

A mallet finger is a deformity of the finger typically caused by injury. After the fingertip gets jammed, the end (smallest) joint of the finger just before the fingernail droops and looks crooked. This gives the finger the appearance of a mallet or hammer.

## Causes

The cause of this condition is an injury to the extensor tendon, which straightens the end joint just before the fingernail. There are two types of mallet finger. The first type is an injury to the extensor tendon itself called a rupture. This can happen fast from jamming or cutting the finger, and it can happen slowly from arthritis stretching out the tendon over time.

The second type is a broken bone at the extensor tendon's attachment site that prevents the tendon from pulling on the whole bone. The tendon itself is intact, but the bone it attaches to breaks off. In children, the fracture may happen in the growth plate of the distal phalanx.

Mallet fingers can happen when an object (such as a ball) strikes the tip of the finger or thumb. The force can cause either the tendon or broken-bone type of mallet finger. This condition is sometimes called "baseball finger" because it can happen so often when catching a baseball bare-handed.

This condition can also happen when the small joint is forcefully bent during use such as lifting heavy objects that force the joint into a bent position. Sometimes, the tendon can rupture from only a little force exerted at just the wrong angle. Examples include scrubbing dishes and bumping an object when putting clothes into a drawer.

A mallet finger can also result from a deep cut from a knife or sharp object on the back of the finger. This cut can go down to the bone and can divide the extensor tendon away from the bone.

## Symptoms

In a mallet finger, the fingertip droops and cannot straighten on its own. It is often at first appearance just a "jammed finger." The finger may be painful, swollen, or bruised. A bump may appear just below the nail on the back of the finger.

Blood can collect beneath the nail, and the nail can even become detached at the base. This occurs most commonly with the broken-bone type of mallet finger.

An "open" mallet finger starts with a sharp cut or laceration, which goes through the tendon and down to the bone, over the last joint of the finger.

Sometimes, mild drooping of the last joint in all the patient's fingers is seen normally in some people. This is due to laxity or flexibility of tissues of the individual instead of injuries.



Figure 1 - Example of mallet finger with drooping of tip

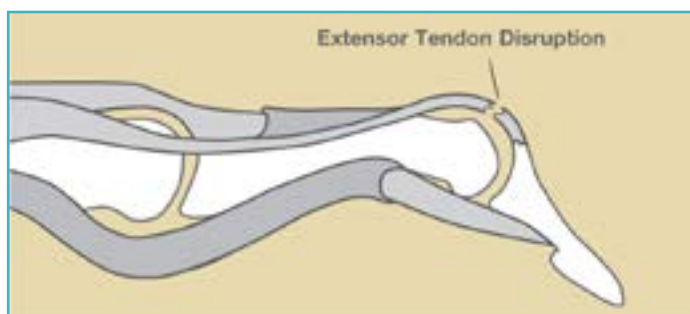


Figure 2 - Example of mallet finger with drooping of tip

## Diagnosis and Treatment

Medical attention should be sought within the first few days after the injury, especially if there is blood beneath the nail or if the nail is detached at the base. This may be a sign of a nail bed injury or an open (compound) fracture. Injuries with even a little swelling or bruising may have a fracture.

X-rays or ultrasound images can be used to show if there is a fracture causing the finger deformity. CT scans may be ordered if there are many fracture fragments. The fracture may be only at the tip of the bone at the attachment site. But sometimes, the fracture disrupts the structure of the joint. In children, the fracture may be in the growth part of the bone. These types of injuries may lead to chronic infection or abnormal growth of the distal phalanx.

Mallet fingers with exposed bone or with a cut tendon should be treated urgently to prevent infection.

If a mallet finger is not treated promptly, the finger may not function properly and may cause pain. Continued pain and repeated injuries are more likely due to a problem in the joint. Usually, this is due to a poorly aligned joint fracture. Over time, arthritis can develop. If there is good positioning of the bone fragments, new bone will fill the gap. This results in a permanent droop. However, it may be painless and only bothersome during certain activities.

## Non-surgical Treatment

Most mallet finger injuries can be cured without surgery. Most can be completely treated with non-removable finger splinting until the tendon heals itself or the bone seals the fracture.

If there's no cut or laceration, a cold treatment (ice) can be applied to bring down the swelling. The hand can be elevated (fingers toward the ceiling). A tongue depressor or a clean popsicle stick can be taped to the bottom or top of the finger across the joint temporarily to keep it straight. The tape should be loose enough to allow sensation and blood flow to the fingertip.

After the diagnosis and a reduction in swelling, there are many different types of splints and casts for mallet fingers that will be successful and comfortable for all activities over the ensuing weeks or months while the tendon or bone heals. The goal is to keep the finger straight at the small joint until it is fully healed. This is the most common treatment when the tendon has ruptured from jamming it. Normally, a splint will be worn at all times for about eight weeks (see Figure 3). If the joint flexes even for a moment with the splint is off, it will disrupt the healing and the process will take longer. Care must be taken to keep the skin dry under a splint. After the tendon or bone is healed, the splint is worn only during sleep and sporting activity for an additional few weeks or months to prevent re-injury.

There can be a delay in getting the care started because the patient is hoping the finger is just sprained. If splinting is not started for several weeks after injury, the result is less satisfactory but can still be successful.

Your surgeon or hand therapist will provide instructions on how to wear the splint. They will show you exercises to maintain motion at the middle joint while the end joint is held still. Once the mallet finger has healed, your surgeon or hand therapist will teach you exercises for the small end joint as it becomes very stiff from the splinting. Typically, the finger regains acceptable function and appearance with this treatment. However, some slight droop, bumpiness, or contour difference in this finger can be permanent.



Figure 3 - This x-ray of a mallet finger shows a broken finger, where a piece of the bone has been broken off.



Figure 4 - A splint supporting the finger tip after a mallet finger injury

## Surgical Treatment

Here are the times when surgery may be considered for closed mallet fingers:

- The skin is open, and the nail is injured
- The joint is not properly aligned because the fragment of bone is too large
- In these cases, temporary pins or permanent small screws are used to realign the joint (see Figure 4), and stitching is used to repair the nail and skin
- It is impossible to wear a splint at all times, or keeping the finger and splint dry is not possible (e.g., some mothers, bartenders)

If the full course of splinting is too difficult or was not successful, surgery may be recommended. Surgery may involve:

- Inserting a wire, pin, or screw into the finger to keep it straight
- Making a new tendon if the original injury is too severe
- Permanently straightening the joint so that it stays fixed but does not bend with grasp, which is an irreversible surgery and is usually done for arthritis.

In summary, mallet fingers are “jammed” fingertips that appear drooped and or crooked at the end joint. Prompt care should result in a full recovery. Your hand surgeon will help recommend the proper treatment that is specific to your injury.



Figure 5 - X-ray of mallet finger treated with a temporary pin