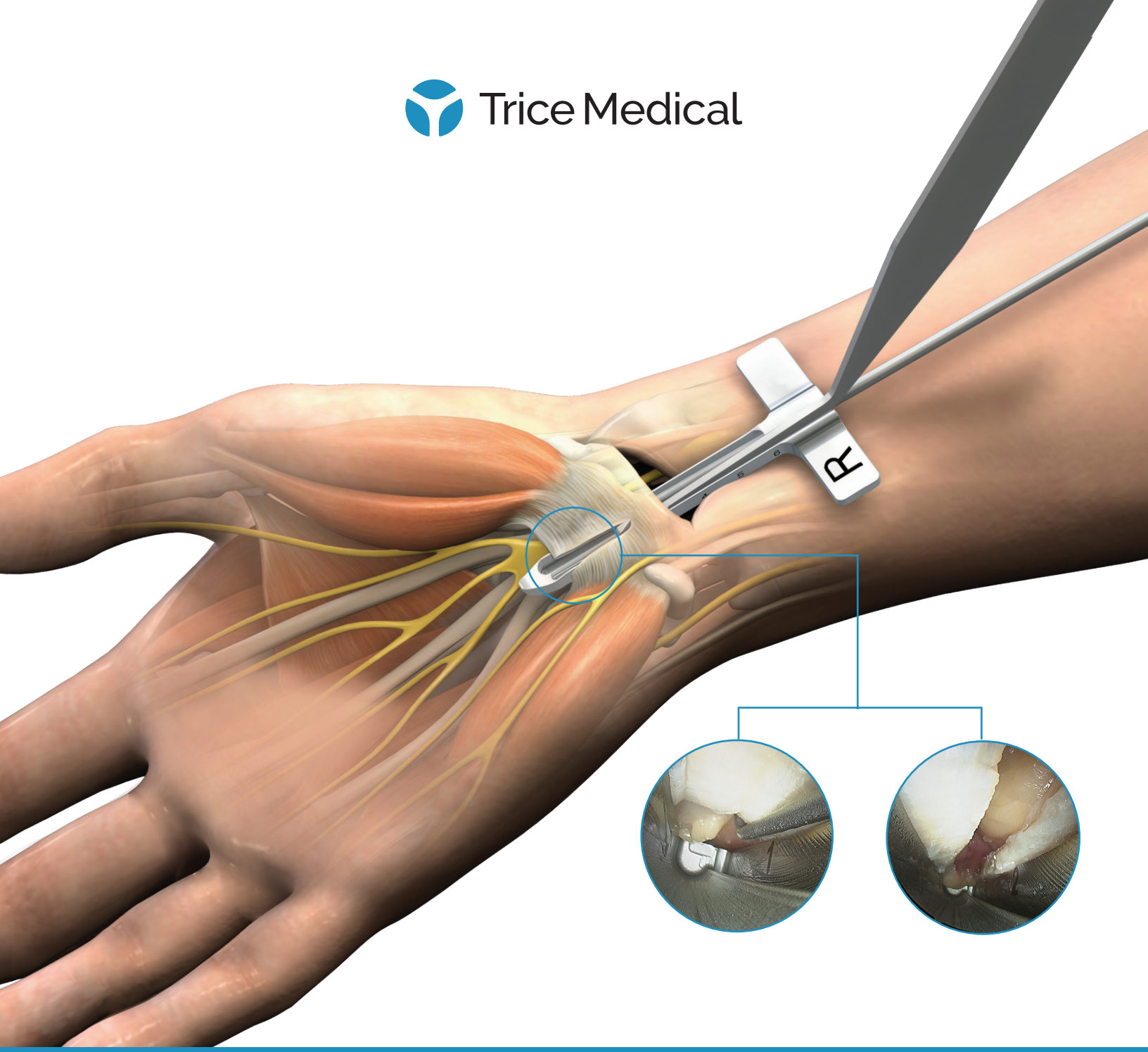
Trice Medical



Seg-WAY™ ECTR

Endoscopic Carpal Tunnel Release (ECTR)

