

# Robotic-Assisted Laparoscopic Ventral Hernia Repair (eTEP)

## Your Hernia

You have a hernia in the muscles of your abdominal wall. A hernia occurs when tissue from inside the abdomen pushes through a weakness in the muscle or fascia, creating a visible bulge that may cause discomfort, pain, or activity limitation.

Your hernia could have been a primary ventral hernia that enlarged over time or from a prior midline incision (or a combination of both). About **2 out of every 10 people** who have had a midline abdominal incision (called a laparotomy) later develop a hernia.

Following prior abdominal surgery, the risk of developing a hernia is higher in people with diabetes, people who smoke, those who are overweight, those who required emergency surgery, or in those who developed an incisional infection following a prior abdominal surgery.

Your hernia is \_\_\_\_ cm wide and is approximately \_\_\_\_ cm in length.

I am offering to repair your hernia with a robotic approach. The information that follows is intended to supplement what we discussed in clinic. My intention is to help you explain the procedure to family and friends who have questions.

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## Why Repair a Ventral Hernia?

Surgical repair is recommended when a hernia causes symptoms, enlarges over time, or interferes with daily activities. Repair restores strength and function to the abdominal wall and reduces the risk of future complications associated with your hernia.

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## What Is Robotic Surgery?

Robotic surgery is a minimally invasive approach in which the surgeon controls robotic instruments through small incisions. The robot does **not** act independently- every movement is directed by the surgeon.

The robotic platform provides:

- **Three-dimensional visualization:** allowing improved depth perception
- **Enhanced precision and control:** especially in tight spaces
- **Improved reconstruction capability:** while maintaining open surgery principles

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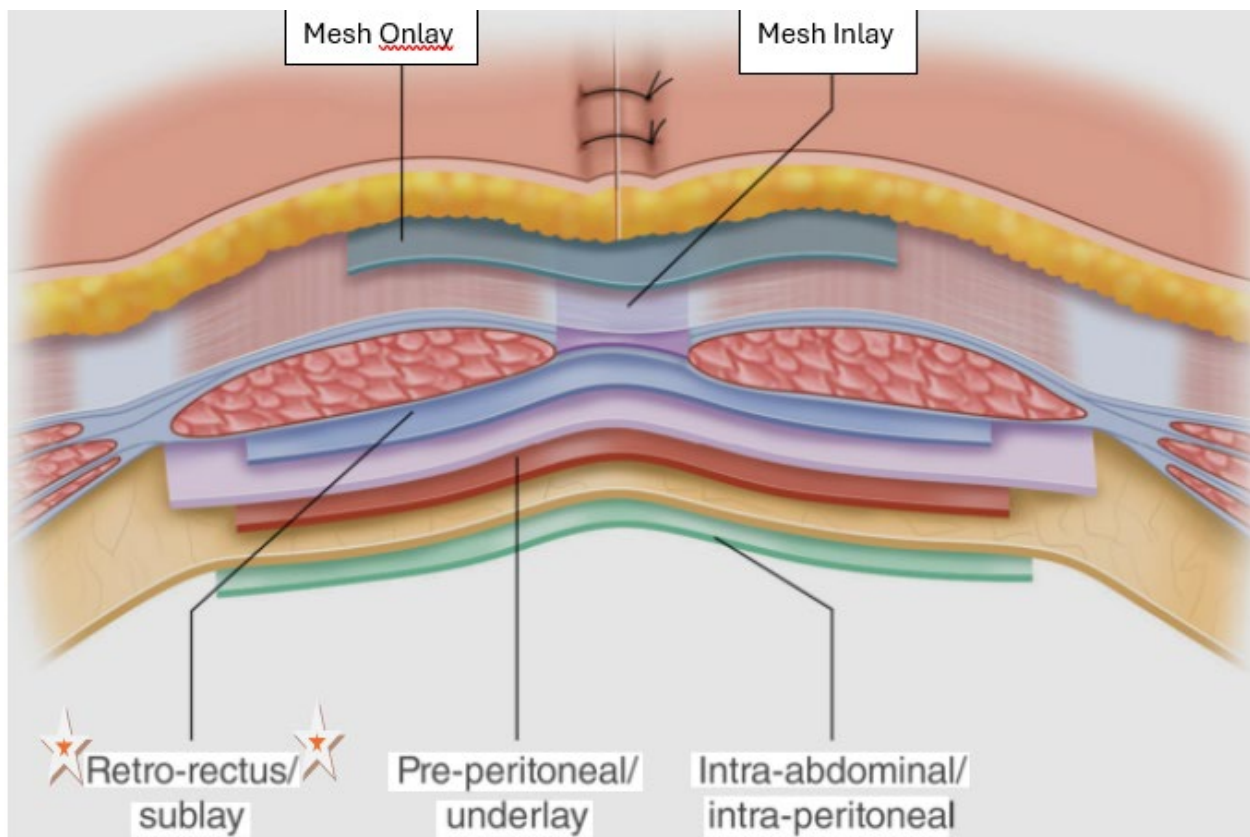
## Detailed Abdominal Wall Anatomy

