LABORATORY 4

PELVIC VISCERAL PROCEDURES

Anatomical Basis of Surgery Course

LABORATORY 4

PELVIC VISCERAL PROCEDURES

March 5, 2015

OBJECTIVES FOR LABORATORY 4

After successfully completing Laboratory 4, you will be able to do the following.

SKILLS OBJECTIVES

1. Perform pelvic packing for trauma
2. Perform a low anterior resection for rectal pathology
3. Perform an abdominoperineal resection for low rectal or anal pathology

KNOWLEDGE OBJECTIVES

1. ???

SUGGESTED READINGS

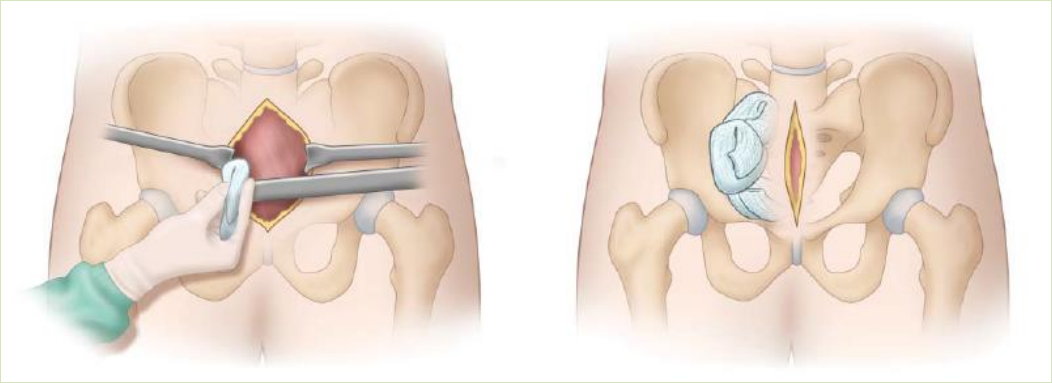
Scott-Connor CEH and Dawson DL. *Essential Operative Techniques and Anatomy*. Lippincott, Williams & Wilkins, Philadelphia. 2014 and posted on MyCourses (AT501 2014).

Zollinger R Jr., Ellison E. *Zollinger's Atlas of Surgical Operations, 9th Ed*. McGraw Hill, New York. 2010.

PELVIC PACKING

Due to previous dissections, this technique will not be performed; relevant anatomy will be reviewed on the cadaver …

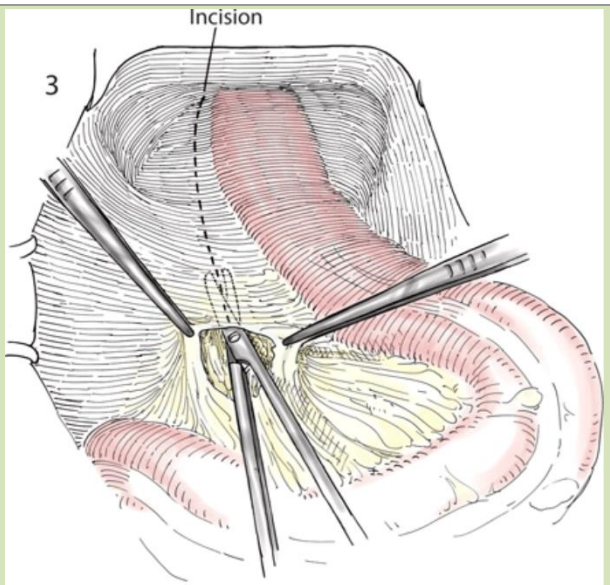
- ☞ *Midline incision from the pubic symphysis 6-8cm cephalad*
- ☞ *Deepen the incision through the anterior sheath but do not enter the peritoneal cavity*
- ☞ *Bluntly open the preperitoneal space (if not already dissected by hematoma)*
- ☞ *Pack 3+ laparotomy pads on either side of the midline and close the fascia*



Ashley SW, Cance WG, Chen H, Jurkovich GJ, Napolitano L, Pemberton J, et al. ACS Surgery: Principles and Practice. BC Decker, Ontario, Canada. 2010.

