



SPOTLIGHT



Redoing Carpal Tunnel Surgery

HELPING PATIENTS GET BACK TO WHAT THEY LOVE MOST

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To refer a patient to Goshen Orthopedics, call (574) 534-2548 or fax a referral form to (574) 534-3622.

This content summarizes a presentation given by Scott Swanson, MD, in June 2024. To view the presentation, go to: <https://youtu.be/E9yIkzkhkyg>. Dr. Swanson welcomes questions at SSwanson@GoshenHealth.com and (574) 534-2548 (office).

Reviewing hand surgery and carpal tunnel anatomy

Carpal tunnel syndrome (CTS) occurs when the transverse carpal ligament, which goes from the scaphoid and the pisiform; and the hamate and the trapezium – like a giant roof over the hand – compresses the contents of the carpal tunnel. This causes pain, tingling and numbness.

Sensation comes off first, then motor branch comes later. The palmar cutaneous median nerve branch can be why the patient has continued pain or damage to the motor branch.

The goal of surgery is to get relief from the restriction and restore good blood flow into the nerves. You need to be sure the area isn't being compressed, scarred or constricted so the patient is actually getting relief.

Recurrent carpal tunnel syndrome

The three schools of thought on recurrent carpal tunnel syndrome are as follows:

1. *It doesn't exist.* Once you've released the carpal, there's nothing more you can do. The patient is either not going to get any better or you're going to have continual scarring, no matter what. The pain is due to intrinsic factors you can't control.
2. *The surgery has achieved only an incomplete release.* This could be the result of different approaches: an outpouring of endoscopic carpal tunnel procedures; single incision, dual incision, whichever approach was used, it led to an incomplete release because the distal component wasn't addressed. When the patient only experienced an 80 percent release of the transverse carpal ligament, it makes sense to go back in to try to complete the release and relieve the pain.
3. *There's been internal scarring.* Sometimes there is internal scarring to the median nerve, which can come from diabetes, thyroid disease or other disease processes. In these cases, you have to go in under a microscope to tease the fibers apart to get rid of internal scarring. Other times the median nerve becomes encased in scar tissue and become compressed.

Brief literature review

In 2012, Neil F. Jones looked at 50 patients who had carpal tunnel surgery. About equal numbers of the patients had endoscopic and open procedures and a good number had recurring symptoms. They all underwent a second surgery, where it was found that almost everyone had circumferential fibrosis around median nerve, with 32 patients having incomplete release.

Forty-one patients received an external neurolysis, freeing up the nerve of any scar tissue; three received a radial forearm adipofascial flap; and eight a hypothenar fat flap. The improvement in symptoms was better with open than endoscopic for redo carpal tunnel release. But the total resolution of symptoms was the same for both procedures, with better than 80 percent resolving of symptoms. Patients could go back to their main activities or activities of daily living.

Jones found before the redo surgery, the symptoms persisted due to one of the following reasons:

1. Incorrect diagnosis or incomplete release
2. Fibrosis surrounding median nerve (basically encased in scar tissue)
3. New symptoms likely due to iatrogenic injury to nerve itself

In 2022, Mackinnon et. al. looked at the risk factors for recurrent carpal tunnel. They found it was more common in males, those with rheumatoid arthritis and those who smoked. Patients with prior severe CTS will not return to normal and may have minimal relief of symptoms. The reason to do surgery is to prevent the situation from worsening. But it won't restore function.



Redoing Carpal Tunnel Surgery

What healthcare providers need to know

What successful surgery must do

Surgery for recurrent CTS is successful when it accomplishes all of the following:

- Frees up adherent median nerve
- Completes resection of the TCL (transverse carpal ligament)
- Prevents recurrence of becoming encased in scar tissue – that’s why we bring in the vascularized tissue
- Brings in vascularized tissue like the hypothenar fat pad flap, which can prevent re-adherence of the nerve and a vascularized gliding surface

Internal micro neurolysis is a phenomenal component to help patient get better.

Does secondary carpal tunnel surgery allow patients to return to work?

In 2004, S. Mackinnon interviewed 45 patients by telephone and found that 53 percent had improved from previous state and 28 percent had returned to work. Those who used repetitive motion or vibrating hand tools in their jobs were less likely to return to work because it caused reinjury.

Patients who come in earlier with CTS will benefit more from having their symptoms addressed. However, it’s difficult to get patients to come in before symptoms progress, or to take time off work to have surgery. Later treatment makes symptoms more severe and harder to treat effectively.

In Los Alamos, I and my team worked with one employer to design a glove to protect against CTS and instituted more breaks. This resulted in reduced incidences of CTS. It reduced productivity some, but also led to fewer absences and shorter absences needed to repair damage.

If you have patients with unresolved symptoms after having a surgery or procedure...

The literature indicates they may benefit from having a redo, particularly if they have achieved only an incomplete release or if there is scarring. We have techniques to achieve complete release, rethread nerves after scarring and help restore blood flow. Of course, other factors come into consideration – whether patients can take time off from work to heal; whether they will return to the same work stresses that caused the initial issue – or whether they can take more breaks or vary their work tasks; and whether they have chronic co-morbidity.

At Goshen Health, we can do surgery with a microscope, which helps when the nerves need to be separated to restore blood flow and address scarring.

Dr. Scott Swanson is a hand surgeon at Goshen Orthopedics, fellowship trained in hand and microvascular surgery. Board certified in hand, plastic and general surgery, he treats patients with a wide range of hand and wrist injuries, including fractures, ligament injuries, nerve and tendon injuries and dislocations. Dr. Swanson also cares for patients with inflammatory disease and arthritis in the upper extremities.



TO REFER A PATIENT

To refer a patient, fax a referral form to (574) 534-3622. Call for an appointment at (574) 534-2548.

If you would like more information or to meet any of our doctors, please contact **Andrea Ledbetter, Physician Liaison**, at ALedbetter@GoshenHealth.com or call (574) 807-1540.