

MEDICAL POLICY – 7.01.595

Carpal Tunnel Release Surgical Techniques

Effective Date: May 6, 2025
Last Revised: Jan. 14, 2025
Replaces: N/A

RELATED MEDICAL POLICIES:
N/A

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Introduction

Carpal tunnel syndrome is a condition caused by compression of the median nerve as it passes through the carpal tunnel in the wrist. This narrow passageway contains tendons that control finger movements, and when these tendons swell or pressure increases in the tunnel, the nerve becomes compressed. This leads to symptoms such as pain, tingling, numbness, and weakness in the hand, particularly in the thumb, index, and middle fingers. Often associated with repetitive hand motions, carpal tunnel syndrome can significantly impact daily activities and quality of life. Treatment options range from rest and wrist braces to surgical interventions for severe cases. This policy describes when treatments for carpal tunnel syndrome may be considered medically necessary.

Note: The Introduction section is for your general knowledge and is not to be taken as policy coverage criteria. The rest of the policy uses specific words and concepts familiar to medical professionals. It is intended for providers. A provider can be a person, such as a doctor, nurse, psychologist, or dentist. A provider also can be a place where medical care is given, like a hospital, clinic, or lab. This policy informs them about when a service may be covered.

Policy Coverage Criteria

Service	Medical Necessity
Carpal tunnel release surgery - Endoscopic - Open	Carpal tunnel release surgery (endoscopic or open) is considered medically necessary when ALL of the following criteria are met: - Documentation supports a clinical diagnosis of carpal tunnel syndrome as noted in the history and physical exam findings with ONE or more of the following symptoms: - Paresthesia (numbness, tingling, burning) in the wrist, hand, or thumb, index, middle fingers, and the thumb side of the ring finger (median nerve distribution) (see Appendix) - Severe pain in the wrist, hand or fingers, which may radiate to the forearm (it may be progressive and/or persistent) - Weakness in the wrist or hand - Sensory loss AND - Symptoms have not responded to at least 6 weeks of conservative care, including ONE or more of the following: - Non-steroidal anti-inflammatory medication (NSAIDs) or oral steroids - Hand immobilization (splint or brace) - Corticosteroid injection AND - Electrodiagnostic testing (nerve conduction study [NCS]) confirms the diagnosis of carpal tunnel syndrome (this may be supplemented with needle electromyography [EMG]) (See Related Information) Repeat carpal tunnel release surgery (endoscopic or open) may be considered medically necessary following failure of a previous carpal tunnel release surgery Carpal tunnel release surgery (endoscopic or open) is considered not medically necessary when the above criteria have not been met

Service	Investigational
• Thread carpal tunnel release (TCTR) • US-guided percutaneous needle release (PCTR)	The following surgical techniques are considered investigational for the treatment of carpal tunnel syndrome: • Thread carpal tunnel release (TCTR) • Ultrasound-guided percutaneous needle release (PCTR) (See Appendix)

Documentation Requirements
The patient's medical records submitted for review for all conditions should document that medical necessity criteria are met. The record should include the following: • Office visit notes that contain the relevant history and physical exam findings with one or more of the following symptoms: ○ Paresthesia (numbness, tingling, burning) in the wrist, hand, or thumb, index, middle fingers, and the thumb side of the ring finger (median nerve distribution) ○ Severe pain in the wrist, hand or fingers, which may radiate to the forearm (may be progressive and/or persistent) ○ Weakness in the wrist or hand ○ Sensory loss AND • Symptoms have not responded to at least 6 weeks of conservative care, including ONE or more of the following: ○ Non-steroidal anti-inflammatory medication (NSAIDs) or oral steroids ○ Hand immobilization (splint or brace) ○ Corticosteroid injection AND • Electrodiagnostic testing (nerve conduction study [NCS]) confirms the diagnosis of carpal tunnel syndrome (this may be supplemented with needle electromyography [EMG])

Coding



Code	Description
CPT	
25999	Unlisted procedure, forearm or wrist
29848	Endoscopy, wrist, surgical, with release of transverse carpal ligament
64721	Neuroplasty and/or transposition; median nerve at carpal tunnel
64999	Unlisted procedure, nervous system

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Related Information

Electrodiagnostic classification

Mild Carpal Tunnel Syndrome

- Prolonged (relative or absolute) sensory latencies, and
- Normal motor studies, and
- No evidence for axon loss

Moderate Carpal Tunnel Syndrome

- Abnormal median sensory latencies as noted for mild CTS, and
- Relative or absolute prolongation of median motor distal latency, and
- No evidence for axon loss

Severe Carpal Tunnel Syndrome

- Any of the aforementioned nerve conduction study abnormalities with evidence of axon loss as defined by any of the following:
 - An absent or low amplitude sensory nerve action potential (SNAP) or mixed nerve action potential (NAP)
 - A low-amplitude or absent thenar compound muscle action potential (CMAP)
 - A needle EMG with fibrillation potentials or motor unit potential changes (large amplitude, long-duration motor unit potentials, or excessive polyphasic)

Source: Kothari MJ. Carpal tunnel syndrome: Clinical manifestations and diagnosis. In: UpToDate. Goddeau Jr, RP. (Ed). Waltham, MA. Last updated July 25, 2024. Accessed January 2, 2025.



