

# Transanal Resection of Rectal Tumors

Megan Shroder and Alexander Hawkins

*Editor's Note: It is rare in our setting for patients with malignant rectal tumors to present at an early stage, where the tumor can be removed by transanal resection. The principles of surgical planning, exposure, and resection in this chapter will be useful for such operations, and for others that require surgical intervention in the distal rectum. -RD*

## Introduction:

Management of rectal tumors differs depending on size of the tumor, location within the rectum, and stage of disease. For early stage (T1 or Tis) rectal tumors without high-risk features, or rectal polyps unable to be removed endoscopically, local transanal excision is the preferred surgical approach.

Rectal adenocarcinomas amenable to local transanal excision include those that are stage T1 (or Tis) without clinical or radiologic evidence of nodal involvement, < 3 cm in diameter, encompass < 40% of the circumference of the rectum, are mobile on examination, lack perineural or lymphovascular invasion, and are well-differentiated. For T1 tumors, overall and local recurrence at 5 years remains slightly higher than following a total mesorectal excision, but this risk increases significantly with lesions > 3 cm or > T1 stage.

Tumors or lesions within the middle to distal rectum are often accessible via a transanal approach, though more proximal lesions may require a formal resection, such as a low anterior resection of the rectum. Transanal excision is not recommended above the peritoneal reflection as a full thickness excision may result in entry into the peritoneal cavity.

Much of the success of local resection is dependent on patient positioning and instrument selection. Most lesions (lateral and anterior) are accessible via prone-jackknife patient positioning, but lithotomy positioning should be utilized in the case of a posterior lesion.

We utilize a Lone Star® ring retractor to provide effacement of the anal canal and assist with bringing the lesion closer to the anal verge (Lone Star® is a product of Cooper Surgical). Circumferential anal retraction sutures can also be utilized as an alternative if this retractor if it is not

available. These are thick sutures placed in 4-8 locations around the anal canal to pull the anal mucosa to the perianal skin. They are removed at completion of the case.



Retractors like the Lone Star® utilize placement of sharp hooks/stays 1-2 cm into the anal canal and threading them through the retractor system at the desired tension. This is completed circumferentially around the anal canal until appropriate retraction is obtained. Sutures between the anal canal and the skin are an option where this device is not available.

In addition to anal circumferential retraction, visualization and retraction within the canal can be accomplished utilizing many different anorectal retractors/speculums. Examples of these include Roschke retractors, Anoscopes, Hill-Ferguson retractors, Bodenhammer speculums, Sawyer retractors, Pratt rectal speculums, and more. Some of these instruments will be more helpful in visualizing some lesions over others. For example, Hill-Ferguson retractors can easily show a distal lesion, while anoscopes may be more helpful for more proximal rectal lesions.

# Transanal Resection of Rectal Tumors

Megan Shroder and Alexander Hawkins



Hill-Ferguson retractors such as this one provide circumferential retraction and allow focused attention on a lesion in the distal rectum.

Local resection of a rectal tumor proceeds in the following steps:

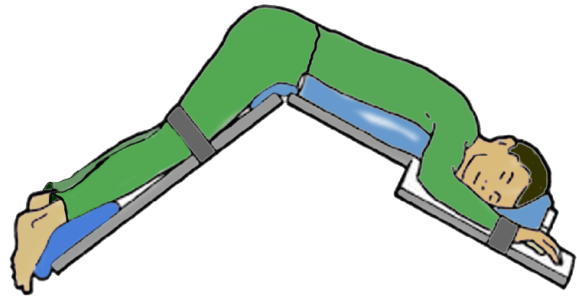
- Induction of general or monitored anesthesia (+/- intubation)
- Patient positioning
- Digital Rectal Examination (DRE)
- Placement of anal retractors
- Visualization of mass
- Resection of mass
- Orientation of the mass for pathology review
- Repair of defect

## Steps:

1. Ensure preparation of instruments, including retractors and a headlight if possible. Ideally, patients should undergo an enema for bowel preparation prior to the operation.
2. Determine ideal patient positioning and discuss with anesthesiology prior to moving the patient onto the operating room table to optimize your set-up. If the lesion is in the posterior rectum, it will be best visualized in lithotomy position. Lesions in the anterior rectum will be better visualized in the prone-jackknife position. Keep in mind that anesthesia is more difficult and dangerous in the prone position, so consider whether your anesthesia team's capacity when

making this decision. See [Approach for Positioning the Patient and the Surgeon](#).