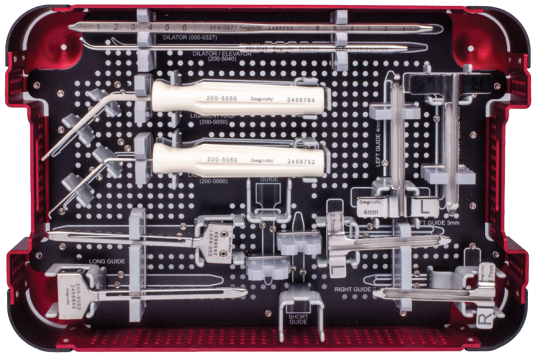
Surgical Technique Guide

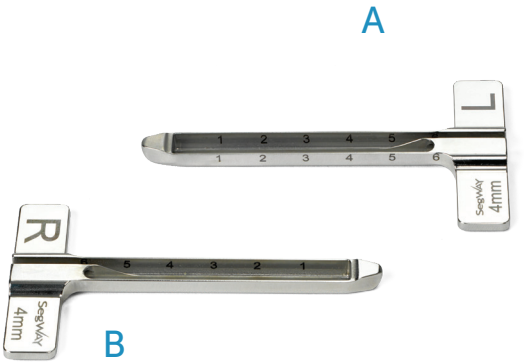
Minimally Invasive ECTR System

Seg-WAY is the first ECTR system designed to position the blade on the Ulnar side of the transverse carpal ligament. The guide provides surgeons with a wider endoscopic field of view while the uniportal entry allows for a small and cosmetically appealing incision.

The scope functions independently from the knife, probe, and rasp. This gives the surgeon the ability to easily probe and identify uncut fibers under direct endoscopic visualization.

Instrument Overview





A) Left Guide (medium and small*)

B) Right Guide (medium and small*)

C) Synovial Dilator/Elevator

D) Retrograde Knife (single use†)

E) Ligament Probe

F) Ligament Rasp

**Different size Seg-WAY guides allow the surgeon to use a 2.7mm or 4 mm scope †Not included in Seg-WAY instrument tray*

Sterile Field Setup

The following instruments are needed for an endoscopic carpal tunnel procedure using the Seg-WAY Endoscopic Guide System:

- 4mm, 2.9mm, or 2.7mm 30° scope depending on size (standard knee, shoulder scope, or wrist)
- Hemostat
- Adson forceps
- Standard dissection kit and hand set

In addition, the following items should be made available for the procedure:

- Cotton swabs
- Anti-fog wipes, for scope
- Marking Pen
- Lead hand or rolled towel

Anesthesia Options

Either under General, MAC or Local and Regional anesthesia. Local and Regional anesthesia are available under the following forms:

- Local Infiltrate
- Regional I.V. bier block
- Proximal median nerve block

In addition to the above anesthesia options, some surgeons prefer to perform the technique under general anesthesia.

Note: *When using a local infiltrative anesthetic, the surgeon should avoid injecting into the carpal canal as fluid could impair visualization of the carpal ligament when using the scope.*

Operating Room Setup

The operating room should be set up to enable the surgeon to have a clear view of the video monitor and proper access to the patient's hand. The assistant should also be seated opposite the surgeon and must have a clear view of the monitor as he/she will assist in the operation of the scope.

Surgical Preparation

An upper arm tourniquet is recommended and the arm is prepped in the usual fashion. Forearm tourniquets are not recommended as they will obstruct the scope and guide as well as put increased tension on the flexor tendons, crowding the carpal canal. The Esmarch bandage is used to exsanguinate the upper extremity prior to inflation of the tourniquet. The arm is then prepped and draped in the usual sterile fashion.

Entry Portal Surface Anatomy

It is recommended that the surgeon identify the following anatomical landmarks prior to inflating the upper arm tourniquet.

A) Proximal wrist crease

B) Distal wrist crease

C) Palmaris Longus (if present)

