

## VHA Office of Integrated Veteran Care

### Clinical Determination and Indication

### Thread Carpal Tunnel Release

**CDI Number: 00027**

**Original Effective Date: September 1, 2024**

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#### I. Disclaimer

This document is currently in draft and is intended to be used as a reference for non-VA providers and not intended to replace clinical judgment when determining care pathways. These guidelines do not guarantee benefits or constitute medical advice.

#### II. Clinical Determinations and Indications

##### a. Indications for Thread Carpal Tunnel Release

Thread carpal tunnel release (TCTR) for the treatment of carpal tunnel syndrome (CTS) is considered investigational and experimental because there is insufficient evidence from peer-reviewed medical literature to support the safety and efficacy of this treatment. Therefore, TCTR is considered **not medically necessary** for the treatment of CTS.

#### III. Background and Supporting Information

The following information is for reference purposes only in accordance with the medical benefits package outlined in 38 C.F.R. § 17.38 (b). Each subsection supports VA's determinations for medical necessity and alignment with generally accepted standards of medical practice.

##### a. Background Information

Carpal tunnel syndrome (CTS) is a painful condition caused by compression of the median nerve as it passes through the carpal tunnel which can lead to permanent nerve damage, resulting in weakness, tingling, and numbness in the hand and fingers. The carpal tunnel is a narrow passageway surrounded by bones and ligaments in the wrist. Common causes of carpal tunnel syndrome include work with vibrating tools, assembly line work, arthritis, hand fractures, or any other condition that compresses the median nerve.

Mild carpal tunnel can be approached with non-surgical treatments to provide relief from the pain and damage to the median nerve, including reduced activity of the wrist, proper positioning, splinting, and anti-inflammatory medications. If these treatment options fail to provide consistent relief,

surgical intervention may be considered. The most widely used surgical treatment for carpal tunnel syndrome is open carpal tunnel release (OCTR).

This procedure involves an incision in the palm of the hand to expose and relieve pressure on the median nerve, including transection of the carpal ligament.

Thread carpal tunnel release (TCTR) is a minimally invasive procedure for treating CTS. Using local anesthetics and ultrasound guidance, a thread is inserted through two small punctures around the ligament, cutting the ligament with the thread to release entrapment of the median nerve. No incision is made, only a needle is inserted at the wrist and in the palm of the hand using ultrasound guidance to position the needles and thread to cut the ligament. This technique aims to reduce soft tissue trauma and enable faster recovery times. One of the potential challenges of TCTR is difficulty visualizing the underlying anatomical structures within the hand and wrist which could lead to unintended damage to tissues and nerves. Current research shows the use of ultrasound guided imagery to perform this procedure requires practice as there is a learning curve for clinicians.

**b. Research, Clinical Trials, and Evidence Summaries**

Park et al. (2022) studied the effectiveness of two different types of thread used for the cutting of the transverse carpal ligament (TCL) to complete the TCTR. In the newly developed titanium coated thread, Smartwire-01, it was shown that there were no significant differences in the patient's overall results from previous threads used for TCTR. However, it was noted that the Smartwire-01 was easier to thread through the Tuohy needle and easier to visualize during ultrasound placement of the wire. A limitation of the study was the small sample size of only 22 procedures on 19 patients operated on by a single physiatrist.

Burnham et al. (2021) evaluated the safety and efficacy of TCTR. The study included 20 patients who underwent TCTR on only one hand, using the other hand as the control. At the 6-month follow-up, 85 to 90% of patients reported high satisfaction with the hand that had the TCTR procedure. Only two patients went on to have open carpal tunnel release (OCTR). At one month post procedure, there had been no adverse events reported and pain and dysfunction had "significantly decreased." Limitations of this study include one survey assessor was not blinded, there were only 20 participants, and the only control used was the patient's other hand which could affect the responses. Despite its limitations, this study determined that the TCTR is safe and effective.

Guo et al. (2016) reviewed outcomes of TCTR on 159 hands in 116 patients. Boston Carpal Tunnel Syndrome Questionnaire (BCTQ) scores were used to

compare patient outcomes. There were significant short-term and better long-term results for patients who received TCTR over the OCTR and endoscopic carpal tunnel release (ECTR) procedures as determined by statistical analysis. Patients who had TCTR were able to return to work within one day for office jobs and within 2 weeks for repetitive jobs. Data content used for TCTR comparison was limited to OCTR and ECTR results from “available data in literature” with only 97 and 95 cases respectfully. The TCTR procedure was found to be safe and effective with improved benefits over the OCTR and ECTR procedure.

Konrad et al. (2023) evaluated outcomes of the TCTR procedure in Europe using a readily available thread. The study included 76 extremities in 67 patients. No “major” complications were reported with the TCTR procedure. Patients who had TCTR had earlier returns to work and normal activities compared to other surgical options such as OCTR, modified open carpal tunnel release (MOCTR) and ECTR. Although the study found TCTR to be a safe and reliable procedure, authors noted it requires specific skills with a learning curve. Authors also recommended further large, randomized control trials to verify study findings.

There are multiple ways that a carpal tunnel surgery can be performed. The TCTR is a relatively new procedure (2012) that uses a thread to dissect the transverse carpal ligament. There have been a few retrospective studies, including this procedure that reviewed patient outcomes. A steep learning curve was also noted with this technique. The lack of randomized controlled studies, standardized outcome measures from current research, and limited number of cases included in available studies warrant further research to prove safety and effectiveness.

### c. Medicare Coverage Determinations

There are no available Medicare coverage determinations for thread carpal tunnel release (TCTR) for the treatment of carpal tunnel syndrome (CTS). VA and Medicare are governed by separate laws and regulations; thus, VA coverage determinations may be different

## IV. Definitions

Term	Definition
Entrapment	Compression of the nerve between other structures
Endoscopic carpal tunnel release	Carpal tunnel surgery performed with an endoscope to visualize structures using a much smaller incision
Minimally Invasive Surgery	To make smaller cut or incision for a procedure potentially with the assistance of ultrasound or flexible cameras

Term	Definition
Transection	To divide or cut across

## V. References

Burnham, R. S., Loh, E. Y., Rambaransingh, B., Roberts, S. L., Agur, A. M., & Playfair, L. D. (2021). A Controlled Trial Evaluating the Safety and Effectiveness of Ultrasound-Guided Looped Thread Carpal Tunnel Release. *Hand (New York, N.Y.)*, 16(1), 73–80. <https://doi.org/10.1177/1558944719842199>

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## VI. CDI History/Revision Information

- Explanation of changes to the CDI

Revision Type	Date of Revision	Update(s) Made to CDI
	MM/DD/YYYY	
	MM/DD/YYYY	