# ROBOTIC TAPP INGUINAL HERNIA REPAIR

Over 800,000 inguinal hernia repairs are performed annually in the US. Minimally invasive or laparoscopic hernia repairs offer small incisions, decreased post-operative pain, quicker recovery and faster return to work. Robotic-assisted surgery adds increased precision, a 3D/magnified view, facilitated tasks such as suturing, and fewer complications such as reduced blood loss and decreased risk of wound infections.

***Patient Selection:***

- Almost all candidates for an open inguinal hernia repair are suitable for a robotic approach.
- Robotic surgery offers a clear advantage in obese patients.
- Contraindications to robotic surgery include inability to tolerate pneumoperitoneum.
- Special circumstances to consider performing an open approach may include complex cases such as recurrence from a prior laparoscopic/robotic approach; massive or incarcerated inguinal-scrotal hernias; prior prostate surgery; or other extensive pelvic surgery or pelvic radiation.

***Setup/Preoperative Considerations:***

- Foley catheter (optional) vs In and Out cath bladder to empty prior to surgery.
- Patient placed in the supine position with both arms extended.
- Trendelenburg position following induction of anesthesia.
- Proper face protection/padding by anesthesia.

***Access:***

- 3-arm robotic technique (no need for $4^{th}$ arm).
- Optical trocar access via LUQ incision with laparoscope.
- Placement of two other 8 mm robotic trocars in the upper midline, RUQ (around 8 cm apart). All trocars are in a horizontal line, around 4 cm above umbilicus.

***Technique:***

- Lysis of adhesions as necessary.
- Identify anatomical landmarks: medial/lateral umbilical ligament, internal inguinal ring, external iliac vessels, inferior epigastric vessels, gonadal vessels/spermatic cord, arcuate line.
- Preperitoneal dissection/release of peritoneal flap: a curvilinear incision is made from the median umbilical ligament to the anterior superior iliac spine, at least 6 cm above the hernia defect. Dissection of the preperitoneal space continues in the avascular plane with caution to avoid neurovascular structures.
- Medial extent of dissection: around 3 cm beyond the symphysis pubis to the contralateral side.
- Lateral extent of dissection: ASIS.

- Caudal extent of dissection: around 4 cm below iliopubic tract and 2 cm below Cooper's ligament medially.
- Dissection/Exposure of Cooper's ligament.
- Reduction of the hernia, content and sac with care not to injure the spermatic cord or vessels.
- Detach hernia sac to help reduce the chance or hernia recurrence and seroma.
- Suture closure of direct hernia defect optional.
- Mesh placement into the preperitoneal space: mesh size approximately 10 x 15 cm.
- Mesh type: self-fixating (eg Progrip) vs. other mesh which may require suture fixation.
- Closure of preperitoneal flap/peritoneum: absorbable suture (e.g. barbed suture such as running 2-0 V-Lock). Any breach in peritoneum to be repaired.
- Assure hemostasis.
- Undock robot/remove trocars/release pneumoperitoneum.
- Consider local anesthetic injection at trocar sites.

***Postoperative Care:***

- Patient is discharged same day from ambulatory surgery.
- Consider non-opioid analgesics.

*References:*

La Grange, S., Gokcal, F., Kudsi, O.Y. (2021). Robotic TAPP for Inguinal Hernia Simple to Complex. In: Gharagozloo, F., Patel, V.R., Giulianotti, P.C., Poston, R., Gruessner, R., Meyer, M. (eds) "Robotic Surgery." Springer, Cham. https://doi.org/10.1007/978-3-030-53594-0_85

**RECOMMENDATIONS ON COST-SAVINGS:**

Supplies: Using 2 (preferred) vs 3 Instruments

**2-Instrument Technique**

Mega suturecut and Fenestrated Bipolar or Force Bipolar**…*$630***

**3-Instrument technique**

Cadiere Grasper, hook cautery, mega suturecut…***$780***

Cadiere Grasper, scissors, mega suturecut…***$900***

**Tips and Tricks for Efficiency**

**Consider Foley:** Many of these patients have prostate issues and preop bladder emptying does not guarantee near-empty urinary bladder. Bladder may refill even if In and Out cath due to the length of the case. If surgeon is not cautious while dissecting the medial umbilical ligament or during the step of dissection around cooper ligament, symphysis area, it will lead to either thermal injury or sharp injury to urinary bladder.

Another scenario which can lead to surgeon getting into trouble will be sliding hernias where urinary bladder is included.

Bladder diverticula: Bladder diverticula are not unusual in patients with prostate problems. Bladder diverticula does not empty well with spontaneous preop voiding, leading to bladder injury.

**Need for bowel prep in selective cases:** Consider bowel prep if sigmoid colon is part of left inguinal hernia sac and also while planning to repair recurrent inguinal hernia. This will make surgery much easier with less contamination, facilitating primary repair in a well-prepped colon. Incidence is extremely low but it's real!

**Access:** Consider using long 8 mm trocars. Arm movements may be restricted if trocar are close to subcostal areas in thinner patients. This will provide better clearance of robotic arms away from patient chest.

**Technique:** Mesh and suture can be inserted under vision prior to docking.

Exercise extra caution while inserting or taking out needles through 8 mm trocars.

Access into the correct preperitoneal plane will be the key for smooth surgery. Since the tip of robotic grasper is wider, there will be tendency to get into deeper planes leading to difficult and bloody dissection. One of the tricks is to create a small incision in the peritoneum and allow pneumo-dissection to identify the preperitoneal plane.

Cold dissection with judicious use of energy while dissecting the sac and around spermatic cord to avoid thermal injury to testicular vessels.

Sometimes it will be easier to drop the abdominal pressure to 10 mm hg while closing the peritoneal defects to allow for complete closure without tension after mesh insertion.

If barbed suture is used, trim to the peritoneal level to avoid bowel obstruction due to bowel getting stuck to the tail of the barbed suture.