

STRATOS™

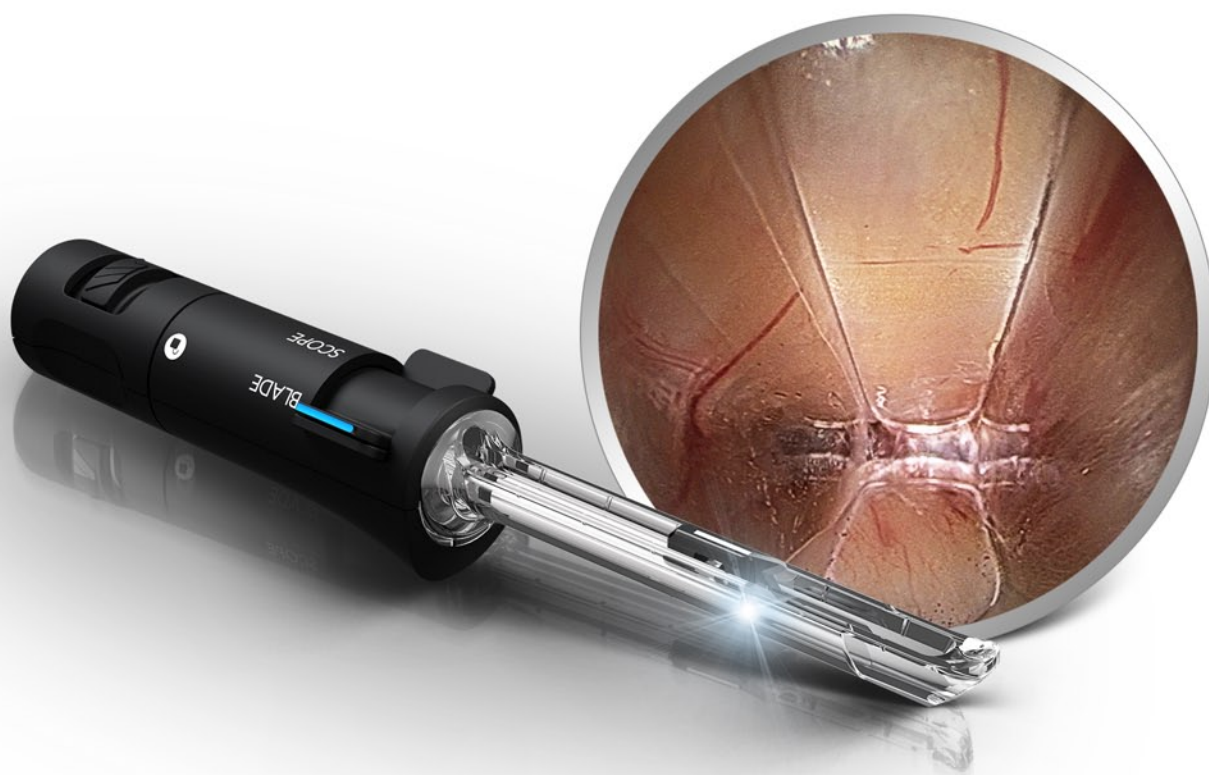
ENDOSCOPIC RELEASE SYSTEM

Endoscopic Cubital Tunnel Release

Surgical Technique

Contributing Surgeons

Blane Sessions, MD ▪ Ather Mirza, MD



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Introduction

The advantages of endoscopic cubital tunnel release (ECuTR) over open procedures to surgically treat cubital tunnel syndrome include a smaller incision, less pain, early recovery and return to work, minimized manipulation of the ulnar nerve and a reduced risk of nerve devascularization. The Stratos™ Endoscopic Release System offers a safe and effective release, with uncompromising protection and visualization of the ulnar nerve throughout the endoscopic portion of the procedure.

