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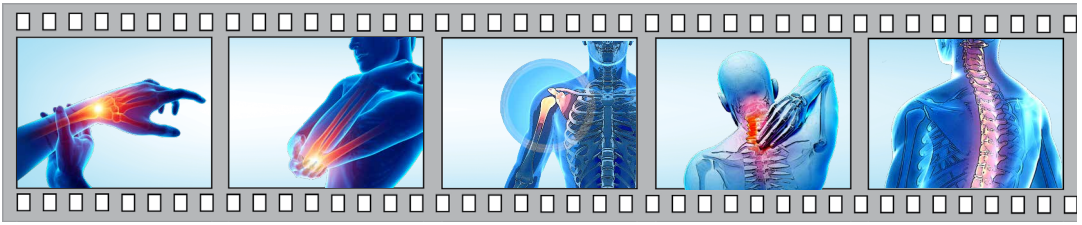
Common Hand Disorders



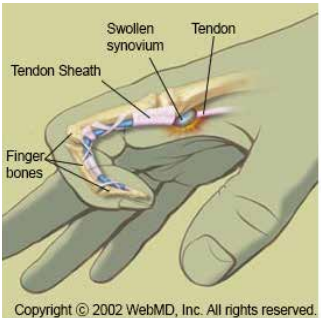
The hand, with its fine tactile sensation and near infinite varieties of motion, from dexterous to Herculean, is precision apparatus to reach out and connect to the world directly.

The symptoms of common hand problems include lumps, deformities, loss of function, pain and sensory disturbances such as numbness or pins and needles. Early recognition and accurate diagnosis of these conditions can reduce patients' problems. This article gives a brief overview of the most common hand disorders categorised according to the typical symptoms.

Pain and loss of function

Trigger finger

Often this diagnosis is obvious, as the patient complains of, and demonstrates, catching of the finger, which is often painful, and the digit may get stuck in flexion and require help to passively straighten it, and it gives way with a snap. In some cases, there is only a pain in the flexor tendon, usually in the palm, and there may be tenderness at the tight pulley near the metacarpal head in the palm.

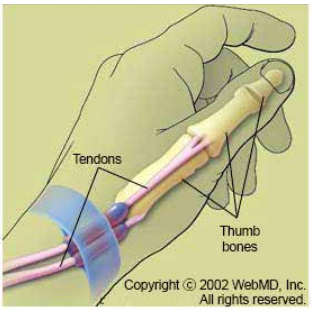


Also named *stenosing tenosynovitis*, **trigger finger** is one of the most common soft tissue musculoskeletal disorders treated by primary-care physicians and orthopaedic surgeons[1]. *Primary stenosing tenosynovitis* is more common in middle-aged women, it is usually idiopathic, but some result from overuse, or any activity that relies on repetitive finger motion, causing degeneration of the flexor tendon and thickening of the A1 pulley. The symptoms are usually worse in the morning and after a firm hand grasp and improve after straightening the locked finger. *Secondary stenosing tenosynovitis* of the digits can occur in patients with diseases that cause connective tissue disorders such as rheumatoid arthritis, diabetes mellitus and gout.

Treatment

The majority of patients do well with therapy and injection of steroid around the tendon. Patients with single-digit involvement have a better response than those with multiple-digit involvement. Moreover, patients enjoying symptom relief two years after injection are likely to maintain long-term success[1, 2]. The small procedure of surgical A1 pulley release with or without excision is generally indicated when all conservative treatments are exhausted. A percutaneous release can be performed under local anaesthesia as an office procedure[3].

De Quervain's tenosynovitis

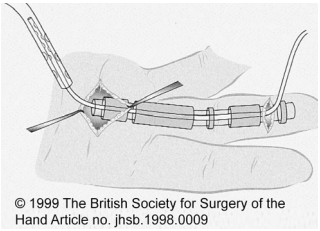


This common painful condition affects the thumb extensor tendons on the radial border of the wrist. The pain is worse if the affected tendon is stretched such as by bending the thumb and twisting the wrist; or if the tendon is under strain when making a fist or grasping. The condition is most common in middle-aged women but is also associated with pregnancy and breastfeeding. Just like other types of inflammatory tenosynovitis, the exact cause of **de Quervain's tenosynovitis** is not known, but many people believe that chronic overuse and activities involved repetitive radial and ulnar wrist motion may contribute to the underlying tendinopathy.

Treatment

It has been demonstrated that a single steroid injection is effective in alleviating symptoms of **de Quervain's tenosynovitis** in more than 80% of patients and that over half of them remained symptom-free for at least 12 months. If symptoms recur, a majority of them will develop within the first 6 months[4]. Steroid injection is safe during pregnancy and while breastfeeding.

Infective tenosynovitis



Different from those inflammatory tenosynovitis aforementioned, **infective tenosynovitis** is the malicious condition of closed-space infection within the tendon sheath that can result in poor clinical outcomes; thus it must be diagnosed and treated promptly. The potential complication includes residual digital stiffness, in a severe case may require finger amputation[5]. The *Kanavel signs* are useful for early clinical diagnosis of the flexor tenosynovitis of the digits. They consist of 1: Fusiform swelling; 2: Flexion posture (hook sign); 3: tenderness along the affected tendon; 4: pain on passive stretching.

Management consists of early intravenous antibiotics prescription and surgical drainage with open washout or catheter irrigation[6].

Arthritis

Apart from those disorders of the tendon and tendon sheath, chronic pain and swelling can also be caused by the overuse or osteoarthritis of the carpometacarpal joint, small joints

of the finger, wrist joint and the distal radioulnar joint. The common symptoms are aching, pain, and stiffness, especially after exertion or motion involving the end range of the affected joint. Those conditions can lead to functional decline and can significantly affect the patients' quality of life.

