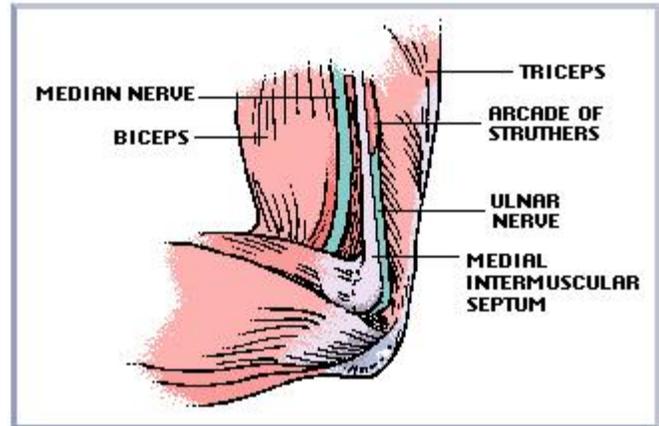


CUBITAL TUNNEL SYNDROME

WHAT IS CUBITAL TUNNEL SYNDROME?

- Cubital tunnel syndrome is the second most commonly occurring nerve compression in the upper body
- It is caused by compression of the ulnar nerve at the elbow
- The ulnar nerve passes through a tunnel formed by the upper arm bone (humerus), the muscle which bends the wrist forward (flexor carpi ulnaris), and a ligament which holds the nerve next to the bone
- When the elbow is bent, the ulnar nerve stretches and the tunnel becomes smaller which can pinch the nerve
- This nerve is also commonly bruised when the inside edge of the elbow hits against an object
- When you hit your "funny bone", you are actually hitting the ulnar nerve



SYMPTOMS

- Pain over the inside edge of the elbow
- Tenderness in the groove at the inside edge of the elbow
- Feeling as if the "funny bone" is being hit when you tap over the groove at the inside edge of the elbow
- Numbness and tingling in the small finger and the ring finger
- Feelings of clumsiness
- Loss of fine motor control
- "Cramping" in the ring finger and small finger
- Symptoms may feel worse when the elbow is bent for a period of time (for example, when driving, holding a phone, using a hair dryer, or at night when sleeping in the "fetal" position)
- In advance cases, the muscles at the base of the hand on the small finger side, in the web-space between the thumb and the index finger, and between the finger bones in the palm may become weaker and begin to waste away (atrophy). The ring finger and small finger may begin to

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"claw". Muscle atrophy is an advanced sign of severe nerve compression. If you notice any muscle wasting, seek medical attention immediately as the pressure on the nerve needs to be relieved as quickly as possible, usually through surgery.

OCCUPATIONAL CAUSES

- Repetitively bending and straightening the elbow
- Holding the elbow bent for long periods of time
- Leaning on the inside edge of the elbow or on the forearm against a desk or table edge
- Performing tasks which require resisted elbow straightening (for example, shoveling, manually turning the wheels while sitting in a wheelchair, surfing, triceps exercises)
- Using vibrating tools

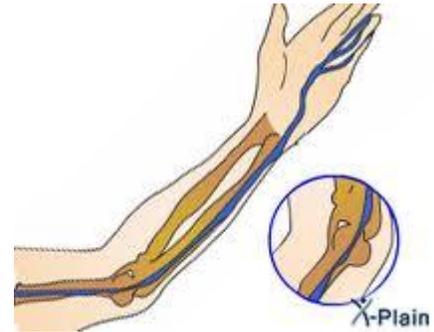


PREVENTION & ERGONOMICS

- Avoid leaning on the inside edge of the elbow
- Avoid leaning the forearm against hard or sharp edges (such as a table or desk edge)
- Pad your workbench, desk surfaces and chair arms
- Avoid holding the elbow in a bent position for any length of time (for example, use a head set if you will be speaking on the phone)
- Work from the shoulder and don't isolate wrist or elbow movement
- Avoid prolonged bending of the wrist towards the palm during activities
- Minimize repetition; Periodically rest the arms briefly during repetitive or stressful activity; Stretch often during repetitive activity
- Slow down the activity
- Use the lightest grip possible (on tools, pens, the mouse, the steering wheel, etc.) that still allows you to maintain good control