Stratos™ Endoscopic Release System

The Stratos™ Endoscopic Release System is an all-in-one, disposable device designed to approach endoscopic cubital tunnel release through a single portal. The Stratos™ features a next generation clear cannula, which offers unparalleled endoscopic visualization and workability along the pathway of the ulnar nerve at the elbow. It combines with any standard 4mm, 30° endoscope allowing the surgeon to steer the device into position under endoscopic control. The scope works independent of the device to confirm the ulnar nerve is completely protected along the length of the cannula prior to release. Add to these features an internalized, deployable blade and the Stratos™ is arguably the safest, most comprehensive system available to surgeons.

Endoscope ■

The Stratos™ is compatible with any standard 4mm, 30° endoscope

Scope-Lock Button ■

Slide the button toward the back of the Stratos™ to combine the Stratos™ with the endoscope. Slide the button toward the front of the Stratos™ to withdraw the scope

Scope-Mounting Scraper ■

Stratos™ Rear Housing ■

Scope Release ■

Rotate the Rear Housing toward the unlock symbol to free the scope from the Stratos™ for independent viewing along the cannula

Revolver ■

Bring the tip of the scope into the Main Housing and select between blade, scope and scraper. The Stratos™ auto-centers to the scope view when the surgeon returns the blade or scraper into the Main Housing

Scope-Mounting Blade ■

Clear Cannula ■

Stratos™ Main Housing ■

Indications for Endoscopic Cubital Tunnel Release

Patients who have mild to moderate lesions (McGowan classification system Grades I & II) with ulnar nerve paresthesia and some intrinsic muscle weakness are good candidates for this procedure. Even some patients with severe lesions (McGowan Grade III) who present with intrinsic atrophy and weakness have demonstrated good postoperative results with recurrence rates comparable to those of open techniques.

Contraindications for Endoscopic Cubital tunnel Release

Contraindications include severe cubital valgus or elbow deformity, osteoarthritis of the elbow, or recurrent compression after previous surgery. A safe, endoscopic decompression cannot be performed if any significant associated pathology is present at the elbow. After endoscopic release, if the ulnar nerve is subluxating, a medial epicondylectomy or anterior transposition should be performed intraoperatively, based on the surgeon's preference.

Training

For safe and effective use, surgeons must possess a thorough knowledge and understanding of elbow anatomy and endoscopic technique using this instrumentation. Instructional video and cadaver workshops are available through A.M. Surgical.

For more information contact us at 800-437-9653 or info@amsurgical.com.

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PROCEDURE SETUP //

Instrumentation

The following instrumentation is recommended for the Stratos™ Endoscopic Cubital Tunnel Release procedure:

From A.M. Surgical

- Stratos™ (*disposable*)
- A.M. Surgical fascial elevator
- A.M. Surgical dilators

From the facility

- 4mm, 30° endoscope (*standard shoulder and knee*)
- Endoscopy tower setup (*camera, light cord, (no fluid used)*)
- Marking pen
- #15 blade/blade handle
- Tenotomy scissors
- Freer elevator
- 2 Ragnell retractors
- Adson forceps
- Curved hemostat
- Army-Navy retractor
- 2 Senn retractors
- Scope defogger (*FRED*)

Positioning and Preparation

The patient is placed supine on the operating table. An upper-arm tourniquet is used and the arm is draped in the usual sterile manner allowing for exsanguination of the arm using an Esmarch bandage. A bolster is placed underneath the elbow with the arm abducted 90° at the shoulder and the elbow flexed 70° to 90°.

Anesthesia

The procedure is typically performed under intravenous regional anesthesia. General anesthesia and axillary block can also be used.

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OPERATIVE TECHNIQUE

Marking the Skin

Two surface landmarks are made: one on the medial epicondyle and one on the olecranon process. A 1.5 to 3cm longitudinal incision is made at the mid-point between these two marks. (Figure 1)

Note: A bolster under the elbow is recommended throughout the procedure.

Exposing the Ulnar Nerve

The incision is made and blunt dissection is continued to identify the Arcuate (Osborne's) ligament. Care is taken to identify and protect any superficial nerves and vessels encountered during dissection. Dissection is continued into the cubital tunnel and the ulnar nerve is identified. (Figure 2)

Introducing Stratos™ - Proximal

Prepare the Stratos™

The Stratos™ is combined with any standard 4mm, 30° endoscope by sliding the *Scope-Lock* button toward the back of the device. (Figure 3) The tip of the scope is positioned at the end of the clear cannula for optimal visualization. The *Scope-Lock* button is released to secure the Stratos™.