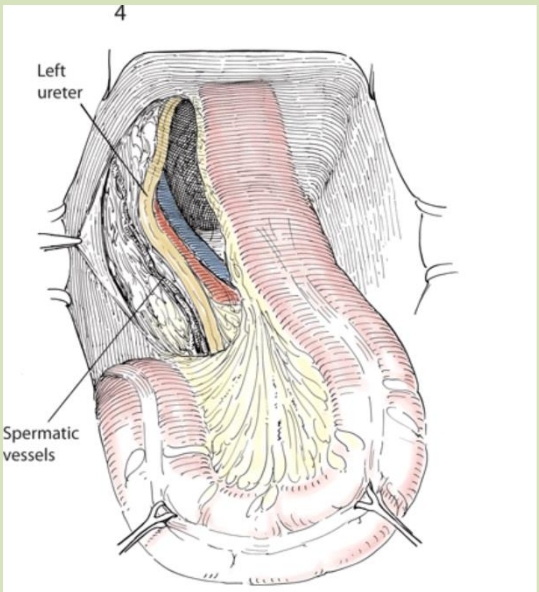
LOW ANERIOR RESECTION

- ☞ *Position: Modified lithotomy*
- ☞ *Prep/drape: Abdomen from xiphoid process to pubis; perineum*
- ☞ *Incision: Midline incision from the umbilicus to pubic symphysis*
- ☞ *Examine the abdomen for evidence of hepatic or peritoneal metastases*
- ☞ *Trendelenburg position*
- ☞ *Mobilize the sigmoid by incising the white line of Toldt*



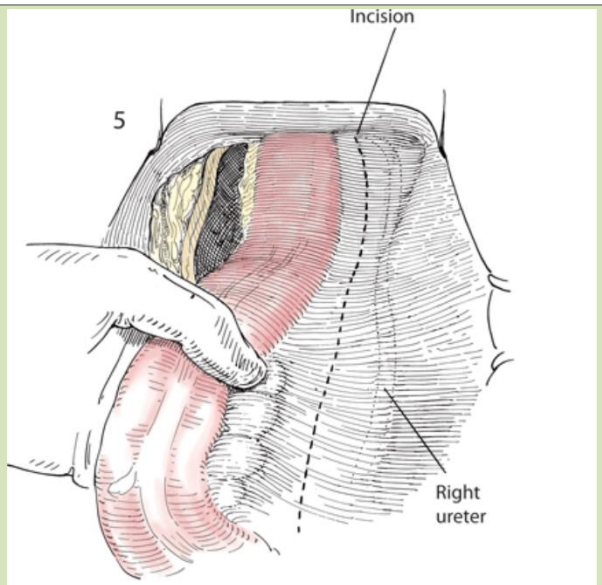
Source: Zollinger RM, Ellison EC: *Zollinger's Atlas of Surgical Operations, 9th Edition*: http://www.accesssurgery.com

- *Identify the left ureter as it passes over the iliac artery or where it overlies the psoas muscle and preserve it*



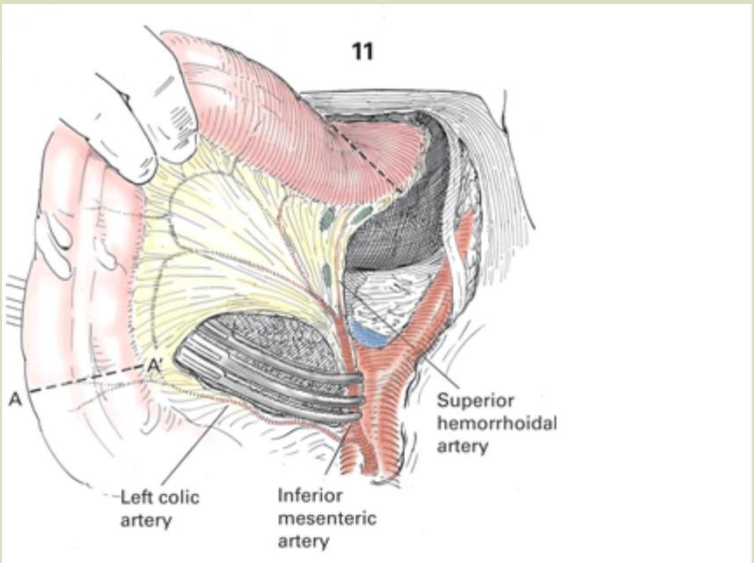
Source: Zollinger RM, Ellison EC: *Zollinger's Atlas of Surgical Operations, 9th Edition*: http://www.accesssurgery.com

