Multidisciplinary Approach to the Treatment of Concomitant Rectal and Vaginal Prolapse

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Abstract

Rectal prolapse and vaginal prolapse have traditionally been treated as separate entities despite sharing a common pathophysiology. This compartmentalized approach often leads to frustration and suboptimal outcomes. In recent years, there has been a shift to a more patient-centered, multidisciplinary approach. Procedures to repair pelvic organ prolapse are divided into three categories: abdominal, perineal, and a combination of both. Most commonly, a combined minimally invasive abdominal sacral colpopexy and ventral rectopexy is performed to treat concomitant rectal and vaginal prolapse. Combining the two procedures adds little operative time and offers complete pelvic floor repair. The choice of minimally invasive abdominal prolapse repair versus perineal repair depends on the patient's comorbidities, previous surgeries, preference to avoid mesh, and physician's expertise. Surgeons should at least be able to identify these patients and provide the appropriate treatment or refer them to specialized centers.

Keywords

- ▶ sacral colpopexy
- ▶ rectopexy
- ▶ pelvic organ prolapse

Pelvic organ prolapse (POP) is a complex disorder resulting from abnormal descent of the pelvic organs from their original attachment in the pelvis. The pelvic structures that may be involved include the bladder and anterior vagina (cystocele), the posterior vagina (rectocele), the uterus (utero-vaginal prolapse), the vagina in patients with no uterus (vaginal vault prolapse), the perineum (perineocele), and the rectum (rectal prolapse). Depending on the presenting symptoms and the organ involved, prolapse is treated by a urologist, a urogynecologist, or a colorectal surgeon. This compartmentalized approach often leads to frustration and suboptimal outcomes including denovo stress incontinence, prolapse in another compartment, dyspareunia, or defecatory dysfunction. Several studies have suggested that a multidisciplinary approach to POP may improve surgical outcomes and patient symptoms.^{1–4}

Approach to Patient with Prolapse

A thorough history and physical exam should focus on urinary, defecatory, and sexual function. Additional factors

to consider include failed prior anti-incontinence or prolapse surgeries, patient's age, and comorbidities. Communication between the urogynecologist and colorectal surgeon is crucial to decide on the best treatment plan and route of surgery. Ideally, in large centers, patients are seen in a multidisciplinary pelvic floor clinic.

In addition to the commonly performed colorectal tests (proctoscopy, colon transit marker, defecography, anal manometry, endorectal ultrasound, etc.), the patient typically undergoes urodynamic testing. Patients with significant cystocele or utero-vaginal prolapse are counseled that they might develop denovo stress urinary incontinence following repair if no concomitant anti-incontinence procedure is performed. Cervical cancer screening should be up to date. Ideally, the colorectal surgeon and urogynecologist examine the patient jointly. A Pelvic Organ Prolapse Quantification exam is performed to determine the staging of prolapse.

If a uterus is present, the patient is counseled regarding her options. A supracervical hysterectomy might minimize mesh

erosion at the vaginal apex.⁵ However, with the recent moratorium and FDA warning on morcellation,⁶ performing a supracervical hysterectomy might require a small mini-laparotomy incision to extract the specimen. Alternatively, if the patient desires to preserve her uterus, she can elect to have a hysteropexy.

In recent years, there has been an increase focus on performing a prophylactic bilateral salpingectomy at time of pelvic surgery to minimize the risk of ovarian cancer.⁷ The decision to perform a prophylactic salpingectomy should be discussed during the consent process.

Procedures to treat POP are classified into three main categories: abdominal, perineal, and a combination of both. The route of surgery is decided based on the extent of prolapse, prior surgeries, comorbidities, and surgeon's training.

Abdominal Minimally Invasive Prolapse Surgery

The choice of robotic-assisted laparoscopic surgery versus conventional laparoscopy depends on surgeon's expertise, patient's preference, and, in some instances, insurance coverage. In addition, the following factors should be taken into consideration: previous failed prolapse surgery, need for concomitant perineal repair, concern for pelvic adhesions, patient's ability to tolerate prolonged steep Trendelenburg, and whether or not to use mesh.

