

Hand Pain & Problems

Anatomy of the hand:

The hand is composed of many different bones, muscles, and ligaments that allow for a large amount of movement and dexterity. There are three major types of bones in the hand itself, including the following:

Anatomy of the Hand



- phalanges - the 14 bones that are found in the fingers of each hand and also in the toes of each foot. Each finger has three phalanges (the distal, middle, and proximal); the thumb only has two.
- metacarpal bones - the five bones that compose the middle part of the hand.
- carpal bones - the eight bones that create the wrist. The carpal bones are connected to two bones of the arm, the ulnar bone and the radius bone.

Numerous muscles, ligaments, and sheaths can be found within the hand. The muscles are the structures that can contract, allowing movement of the bones in the

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hand. The ligaments are fibrous tissues that help bind together the joints in the hand. The sheaths are tubular structures that surround part of the fingers.

What are some common hand problems?

There are many common hand problems that can interfere with activities of daily living (ADLs), including the following:

- arthritis
Arthritis is joint inflammation and can occur in multiple areas of the hand and wrist. The pain associated with arthritis may be from many different sources, including inflammation of the following:
 - synovial membrane - (joint lining) a clear, sticky fluid that is released by the synovial membrane and acts as a lubricant for joints and tendons.
 - tendons - the tough cords of tissue that connect muscles to bones.
 - ligaments - a white, shiny, flexible band of fibrous tissue that binds joints together and connects various bones and cartilage.

Osteoarthritis, a degenerative joint disease, is the most common type of arthritis in older people. It is a slow-progressing disease that primarily affects the hands and the large weight-bearing joints of the body, such as the knees and hips. Osteoarthritis in the hands or hips may run in families, or be caused by injuries, overuse, muscle strain, or fatigue.

Heberden nodes, abnormal enlargements of the bone or cartilage - about the size of a pea or smaller - may occur in the finger joints, and may be aggravated by osteoarthritis.

- carpal tunnel syndrome
Carpal tunnel syndrome is a condition in which the median nerve is compressed as it passes through the carpal tunnel in the wrist, a narrow confined space. Since the median nerve provides sensory and motor functions to the thumb and three middle fingers, many symptoms may result.

The following are the most common symptoms for carpal tunnel syndrome.

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However, each individual may experience symptoms differently. Symptoms may include:

- difficulty making a fist
- difficulty gripping objects with the hand(s)
- pain and/or numbness in the hand(s)
- "pins and needles" feeling in the fingers
- swollen feeling in the fingers
- burning or tingling in the fingers, especially the thumb and the index and middle fingers

The symptoms of carpal tunnel syndrome may resemble other conditions such as tendonitis, bursitis, or rheumatoid arthritis. Always consult your physician for a diagnosis.

Treatment may include:

- splinting of the hand (to help prevent wrist movement and decrease the compression of the nerves inside the tunnel)
- oral or injected (into the carpal tunnel space) anti-inflammatory medications (to reduce the swelling)
- surgery (to relieve compression on the nerves in the carpal tunnel)
- changing position of a computer keyboard, or other ergonomic changes
- ganglion cysts
Soft, fluid-filled cysts can develop on the front or back of the hand for no apparent reason. These are called ganglion cysts - the most common, benign (non-cancerous), soft-tissue tumor of the hand and wrist.

The following are the most common symptoms for ganglion cysts. However, each individual may experience symptoms differently. Symptoms may include:

- wrist pain that is aggravated with repeated use or irritation
- a slow growing, localized swelling, with mild aching and weakness in the wrist
- an apparent cyst that is smooth, firm, rounded, and/or tender

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The symptoms of ganglion cysts may resemble other medical conditions or problems. Always consult your physician for a diagnosis.

Initially, when the cyst is small and painless, treatment is usually not necessary. Only when the cyst begins to grow and interferes with the functionality of the hand is treatment usually necessary. Treatment may include:

- rest
 - splinting
 - nonsteroidal anti-inflammatory medications
 - aspiration
 - cortisone injections
 - surgery
- Tendon problems
Two major problems associated with tendons include tendonitis and tenosynovitis. Tendonitis, inflammation of a tendon (the tough cords of tissue that connect muscles to bones) can affect any tendon, but is most commonly seen in the wrist and fingers. When the tendons become irritated, swelling, pain, and discomfort will occur.

