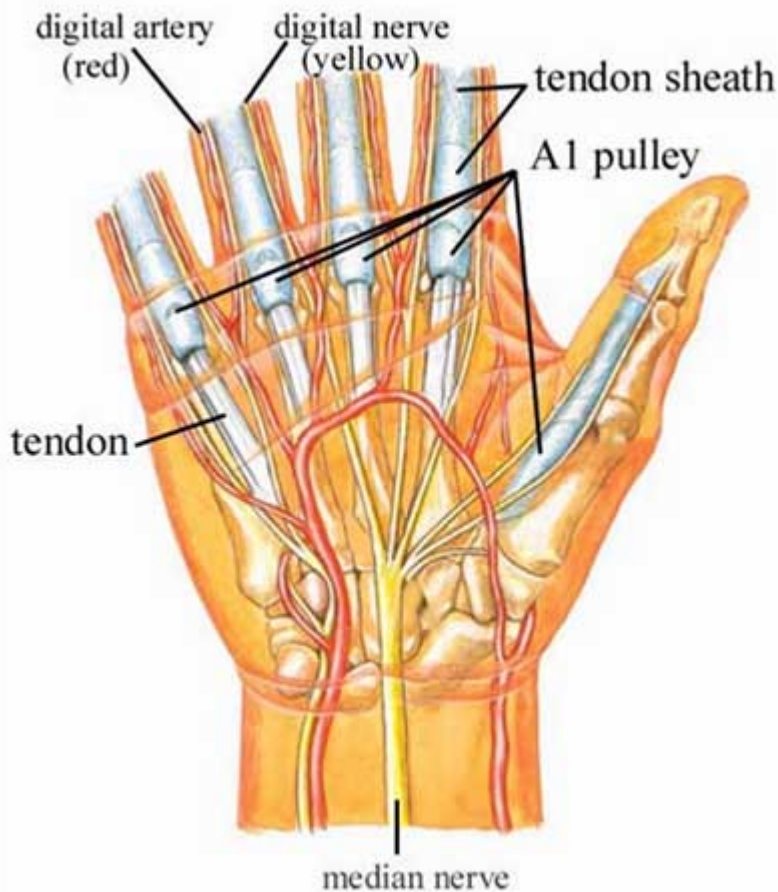


Trigger Finger

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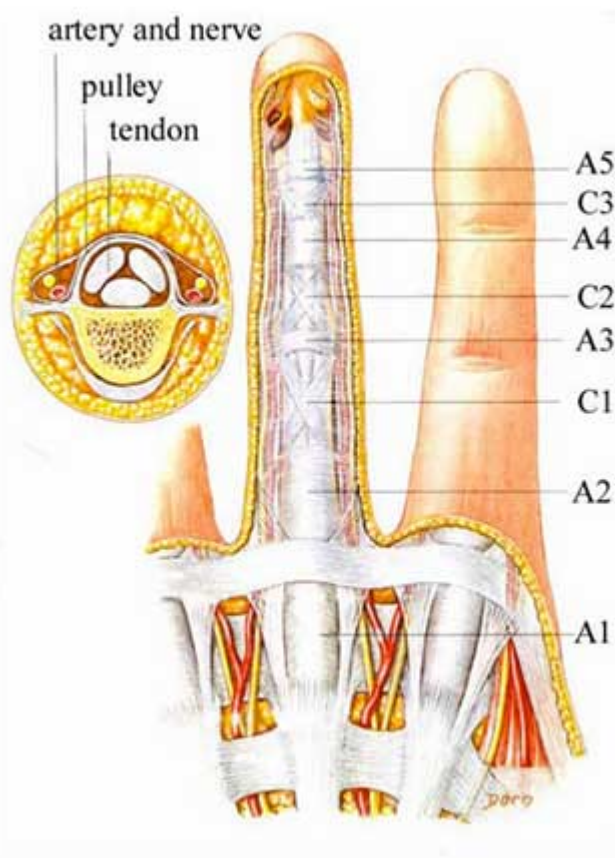
What is trigger finger or trigger thumb?

Trigger finger and trigger thumb are some most common conditions I treat. It is due to a swollen part of the tendon at the base of the digit. It can cause a painful popping and clicking in the finger or thumb as the patient flexes or extends the digit. It is very common for this to occur just when you wake up in the morning. If the condition is not treated, it will commonly worsen to the point that you cannot fully straighten the finger (or sometimes cannot flex, although that is less common). The painful popping and clicking is called "**triggering**" (this is where the name comes from) and the inability to fully straighten is called "**locking**". To better understand how this happens, look at the illustration below.