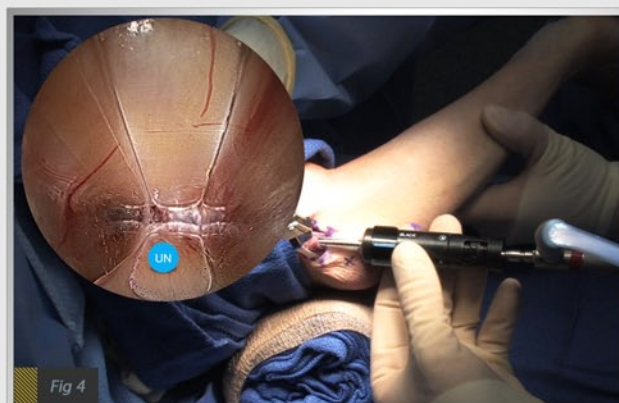
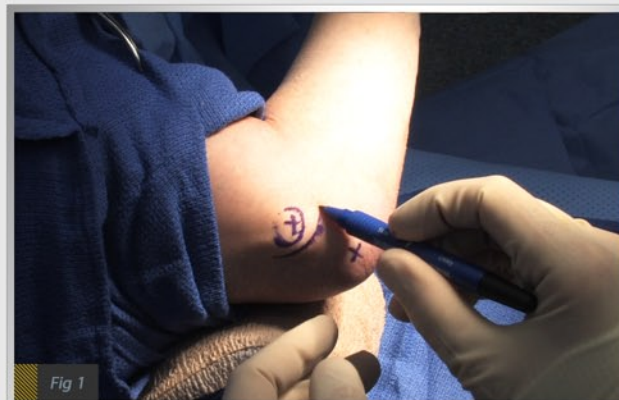
Note: To remove the endoscope from the Stratos™ during the procedure, slide the Scope-Lock button toward the front of the device and withdraw the scope.

Note: To prevent fogging during the procedure, apply scope-defogger to the endoscope prior to assembling the Stratos™.

The A.M. Surgical fascial elevator is introduced to create a proximal pathway between the ulnar nerve and fascia. The plane should be free of obstructions. If resistance is met, reposition.

The skin and subcutaneous tissue are retracted and the Stratos™ is placed into the proximal pathway with the slot of the clear cannula facing away from the ulnar nerve. The ulnar nerve should be visible through the inferior viewport at the tip of the cannula while the surgeon advances the Stratos™ proximally under endoscopic control. (Figure 4)

Note: If advancing the Stratos™ proves difficult, the A.M. Surgical dilators can be used to create additional space along the path of the ulnar nerve.



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Endoscopic Visualization - Proximal

With the Stratos™ in position, the scope is freed from the device by rotating the *Rear Housing* to the unlock symbol. (Figure 5) The Stratos™ cannula and *Main Housing* remain in position, while the scope moves independently.

Viewing the Fascia

The entire length of the clear cannula is visualized taking notice of the fascia overlying the slot of the cannula. (Figure 6)

The fascia should be free of adhesions. If the fascia is not clearly seen, the tip of the Stratos™ cannula is utilized to further define the pathway by moving the device back and forth under endoscopic control.

Viewing the Ulnar Nerve

The lens of the scope is rotated to the floor of the clear cannula bringing the ulnar nerve into view. (Figure 7) The nerve is traced along the entire length of the cannula to ensure it's completely in view and protected.

Failure to visualize the ulnar nerve along the entire length of the cannula prior to release may result in permanent injury to the patient.