The abdominal wall consists of skin, subcutaneous tissue, fascia, and muscle layers. The paired rectus abdominis muscles are enclosed within the rectus sheath. Behind the posterior rectus sheath lies the retrorectus space, followed by the peritoneum and abdominal organs.

## How Abdominal Wall Hernias Are Repaired

Hernia repair involves rebuilding the abdominal wall and reinforcing it with surgical mesh. Mesh can be placed in different tissue layers depending on anatomy and hernia complexity.

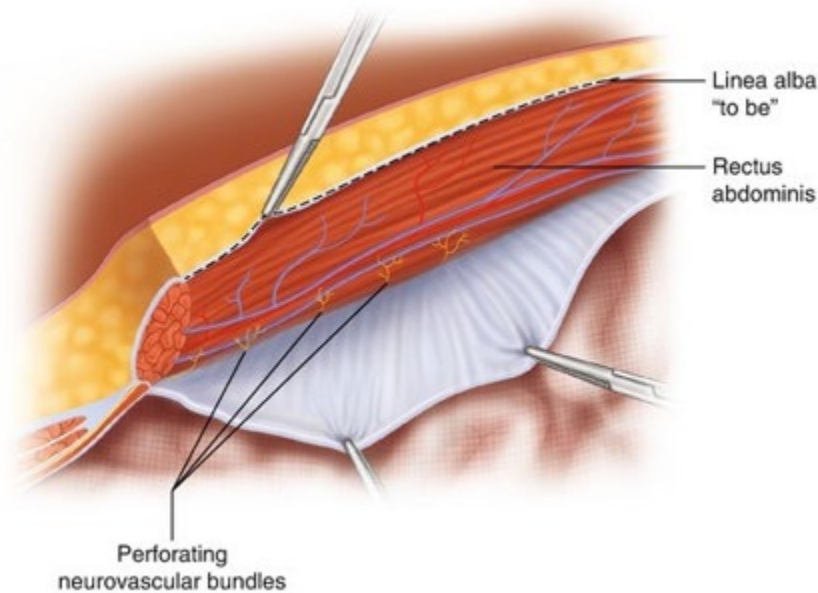
Whenever possible, mesh is placed in locations where it does **not contact the bowel (Retro-rectus/sublay position is preferred for this operation)**. If mesh must be placed closer to abdominal organs, a special coated mesh is used to reduce adhesion risk.



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## Where exactly do you try to place mesh?

Every effort is made to place the mesh in the space shown below. You can see red muscle fibers and a white layer underneath. This is the retro-rectus (quite literally “behind the rectus”) space. When brought together with the other side, the retro-rectus space keeps mesh from coming in contact with abdominal contents.



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## What Is Robotic Assisted Laparoscopic eTEP Repair?

