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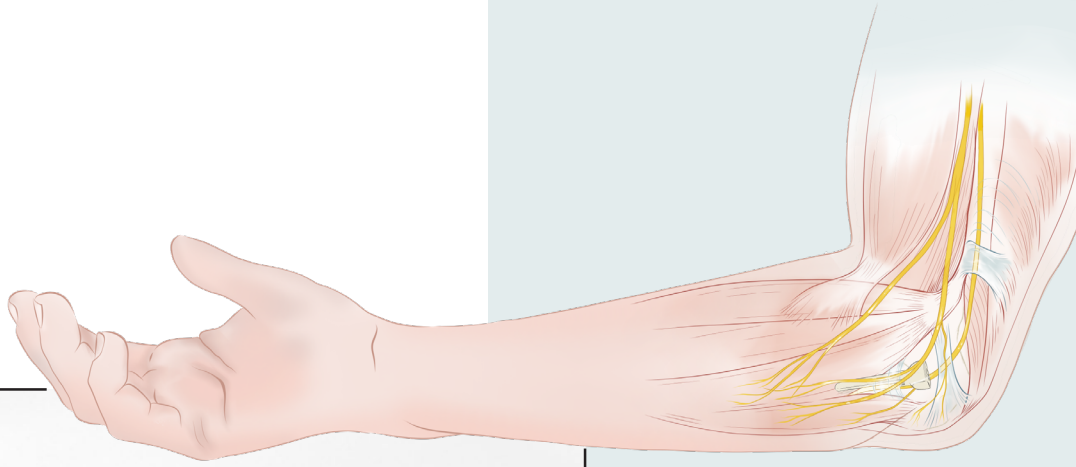
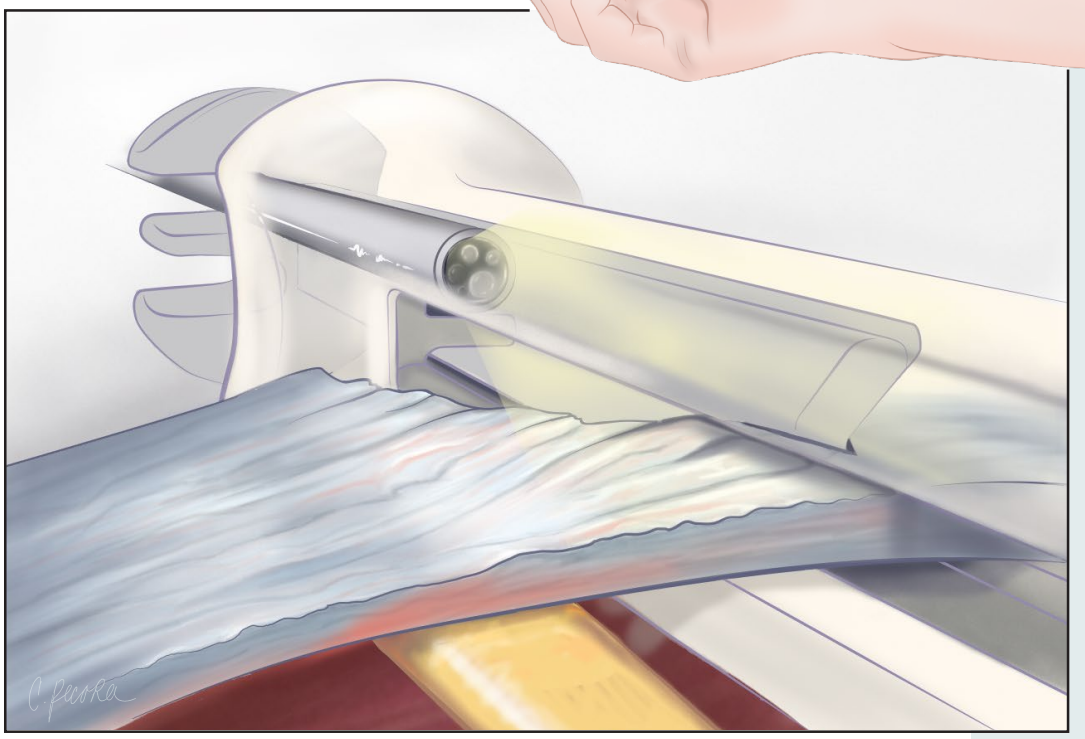
Creating safer technologies for Surgeons and their Patients.