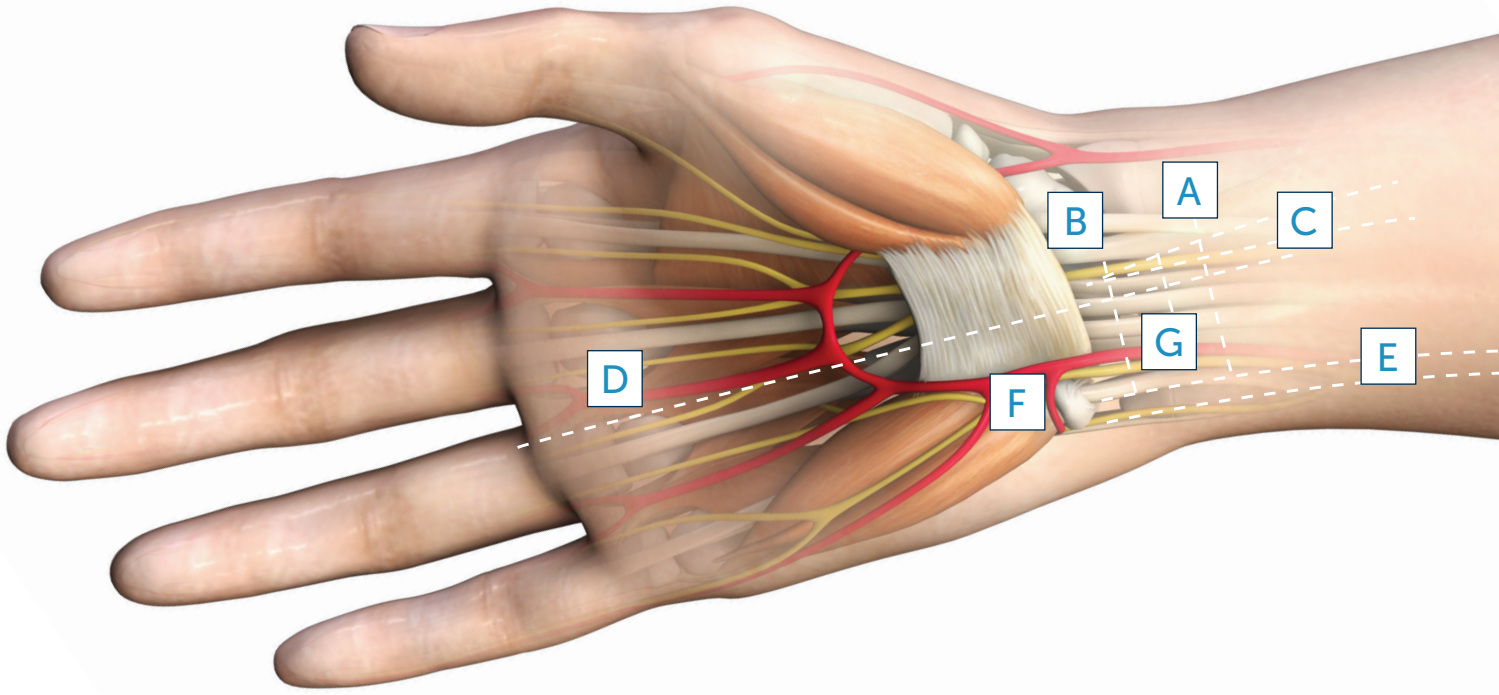
D) Line from Radial Ring Finger to Wrist Crease

E) Flexor Carpi Ulnaris

F) Hook of Hamate

G) Entry Portal

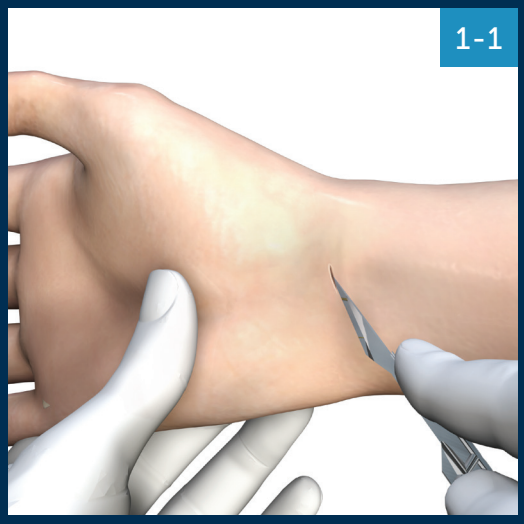
The entry portal is a 1cm transverse line in between the proximal and distal wrist flexion creases centered about the radial aspect of the ring finger line (starting over Palmaris Longus and extending 1cm ulnarward).