Treatment

First line treatments are therapy, splintage and painkillers. If these fail to relieve the symptoms, surgery may be helpful. The small procedure of arthroscopic synovectomy can be helpful. Definitive treatment for advanced degeneration included fusion of the joint in a functional position and various types of joint replacement or excisional arthroplasties[7, 8].

Lumps

Finding a lump in one's body can be worrying, but in general, cancers are uncommon in the upper limb, and most lumps are 'benign'.

The **ganglion cyst** is the most common lump found in the fingers, hand and wrist. It is a synovial cyst filled with gelatinous mucoid material. **Ganglion cysts** are completely benign but have an annoying habit of coming back, despite careful treatment.

Giant cell tumours of the tendon sheath are solid lumps in the tendon sheaths of the hand, which can easily be confused with a ganglion. There are two kinds - localised and diffuse. Diffuse types do not have a clear boundary and have more aggressive growth and higher recurrence rates [9], though both are benign.

The **glomus tumour** most frequently occurs in the fingertip and underneath the nail. It is a benign growth of the glomus body of the thermoregulation of cutaneous microvasculature. It is more common in women and causes stabbing paroxysmal pain, tenderness and cold intolerance. Although they can develop in any part of the body, they are most common in the upper extremities[10].

Schwannoma (also known as *neurilemmoma*) generally appear as an asymptomatic lump or slow-growing swelling with vague discomfort. They are benign tumours of nerves, and so odd sensations, such as pins and needles or pain ('paraesthesias') may be caused by pressure on the lump. Ultrasound or MRI is helpful in confirming the diagnosis.

Treatment

Surgical removal is the general treatment for **ganglion cysts**, **giant cell tumours** of the tendon sheath and **glomus tumours**, and is usually successful without significant side effects. Generally, we attempt to remove **Schwannomas** while leaving the rest of the nerve intact, but there is a risk of residual paraesthesia caused by the effect on the normal part of the nerve[11].

Deformity

Claw deformity of finger or hand can be due to: imbalance between strong extrinsic and deficient intrinsics in neuropathic conditions such as ulnar nerve palsy and any previous trauma resulted in compartment syndrome, bone deformity or joint destruction.

Claw deformities of the hand impair function because of reduced power grip and pinch strength.

Dupuytren's contracture is a progressive condition in which the normal layers of fibrous tissue in the palm tighten up, bending the fingers. The palmar fascia and the digital ligaments thicken and shorten into pathological cords and eventually causing flexion deformity of one or more fingers. The primary cause of **Dupuytren's contracture** is still not known, but there is a strong hereditary component, with the condition running in families and being more common in those of Northern European descent. Other risk factors include diabetes, smoking, and alcohol. The most commonly used treatments are enzyme injections and surgery.

Treatment

Surgical options include open or percutaneous needle fasciotomy (also known as aponeurotomy) and partial or total fasciectomy. It has been shown in a clinical trial that there were no significant differences in the reduction of proximal interphalangeal joint contracture, the range of motion, or patient-reported outcomes between the treatments using the enzyme injection and the percutaneous needle fasciotomy[12].

Ulnar claw hand is an abnormal hand position that develops due to ulnar nerve dysfunction, and **cubital tunnel syndrome** is the second common compressive neuropathy in the upper extremity. It can cause numbness (pin and needles) or burning pain in the ring and little

fingers and clumsiness and weakness in the hand. The symptoms are often worse with the elbow bent as the ulnar nerve is stretched around the medial epicondyle of the humerus bone at the elbow.

Electrodiagnostic testing is essential for the accurate diagnosis of cubital tunnel syndrome and other compressive neuropathies.

Treatment

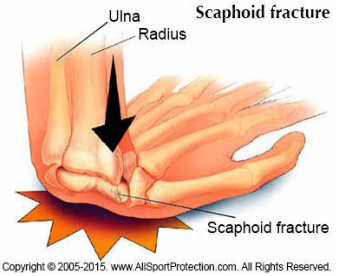
Night time elbow extension splints may help. Surgical options include ulnar nerve transposition (either subcutaneous or submuscular) and ulnar nerve decompression with removal of the medial epicondyle of the humerus bone. Ulnar nerve transposition operation cause more discomfort than simple decompression operation with patients taking more narcotic painkillers after the operation and reporting greater disability up to 8 weeks after the operation, as well as more sensory disturbance around the incision[13].

Sensory Disturbance

Carpal tunnel syndrome is the most common neuropathy in the upper limb, caused by compression of the median nerve at the wrist. Pain in the arm, especially at night, is one of the most common symptoms. Numbness and tingling of the index and middle fingers and the thumb, weakness in thumb abduction are the classic symptoms. The paresthesia is usually worse at night and with wrist flexion. It is common in pregnancy. First line treatment is therapy and splintage. Steroid injections are safe and often helpful. Surgical release of the carpal ligament, decompressing the median nerve, either via an open or endoscopic technique, is an effective treatment[14].

Hand and wrist injuries

Lacerations of nerves and tendons require tension-free nerve repair and secure tendon repair together with a structured post-operative rehabilitation programme to achieve the best results.



The principle of treatment of hand fractures is to achieve early movement to minimise stiffness. If fractures are unstable, they may require surgery to allow early movement. Hand and wrist fractures, especially distal radius and scaphoid fractures, are ideally operated with specialised, limited

soft tissue dissection techniques to minimise scar tissue formation yet achieving anatomical reduction and rigid fixation for early mobilisation.

Most soft tissue sprains can be treated with protective splintage, except for skier's thumb and acute TFCC tear, which may require surgical reduction and direct repair, as they do not usually heal well naturally.

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