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CarpaT Clip

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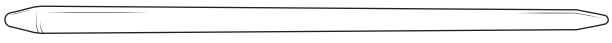
Surgical technique guide

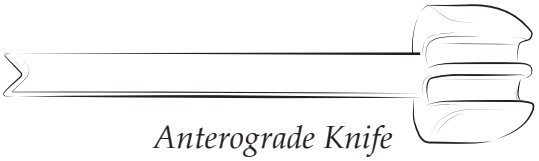
Endoscopic cubital tunnel release

Instrumentation

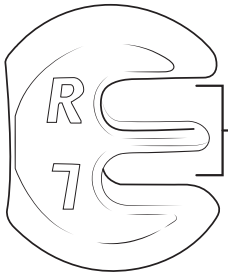
AT18-0000

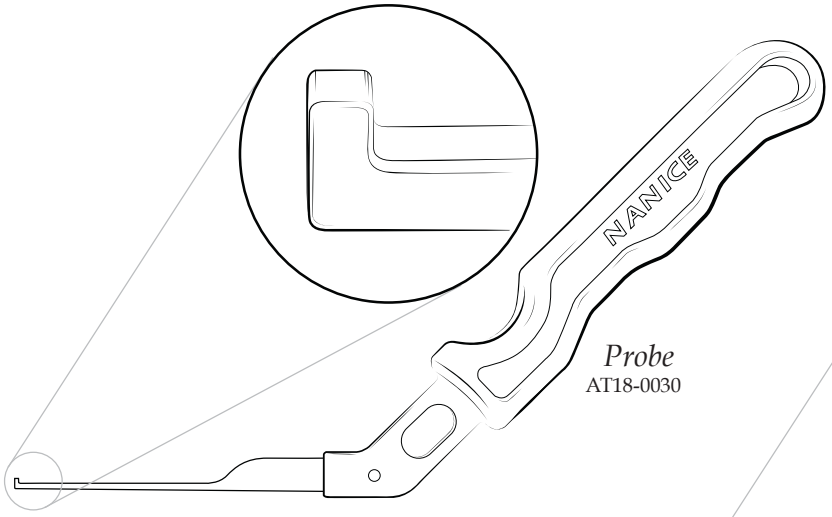


Dilator
AT18-0010

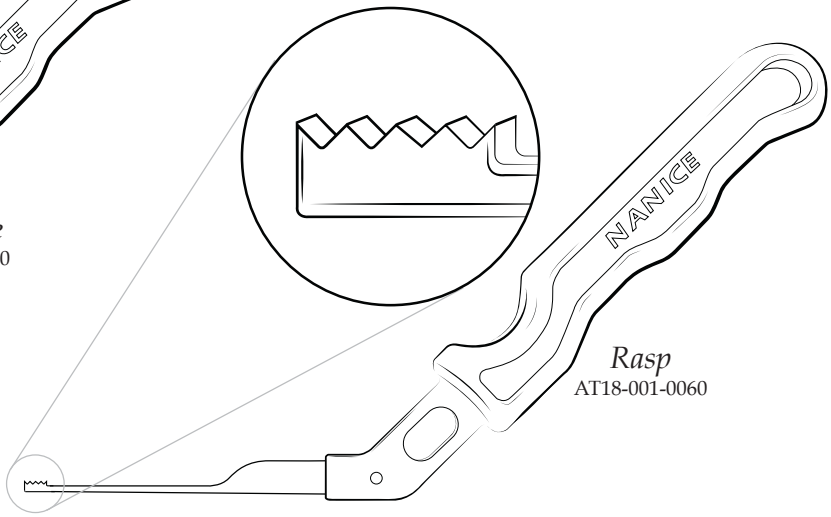


Anterograde Knife
AT18-0040

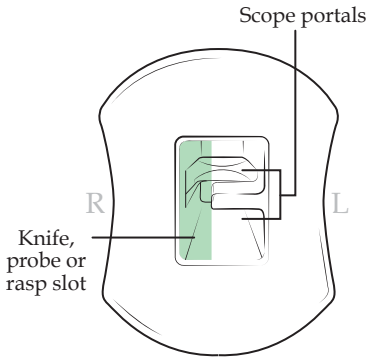


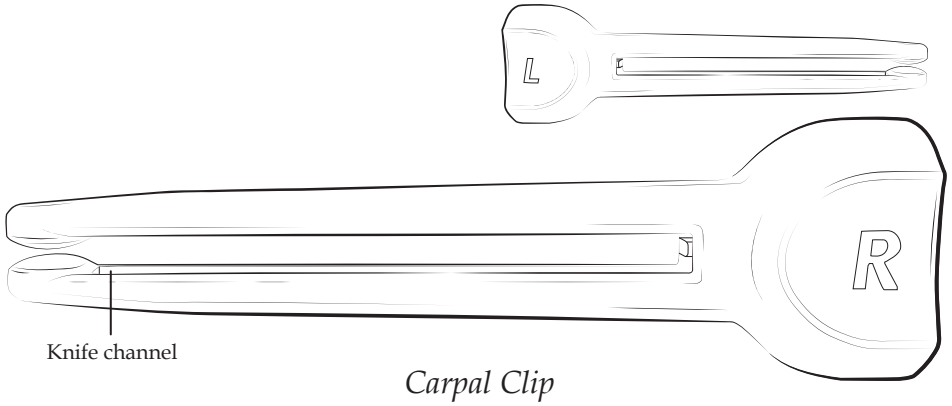


Probe
AT18-0030



Rasp
AT18-001-0060





Carpal Clip
AT18-0020

Preoperative Considerations

Normal anatomic variants, such as the anconeus epitrochlearis and a large medial head of the triceps, may hinder visualization of the cubital tunnel. Surgeon discretion should be used and if in doubt, conversion to an open procedure is appropriate. After surgical release of the cubital tunnel, care must be taken to observe for any ulnar nerve subluxation. It is recommended to proceed with an open cubital tunnel release and anterior ulnar nerve transposition, technique up to surgeon's discretion, if the ulnar nerve is subluxating in order to prevent recurrent symptoms.

Surgical technique