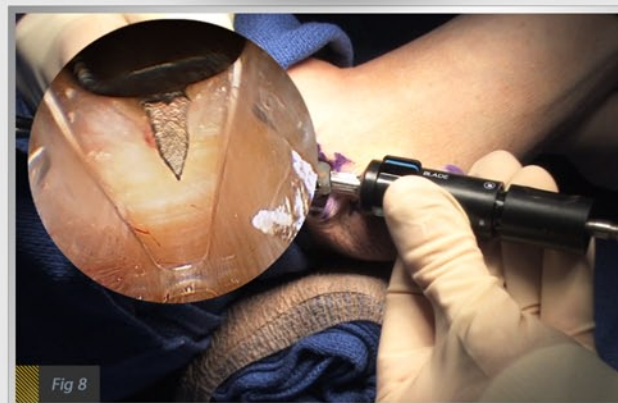
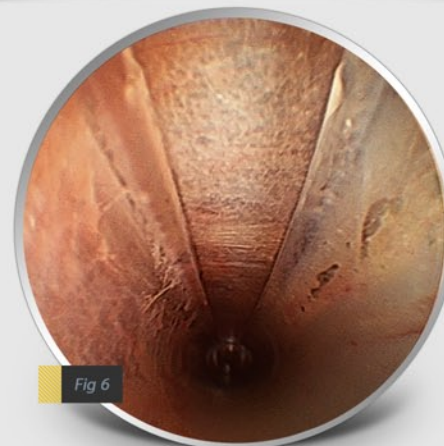
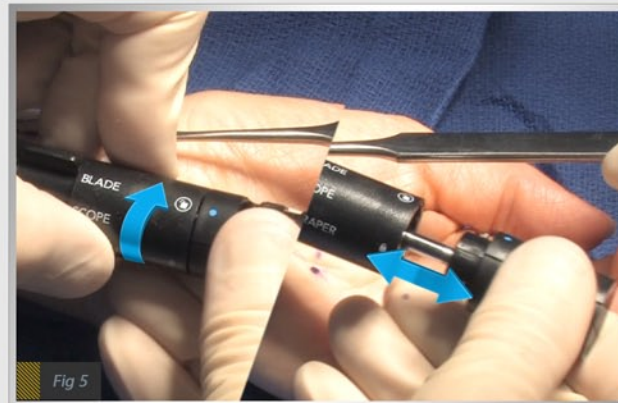
Releasing the Proximal Fascia

With a clear view of the fascia overlying the cannula slot and confirmation that the ulnar nerve is completely protected beneath the cannula, the blade is deployed.

The blade is deployed by withdrawing the tip of scope into the *Main Housing* of the Stratos™ until an "audible" click is felt. The tab of the *Revolver* is moved toward the BLADE position. The blade/scope assembly can now be seen on the monitor. The skin and subcutaneous tissue are retracted and while observing the monitor, the blade is advanced along the length of the cannula to divide the fascia. (Figure 8)

The blade is brought back into the *Main Housing* of the Stratos™ (the transition from blade to scope happens automatically), and the scope reintroduced into the cannula to confirm the release of the overlying fascia.

Note: The Stratos™ is intentionally designed to offer a clean, forward working view during division of the fascia by keeping subcutaneous tissue above the slot. Withdrawing the scope more than a few millimeters during the release may introduce subcutaneous tissue into the view.



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Introducing Stratos™ - Distal

Using the A.M. Surgical fascial elevator, a distal pathway is created between the ulnar nerve and fascia. Care is taken to follow the nerve underneath the fcu muscle heads into the deep fcu fascial plane.

The skin and subcutaneous tissue are retracted and the Stratos™ is placed into the distal pathway with the slot of the clear cannula facing away from the ulnar nerve. (Figure 9) The ulnar nerve should be visible through the inferior viewport at the tip of the cannula (Figure 9a) while the surgeon advances the Stratos™ distally under endoscopic control.

Note: If advancing the Stratos™ proves difficult, the A.M. Surgical dilators can be used to create additional space along the path of the ulnar nerve.

