

## Flexor Tendon Injuries

Tendons are tissues that connect muscles to bone. When muscles contract, tendons pull on bones. This is what causes some parts of the body to move. The muscles that move the fingers and thumb (the flexor muscles) are located in the forearm, above the wrist. Long tendons extend from the flexor muscles through the wrist and attach to the small bones of the fingers and thumb.

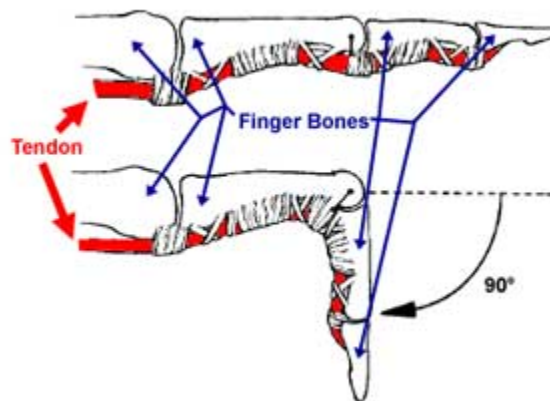
Tendons are stretched tightly as they connect the muscle to the bone. If the tendon tears, the end of the tendon that is released pulls back toward the area to which it remains attached. A tear (rupture) or cut of the tendon anywhere along its route, at the wrist, in the palm of the hand, or along the finger, may make it impossible to bend one or more fingers.

### Anatomy

Each finger has two flexor tendons; the thumb has one tendon. The tendons run along the palm side of the fingers. They are very close to the surface of the skin, particularly where the skin folds as the finger bends.

One tendon attaches to the last bone of the finger and bends the tip. This is the longer tendon and is called the flexor digitorum profundus, or FDP.

The other tendon bends the middle joint of the finger. It is the shorter tendon and is called the flexor digitorum sublimis, or FDS.



The flexor digitorum profundus tendon (red) works to bend the finger.

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## **Types of injuries**

Most often the flexor tendons are damaged by a cut. Because the nerves to the fingers are also very close to the tendons, a cut may damage them as well. This will result in numbness on one or both sides of the finger.

Athletic injuries are also common, usually in football, wrestling, or rugby. One player grabs another's jersey, and a finger (usually the ring finger) gets caught and pulled. This type of injury is so common, it even has a name: "jersey finger."

Tendons can also be stretched (strained) or ruptured. This can happen during sports like rock climbing.

In rheumatoid arthritis, flexor tendons may rupture without warning or injury (spontaneously). One may simply notice that the finger no longer bends, but cannot recall what may have caused that to happen.

## **Signs and symptoms**

- An inability to bend one or more joints of the finger.
- Pain when the finger is bent.
- An open injury, such as a cut, on the palm side of the hand, particularly in the joint area where the skin folds as the finger bends.
- Mild swelling over the joint closest to the fingertip.
- Tenderness along the finger on the palm side of the hand.

## **Diagnosis**

It is important to see a physician whenever the fingers are injured. This is especially true if the finger is jammed and the fingertip cannot be bent or straightened. With an injury of the FDS tendon, it may still be possible to bend the finger, but not completely. Bending the finger will be painful.

The doctor will test the fingers by asking the patient to bend and straighten the fingers. Sometimes he or she may apply resistance in order to test the strength of the fingers. The doctor may test the feeling and blood flow to the fingers to see whether any nerves or blood vessels were injured. An X-ray may be needed to learn whether there is any damage to the bone. If the wound is open, a tetanus shot or antibiotics may be needed to avoid infection.

## Treatment

### *First Aid*

For immediate first aid, ice should be applied. Compression on the injured area will slow the flow of blood to the damaged site. The doctor may first clean and treat any superficial wounds. The hand may be placed in a splint.



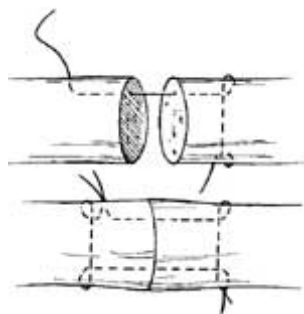
The hand may be placed in a splint for protection.

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### *Surgical Treatment*

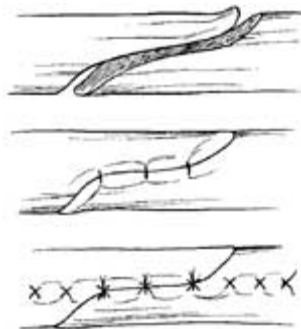
Because the tendon cannot heal unless the ends are touching, a torn (ruptured) tendon must be repaired or sewn back to the muscle or bone. This requires surgery. It is usually best to have the surgery as soon as possible after the injury.

The hand surgeon will sew the tendon using special stitches on both the inside and outside of the tendon. It can take up to two months before the repair is healed and it is strong enough that the hand can be used without protection. It may take another month or so before the hand can be used with any force.



One example of the many different methods that surgeons use to suture (stitch) the torn ends of tendons back together is the Kessler grasping stitch.

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Another example of the many different methods that surgeons use to suture (stitch) the torn ends of tendons back together is the Mason-Allen (Chicago) stitch.

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In the meantime, a splint should be worn. A physical therapist will help with special exercises to strengthen the tendons and muscles in the injured area. After surgery, there may be some stiffness in the finger. This stiffness will be considerably less than if the surgery were not performed.

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