The Palm of the Hand

This is a view of the palm side of the hand. The tendons, shown in white, pass into the finger inside a tendon sheath. This sheath functions to keep the synovial fluid (the "tendon oil") around the tendon. The synovial fluid lubricates the tendon as it moves back and forth in the finger. The beginning of the sheath is called the A1 pulley. Note the digital (finger) artery and nerve. They are very close to the pulleys. The illustration below shows an enlarged view of the pulley system.



Enlarged View of the Pulley System

This illustration shows the tendon sheath and shows how it has some thicker regions that are divided into regions. The A1 region is the one that gets involved in trigger finger. There is a similar division, but much simpler, in the thumb.

The purpose of the pulleys is to keep the tendons close to the bone (see the smaller illustration above, to the left). As the finger bends (flexes), the pulleys prevent the tendons from sagging away from the bone.

In trigger finger, there is some swelling of the tendon, due to a variety of factors, mostly processes of aging. The swollen part of the tendon "pops" under the A1 pulley, causing the finger to "pop" or not bend smoothly. Often the patient thinks it is the joint that is popping, but it is the tendon that moves that joint that is popping.

What causes trigger finger?

We do not know exactly what causes trigger finger, but we do know some things. The tendon is subjected to significant forces at the A1 pulley, which is where trigger finger occurs. Trigger fingers show changes in the substance of both the tendon and the pulley called "fibrocartilaginous metaplasia", which means that some of the cells change into cells that have the characteristics of cartilage cells such as those found in intervertebral disks. The cells show an increase in both the size of the cells and the number of cells. The smooth gliding layer of the tendon and the pulley change, with fraying and disintegration of the surface. We do not see these high forces or cellular changes in other areas of the flexor tendons; therefore, we feel that these changes must be related to the disease called trigger finger. (Trigger Digits: Diagnosis and Treatment, by Miguel J. Saldana, MD; Journal of the AOS, July/August 2001, pages 246-252)

What are the symptoms of trigger finger?

The hallmarks of trigger finger are painful popping of the digit and pain in the palm at the A1 pulley level. The popping is usually worse in the morning when you first get up, but as the problem progresses, it can pop all the time. When it is really bad, the bump in the tendon cannot pass under the pulley and the finger is "locked", that is, it cannot straighten (or bend, if it is stuck out straight).

Who gets trigger finger?

Many people think trigger finger should come from a long history of hard work, but hard labor does not seem to be related. It can come from an episode of overuse but is usually not associated with any period of heavy use. It usually comes on gradually, and typically comes in our 40's, 50's, and 60's. It is about two to three times more common in women than in men, and the fourth finger is the most often involved. It is common for patients to get it in more than one finger. If they do, it is often either the same finger in both hands, or two adjacent fingers. I have only had one patient who had it in all 10 fingers, and he was a 60-year-old who played handball.

I think if you are 60 and go around whacking things with your palm, you should expect to get problems! Most patients will get it in only one or two fingers.

How is trigger finger diagnosed?

The diagnosis is made by listening to the patient and by examining the patient. Most patients will have a history of painful clicking and popping, without any history of trauma. There will be a painful nodule in the palm, exactly at the A1 pulley location.

How is trigger finger treated?

Making the diagnosis is usually quite simple. The next step is very important: patient education. The third step in my general treatment regimen for all hand problems is activity modification. This step does not really apply much to trigger finger. It is usually not due to overuse. The fourth step in my general treatment regimen for all hand problems is anti-inflammatory medication. This usually does not help in the treatment of trigger fingers. It is not strictly an inflammatory condition, since the changes are not just the changes of inflammation, but of fibrocartilaginous metaplasia (see section above for explanation).

The fifth step is splints. While they will work as long as you wear the splints, you will not be able to do anything with your hand. If the trigger digit was minimally symptomatic and you happened to do something that made your hand swell, a temporary splint may help. What is easy and can help is to tape the finger at night. By placing a one-inch piece of tape lightly around the joint helps to comfortably splint the finger in extension and avoids a common problem of a painfully locked finger in the morning. Once up, remove the tape and start some normal use; some stiffness in the morning is common. The sixth step in my general treatment regimen for all hand problems is hand therapy. While I use a lot of hand therapy in my practice, there is only a little that hand therapy can offer this condition.

The seventh step in my general treatment regimen for all hand problems is steroid injection, and this is a great way to treat trigger fingers. I presented a study at the American Society for Surgery of the Hand showing that one injection was curative (through 2 years of follow up) in 75% of cases, and two injections in 90%, pretty good odds. It is not a good idea, in general, to give more than 2 injections in any one location in the body, as it can cause some collagen degeneration. You can have 2 in each involved finger.



The final step is surgery. About 10% of trigger fingers go on to surgery. The longer you waited to come see me, the greater the chance that you will need surgery. It is out-patient surgery (that is, you don't stay overnight in the hospital). You don't even have to eat the hospital food!

Surgical Risks

What can go wrong?