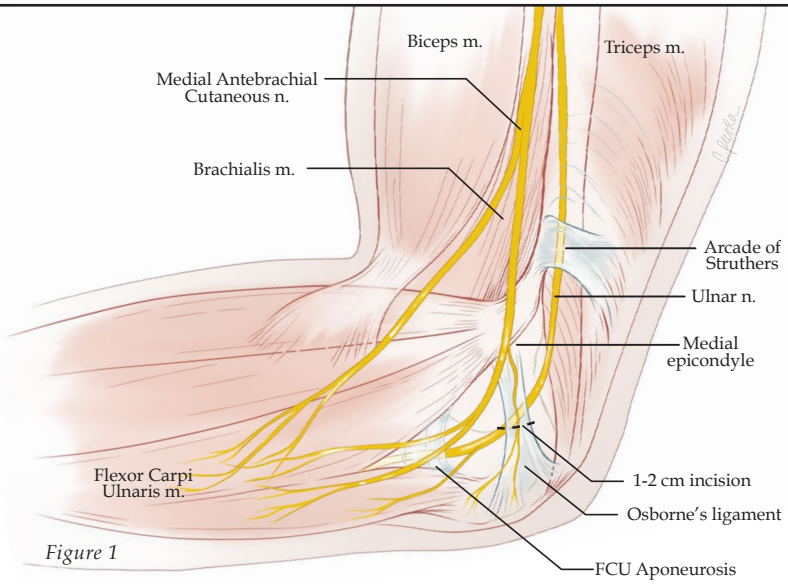


Figure 1

Incision

Make a 1-2 cm transverse incision, 1 cm posterior to the medial epicondyle (over the ulnar groove of the distal humerus) with elbow flexed 90 degrees. Bluntly dissect the subcutaneous tissue, making sure to isolate any traversing medial antebrachial cutaneous nerve branches. Once the cubital tunnel roof has been reached, incise Osborne's ligament for 2 cm.

Proximal Dilation

Find the proximal aspect of the cubital tunnel fascia and start dilation below the fascia in line with the ulnar nerve trajectory. Upon dilation of the proximal aspect of the cubital tunnel, palpate the mid humerus and the distal point of the dilator and make a mental mark. In general, this mark will be in line with the mid humerus and should be 8 cm from the medial epicondyle where the Arcade of Struthers is present. This mark will be your visual for dilating a pathway when you dilate above the fascia line for the subcutaneous channel. It is important to create a subcutaneous channel that is parallel to the proximal aspect of the cubital tunnel to prevent divergence of the carpal clip arms. This will allow for easy insertion of the Carpal Clip and for smooth gliding of the anterograde knife within the clip.