Endoscopic Visualization - Distal

Viewing the Fascia

With the Stratos™ in position, the scope is freed from the device, and the length of the clear cannula is visualized. (Figure 10)

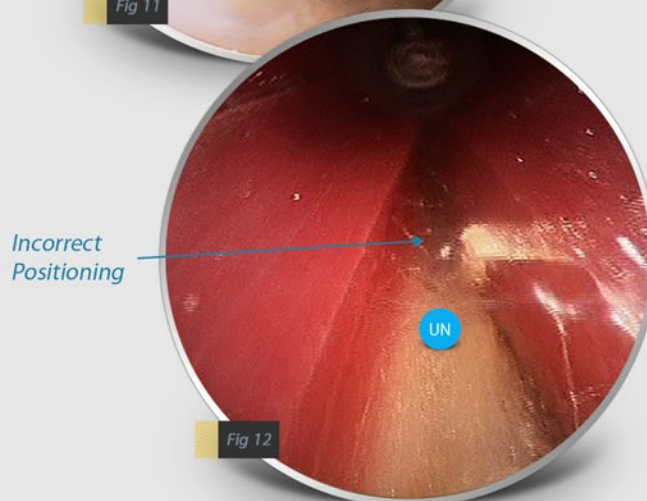
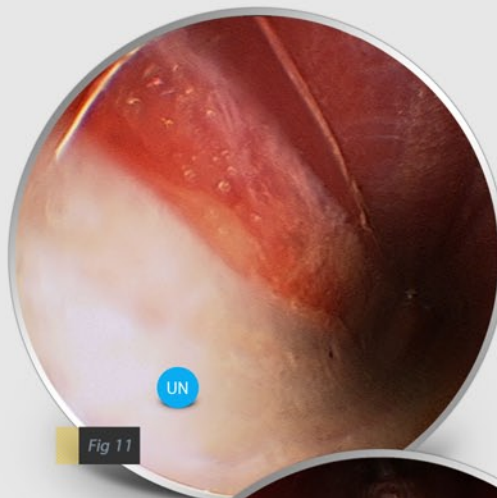
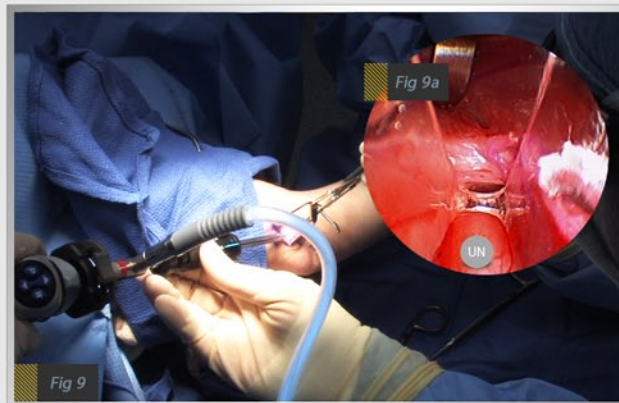
The fascia should be free of adhesions. If the fascia is not clearly seen, the tip of the Stratos™ cannula is utilized to further define the pathway.

Viewing the Ulnar Nerve

Procedure Pearl: The cannula is correctly positioned in the distal pathway when the ulnar nerve is visualized along the entire length of the cannula. (Figure 11) When positioned incorrectly, the ulnar nerve is seen diving beneath the fcu muscle heads, typically this is observed halfway down the cannula. (Figure 12)

The scope view is rotated to the floor of the clear cannula to bring the ulnar nerve into view. The nerve is then visualized along the entire length of the cannula to ensure it's completely protected prior to dividing the fascia.

Failure to visualize the ulnar nerve along the entire length of the cannula, prior to dividing the fascia, can result in injury to the patient.



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Releasing the Distal Fascia

With a clear view of the fascia overlying the cannula slot and confirmation that the ulnar nerve is completely protected beneath the cannula (**Figure 13**), the blade is deployed.

The blade is deployed by withdrawing the tip of scope into the *Main Housing* of the Stratos™ until an “audible” click is felt. The tab of the *Revolver* is moved toward the BLADE position. The blade/scope assembly can now be seen on the monitor. The skin and subcutaneous tissue are retracted and while observing the monitor, the blade is advanced along the length of the cannula to divide the fascia. (**Figure 14**)

The blade is brought back into the *Main Housing* of the Stratos™ (the transition from blade to scope happens automatically), and the scope reintroduced into the cannula to confirm the release of the overlying fascia.