Portal Creation to View Carpal Tunnel

Make Incision

- Make a 1cm transverse skin incision on the predetermined entry portal line (Figure 1-1)



Expose Forearm Fascia to gain access to Carpal Tunnel

- Expose the distal forearm fascia by dissecting the soft tissue in a longitudinal manner (Figure 1-2)
- Retract Palmaris Longus tendon radially if present

Expose Median Nerve

- Divide the distal forearm fascia transversely to expose the median nerve
- Retract distal soft tissues to provide clear visualization of the carpal tunnel (Figure 1-3)

Technique Tip: *To allow for easier access to the carpal tunnel and to provide added decompression of the median nerve: (1) Release the proximal forearm fascia 1cm under direct visualization; Then (2) release the proximal end of the transverse carpal ligament approximately 4mm to 5mm.*

Seg-WAY Guide Prep and Insertion

Insert Synovial Dilator

- Insert 6mm Synovial Dilator into the carpal tunnel (Figure 2-1)

Technique Tip: *Aim for the web space between the 3rd and 4th metacarpals while feeling the hook of hamate ulnarly to avoid Guyon's canal.*

Insert Elevator

- Insert the curved elevator until the tip is easily palpated in the mid palm, just distal to the transverse carpal ligament (Figure 2-2)

Note: *Depth of insertion of the elevator shown on the instrument is generally between 3cm and 4cm).*

Technique Tip: *Move the elevator longitudinally along the bottom of the transverse carpal ligament, feeling the washboard effect while removing the synovium off the undersurface.*

Choose Appropriate Guide

- Choose right and left guide to match the hand on which you are operating (Figure 3-1)

Note: *Depth markings are located on the ulnar side of each guide.*

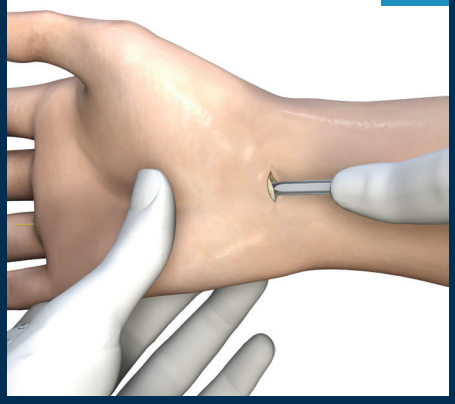
Insert Guide

- Insert the guide through the carpal tunnel, slightly deeper than the previously measured depth during use of the elevator (Figure 3-2)
- The tip of the guide should be palpated in the palm just distal to the transverse carpal ligament

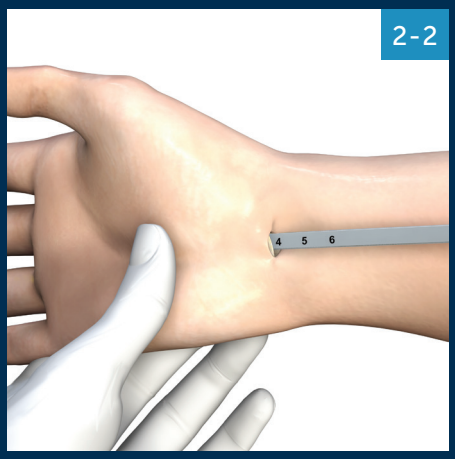
Note: *The guide should insert easily. If there is resistance or the patient experiences pain or parasthesias, repeat the elevation/ dilation steps and reposition the guide.*

Technique Tip: *The tip of the guide should pass along the undersurface of the transverse carpal ligament while the surgeon is exerting upward pressure with the tip of the guide. This will help displace the flexor tendons, median nerve and synovium away from the ligament and help avoid entrapment of these structures. The wrist and fingers should already be placed in extension to help avoid their entrapment as well. Do not rotate the guide to look at the depth markings, rotate the wrist.*

2-1

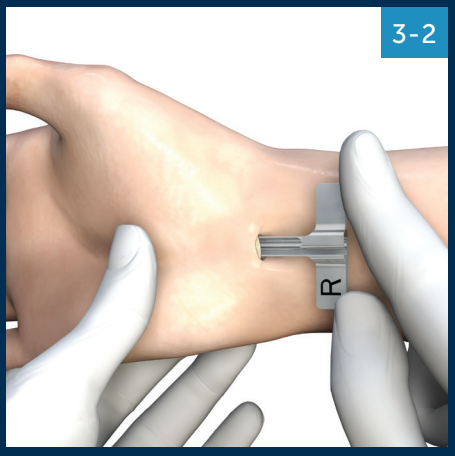


2-2



3-1

3-2



Seg-WAY Guide Insertion

Insert Scope

- Insert scope into the radial track of the guide
- Rotate the light source just off the radial side of the forearm to provide visualization of the ligament undersurface (Figure 3-3)