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- Use the least amount of force necessary during the activity
- Use the appropriate tool for the job
- Use ergonomically designed tools if available; Use leverage to help you push and pull with less force
- Make sure that tools are in good condition and that cutting edges are sharp (reduces the force needed to use the tool)
- Alternate work activities so the hands are not performing any one task repetitively for any length of time
- Use good ergonomic practices at work; Apply these tendon and nerve protection principles to daily and leisure activities as well.
- Practice good health habits



PREVENTION & EARLY TREATMENT

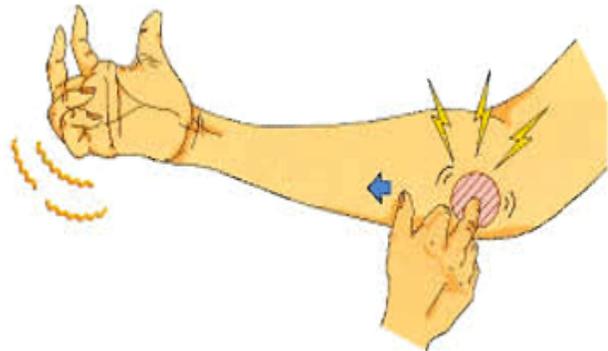
- Night splinting which prevents the elbow from bending more than 60 degrees (0 degrees would be straight)
- Wear an elbow pad during the day to remind you not to lean of the elbow, to provide a slight resistance that reminds you not to bend the elbow, and to pad and protect the vulnerable nerve
- Avoid the activities which cause pain if possible; Modify those activities that cannot be avoided
- An ergonomic consultation to modify work environment stressors
- Education in tendon and nerve protection techniques including modification of sleep and work habits
- Hand therapy techniques to improve circulation, decrease swelling and reduce pain
- A supervised exercise program to stretch tight muscles, strengthen weak muscles, promote postural balance; the program should include tendon and nerve gliding exercises
- The M.D. may prescribe anti-inflammatory medications such as naprosyn or ibuprofen; if these medications cause stomach irritation, the M.D. may also prescribe a stomach calmer such as zantac

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- The M.D. may recommend a cortisone injection near the area that the ulnar nerve is compressed
- A vitamin B6 supplement may help improve nerve function (the studies are controversial); 100 milligrams is the daily recommended dosage; too much B6 can actually cause nerve damage. You may want to consult with your M.D. prior to taking.

SURGICAL PROCEDURE

- There are a variety of surgical procedures which can be used to relieve the pressure on the ulnar nerve at the elbow; the procedure chosen depends upon the severity and location of the injury and upon M.D. preference and training
 - The ligament which forms the roof of the tunnel at the elbow can be divided to decrease the pressure in the tunnel
 - The ulnar nerve can be repositioned from behind the bony groove of the elbow to in front the bone so that there is less tension and stretch on the nerve when the elbow is bent.
 - The nerve can be placed underneath or within the forearm muscles that insert onto the bone at the inside of the elbow for protection
 - The bone which forms the bottom of the tunnel can be shaved and smoothed out, or a small portion removed if necessary. The nerve is then positioned in front of the bone.



WHAT SHOULD I DO AFTER SURGERY?