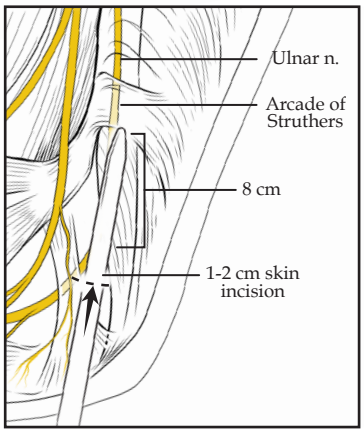


Figure 2 - Proximal dilation

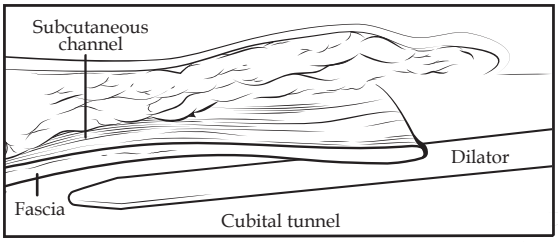


Figure 2a - Lateral view of dilation below fascia line

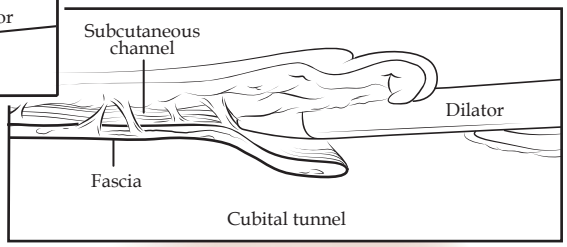


Figure 2b- Lateral view of dilation in subcutaneous channel

Proximal Placement of Carpal Clip

Remove the dilator and place the Carpal Clip guide with one sleeve in the proximal aspect of the cubital tunnel and the other in the subcutaneous channel just created. The device can be placed in any configuration whether the "R" or the "L" letter is upright, this will depend on the surgeon's preference. With the Carpal Clip in place, insert a 4 mm or smaller scope in one of the two scope portals that are opposite to the knife slot. The two scope portals will allow visualization of the ligaments/fascia both superficial and deep to the ulnar nerve position.

