Robotic Low Anterior Resection

55

Anuradha R. Bhama and Robert K. Cleary

Indication

- Carcinoma of the rectum, not involving the anal sphincters

Essential Steps

1. Combined lithotomy–supine position.
2. Place laparoscopic/robotic cannula.
3. Explore the abdomen for metastatic disease (liver and peritoneum and ovaries in female).
4. Mobilize the mesentery from the retroperitoneum, working from medial to lateral.
5. Identify the left ureter.
6. Identify and ligate the inferior mesenteric artery.
7. Mobilize the splenic flexure.
8. Mobilize the sigmoid and descending colon from remaining attachments, working from lateral to medial.
9. Total mesorectal excision of the rectum.
10. Staple at pelvic floor.
11. Check the anastomosis for patency and integrity using leak test.
12. Diverting loop ileostomy if indicated.
13. Close the abdomen.

A.R. Bhama, MD (✉) • R.K. Cleary, MD
Department of Surgery, St. Joseph Mercy Health System, Ann Arbor, MI, USA
e-mail: anuradha.bhama@stjoeshealth.org

Note These Variations

- Robotic or laparoscopic identification of IMA, medial to lateral dissection of left colon off retroperitoneum, mobilization of splenic flexure.
- Note and document any metastatic disease.
- Stapled vs. *sutured* anastomosis.
- *Size of stapler/type of suture.*
- *Diverting loop ileostomy.*

Complications

- Injury to the ureters
- Injury to the spleen
- Anastomotic leak

Template Operative Dictation

Preoperative Diagnosis Malignant neoplasm of the rectum

Procedure Low anterior resection with primary anastomosis

Postoperative Diagnosis Same (*enumerate any metastatic disease found*)

Indications This ____-year-old *male/female* with *abdominal pain/bleeding/obstructive symp-*

J.J. Hoballah et al. (eds.), *Operative Dictations in General and Vascular Surgery*,
DOI 10.1007/978-3-319-44797-1_55

toms was found to have carcinoma of the *upper/mid/lower third* of the rectum approximately ___cm from the anal verge. Workup with *computed tomography scan of the chest*, *abdomen, and pelvis* revealed *no evidence of metastatic disease/other. Endoscopic ultrasound/MRI* revealed _____ disease. The patient *did/did not* undergo neoadjuvant chemoradiation therapy. Elective resection was indicated.

Description of Procedure The patient was taken to the operating room and placed supine on the operating room table. Sequential compression device stockings were placed and subcutaneous heparin was administered. Time-outs were performed using both preinduction and preincision safety checklists to confirm correct patient, procedure, positioning, administration of IV antibiotics, VTE prophylaxis, and address any anesthesia or surgeon concerns. After the induction of general anesthesia, the patient was placed in the lithotomy position with all pressure points padded appropriately. The patient's upper extremities were tucked at both sides with pressure points padded appropriately. A urinary catheter *and an orogastric tube* were placed. The abdomen was prepped and draped in the usual sterile fashion.

Using a Veress needle/Hasson technique at the umbilicus, carbon dioxide pneumoperitoneum of 15 mmHg was obtained. A 12 mm port was placed at the midline location. A laparoscope was used to examine the abdomen to identify any iatrogenic injury and none was seen. The abdomen was explored for metastatic disease, and *note absence or presence of metastatic disease*.

Additional working cannulas were placed under direct vision. This included a 13 mm robotic cannula in the right lower quadrant, an 8 mm robotic cannula in the left lower quadrant, and an 8 mm robotic cannula in the subcostal area just to the right of the midline. A 5 mm assistant port was placed in the right upper quadrant. (*Port placement may vary based on surgeon preferences*.)

The patient was placed in steep Trendelenburg position and tilted to the right. The small bowel was retracted out of the pelvis. The patient cart was then brought *over the patient's left hip/between the legs*. The robotic arms were then attached to the instrument cannulas. The instruments were then placed under direct vision.

