Transanal Minimally Invasive Surgery (TAMIS)

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Indications

- Tumors should meet the following criteria:
  - <3 cm in size
  - <1/3 of the lumen's circumference
  - Benign pathology or at most a T1 lesion
  - Low risk histopathologic features (no lymphovascular invasion; well or moderately differentiated)
- Lesions should be no more than 8–10 cm from the anal verge.

Essential Steps

1. Position the patient in either lithotomy, lateral decubitus, or prone positioning depending on the location of the tumor. In general, the lesion should be at the inferior aspect of the operative field – position prone for anterior lesions and lithotomy for posterior lesions.
2. Perform a digital rectal examination to confirm the location of the tumor.
3. Lubricate a GelPOINT® path transanal access platform (Applied Medical, Rancho Santa Margarita, CA, USA) and insert it into the anal canal.
4. Insert three 5 mm ports into the gel matrix such that the ports mark the apices of the triangular grooves on the device.
5. Connect the GelPOINT to an Airseal device and establish pneumorectum using warm carbon dioxide. The goal insufflation pressure is the least amount required to complete the surgical procedure, usually falling between 5 and 25 mmHg (start at 15 mmHg).
6. Use a bariatric length 5-mm, 30-degree laparoscope to visualize the rectum and define a 1-cm resection margin surrounding the targeted lesion with hook electrocautery.
7. Excise a full-thickness specimen along the marked boundaries. When the specimen is removed, carefully orient it on a marking board and send to pathology.
8. Close the defect with intraluminal suturing technique. It is often helpful to use a lower insufflation pressure for this step.
9. Deflate the rectum and remove the port.

Note These Variations

- A single-incision laparoscopic surgery (SILS) platform may be used instead of a GelPOINT platform. This is based on surgeon preference,

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but the SILS platform is usually reserved for patients with small diameter anal canals in which the GelPOINT will not seat properly.
- The GelPOINT path long channel transanal access platform may be used to reach lesions as proximal as 15 cm from the anal verge.
- A flexible endoscope can be used as opposed to a rigid laparoscope for visualization.
- A hybrid approach with laparoscopic assistance can aid with exposure of a proximal defect or can be employed to close full-thickness intraperitoneal defects.
- Some data have suggested safe outcomes without closure of the defect if it is extraperitoneal. However, patients will have bleeding per rectum and tenesmus, while the defect heals by secondary intention.
- A flexible sigmoidoscopy is performed after the TAMIS is complete to ensure that there is no luminal stenosis.

Complications

- Intraoperative bleeding
- Urinary retention
- Perforation into peritoneum (either discovered intraoperatively or presenting as a late complication)
- Aborted operation
- Delayed bleeding

Template Operative Dictation

Preoperative Diagnosis Rectal mass

Procedure Examination under anesthesia; transanal minimally invasive approach for excision of rectal mass

Postoperative Diagnosis Same as preoperative diagnosis

Indications This is a __-year-old *male/female* with a recently discovered __ (*size*) *cm* (*location*: *anterior*, *right lateral*, *left lateral*, *posterior*) rectal mass approximately __ (*distance*) *cm* from the anal verge. Workup to this point has suggested (*diagnosis*: *a benign rectal mass/an early-stage adenocarcinoma*).

Description of Procedure After obtaining informed consent, the patient was brought to the operating room. Time-outs were performed using both preinduction and pre-incision safety checklists to verify correct patient, procedure, site, and additional critical information prior to beginning the procedure. *Five thousand units of subcutaneous heparin* and intravenous __ (*antibiotic*) were administered within 1 h of the surgical incision. After induction of general endotracheal anesthesia, a Foley catheter and orogastric tube were placed. Because of the *anterior/posterior* location of the tumor, the patient was positioned on the OR table in *lithotomy*, *lateral decubitus*, *or prone position*. Appropriate foam padding was used to protect pressure points. The patient was then prepped and draped in usual sterile fashion.

A digital examination under anesthesia was performed to confirm the location of the tumor. A GelPOINT path multichannel access port was prepared by inserting three 5-mm ports into the apices of the triangular groove in the GelSeal Cap®. GelPOINT access channel was lubricated and inserted into the anal canal with the assistance of the introducer. The Airseal device was connected to the GelPOINT, and the rectum was insufflated with warm carbon dioxide to a pressure of 15 mmHg. A bariatric 5-mm 30-degree laparoscope was inserted, and the target lesion was visualized approximately __ (*distance*) cm above the anal verge on the (*location*: *anterior*, *posterior*, *right lateral*, *left lateral*) rectal wall. Hook electrocautery was used to mark a *1-cm* margin surrounding the tumor. A laparoscopic grasper was used to provide traction on the rectal wall, and a full-thickness excision along the marked boundary was performed using an energy device (*electrocautery*, *LigaSure*, *harmonic ultrasonic scalpel*). The specimen was removed and carefully oriented on a marking board and sent to pathology for permanent sectioning.

The insufflation was lowered to *5 mmHg* and the rectal defect was closed with __suture using

an intra-corporeal suturing technique (*the author prefers a 2-0 V-lock suture*). After full closure of the defect, the rectum was deflated and the GelPOINT removed. A debriefing checklist was completed to share information critical to postoperative care of the patient. The patient was safely extubated and brought to the postoperative unit for recovery.