Why does my wrist hurt?
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Our hands serve to connect our brains to our environment and interact with it. The hand is both delicate and powerful to allow both the blind to read Braille and the rock climber to hang their bodies from their fingertips.

The shoulder, elbow, and wrist all play separate and important roles in positioning our hands in space. The wrist plays a critical role in this linkage and pain in the wrist can certainly be debilitating to how we use our hands in our daily lives whether it is in work or play.

The wrist has to be able to position the hand through almost a hemisphere of motion, and in this motion, be able to transmit pulling, pushing and twisting. It does this through a complex of bones, ligaments, and tendons, all working in concert. It is when one of these is unable to perfom that pain develops, either from pain in the weak link, or abnormal loading of the remaining parts.

In some situations, pain develops immediately after an injury. This can either be a single event or cumulative. Immediate pain can result from partial tearing or sprain of the bone to bone ligamentous attachments, complete ligamentous tear, or fracture. Treatment can range from as simple as a spint and anti-inflammatory medication to surgery to position and align the bones to allow anatomic healing.

Long lasting pain can result from repeated overloading to a tendon resulting in microscopic tears that aren't allowed to heal, or to abnormal loading resulting from missed ligament tears that over years speed up the development of wear type arthritis also known as osteoarthritis.

There are several causes for wrist pain, and the following are some explanations of the causes and treatments.

Dequervain's Tendonitis
There are many tendons that cross the wrist to extend our wrist and fingers. The thumb alone has three tendons to straighten the tip, straighten the knuckle, and stabilize the base of the thumb that come from the forearm. The muscles that come from the forearm must cross underneath a band of tissue known as the dorsal retinaculum. The retinaculum is divided into compartments that the tendons pass through, and two of the the thumb tendons pass through the first compartment. So that they pass underneath smoothly, the tendons are lubricated by a sack known as tenosynovium that wraps around the tendon under the retinaculum. If this tenosynovium becomes inflamed, usually from repeated use, it is thicker than normal. As the thickened tenosynovium and tendon pass under the retinaculum, it gets painfully stretched in order to them to pass underneath. Pain at the radial base of the thumb that is worsened with placement of the thumb in the palm then

bending the wrist toward the ulna is called Finklestein's test and is diagnostic for so called Dequervain's tendonitis. Treatment for Dequervain's usually starts with simple measures such as a thumb spica splint and anti-inflammatory medication. If this is ineffective, an anti-inflammatory corticosteroid injection into the tenosynovium may allow the swelling to go down for an extended period or even completely. Finally, if these measures fail, the retinaculum can be released surgically and the tendon and tenosynovium have enough space to glide freely. The thumb is allowed to move immediately postoperatively and recovery is usually complete in six weeks.

Ganglion Cyst

The joints that make up our hands and wrist have joint or synovial fluid that acts as a lubricant to allow the cartilage to slide easily. Sometimes there is a weak area, almost like a hole that can develop for not entirely clear reasons. In this hole in the capsule, the lining of the joint, the synovium can pouch out. As it pouches out, fluid can make the pouch bigger and the spot that allows the fluid out acts as a one way valve and doesn't let the fluid back into the joint. The accumulated fluid then forms a clear jelly like substance. The pouch is known as a ganglion cyst, and depending on the location and closeness of nerves, can be painful. The back of the wrist is the most common spot, followed by the palm side of the wrist near the radial artery. Treatment can sometimes be conservative, but the most successful treatment usually means surgical excision. The cyst can be opened up with an arthroscopic shaver to open the valve, or an incision can be made and the cyst and stalk cut out and the area of the capsule roughened to scar over the rent in the capsule. The cyst can reform about 5-10% of the time.

Flexor Carpi Radialis / Flexor Carpi Ulnaris tendonitis

There are two muscle and tendon units on either side of the wrist to bend the wrist down toward the palm and alternatively can act to swing the wrist from side to side. The tendon on the small finger side, the flexor carpi ulnaris, is very strong and is used to pull the hand down such as when swinging a hammer. When these tendons are used repeatedly, without the chance to heal, they can develop small tears that cause pain. The tendon becomes swollen and painful. Usually on examination the tendon is tender to touch. Treatment usually consists of rest and anti-inflammatory medication.

Wrist Osteoarthritis (OA)

As a result of many conditions, sometimes trauma, the cartilage that covers bones in the wrist is worn and the bones rub each other. This rubbing irritates nerve endings in the bone and pain results. Almost always this wear results in narrowing of the joint space on x-ray, and sometimes there are bubbles of joint fluid going into the bone known as cysts. Also there may be more bone put down around the joint as spurs or hardening of the bone just below the cartilage. Treatment depends on the severity of the arthritis. It usually starts simply with splinting and anti-inflammatory medication, and progresses to corticosteroid injection and eventually surgery. On occaision several bones need to be made to grow together or fuse, and in some situations the bones are removed to allow for newer surfaces to be in contact.

Triangular Fibrocartilage Complex (TFCC) tear

There is a cartilage disc, the TFCC, on the ulnar side of the wrist (opposite the thumb) that allows the relatively flat end of the ulna to transmit forces to the rounded carpal bones of the wrist. This disc serves also to blend in with the ligaments that stabilize the joint between the far end of the radius and ulna. In some instances there is a tear that can happen in the middle or edge of this disc that can cause pain. Occasionally these tears can happen with a single event of trauma or as a result of repeated loading on the wrist. The tears that happen as a result of repeated loading are fairly common as we get into our older years (60+). In acute, single traumatic episodes, immobilization for a short period can be used to allow the tissues to heal. In chronic circumstances, MRI and x rays of the wrist can be used in combination to decide the best treatment. This can involve wrist arthroscopy, which looks inside the joint with a small camera and tools to shave or repair the torn TFCC. Alternatively, in situations when the loading is uneven between the radius, ulna and carpal bones, the ulna can be cut and shortened by a few millimeters and held in place with a plate and screws until it is healed.

Scapholunate (SL) ligament tear

The multiple bones that make up the wrist interact in a very specific fashion to transmit forces effectively and so that the cartilage is not worn unevenly. A key part of this coordinated motion occurs due to the intricate ligaments that tie the carpal bones of the wrist together. A key ligament connects two of them, the scaphoid and the lunate, called the scapholunate ligament. The scaphoid is a kidney shaped bone underneath the thumb and the scaphoid is a moon shaped bone as its most adjacent neighbor. The scaphoid acts to tie or coordinate motion almost like a link in a car's multilink suspension. If the scapholunate (SL) ligament is torn, the space between them spreads and the wrist tends to become more unstable. Similarly to the TFCC, it can be torn with a sinlge traumatic event that is sometimes overlooked initially. If left for a long duration, this can develop into arthritis in the wrist. Treatment is similar to a TFCC tear, with splinting initially, but if there is significant instability between the carpal bones, surgery is the only option. Again, this in some circumstances can be arthroscopic; although in most it is an open repair of the ligament.

There are several other causes of pain in the wrist. Seeing a surgeon can allow them to most closely find the cause of your pain and get you on your way to a more painless wrist.

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