The extended total extraperitoneal (eTEP) approach is a minimally invasive technique that allows hernia repair **outside the abdominal cavity**. The repair is performed in the retro-rectus space, keeping mesh separated from the intestines.

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## Goals of the Procedure

The goals of robotic assisted laparoscopic eTEP ventral hernia repair are to identify and repair all hernia defects, restore normal abdominal wall anatomy, rebuild the midline (linea alba) in a tension-free manner, and reinforce the repair with mesh.

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## **How the Repair Is Performed**

Ultrasound is used to mark the borders of the rectus muscles for accurate port placement. Small incisions are made away from the hernia defect, and a working space beneath the rectus muscle is developed.

The rectus muscles are freed from the tissue behind them. Using pre-operative CT imaging as a guide, the midline is crossed and all hernia defects are identified and repaired. The rectus muscles on the other side are freed from the tissue behind them, and then right and left rectus muscles are brought together with heavy suture to reconstruct the center of the abdominal wall.

Mesh is then measured, tailored, and placed flat in the retrorectus space. In some patients, the mesh may extend from just below the breastbone (sternum) to the pelvis.

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## **When a Transversus Abdominis Release (TAR) May Be Needed**

If the muscles cannot be brought together without excessive tension, a transversus abdominis release (TAR) may be performed to allow additional mobilization. TAR involves cutting the transversus abdominis muscle and bluntly dissecting along tissue just below the cut muscle. The release allows better movement of your abdominal muscles with less tension when reconstructing the midline. TAR may be required on one or both sides in larger or more complex hernias.

If TAR is required on both sides, this will likely require a “double-dock” procedure. In a “double-dock”, you will have incisions on both sides of your abdomen.

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## **Possibility of Conversion to Open Surgery**

In some cases, such as extensive scar tissue or complex anatomy, the repair may not be able to be safely completed robotically. If this occurs, the procedure will be converted to an open repair with a midline incision, which may require a longer hospital stay and recovery.

If conversion to open is required, the midline incision is typically much smaller than it would be should we have performed the procedure in an open fashion from the beginning.

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## Advantages of the eTEP Robotic Approach

- **Small incisions:** which may reduce pain and improve cosmetic outcomes
  - **Excellent visualization:** allowing precise dissection and reconstruction
  - **Wide mesh coverage:** improving durability of the repair
  - **Mesh placement outside the abdominal cavity:** reducing bowel adhesion risk
  - **Restoration of normal abdominal wall anatomy and function**
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## Risks of Ventral Hernia Repair Surgery

- **Bleeding:** may occur during or after surgery and rarely requires transfusion or additional procedures
  - **Infection:** may involve the incision or mesh and may require antibiotics or further treatment
  - **Injury to bowel or other organs:** uncommon but may require repair
  - **Injury to blood vessels:** may cause bleeding or bruising
  - **Nerve injury or chronic pain:** may result in numbness or persistent discomfort (see “perforating neurovascular bundles” in the second picture)
  - **Fluid or blood collection (seroma or hematoma):** often resolves on its own but may require drainage
  - **Hernia recurrence:** possible despite mesh reinforcement
  - **Respiratory or pressure-related symptoms:** usually temporary after large repairs
  - **Excess skin or midline ridge:** may occur and often improves over time
  - **Conversion to open surgery:** may be required for safety
  - **Additional procedures:** may be necessary if complications occur
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## Steps We Take to Minimize Risk

Several measures are routinely taken to reduce operative risk and improve outcomes:

- **Pre-operative evaluation and imaging:** careful review of history and imaging, when indicated, to define anatomy and defect size
- **Safe abdominal entry:** direct visualization entry (Optiview) at a safe access point to reduce injury to underlying structures during robotic approaches
- **Strategic port placement:** ports placed away from the hernia defect and prior scars to improve safety and visualization
- **Robotic visualization and dissection:** use of three-dimensional visualization and precise robotic dissection when applicable