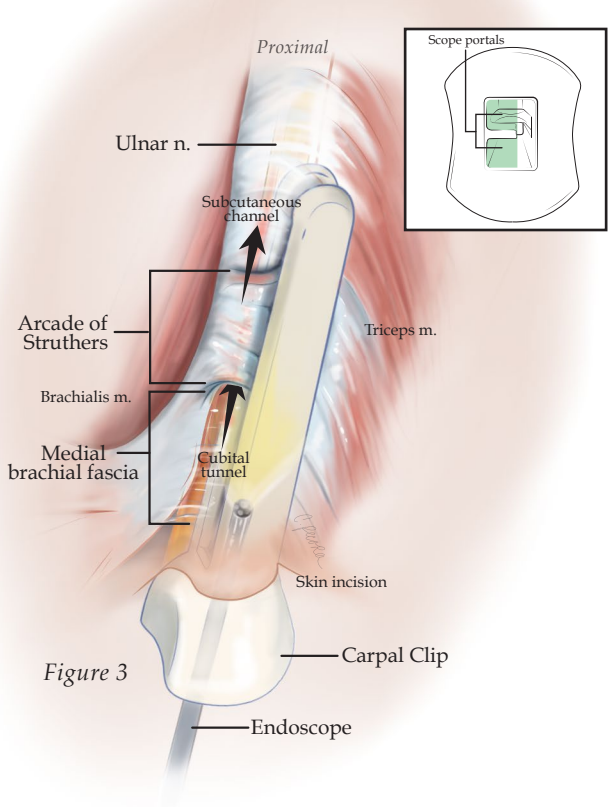


Figure 3

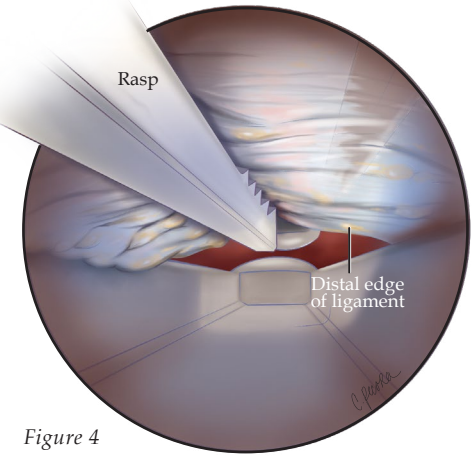


Figure 4

Defining

Use the included rasp to remove any soft tissue to better define the proximal fascia and the Arcade of Stuthers. If you cannot identify the fascia or the Arcade of Struthers, then re-introduce the Carpal Clip and slide the guide distally until you appreciate the appropriate structures. After you have confirmed a clear channel superficial and deep to the fascia/ligaments, the structures are ready to be transected.

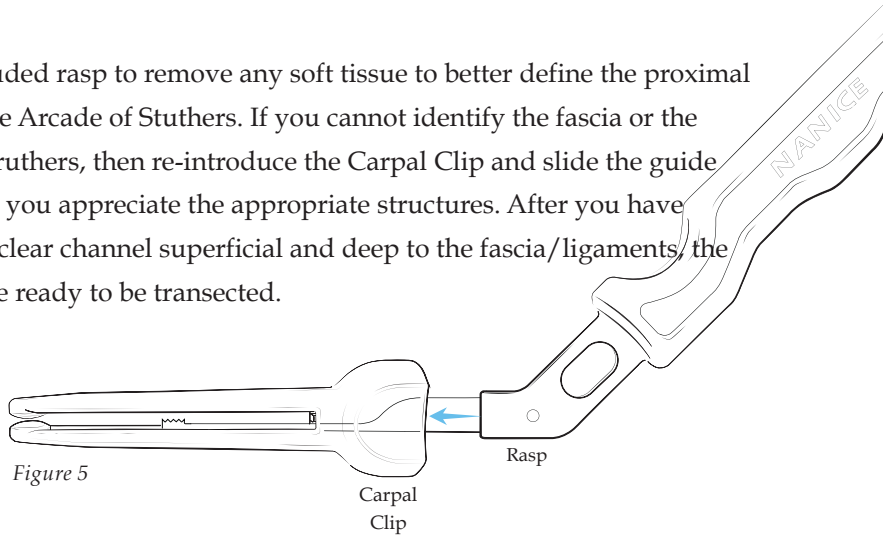


Figure 5

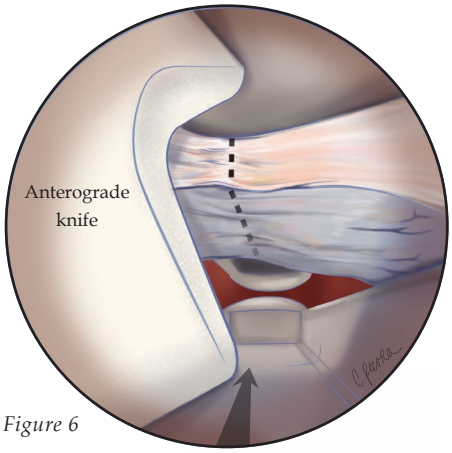


Figure 6

Transection

Place the anterograde knife (V-shaped blade) over the scope such that the knife blade is aligned with the knife slot on the Carpal Clip guide. Then proceed to slide the knife distally until transection is complete. (Note: the Carpal Clip guide will stop the knife from sliding past the guide's end.) Only a single pass is required with the anterograde knife. Once transection is complete, remove the Carpal Clip guide and proceed with the distal cubital tunnel release.