Note: The transverse oriented fibers of the ligament should be clearly visualized as well as the fat pad distal to the ligament. If there is any interposed tissue such as median nerve or flexor tendon, remove guide and reinsert tilted slightly toward the ulnar side until the field of vision is clear. Convert to open release If the field cannot be cleared after three attempts.

Note: Use an antifog agent on the lens of the arthroscope to achieve optimal visualization.

Preparation for Release

Instrument Placement

- Insert the instrument into the ulnar track of the guide. The instrument should remain in full contact with the guide while sliding distally. All instruments must be cantilevered from within the guide to engage the tissue (Figure 4-1)

Insert Probe

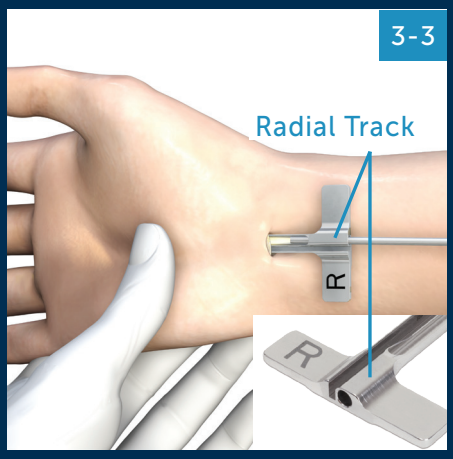
- Insert the probe in the ulnar track and cantilever the instrument to allow the tip of the probe to hook the distal end of the ligament noting the approximate measurement on guide. Lightly pull in a proximal direction to verify the distal end of the ligament (Figure 4-2)

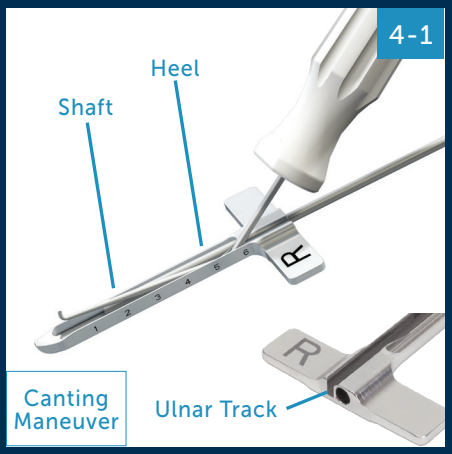
Technique Tip: The probe can be used to palpate the undersurface of the ligament and dissect through the synovial membrane layer.

Insert Rasp

- Cantilever the rasp to clear the remaining synovial tissue from the undersurface of the ligament for better visualization (Figure 4-3)

Technique Tip: Sterile cotton swabs may be used to sweep away remaining soft tissue or absorb fluid that may be obstructing the field of view.





Carpal Tunnel Release

Release Transverse Carpal Ligament with Seg-WAY Retrograde Knife

- Insert the Seg-WAY retrograde knife (packaged separately) in the ulnar track of the guide (Figure 5-1)
- Move the scope with the Seg-WAY retrograde knife to maintain constant visualization of the tip of the knife while cutting the ligament (Figure 5-2)
- Cantilever the Seg-WAY retrograde knife to allow the tip of the knife to hook onto the distal edge of the ligament
- Keep the heel of the Seg-WAY retrograde knife against the guide and pull the knife in the proximal direction to incise the ligament

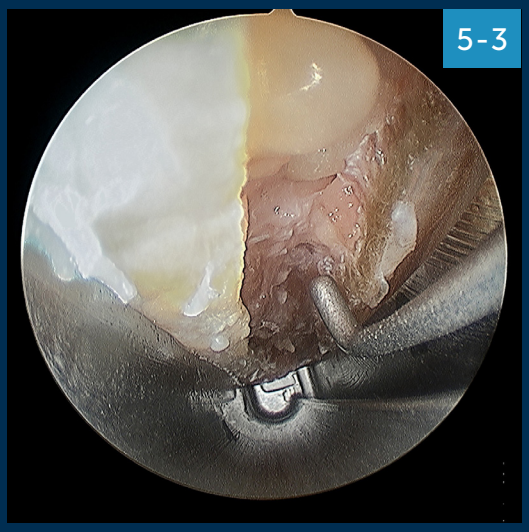
Technique Tip: *A 2mm proximal edge of the ligament may be left intact for a later release using tenotomy scissors after guide removal. This helps protect the patient's skin from getting cut knife during removal.*