- Keep the initial cast and incision clean and dry
- Once the cast is removed (usually in 2-4 weeks), change the bandages as needed, especially if saturated with blood
- Keep the fingers moving - make a gentle fist and hook fist, spread the fingers apart
- Avoid bending the wrist forward (toward the palm) for 4 weeks after surgery to let the muscles that insert onto the elbow heal; the M.D. or

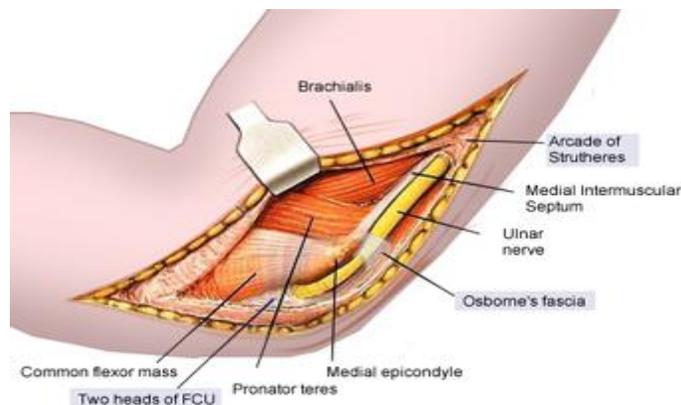
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therapist may provide a wrist support (custom or pre-fabricated) to be worn at all times

- Begin gently bending and straightening the elbow once the M.D. approves movement
- When the cast is removed, use your arm for light activity, as normally as possible, but respect pain
- Once the stitches and cast are removed, begin gently massaging the scar
- Use a silicone based scar bandage if the scar is thick, stuck, red or painful
- Gradually increase strength activities at 6 weeks post-surgery

POST-SURGICAL THERAPY

- Protective splinting with the wrist neutral and the elbow at a 90 degree angle for a short period of time immediately post-surgery
- Cleaning and dressing of the incision until healed
- The therapist or M.D. may provide a padded elbow sleeve to protect the healing area from re-injury and for comfort. The inside edge of the elbow can remain tender for 3-4 months after this type of surgery
- Scar management including massage, the use of scar molds or silicone gel sheeting, ultrasound, hot packs
- Swelling reduction techniques including instruction in elevation of the arm, compression wraps, retrograde massage, cold packs
- Desensitization techniques for a sensitive scar.
- Active motion including tendon and nerve gliding exercises
- Strengthening and work conditioning activities beginning at 6 weeks after surgery to tolerance



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FAQs

I'm afraid to have the surgery. I've heard that it doesn't help. Why?

- Most people who have the cubital tunnel release surgery notice an improvement in symptoms. However, symptoms may not resolve entirely if the compression on the nerve has caused any permanent damage. If this is the case, the surgery may prevent the condition from getting worse but a good result may not be reported.
- The person with a "poor" surgical result may be experiencing a "double-crush" injury. The nerves are long, starting up in the neck and branching into the three main nerves into the hand. If the nerve is compromised at one position (for example, the cubital tunnel), the function of the nerve may be compromised at other locations along its length. Your M.D. may want to pursue further diagnostic testing if symptoms continue.
- The M.D. will usually try to make the smallest incision possible to promote a speedier recovery and cause less scarring. In the rare cases that a surgery is not initially a success, a larger incision will allow the M.D. to visualize a greater portion of the tunnel and achieve a more in-depth cleaning around the nerve.

What can I expect after surgery?

- Most often, a large portion of the numbness and tingling that you may have experienced prior to the surgery is relieved almost immediately post-surgery. Occasionally, some degree of numbness may remain for 3-4 months.
- The pain that travels or radiates up the arm into the shoulder and neck is often relieved almost immediately as well. Pain becomes more centered around the surgical site while the arm is healing.
- The inside edge of the elbow will likely be tender for 4-6 months after surgery.
- There will be some amount of swelling over the inside edge of the elbow for months as well

I was doing okay for a few weeks after surgery, but now my hand is hurting more. Why?

- The nerve may be "waking up". When it has been squeezed for awhile, the nerve impulses have not been moving normally. Now that there is less pressure on the nerve, it is sending out signals to try and re-establish normal nerve function. You may feel sharp, shooting pains, or burning, or "zingers". These are all good signs, even if they are uncomfortable or painful. They will normalize with time. Let the M.D. or therapist know about these sensations during your appointments.