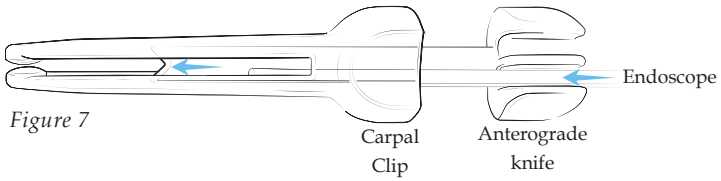


Figure 7

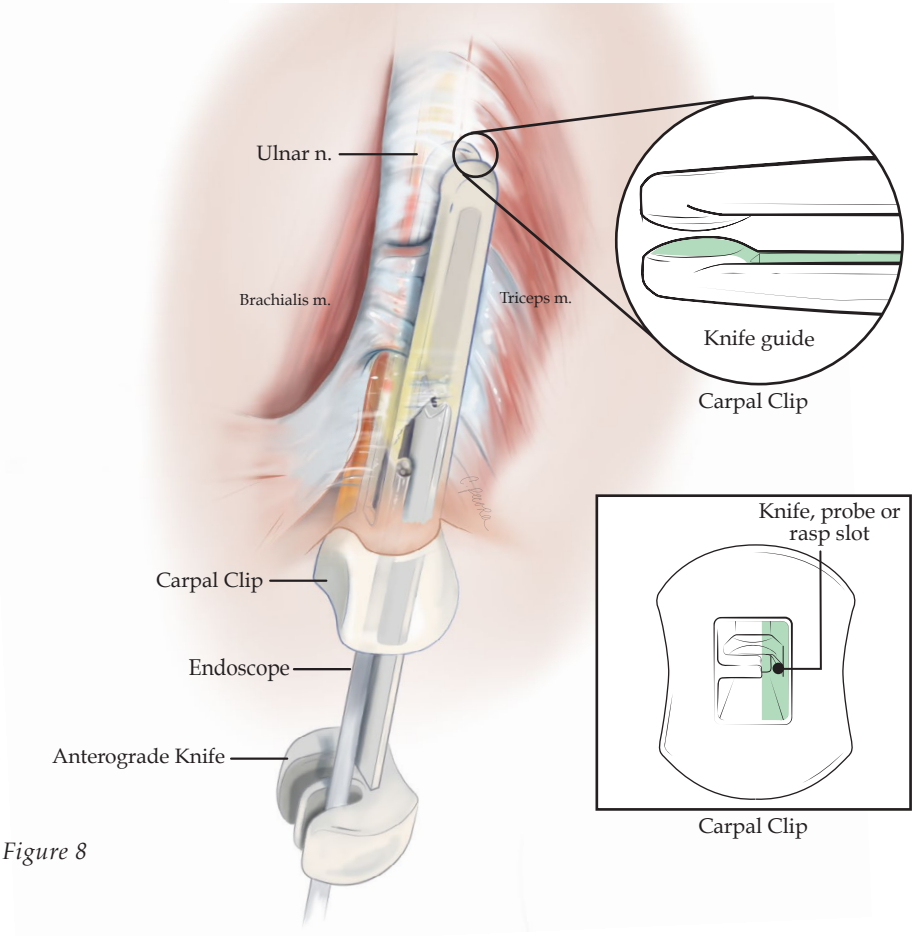


Figure 8

Distal Dilation

Find the distal aspect of the cubital tunnel fascia and start dilation below the flexor carpi ulnaris (FCU) aponeurosis and deep FCU fascia in line with the ulnar nerve trajectory. Upon dilation of the distal aspect of the cubital tunnel, palpate the ulna shaft and the distal point of the dilator and make a mental mark. In general, this mark will be in line between the two FCU muscles. This mark will be your visual for dilating a pathway when you dilate above the FCU aponeurosis and FCU fascia for the subcutaneous channel. It is important to create a subcutaneous channel that is parallel to the cubital tunnel to prevent divergence of the Carpal Clip arms. This will allow for easy insertion of the carpal clip and for smooth gliding of the anterograde knife within the clip.