3. For **prone-jackknife** positioning (anterior or lateral masses), place padding or support at the patient's head, upper chest, across their pelvis at the level of the anterior superior iliac spines, knees, and shins. For cases requiring general anesthesia, the patient is often intubated on their stretcher and is then flipped by the operating room team into a prone position after induction of anesthesia. See [Prone Position](#).



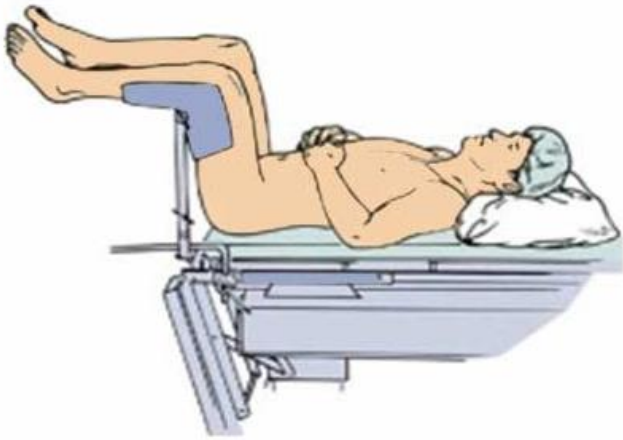
The prone jackknife position is best suited for tumors located in the anterior rectum: a surgeon standing next to the patient is looking down on the tumor. By Saltanat ebli - Own work, CC0,

<https://commons.wikimedia.org/w/index.php?curid=25388640>

4. For **lithotomy** positioning (posterior masses), the patient can be transferred to the operating room table in standard fashion. After induction of anesthesia, they must be moved down on the operating table so their anal verge is located just above the end of the bed. Their legs should be placed in stirrups and the end of the bed should be removed/folded away for adequate exposure.

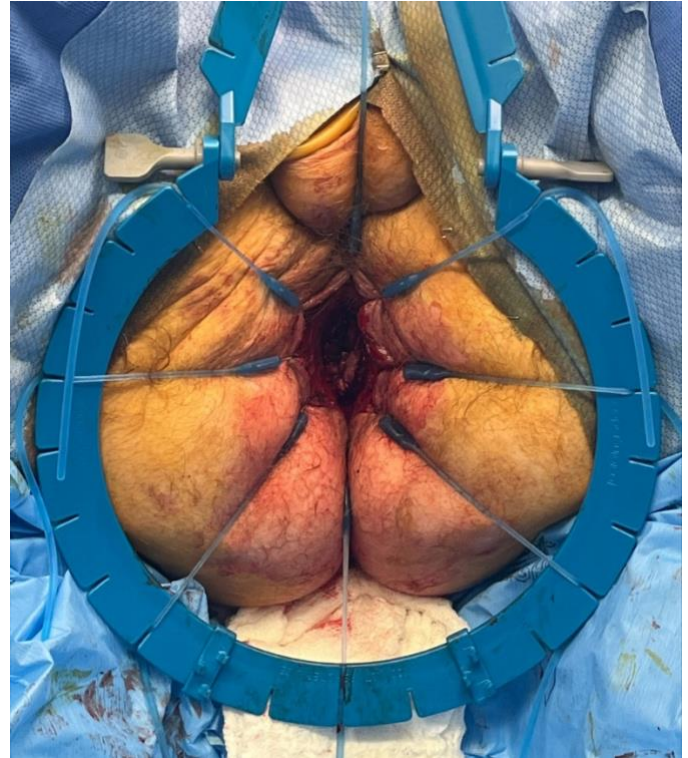
# Transanal Resection of Rectal Tumors

Megan Shroder and Alexander Hawkins



*The lithotomy position is best suited for tumors in the posterior rectum: a surgeon sitting or standing between the patient's legs is looking down on the tumor. By Saltanat ebli - Own work, CC BY-SA 3.0,*