Description

Carpal tunnel syndrome is a common condition which usually occurs more frequently in women than men and in those over 40 years of age. It is caused by compression of the median nerve, which runs the length of the arm and travels through the wrist. The median nerve is surrounded by bones and tendons on the palm side of the hand and the transverse carpal ligament covers the nerve across the top like a roof. The compression of the median nerve may lead to symptoms such as numbness, tingling, and pain in the hands and fingers. There may also be weakness when gripping objects. When conservative measures fail to relieve the symptoms, endoscopic or open surgery may be required for treatment of this condition.

Background

Carpal tunnel syndrome is a common condition which usually occurs more frequently in women than men and in those over 40 years of age. It is caused by compression of the median nerve, which runs the length of the arm and travels through the wrist. The median nerve is surrounded by bones and tendons on the palm side of the hand and the transverse carpal ligament covers the nerve across the top like a roof. The compression of the median nerve may lead to symptoms such as numbness, tingling, and pain in the hands and fingers, such as the thumb, index, middle fingers, and the thumb side of the ring finger. The little finger is not affected. There may also be weakness in the hand causing an individual to drop objects or have difficulty gripping objects. These symptoms may initially be mild and progressively worsen over time. For some individuals, the pain may occur more prominently at nighttime due to the tendency of some to bend their wrists while sleeping.

The etiology of carpal tunnel compression may be difficult to attribute to just one cause. There may be an anatomical change such as a small wrist or fracture, a disease such as osteoarthritis, rheumatoid arthritis, diabetes, pregnancy, obesity, or hypothyroidism that may cause swelling, irritation, or inflammation to the area. It is also believed that repetitive movements such as working a cash register, working on an assembly line, working with vibrating tools or swinging a hammer may lead to compression of the median nerve.

Treatment

The primary goal of any treatment for carpal tunnel syndrome is to relieve any pressure on the median nerve that may be producing the symptoms an individual is experiencing. Non-surgical treatment may include the use of NSAIDs, oral steroids, injection of corticosteroids, or wrist splinting. If these conservative measures fail to bring about any lasting relief, then surgical treatments such as an endoscopic or open carpal tunnel release may be warranted where the transverse carpal ligament is cut to relieve the pressure on the median nerve and to create more space in the tunnel. Electrodiagnostic testing such as a nerve conduction study should be performed prior to surgical intervention to confirm the clinical diagnosis and to define the extent of the median nerve injury. In the open procedure, a small incision is made in the palm of the hand or wrist where the surgeon has direct visual access to cut the transverse carpal ligament. In the endoscopic procedure, the surgeon, through a tiny incision at the wrist, inserts a small flexible tube with a camera attached to view the transverse carpal tunnel ligament through the camera, then another tiny incision is made for the tools used to cut the ligament. In certain cases, the surgeon may use only one tiny incision for both the tube and the cutting tool, this is referred to as a single portal technique.

Two newer forms of less invasive treatment are being investigated: thread carpal tunnel release and ultrasound-guided percutaneous carpal tunnel release. Thread carpal tunnel release "transects the transverse carpal ligament by sawing the ligament with a piece of surgical thread looped percutaneously under the guidance of ultrasound."¹³ It is proposed that this method spares injury to adjacent tissues as it uses only two puncture sites, one for entry and one for exit. As there is no incision, it can be performed in the office with local anesthesia. There is no scarring with this method and return to work is within a few days after the procedure. This procedure has primarily been performed on cadavers and continues to be modified to find the most suitable spinal needle and method for entry and exit. Hydrodissection is used throughout the procedure during visualization with ultrasound to separate the tissues associated with carpal tunnel syndrome. In the study conducted by Guo, et al (2017),¹⁵ (n=159), there were 39 males and 77 females, and 43 participants had the procedure performed on both hands, but on different dates. Outcome measurements were determined by participant responses to the Boston Carpal Tunnel Syndrome Questionnaire (BCTQ). The outcomes were then compared to outcomes in the published medical literature (Trumble, et al)². A modified TCTR approach was used with entry being at the palm and the exit at the wrist whereas the procedure had previously been performed with entry at the wrist and exit at the palm. The results demonstrated that the symptom severity mean score and the functional status score were better for TCTR at one day and one month, respectively than published scores of ECTR/OCTR at one year. The limitations of the study were small sample size and the cases that were followed-up to six

months dropped to n=96 of the initial participants, also the study did not have a control comparator.