- *+/- Mobilize the splenic flexure if this will be required to give sufficient length for a tension free anastomosis*
- *Pack the small bowel in the upper abdomen*
- *Lift the sigmoid anteriorly to place tension on its mesentery and score on either side of the sigmoid colon from its junction with the left colon down to the sacral promontory*



Source: Zollinger RM, Ellison EC: *Zollinger's Atlas of Surgical Operations, 9th Edition*: http://www.accesssurgery.com

- ☞ *Identify and preserve the right ureter*
- ☞ *Divide the colon at the sigmoid-descending colon junction using a linear stapler and pack the colon with the rest of the bowel in the upper abdomen*
- ☞ *Using a Ligasure™ or other advanced thermal energy device, divide the mesentery down toward the pelvis until the sigmoidal vessels are encountered*
- ☞ *Isolate the sigmoidal vessels using large Kelly clamps and divide the vessels with Metzenbaum scissors*
- ☞ *Doubly ligate the sigmoidal vessels*
- ☞ *Suture ligate superior hemorrhoidal artery at its origin*



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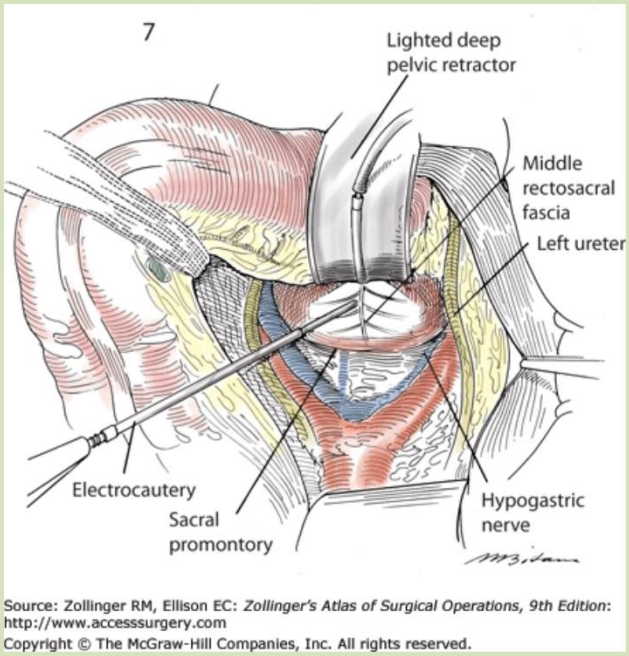
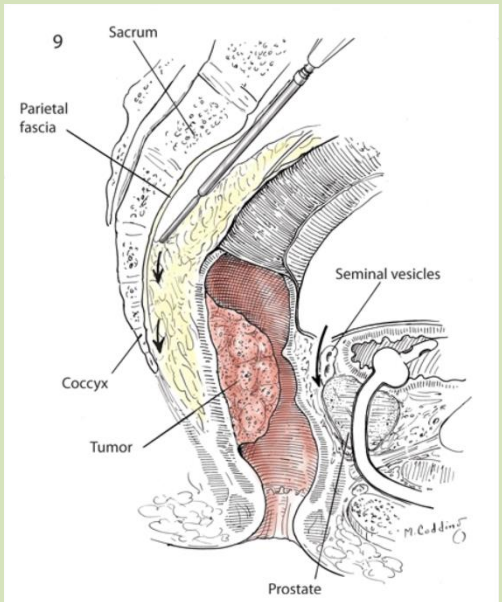
- ☞ *+/- Proximal ligation of the IMA if necessary for extra length of colon (not necessary from an oncologic standpoint)*
- ☞ *Locate and preserve the sympathetic nerves along the pelvic brim*

- ☞ *Retract the rectum anteriorly*
- ☞ *Use sharp dissection with the Bovie electrocautery with the extension tip to develop the avascular loose areolar plane posteriorly (nerves should remain posterior to plane of dissection)*



Source: Zollinger RM, Ellison EC: *Zollinger's Atlas of Surgical Operations, 9th Edition*: http://www.accesssurgery.com

- ☞ *Use the St. Mark's retractor to facilitate deep pelvic dissection*
- ☞ *Incise the presacral fascia down to Waldeyer's fascia*
- ☞ *The posterior dissection is complete when dissection has been carried to the coccyx*