Fortunately, most surgical procedures have a very low complication rate and a very good rate of success. However, the results of surgery cannot be guaranteed; complications can occur despite the best of intentions. Though I cannot list every possible problem, I will highlight the most common complications.

- Anesthesia
 - Infection
 - Nerve or tendon injury
 - Stiffness
-

Anesthesia

What type of anesthesia do I use?

I recommend that most surgery be done under a local type of anesthesia. In many cases I will administer the local anesthetic myself which is a combination of a short and long acting Novocain-like anesthetic. Most of the time, the anesthesiologists will be there to comfort you and provide the level of sleepiness that you desire. You can be as awake or as sleepy as you wish; my preference, to minimize any postoperative side effects is for you to be awake so we can talk through the surgery. Some very small cases will be done with the local anesthetic only. For surgeries requiring more medication, the anesthesiologist can do what is referred to as a regional block to numb a larger portion of the arm. Occasionally for the more complex surgeries, you will require a general anesthetic. People may react to the medications given and they can rarely affect your heart, lungs or other organs, which is why I try to use the least invasive anesthetics.

What about bleeding?

For virtually all the surgeries I do, excessive bleeding is usually prevented by a medical tourniquet. This is a blood pressure type cuff applied to your arm at the time of surgery. By

wrapping the arm with a rubber bandage, the blood is removed, and the blood pressure cuff is inflated to minimize blood loss and allow me to best visualize the anatomy of your arm.

Infections

Do infections occur with hand surgery?

Fortunately, infections are rare and usually occur in less than 1% of cases. If you have no significant allergies, I will have the anesthesiologist administer an intravenous dose of an antibiotic, usually one known as Cefazolin. This is in the category known as Cephalosporins that cover most of the common skin bacteria. Despite sterility and antibiotics, infections may occur. If you have any concerns for infection after surgery, please call my office. Infections may require hospitalization, further surgery and intravenous antibiotics.

Nerve and Tendon Injuries

Nothing else can happen, right?

Fortunately rare, but unfortunately these injuries may cause a significant complication. Nerves, tendons and blood vessels run close to each other in the intricate anatomy of the hand. I do most of my surgeries wearing magnified glasses to define these structures, but injuries may occur that could require further surgery or may lead to permanent problems with hand function.

Stiffness

I am a firm believer in hand therapy by individuals trained in this capacity. After most surgeries, we will have you see the therapist to not only work with you, but to teach you what to do on your own to maximize your result. Complex regional pain syndromes are rare and serious conditions.

After Surgery

What should I expect after surgery?

You will leave the operating room in a very large bulky dressing which serves two purposes. First it helps control the swelling. Second, because of the tourniquet that I described above, the bandage helps provide compression to minimize bleeding, sort of like holding pressure on a bloody nose. Whatever is out of the dressing you can move but keep the dressing in place. If



you have any concern that it is too tight, the fingers change color, you cannot feel your hand, or you have unexpected pain or fevers call my office at any time (203-865-6784).

Will it be painful?

I usually use a long acting Novocain-like medication called Bupivacain. This can block the pain for six to eight hours after many surgeries. You will also be given a prescription for pain medication to help the discomfort. Most of these contain Tylenol so do not take Tylenol at the same time, but you can alternate Tylenol with the prescription medication at 4-hour intervals. Anti-inflammatories like Ibuprofen can be taken at the same time, as long as you have no medical contraindication to these types of medications. However, if your surgery was for a fracture or fusion, studies have shown that anti-inflammatories do interfere with bone healing, so I suggest avoiding them in this situation.

Can I smoke cigarettes?

As a physician, my request for all my patients is to stop cigarette smoking period, based on its bad health effects. Before surgery, cigarette smoking affects the lungs and increases your complication rate with anesthetics. Post operatively, cigarette smoking significantly affects healing, so if you smoke, use your surgery as a good reason to stop.

When will I return to the office?

When you leave the operating room, there will generally be two appointment cards, one for the therapist and one for me. For many surgeries you will see the therapist first who will remove the dressing, splint you if appropriate, and start you on an exercise program. They will work with you and explain what you should do on your own.

When do the sutures come out?

Depending upon the surgery, it is usually 7 to 10 days after the procedure. Generally, I do not use absorbable sutures except in young children, since the scarring is worse than with sutures that we remove. We try to make all your appointments in the office next convenient for you. However, because of the timing for suture removal, this one appointment might be in a different office.

When can I get it wet?

Keep the wound clean and dry until after the sutures are removed.

Therapy and Rehabilitation

The Therapist will continue to work with you to maximize your result after surgery. The goal is to return your hand to its best possible function, maximal strength and range of motion, and return the fine motor skills of your hand. Both the therapists and I will supervise you during this period;



some people need more visits, some less and the frequency of visits will diminish as you are exercising on your own and your hand function returns.

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