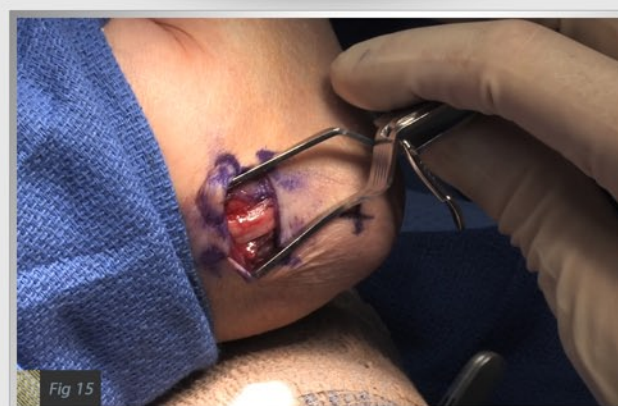
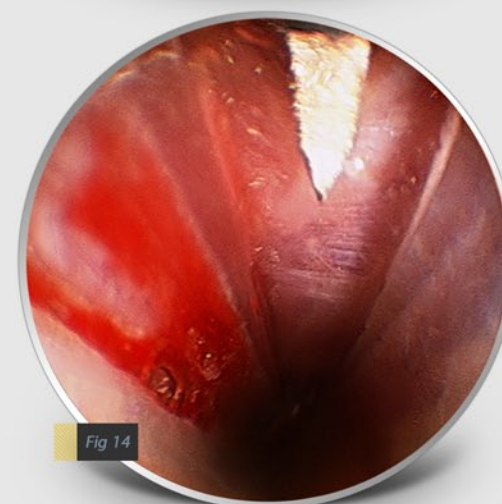
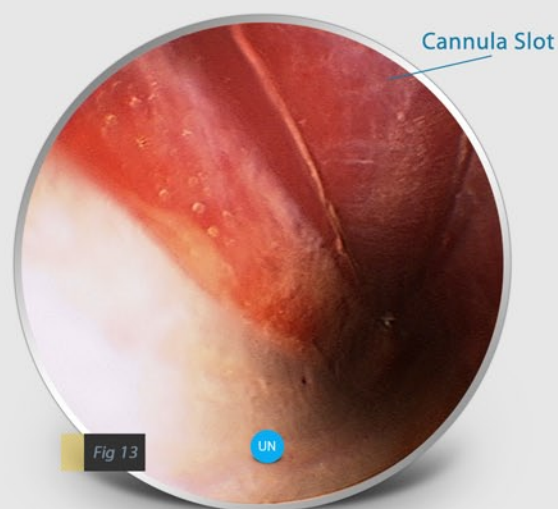
Observing for Nerve Subluxation

After the ulnar nerve is completely released, the elbow is brought through a full range of passive motion. (**Figure 15**) If ulnar nerve subluxation is observed, a medial epicondylectomy or anterior transposition is recommended.

Closing the Wound and Postoperative Care

The wound is irrigated and closed using bioabsorbable subcuticular sutures. Sterile adhesive strips are applied and the wound is infiltrated with 0.25% Marcaine with Epinephrine. A soft, bulky dressing is applied.

The patient is encouraged to move the elbow on the first postoperative day, with full range of motion typically achieved before the first postoperative visit in 7-10 days. Patients can return to full activities of daily living and work as tolerated.



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Disposables

| | |
|---------|---|
| #5500-B | Stratos - Endoscopic Release System (Box of 5) |
| #5500-K | Stratos - Endoscopic Release System (Box of 5, Straps/PadKit) |
| #5500 | Stratos - Endoscopic Release System (Single) |

Instrumentation

| | | | |
|---------|------------------|---------|------------------|
| 9600-06 | Fascial Elevator | 9600-08 | Dilator - Medium |
| 9600-07 | Dilator - Small | 9600-09 | Dilator - Large |



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