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- **Mesh positioning:** placement of mesh in well-protected tissue planes whenever possible
  - **Meticulous hemostasis:** careful control of bleeding throughout the operation
  - **Infection prevention:** sterile instruments, antiseptic skin preparation, and antibiotics administered before surgery
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## Hospital Course and What to Expect After Surgery

- Most patients will spend one night in the hospital.
- Because of the case's length, I typically perform this procedure as my last case of the day (starting 1 – 2 pm, or so)
- After you fall asleep in the OR, a urinary catheter is placed during surgery. It will be removed the next morning.
- An abdominal binder is placed after surgery. Some patients find it helpful, while others do not; use is optional.
- Home medications
  - Usually restarted on post-operative day 1.
  - Blood thinners are typically resumed on post-operative day 2- depending on your situation and my pre-operative communication(s) with your cardiologist / pulmonologist.
- Some patients experience early fullness or temporary difficulty taking deep breaths due to increased abdominal pressure. These symptoms are usually temporary. Walking, sitting upright, and incentive spirometry are encouraged and will aid in recovery
- If drains are placed:
  - **Purpose:** to remove excess fluid and promote healing
  - **Removal:** when drainage is less than 30 cc (about 2 tablespoons) in 24 hours
- Goals for discharge:
  - **Pain control:** must be manageable with oral medications
  - **Diet:** you must be able to eat and drink adequately
  - **Void:** you must be able to void spontaneously after the catheter is removed
  - **Mobility:** you must be able to walk safely. Sometimes physical therapy is consulted for evaluation prior to discharge home

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## Pain Control After Surgery

Pain control is individualized to maximize comfort while minimizing narcotic use.

In the pre-op holding area, anesthesia providers may offer an abdominal wall nerve block. These blocks can last up to 72 hours.

## Scheduled medications (first 3 days):

- Acetaminophen (Tylenol): 1,000 mg every 6 hours (maximum 4,000 mg per day)
- Celecoxib (Celebrex): 200 mg every 12 hours
- Methocarbamol (Robaxin): 500 mg every 8 hours
- Narcotic pain medication:
  - IV and oral will be available immediately post-op
  - Oral for discharge home
  - These medications are prescribed for breakthrough pain only
- Constipation: common after surgery and narcotic use; preventive medications will be provided

**After the first 3 days**, these medications may be taken as needed.

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## Wound Care

- **Incisions:** closed with absorbable sutures and covered with Dermabond, a purple colored, waterproof protective dressing
  - **Showering:** permitted the day of surgery; allow water to run over incisions and pat dry
  - **Umbilical dressing:** remove on Sunday after surgery if present
  - **Sun exposure:** avoid direct sunlight to incisions for 6 months to prevent permanent discoloration
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## Post-Operative Activity Limitations

- **Walking:** encouraged starting the day of surgery
- **Lifting:** avoid pushing, pulling, or lifting more than 10 pounds for 4 weeks. We will discuss your progress at your first post-operative visit.
- **Exercise:** avoid strenuous activity and core exercises during this period
- **Driving:** may resume once narcotic pain medications are no longer required

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## When to Call the Office

- **Fever:** greater than 101°F
  - **Incision changes:** increasing redness, warmth, swelling, or drainage
  - **Pain:** worsening or not improving with prescribed medications
  - **Gastrointestinal symptoms:** persistent nausea or vomiting
  - **Abdominal changes:** increasing swelling or a new bulge
  - **Concerns:** regarding recovery or activity restrictions
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## What to Expect

Recovery is gradual over several weeks. Temporary swelling, firmness, or changes in abdominal contour are common and usually improve with time.

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*This handout is intended for patient education. Surgical technique, pain management, mesh selection, and recovery are individualized based on anatomy and clinical findings.*



This QR Code takes you to a site that has this guide in electronic (pdf) format for ease of use / reference (drop down menu on far right). The site also contains additional information on scheduling surgery, what to expect on day of surgery, etc.