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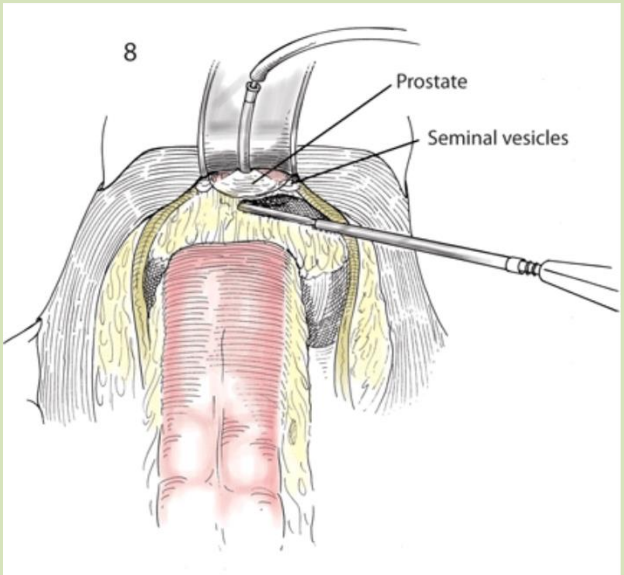
- ☞ *Incise the peritoneum laterally and then in the anterior midline to the deepest point in the cul-de-sac (just posterior to the seminal vesicles in men and the uterus and vagina in women)*
- ☞ *Carry down the lateral dissection to the lateral stalks, which can be divided with Ligasure™ or sequential clamp-and-tie technique*

- *Preserve the hypogastric plexus on the pelvic sidewall (lateral to the seminal vesicles in men and the cardinal ligaments in women)*

☞ *Elevate the seminal vesicles/vaginal wall anteriorly using the St. Mark's retractor and dissect the less distinct anterior plane being sure not to violate the mesorectum, which is thinnest anteriorly*



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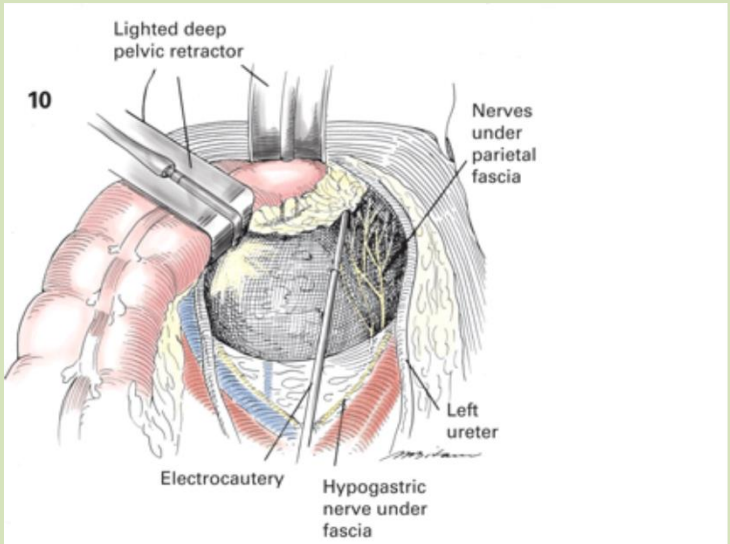

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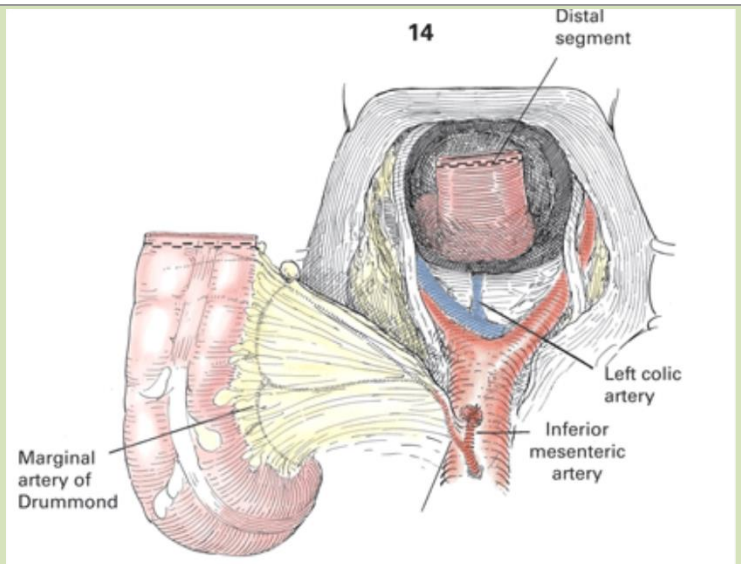
☞ *In men, Denonvillier's fascia should be included with the specimen and thus dissection proceeds anterior to this*