Ultrasound-guided percutaneous needle carpal tunnel release is similar to the thread carpal tunnel release in that only two small incisions are used under ultrasound guidance with hydrodissection; however, the tool used to release the transverse carpal ligament varies. Tools that have been used are a hook knife, a surgical thread, and angle blade or a needle¹⁸. In the controlled trial (the non-operated hand was considered the control) conducted by Burnham, et al, (2021)²⁰, a surgical cutting thread was inserted via a surgical spinal needle under ultrasound guidance and hydrodissection. Several outcome measures were collected such as symptoms and functional limitation severity, hand monofilament sensibility, grip and pinch strength, US-derived median nerve cross-sectional area at the carpal tunnel inlet and at the pronator quadratus, and nerve conduction studies of the median nerve across the carpal tunnel. The results demonstrated significant improvement in pain and dysfunction particularly in the first month post-surgery and a slight continued improvement for 6 months. However, there was also improvement in the non-operative hand as well just not as much as in the operative hand. There was no significant change in hand sensibility or grip strength, but there was statistically significant improvement in pinch strength. There was reduced median nerve cross sectional area at the carpal tunnel inlet along with electrophysiologic improvements in median nerve function²⁰. The limitations of the study included sample sizes that were very small ($n \leq 20$) with limited six-month follow-up. The control was not independent as it was found that 13 of the 20 untreated “control hands” had symptomatic carpal tunnel syndrome, and one of the three assessors was not blinded to the treated hand. Additional well-designed studies are needed to determine the health outcome of these newer minimally invasive surgical treatment techniques compared to the standard treatment of endoscopic or open carpal tunnel release.

Summary of Evidence

For individuals diagnosed with carpal tunnel syndrome who receive carpal tunnel release surgery (endoscopic or open), the evidence includes numerous systematic reviews and meta-analyses of RCTs which showed that open and endoscopic carpal tunnel release are both about as effective in relieving symptoms and improving an individual’s functional status. There may be a benefit in improvement of grip strength, fewer minor complications, and quicker return to work with endoscopic surgery versus open surgery^{10,11,12,16}. The evidence also suggests that injection of a corticosteroid may provide symptom relief and delay surgery better than wearing a night splint or using oral steroids; however, the symptom relief is usually short-term.^{7,15,17,19,21} The evidence is

sufficient to determine that the technology results in an improvement in the net health outcome.

Practice Guidelines and Position Statements

The purpose of the following information is to provide reference material. Inclusion does not imply endorsement or alignment with the policy conclusions.

The American Academy of Orthopedic Surgeons (AAOS)

In 2024, the AAOS published an evidence-based clinical practice guideline on the management of carpal tunnel syndrome that was endorsed by the American Association for Hand Surgery (AAHS)²⁶. In the guideline the AAOS made the following recommendations:

- Strong evidence suggests corticosteroid injection does not provide long-term improvement of carpal tunnel syndrome
- Strong evidence suggests PRP Injection does not provide long-term benefits in non-operative treatment of carpal tunnel syndrome (leukocyte rich or leukocyte poor PRP)
- Strong evidence suggests that there is no difference in patient reported outcomes between a mini-open carpal tunnel release and an endoscopic carpal tunnel release
- Strong evidence suggests local anesthesia alone can be used for carpal tunnel release
- Evidence suggests therapeutic ultrasound does not provide long-term improvement of carpal tunnel syndrome
- Evidence suggests the following non-operative treatments do not improve long-term patient reported outcomes for carpal tunnel syndrome: oral corticosteroid, hyaluronic acid injection, hydro dissection, kinesiotaping, laser therapy, peloid therapy, perineural injection therapy, topical treatment, shockwave therapy, exercise, ozone injection, massage therapy, manual therapy, pulsed radiofrequency
- Evidence suggests no significant difference in patient reported outcomes between non operative treatment techniques for carpal tunnel syndrome

Medicare National Coverage

There is no national coverage determination.

Regulatory Status

Carpal tunnel release is a surgical procedure and, as such, is not subject to regulation by the US FDA.

