

Robotic-Assisted, Laparoscopic Inguinal Hernia

What is Robotic-Assisted Laparoscopic Surgery?

Robotic-assisted laparoscopic surgery is a minimally invasive technique that uses advanced robotic technology to help the surgeon perform precise movements through small incisions. During the procedure, the surgeon “docks” the robot to the patient and then sits at an adjacent console, which is close to the operating table. From the console, the surgeon uses hand and foot controls to guide the robotic arms and instruments inside the patient. The robotic system provides a high-definition, 3D view of the surgical area and allows for enhanced precision, flexibility, and control. The rest of the surgical team remains at the bedside to assist with the procedure and patient care.

What is an Inguinal Hernia?

An inguinal hernia occurs when tissue, such as part of the intestine, pushes through a weak spot in the lower abdominal wall (groin). This can cause a bulge, discomfort, or pain, especially when lifting, coughing, or straining. Lower abdominal wall pain does not always signify the presence of a hernia.

Understanding Inguinal Anatomy, Embryology, and Physiology

- **Anatomy:**
The inguinal region is located in the lower part of the abdomen, near the groin. Key structures include the inguinal canal (a passage in the lower abdominal wall), blood vessels, nerves, and muscles.
- **Embryology:**
During development, the inguinal canal forms as structures like the testicles (in males) descend from the abdomen into the scrotum. This process leaves a natural weakness in the abdominal wall.
- **Physiology:**
The abdominal wall muscles and connective tissue normally keep internal organs and intra-abdominal fat in place. Weaknesses or defects in these tissues can allow hernias to form.

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Types of Inguinal and Related Hernias

- **Indirect Inguinal Hernia:**
The most common type, often present from birth. It occurs when abdominal contents push through the internal inguinal ring, following the path taken during testicular descent.
- **Direct Inguinal Hernia:**
Develops later in life due to weakness in the abdominal wall muscles, allowing tissue to push directly through the wall in the inguinal region.
- **Femoral Hernia:**
Less common, occurs just below the inguinal ligament, where the femoral artery and vein pass into the thigh. More likely to occur in women.

The Procedure

1. Preparation:

You will be asked to urinate prior to proceeding to the operating room. The bladder is in the middle of the pelvis. If it is too full, the surgeon may not be able to visualize necessary anatomy requiring the placement of a foley catheter.

2. Creating Access:

Access to the abdomen is achieved using a 5 mm OptiView technique at Palmer's Point (an area in the upper left abdomen). This approach helps minimize the risk of injury to underlying organs. After entry, I will inspect the area underneath the entry point to ensure there are no injuries to underlying structures.

3. Bladder Management:

After I enter into the abdomen, I will perform a visual inspection of your pelvis. If I see that your bladder is too full when the case starts, I will place a Foley catheter to drain the bladder. This is important to allow better visualization during the operation and to minimize the risk of bladder injury during dissection.

Regardless if there was a catheter placed in the operating room, there are some occasions when patients may experience difficulty urinating after surgery (urinary retention), a catheter may also be required postoperatively. If you need to go home with a catheter, we will arrange urology follow-up for you.

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4. Inserting Instruments:

Two or three additional small incisions are made for robotic instruments and a camera.

5. Identifying Anatomy:

Identifying anatomy is first performed by creating a flap from the inner layer of the abdomen (peritoneum). This allows the surgeon to carefully identify important structures, including blood vessels, nerves, and the hernia sac.

6. Reducing the Hernia:

Protruding tissues are gently separated from surrounding structures and returned back into the abdominal cavity.

7. Ensuring Critical View of the Myopectineal Orifice:

The myopectineal orifice is a key area where hernias can occur. The surgeon clears the area of fat and tissue to fully visualize the boundaries, ensuring all potential hernia sites are addressed and critical structures are protected.

8. Surgical Safety: Avoiding Nerve and Vessel Injury

- **“Triangle of Pain”**

This area contains important nerves. To avoid nerve injury, the surgeon stays adjacent to the peritoneum (the thin lining of the abdominal cavity) when working laterally (toward the outside), minimizing the risk of nerve damage in this region.