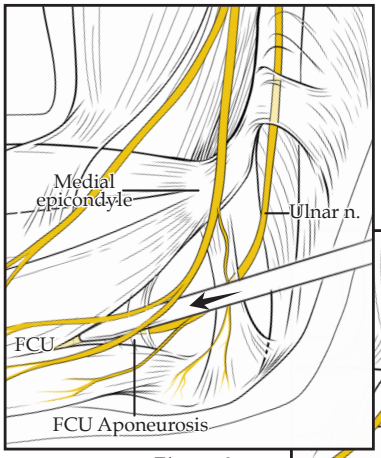


Figure 9

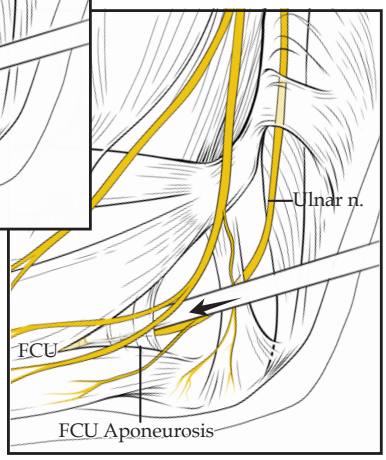


Figure 10

Distal Placement of Carpal Clip

Remove the dilator and place the Carpal Clip guide with one sleeve in the cubital tunnel and the other in the subcutaneous channel just created. The device can be placed in any configuration whether the "R" or the "L" letter is upright, this will depend on the surgeon's preference. With the Carpal Clip in place, insert a 4 mm or smaller scope in one of the two scope portals that are opposite to the knife slot. The two scope portals will allow visualization of the FCU aponeurosis/fascia both superficial and deep to the ulnar nerve position.

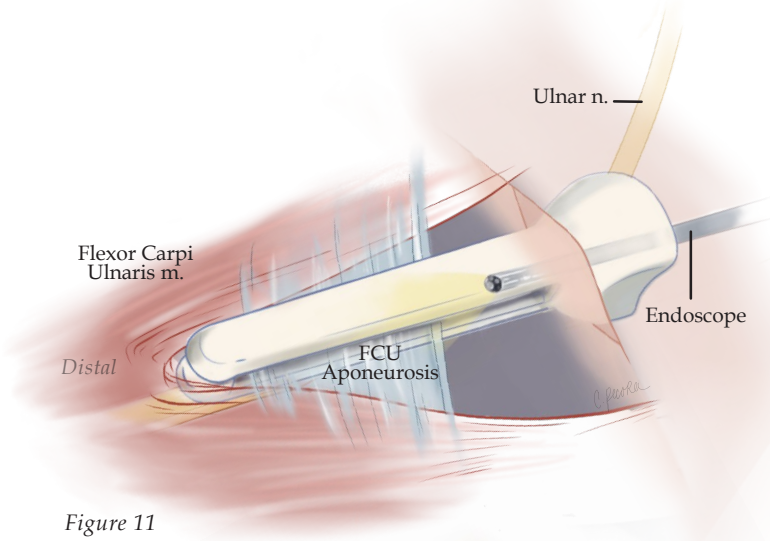


Figure 11

Defining

Use the included rasp to remove any soft tissue off the FCU aponeurosis/fascia. If you cannot identify the fascial layers then the Carpal Clip will need to be re-introduced and advanced distally. After you have confirmed a clear channel superficial and deep to the FCU aponeurosis/fascia, the structures are ready to be transected.

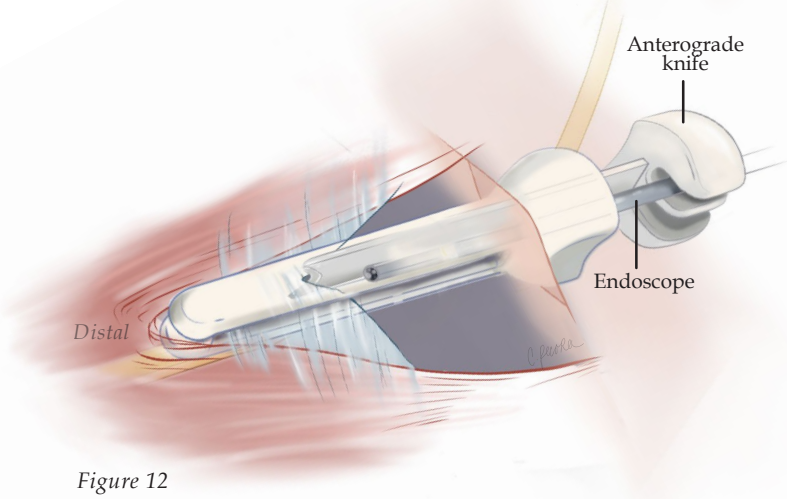


Figure 12

Transection

Place the anterograde knife (V-shaped blade) over the scope such that the knife blade is aligned with the knife slot on the Carpal Clip guide. Then proceed to slide the knife distally until transection is complete. (Note: the Carpal Clip guide will stop the knife from sliding past the guide's end.) Only a single pass is required with the anterograde knife. Once transection is complete, remove the Carpal Clip guide. Irrigate and close the small incision. Place a light bandage over the closed incision. Rehabilitate based on preferred method of treatment.