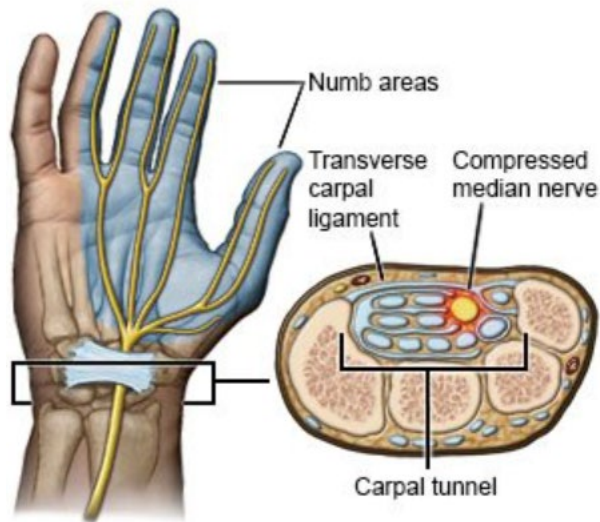
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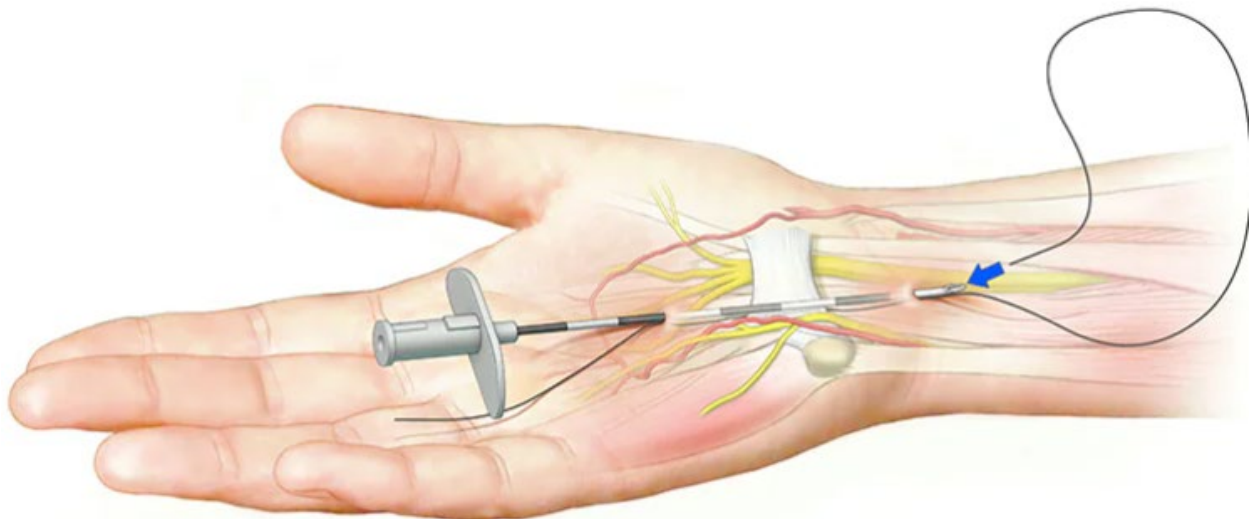




Carpal Tunnel Syndrome

Source: <https://www.drugs.com/cg/carpal-tunnel-syndrome.html> Accessed December 16, 2024.

Percutaneous Carpal Tunnel Release



Source: <https://www.mayoclinic.org/medical-professionals/physical-medicine-rehabilitation/news/new-approaches-to-carpal-tunnel-release-and-treatment-of-tendinopathy/mac-20521546> Accessed December 16, 2024.

History

Date	Comments
02/01/25	New policy, approved January 14, 2025, effective for dates of service on or after May 6, 2025, following 90-day provider notification. Add to Surgery section. Carpal tunnel release is considered medically necessary for individuals with carpal tunnel syndrome who have failed conservative therapy when criteria are met. CPT codes 25999, 29848, 64721 and 64999.

Disclaimer: This medical policy is a guide in evaluating the medical necessity of a particular service or treatment. The Company adopts policies after careful review of published peer-reviewed scientific literature, national guidelines and local standards of practice. Since medical technology is constantly changing, the Company reserves the right to review and update policies as appropriate. Member contracts differ in their benefits. Always consult the member benefit booklet or contact a member service representative to determine coverage for a specific medical service or supply. CPT codes, descriptions and materials are copyrighted by the American Medical Association (AMA). ©2025 Premera All Rights Reserved.

Scope: Medical policies are systematically developed guidelines that serve as a resource for Company staff when determining coverage for specific medical procedures, drugs or devices. Coverage for medical services is subject to the limits and conditions of the member benefit plan. Members and their providers should consult the member benefit booklet or contact a customer service representative to determine whether there are any benefit limitations applicable to this service or supply. This medical policy does not apply to Medicare Advantage.