- **“Triangle of Doom”**

This area contains major blood vessels. The surgeon performs careful dissection of the peritoneum off the fat that overlies these vessels, taking special care to avoid injury to these critical structures.

9. Placing the Mesh:

After the hernia contents are reduced and the critical view is established; a synthetic mesh is placed over the weakened area of the abdominal wall (covering the myopectineal orifice). The mesh is anchored in 2 or 3 places to the pelvis—specifically to Cooper's Ligament and to the anterior abdominal wall. This anchoring helps keep the mesh securely in place and reinforces the repair to prevent recurrence.

10. Closing the Peritoneal Flap and Final Steps:

After placing the mesh, the peritoneal flap (the inner lining of the abdomen) is closed over the mesh. Air is removed from the space, allowing the peritoneum to collapse against the mesh. I ensure there is no wrinkle or "clam shell" in the mesh. A "clam shell" refers to a

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situation where the mesh folds or buckles, creating a gap between the mesh and the abdominal wall- similar to how a clam shell opens. This can increase the risk of hernia recurrence, so it is important that the mesh lies flat and smooth.

11. Closing Incisions:

The instruments are removed, and the small incisions are closed with absorbable sutures placed deep to the skin. The incisions are then covered with Dermabond, a watertight "super glue" for the skin.

12. Nerve Block:

A local anesthetic may be injected near nerves in the groin to help control pain after surgery. This goes a long way to minimizing the need for post-operative narcotics.

Potential Complications

- **Bleeding or infection**

Bleeding is minimized by utilizing electricity to cauterize small bleeding blood vessels. Infection is minimized by cleaning your skin with anti-septic soaps, utilizing sterile instruments, and administering antibiotics before the procedure starts. Please also see #8 in the preceding section- "Triangle of Doom".

- **Injury to blood vessels or organs**

Injury can occur during entry into the abdomen. Please see #2 in the preceding section.

- **Recurrence of the hernia**

Please see #9 in the preceding section.

- **Nerve injury or chronic pain**

Please see #8 in the preceding section- "Triangle of Pain".

- **Urinary retention:**

Difficulty urinating after surgery can occur. This may require placement of a catheter to drain the bladder. In some cases, you may need to go home with a catheter, and we will arrange urology follow-up if that is necessary.

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- **Triangle of Pain:**
An area containing important nerves. Injury here can cause numbness or chronic pain. Surgeons take special care to avoid these nerves during the procedure.
 - **Triangle of Doom:**
An area containing major blood vessels. Injury here can cause serious bleeding. Surgeons take special care to avoid these blood vessels during the procedure.
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Multi-Modal Pain Management

After surgery, pain is managed using several types of medications:

- **NSAIDs (e.g., ibuprofen or celecoxib):** Reduce inflammation and pain.
- **Acetaminophen (Tylenol):** Helps control pain and fever.
- **Robaxin (methocarbamol):** A muscle relaxant to reduce muscle spasms.
- **Narcotics (as needed):** For severe pain, used for the shortest time necessary.

This approach helps minimize the need for narcotics and improves comfort.

What to Expect After Surgery

- **Recovery:**
Most patients go home the same day. You may have mild pain, swelling, or bruising.
- **Activity:**
Walk as tolerated but avoid strenuous activity.
- **Lifting Restrictions:**
Do not lift more than 10 pounds until your first post-op appointment.
- **Wound Care:**
You may shower the day of surgery. However, do not submerge your incisions in water (such as in a bathtub, pool, or lake) for 2 weeks. Absorbable sutures are placed deep to the skin and covered with Dermabond, a watertight "super glue" for the skin.

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- **Follow-Up:**

Attend your scheduled post-op appointment to check healing and discuss returning to normal activities.

- **Keep Incisions Covered:**

As incisions heal, they are sensitive to sun. If they become sunburned, they can discolor. This discoloration may become permanent.

When to Call the Office

Contact us if you experience:

- Fever over 101°F
- Severe pain not controlled by medication
- Redness, swelling, or drainage from incisions
- Difficulty urinating or breathing
- Constipation issues
- If you have any questions...call (817) 250-7030

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.