Confirm Release with Probe

- Insert the probe into the ulnar track of the guide to check for uncut fibers (Figure 5-3)

Note: *If uncut fibers are identified, reinsert the Seg-WAY blade to cut remaining fibers.*

Technique Tip: *There should be parallel separation of the cut edges of the ligament, interceding fat from the palm and a loss of tension on the guide.*



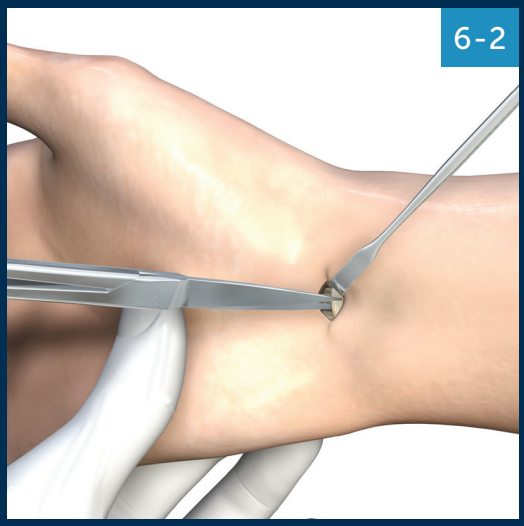
Completing the Procedure

Proximal Edge of the Transverse Carpal Release

- Under direct visualization, the remaining 2mm proximal edge of the transverse carpal ligament can be sectioned using tenotomy scissors (Figure 6-1)

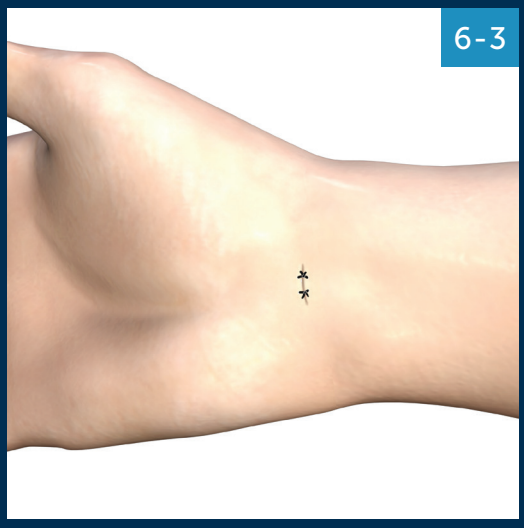
Forearm Fascia Release

- If the forearm fascia release was not completed at the beginning of the procedure, the surgeon may choose to perform a 1 cm release at this time. This provides added decompression of the median nerve (Figure 6-2)



Closure

- Using a small bulb or 10cc syringe, irrigate the wound and carpal canal with sterile saline
- Wound closure should be skin only, with surgeon choosing the suture material and method of their choice (interrupted or subcuticular type closure) (Figure 6-3)
- Apply a small, soft dressing to cover the wound Splinting is neither necessary or desirable
- Allow for thumb movement when a soft dressing is applied to the hand and wrist



Postoperative Care

The postoperative care is as usual, allowing the patient full finger range of motion the next day with use of the hand for activities as tolerated. Allow at least four weeks before heavy work or other strenuous activity. Assuming no pain, the patient can perform functional activities as tolerated.

Description	**Part Number**
Seg-WAY Instrument Set (Complete)	200-5560
Left Large SS Knife Guide	200-5012
Right Large SS Knife Guide	200-5022
Left Small SS Knife Guide	200-5014
Right Small SS Knife Guide	200-5024
Synovial Dilator / Elevator	200-5040
Rasp, Ligament	200-5050
Probe, Ligament	200-5060
Dilator	000-0327
Retrograde Ligament Knife (Single Use)	200-1003