Tenosynovitis is the inflammation of the lining of the tendon sheaths which enclose the tendons. The tendon sheath is usually the site which becomes inflamed, but both the sheath and the tendon can become inflamed simultaneously. The cause of tenosynovitis is often unknown, but usually strain, overuse, injury, or excessive exercise may be implicated. Tendonitis may also be related to disease (i.e., diabetes or rheumatoid arthritis).

Common tendon disorders include the following:

- lateral epicondylitis (commonly known as tennis elbow) - a condition characterized by pain in the back side of the elbow and forearm, along the thumb side when the arm is alongside the body with the thumb turned away. The pain is caused by damage to the tendons that bend the wrist backward away from the palm.
- medial epicondylitis (commonly known as golfer's or baseball elbow) - a condition characterized by pain from the elbow to the wrist on the

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palm side of the forearm. The pain is caused by damage to the tendons that bend the wrist toward the palm.

- rotator cuff tendonitis - a shoulder disorder characterized by the inflammation of the shoulder capsule and related tendons.
- DeQuervain's tenosynovitis - the most common type of tenosynovitis disorder characterized by the tendon sheath swelling in the tendons of the thumb.
- trigger finger/trigger thumb - a tenosynovitis condition in which the tendon sheath becomes inflamed and thickened, thus preventing the smooth extension or flexion of the finger/thumb. The finger/thumb may lock or "trigger" suddenly.

Treatment for most tendon problems may include:

- activity modification
- ice
- splinting or immobilization
- steroid injections
- nonsteroidal anti-inflammatory medications
- surgery

What are ganglion cysts?

These non-cancerous, fluid-filled cysts are the common masses or lumps in the hand and usually found on the back of the wrist. They arise from irritated or inflamed ligaments, joint linings, or tendon sheaths. They may appear, disappear, or change size quickly, and may not require treatment unless they are painful, interfere with activity, or have an undesirable appearance.

What is carpal tunnel syndrome?

Symptoms of carpal tunnel syndrome often include:

- numbness and tingling in the hand, especially at night
- pain with prolonged gripping such as holding a steering wheel
- clumsiness in handling objects

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The symptoms are caused by pressure on the median nerve as it enters the hand through a tunnel in the wrist. Pain from carpal tunnel syndrome can radiate up the arm to the shoulder.

Carpal tunnel syndrome may be treated with:

- brace or splint
- oral medications
- cortisone injection
- surgery

What is tendinitis of the wrist?

This condition is an irritation and swelling of the sheath or tunnel that surrounds the thumb tendons. It may be caused by overuse and is also seen in association with pregnancy or inflammatory arthritis.

Modification of the activity that initially caused the symptoms may be required, followed by treatment with a splint, injection with steroids, or taking anti-inflammatory medications. Some cases may require surgery.



Arthritis of the Hand:



Arthritis is very common at the base of the thumb, and can be treated with anti-inflammatory medication, steroid injections into the joint, or splinting.

Heberden nodes are bumps that occur at the last joint of the finger or thumb due to arthritis. They are small bone spurs that form over the back of the joints and make them appear lumpy, but are not painful and seldom interfere with function. Treatment may or may not be necessary.

What is Dupuytren's contracture?

This is a hereditary thickening of the tough tissue, called fascia, that lies just below the skin of the palm. Small lumps or bands appear, which may eventually pull the fingers into the palm. Dupuytren's disease runs in

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families, but may also be associated with cigarette smoking, vascular disease, epilepsy, and diabetes.

The small nodules or lumps in the palm do not need treatment unless they become very large or interfere with hand function. Surgical treatment may be recommended if there is progressive drawing of the fingers into the hand. Bands may reappear or occur in other fingers.

What is trigger finger?

This is an irritation of the digital sheath that surrounds the flexor tendons. When the sheath surrounding the tendon becomes swollen, it pinches the tendon and prevents it from gliding smoothly. The tendon catches and then suddenly releases an action similar to pulling and releasing a trigger.

Swelling in the tendon sheath can be treated with rest, activity modification, anti-inflammatory, or steroid injections. Some cases may require surgery to release the tendon.