An incision was made in the mesentery near the origin of the inferior mesenteric artery. A plane was created between the mesentery and the retroperitoneal tissue using a combination of blunt and sharp dissection. The left ureter was identified and care was taken to avoid injury to this structure. The IMA was clipped and then divided using the Vessel Sealer®. Dissection of the colon mesentery off the retroperitoneal structures was continued cephalad and laterally. After taking down the splenic flexure, lateral to medial dissection of the sigmoid, descending colon and splenic flexure was performed, thereby fully mobilizing the left colon. *If needed to achieve adequate length of the colon to create a tension-free anastomosis*: *the inferior mesenteric vein was identified*, *clipped*, *and ligated at the inferior border of the pancreas*. The presacral space was entered and the rectum was fully mobilized to the levators posteriorly, staying in the correct plane between the presacral fascia and the fascia propria of the rectum, as well as laterally and anteriorly to ensure a total mesorectal excision with an intact mesorectal envelope. The lowermost part of the rectum devoid of mesorectum was well below the neoplasm, and the lower rectum was transected using the robotic stapler approximately 4–5 cm above the anal verge. The mesentery was then taken down with the vessel sealer from point of transection inferior mesenteric vessels to the mid descending colon where the bowel was soft and pliable (well out of the radiation field). Fluorescent imaging at this time confirmed viability of the proposed segment of descending colon to be used for the anastomosis. This concluded the robotic part of the operation. The transected end of the rectum was grasped with a laparoscopic locking grasper under vision.

The robotic instruments were removed under direct vision. The robotic arms were detached from the trocars and the robot removed from the patient. The robot remained sterile in case docking was required to suture repair any leak

of the anastomosis. A small Pfannenstiel incision was made, carried through the subcutaneous tissue, fascia, and peritoneum. A wound protector was placed.

The proximal end of the divided rectum was brought through the wound protector to the mid descending colon that was previously cleared. *A purse-string clamp was placed on the descending colon. A 2-0 nylon on a Keith needle was passed through the purse-string clamp, and a heavy scissor was used to transect the colon distal to the clamp*. The specimen was then handed off for permanent pathology. A *___mm EEA stapler* was chosen for the circular stapled anastomosis. The purse-string clamp was removed, and the anvil was placed within the descending colon. The purse-string suture was cinched down and tied around the anvil. The anvil and descending colon were returned to the abdominal cavity, and pneumoperitoneum was reinstituted. The perineal operator then went below. The circular stapler was introduced per anum. The spike was introduced *anterior/posterior* to the staple line. The anvil on the descending colon was attached to the circular stapler and the circular stapler was closed and fired, thereby creating a laparoscopic colorectal anastomosis between the mid descending colon and lower rectum. Two complete donuts were obtained from the stapling mechanism. Flexible sigmoidoscopy was performed. This revealed an anastomosis that was widely patent, without tension, and clearly viable. It was tested for leak with air insufflation, saline in the pelvis, and occlusion of the proximal colon, and no leak was noted.

The pelvis was irrigated with warm saline and hemostasis was complete. Again, inspection of the abdomen and pelvis revealed no other apparent abnormalities.

If a loop ileostomy is created: Inspection *of the abdomen and pelvis revealed that hemostasis was complete. A loop of ileum about 15–20 cm proximal to the ileocecal valve was chosen for the diverting loop ileostomy. A circular incision was made in the skin at the previously marked site*, *carried through the subcutaneous tissue*, *and an incision was made in the fascia. The peritoneum was incised and two fingerbreadths of fascia opening was made for the stoma site. Taking care to ensure proper orientation*, *the distal ileum was brought through the stoma site using laparoscopic visualization. A Babcock clamp was placed on the ileum to prevent retraction back into the abdominal cavity. The loop of ileum was left at this location and matured after wound closure*.

The 13 mm trocar site fascia in the right lower quadrant was closed with 0 Vicryl suture. The camera port fascia was similarly closed with 0 Vicryl suture. The peritoneum of the Pfannenstiel incision was closed with running 2-0 Vicryl and the fascia over the muscle was closed with 2-0 Vicryl suture. The subcutaneous tissue was irrigated with warm saline. All skin wounds were closed with running subcuticular 4-0 Monocryl followed by the application of Dermabond. Attention was then placed to the stoma, which was matured in the usual Brooke fashion as a loop ileostomy with interrupted 4-0 Vicryl. The stoma was clearly viable and without tension. A stoma appliance was placed it.

A debriefing checklist was completed to share information critical to postoperative care of the patient. The patient was then taken out of lithotomy position, extubated, and taken to the recovery room in stable condition. The patient tolerated the procedure well with no immediate complications.