<https://commons.wikimedia.org/w/index.php?curid=23397027>

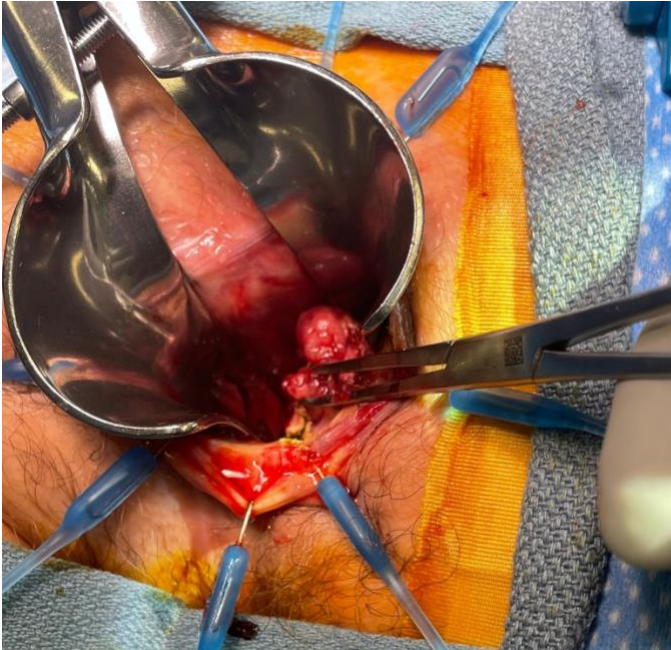


*Lone Star® retractor placement with stays/hooks placed circumferentially around the anal canal and secured to the device with appropriate tension to aid in visualization without causing tearing/injury. A creative surgeon with a self-retaining retractor system that attaches to the patient's bed could duplicate this exposure by placing sutures through the mucosa in the anal canal and attaching them to the retractor.*

5. After positioning of the patient and induction of anesthesia, the patient should be adequately secured to the table with straps in multiple locations (legs, chest).
6. Raise the table to an appropriate height for standing or sitting on a stool if patient is in lithotomy position. Prepare the perianal region with a sterile skin preparation solution and drape the patient.
7. Perform a digital rectal examination and anoscopy as indicated.
8. Place a Lone Star® retractor around the anal canal and secure the tightening dials to allow it to lay flush against the perineum. Stays/hooks should be placed in multiple positions (at least 8) around the anal canal. Be careful to avoid causing a sharp injury to the surgical team during placement of the Lone Star® hooks.
9. Utilize a retractor (rectal speculum shown below) to visualize the lesion/mass. Tip: a traction suture can be placed just proximal to the lesion to apply pressure and pull it closer to the anus if there is difficulty visualizing. Additionally, utilizing an atraumatic grasper/clamp on the lesion may also be helpful at this step.
10. With electrocautery (bipolar or monopolar), score or mark 1 cm margins around the lesion.
11. Incise the rectal mucosa and extend the incision laterally and proximally with 1 cm margins circumferentially. The incision should extend to the perirectal fat with caution to avoid injury to adjacent structures, especially anteriorly (such as the prostate gland or vagina).

# Transanal Resection of Rectal Tumors

Megan Shroder and Alexander Hawkins



*Rectal speculum and Lone Star® retractor aide in visualization of the rectal mass, which is grasped with an atraumatic instrument. Photo courtesy of Dr. Timothy Geiger*

12. After excision of the mass, it should be oriented for pathology. Markings should indicate laterality, superficial vs. deep, and proximal vs. distal.



*Marking of the specimen for pathology examination. Sutures of different lengths will now be placed on the specimen and communicated to the pathologist in the request form. Photo courtesy of Dr. Timothy Geiger.*

13. The defect should be closed in a single, full-thickness layer. This is done in a transverse manner with absorbable suture (i.e. Vicryl). This can be done in an interrupted or running fashion.
14. The anal canal should be inspected for defects or bleeding. Hemostasis should be obtained with electrocautery or additional sutures as indicated.

## Pitfalls

- Appropriate padding and support of patients in the prone-jackknife and lithotomy positions is crucial. Pressure injuries to the genitals, shoulders, and lower extremities can occur quickly and should be prevented starting with preparation of the table set-up even before the patient enters the operating room.
- Anterior lesions put patients at higher risk of iatrogenic injury to the prostate gland, vagina, and other parts of the genitourinary tract. Take care to avoid injury to these structures.
- Complications are rare from local transanal excision, but post-operative understanding of the presentation and management of hemorrhage/bleeding, infection or pelvic sepsis, rectovaginal fistulae, perforation, and urinary retention is crucial.
- If the lesion is difficult to visualize during removal, tension sutures can be placed around the margin of excision while the mass is being excised. This helps to ensure appropriate visualization when the defect is being closed.

Megan Shroder, MD MPH  
Alexander Hawkins, MD MPH  
Vanderbilt University Medical Center  
Nashville, Tennessee USA

October 2024