based on the joints involved, the residual range of motion, the age and the activities you want to return to postoperatively.

Wrist Denervation:

- Cutting the nerves of the wrist which transmit pain;
- ~70% of patients report pain ≤3/10 and ~80% are satisfied;
- Pain relief is inadequate in manual labourers;
- Low complication rate of ~15% including early failure and secondary surgery;

Proximal Row Carpectomy (PRC):

- Excision of the proximal row of carpal bones;
- Only possible in mild to moderate disease when the cartilage of the distal row (specifically the capitate) is healthy;
- ~50% of patients report being pain free and >80% are satisfied;
- Less satisfactory in manual labourers and younger people;
- Preserves ~60% range of motion and ~75% grip strength.

Limited Carpal Fusion:

- Fusion of proximal and distal carpal bones;
- Excision of the scaphoid and four-corner fusion is the most common;
- Possible in more severe disease as long as the cartilage of the proximal lunate is healthy;
- Requires immobilisation postoperatively;
- ~50% of patients report being pain free;
- Preserves 50% range of motion and >75% grip strength;
- Associated with a higher complication rate of ≤20% including conversion to total wrist fusion.

Total Wrist Fusion:

- Fusion of the radius and carpal bones;
- Reliably relieves pain and >80% of patients are satisfied;
- Preservation of forearm rotation but loss of flexion and extension;
- >80% strength preserved and most patients can return to their previous occupation;
- Complication rate <10%.

Total Wrist Arthroplasty:

- Insertion of prosthesis to replace joint surfaces;
- ~70% of patients report pain ≤3/10 and ~80% are satisfied;
- Preserves >50% range of motion;
- Complication rate ~30% including revision or conversion to total wrist fusion.

Prevention

Unfortunately, previous injury to a wrist cannot be reversed. **The Arthritis Australia website is a great resource for someone with established OA. A healthy lifestyle is the best way to prevent progression.** Dietary supplements such as glucosamine, chondroitin, fish oil and turmeric are popular but the evidence supporting them is poor. Unfortunately, the wrist is used in functional 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.

Written with the help of:

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P 1300 836 366
F 02 9475 1250
E reception@drjamesledgard.com.au
www.drjamesledgard.com.au