

Endoscopic Carpal Tunnel Release

Disposable Kit Surgical Technique Guide

Minimally Invasive ECTR-d System

Seg-WAY ECTR-d is the first fully disposable endoscopic carpal tunnel release system designed to properly position the incision in the Ulnar Safe Zone. It is also the only system that is anatomy and patient specific. The system provides enhanced visualization and safety and can be done under local anesthetic and the tray and parts are fully disposable resulting in quicker turnaround times.

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) Hand Positioner



B) Right/Left Guides



C) Tenotomy Scissors



D) Adson Tissue Forceps



E) Scalpel



F) Dilator/Elevator



G) Probe/Rasp



H) Ragnell Retractor



I) Retrograde Knife



Sterile Field Setup

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

- 4 mm, 2.7mm, or 2.3mm 30° scope
- Seg-WAY ECTR-d Complete Kit

If using the Seg-WAY ECTR-d Basic Kit, you will need the following:

- 4 mm, 2.7mm, or 2.3mm 30° scope
- Tenotomy Scissors
- Adson Forceps
- Ragnell Retractors
- Scalpel

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

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

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.

Procedure Room Setup

The procedure room should be set up to enable the surgeon to have a clear view of the mi-tablet 2™ screen 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

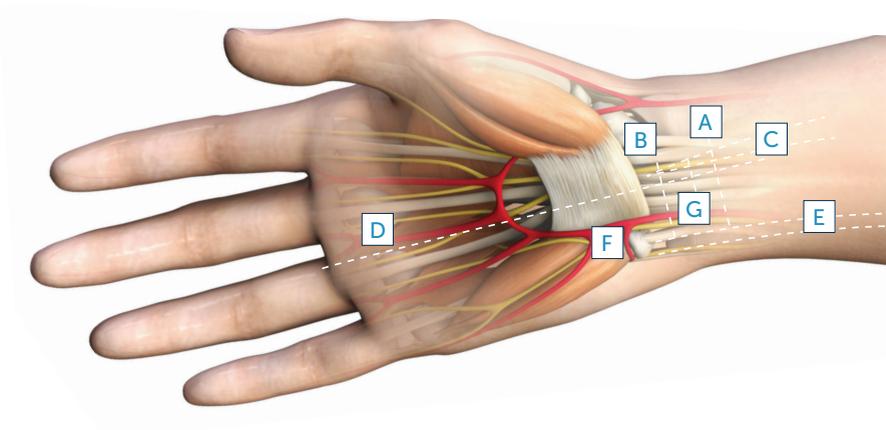
An upper arm tourniquet is recommended and the arm is prepped in the usual fashion. Forearm tourniquets are not recommended as they will obstruct the mi-eye angled and guide as well as put increased tension on the flexor tendons, crowding the carpal canal. The Esmarch bandage is used to exsanguinate 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

Expose Forearm Fascia to gain access to Carpal Tunnel

- Expose the distal forearm fascia by dissecting the soft tissue in a longitudinal manner
- 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

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
- 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

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

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

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 and Insert Appropriate Guide

- Choose right or left guide to match the hand on which you are operating

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

- Insert the guide through the carpal tunnel, slightly deeper than the previously measured depth during use of the elevator
- 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 paresthesias, 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.

Scope 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

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

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

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

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 the Retrograde Knife

- Insert the retrograde knife in the ulnar track of the guide
- Move the scope with the retrograde knife to maintain constant visualization of the tip of the knife while cutting the ligament
- Cantilever the retrograde knife to allow the tip of the knife to hook onto the distal edge of the ligament
- Keep the heel of the 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

Note: If uncut fibers are identified, reinsert the retrograde knife 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

Forearm Fascia Release

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

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)
- 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
Disposable Right Guide	1-10-0462
Disposable Left Guide	1-10-0463
Dilator/Elevator	1-10-0470
Disposable Probe/Rasp	1-10-0456
Retrograde Ligament Knife	1-10-0430
Adson Tissue Forceps	2-10-0256
Tenotomy Scissors	2-10-0257
Disposable Scalpel	2-10-0258
Ragnell Retractor	2-10-0262

Always refer to the products Direction for Use and User Manual for full prescribing and safety information.