☞ *Total mesorectal dissection should be completed to allow a distal margin of at least 2cm*

☞ *Dissect the mesorectal fat away from the rectum at the site of distal resection, being sure to dissect perpendicularly rather than coning in*

☞ *Divide the rectum with a TA stapler and apply a clamp to the proximal bowel prior to dividing above the staple line*

☞ *Pass off the specimen*



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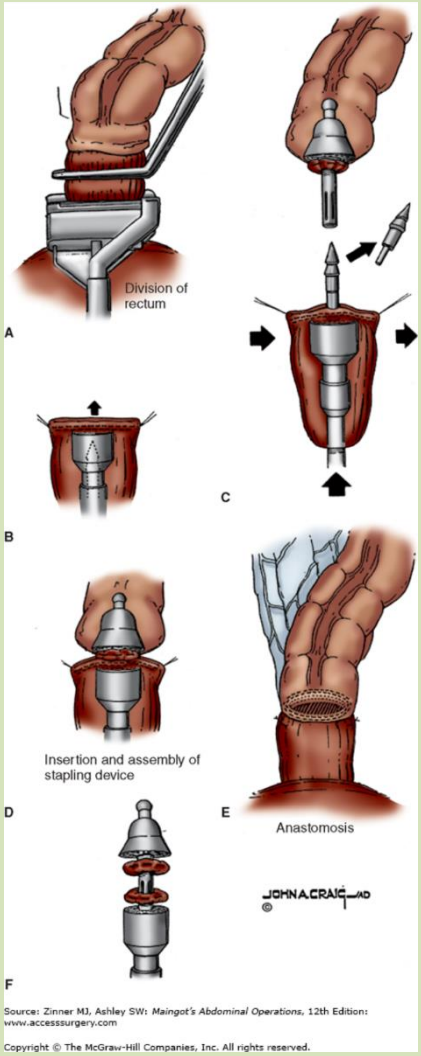
Colorectal anastomosis: Double-stapling technique

- ☞ *Excise the proximal staple line (on the distal colon)*
- ☞ *Use a 3-0 Prolene suture to fashion a pursestring suture line around the anvil of an EEA circular stapler*
- ☞ *A team-member dilates the anus with 2 to 3 fingers then inserts the circular stapler*
- ☞ *The stapler is guided so that the trocar spike exits 2-3mm posterior to the TA staple line on the rectum*
- ☞ *The trocar is fully advanced so that its bottom is visualized*
- ☞ *The trocar is removed and the anvil is brought down to the stapler and connected, ensuring that no twisting of the bowel has occurred and that no soft tissue (epiploicae, mesentery, etc.) have intervened between the anvil and stapler*
- ☞ *The stapler is fired and cautiously opened*
- ☞ *Anastomotic integrity is verified by*
  - o *Direct visualization of the staple line, looking for gaps/defects*
  - o *Inspection of the stapler for 2 intact donuts*
  - o *Air leak testing utilizing insufflation of a rigid proctoscope after the pelvis has been filled with saline*
- ☞ *Defects in the staple line are reinforced by additional sutures*

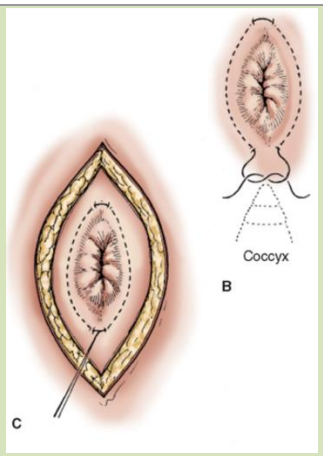


- *+/- Diverting loop ileostomy*
- *+/- Closed suction drain placement*

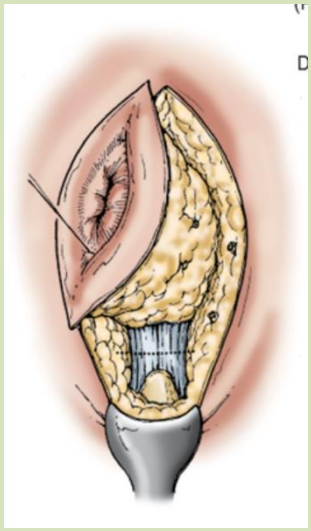
Low anterior resection, laparoscopic: http://www.surgicalcore.org/videoplayer/510000086/9

ABDOMINO-PERINEAL RESECTION

- *Positioning, incision, and initial dissection are similar to that of "LOW ANTERIOR RESECTION" above*
- *The transabdominal pelvic dissection is carried down to the levator ani muscles*
- *2 #10 Blake or Jackson-Pratt closed suction drains are placed in the pelvis and brought out the anterior abdominal wall*
- *The abdomen is closed and end colostomy matured*
- *The patient is then repositioned into prone, jack-knife (alternatively the perineal portion may be performed with the patient still in modified lithotomy)*
- *A 0-silk purse-string suture is used to close the anus*

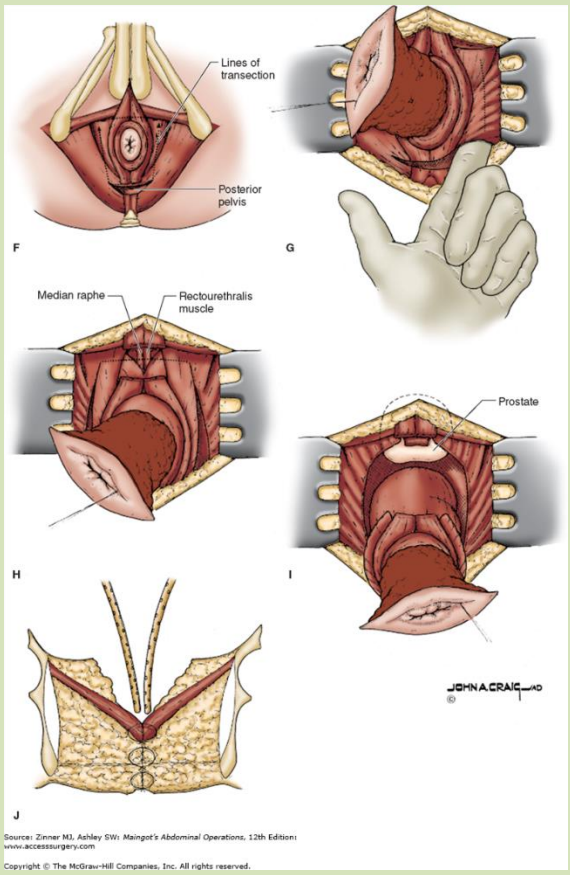


- *The borders of perineal resection are*
  - *Posterior: coccyx tip*
  - *Anterior: perineal body*
  - *Lateral: right and left ischial tuberosities*
- *A 10 blade is used to make an elliptical incision using the above landmarks and staying 2cm outside the superficial external sphincter*
- *The dissection is deepened using Bovie electrocautery being sure to dissect perpendicularly rather than coning in*
- *Gelpi retractors are used to facilitate exposure*



- *Posteriorly, the anococcygeal ligament is palpated just anterior to the tip of the coccyx and large scissors are used to poke through and divide the posterior attachments*
- *The index and middle fingers of the nondominant hand are used to hook under the levator muscles, which are then transected with electrocautery to free the rectum laterally*

- ☞ *The specimen can now be eviscerated through the perineum and only remains attached anteriorly*
- ☞ *The rectum is retracted posteriorly and inferiorly and cautery is used to cautiously divide the anterior attachments of the rectum while avoiding injury to the prostate in men and posterior vagina in women*



- ☞ *The specimen is passed off*
- ☞ *Hemostasis of the pelvic floor is verified*
- ☞ *+/- Omental pedicle flap coverage of the pelvis*
- ☞ *Closed suction drains are repositioned to drain the pelvis*
- ☞ *The perineal wound is closed in layers (interrupted 2-0 Vicryl for subcutaneous and deep tissues and 3-0 Vicryl vertical mattress sutures to approximate the skin)*