The combination of Trendelenburg position, CO₂ insufflation, and prolonged anesthesia has a tremendous impact on hemodynamic changes and should be carefully evaluated in the frail elderly and patients with pulmonary, cardiovascular, or renal disease.^{8,9}

Operative Setup and Pertinent Anatomy

The patient is placed on a gel pad, a bean pad, or simply an egg crate. Following anesthesia induction, the patient is positioned in the dorsal lithotomy position. Allen or Yellofin (Allen Medical Systems, Acton, MA) stirrups are ideal because they provide sufficient mobility to perform abdominal surgery while retaining access to the perineum. Arms are tucked and chest is secured. Padding is used around pressure point to avoid nerve or joint injury. The abdomen, perineum, vagina, and rectum are prepped and the patient is draped.

The surgeon must have a thorough knowledge of the anatomy of the anterior abdominal wall and pelvic area. The umbilicus is commonly located at L3–L4 with the aorta bifurcating at L4–L5. This is key while placing a trocar through the umbilicus. Alternatively, in patients with suspected adhesions, the preferred entry is the left upper quadrant (Palmer's point). A nasogastric or orogastric tube must be placed prior to trocar insertion. The remaining trocars are placed with care taken to avoid the inferior and superficial epigastric vessels (→Fig. 1).

During conventional laparoscopy, four trocars are placed. Typically a 5-mm umbilical trocar, a 5-mm right lower quadrant trocar, and two trocars in the left lower quadrant (5 and 8–12mm) (→Fig. 2).

During robotic-assisted laparoscopic surgery, five trocars are placed in a "W" formation or in a more linear configuration depending on surgeon's preference. A 12-mm trocar is used for the umbilical port to allow placement of the laparoscope. The remaining trocars are 8mm in size with the exception of the right lateral lower quadrant trocar, which is usually 8 to 12mm in size based on the size of the needle used for suturing (→Fig. 3).

Fig. 1 Trocar placement for (A)laparoscopic and (B)robotic approaches with corresponding anatomy. (Reprinted with permission, Cleveland Clinic Center for Medical Art & Photography © 2010–2015. All Rights Reserved.)

Fig. 2 Conventional laparoscopic operating room setup and trocar placement. (Reprinted with permission, Cleveland Clinic Center for Medical Art & Photography © 2010–2015. All Rights Reserved.)

While performing the sacral dissection, the surgeon identifies the sacral promontory, the common iliac arteries and vein, and the right ureter. Particular care should be taken to avoid the left common iliac vein since it courses underneath and medial to the left common iliac artery. The vein is usually collapsed due to the pressure from the pneumoperitoneum, which makes it more difficult to identify. The middle sacral artery originating from the aorta courses in the midline and is usually encountered while dissecting the peritoneum to access the anterior longitudinal ligament.

Sacral Colpopexy and Ventral Rectopexy

Either the urogynecologist or colorectal surgeon performs the presacral and the rectovaginal dissection. The urogynecologist proceeds with the anterior dissection (vesico-vaginal) with care taken to avoid damaging the bladder. If needed, a retrograde bladder filling is performed to minimize an unintentional cystotomy. A vaginal manipulator, typically an end-to-end anastomosis (EEA) sizer, is inserted in the vagina to facilitate the dissection. A lightweight polypropylene mesh is then introduced and sutured to the anterior vagina with 2–0 polydioxanone sutures.

The colorectal surgeon proceeds with the development of the rectovaginal space. An EEA sizer is placed in the rectum to facilitate the dissection. A lightweight polypropylene mesh or biologic graft is then sutured to the anterior aspect of the rectum with 2–0 polydioxanone sutures. Both meshes are then secured

with polypropylene sutures to the anterior longitudinal ligament of the sacrum at the level of S1. The peritoneum is reapproximated over the mesh with barbed or polyglactin sutures. A cystoscopy is performed at the end of the procedure.

In cases where there is a redundant sigmoid, particularly in the presence of preoperative constipation, the colorectal surgeon could elect to perform a sigmoid resection prior to the rectopexy. The rectum is mobilized and the sigmoid colon is then resected. The anastomosis is performed with a circular stapler or handsewn.

Clinical Results

Ventral rectopexy avoids the surgical risks associated with anastomotic complications after colon resection and avoids new-onset constipation reported with lateral rectal stalk division and extensive rectal dissection.¹⁰

Most studies on minimally invasive prolapse surgery focus on sacral colpopexy or ventral rectopexy. Few studies have looked at the outcomes of combined prolapse surgeries. Watadani et al (2013) evaluated the outcomes of sacrocolpopexy and rectopexy by comparing pre- and postoperative function and quality of life. They included 110 women who underwent a sacral colpopexy and rectopexy. A total of 96 patients had rectal prolapse and 14 had rectal intussusception. In addition, 86 of those had enterocele and 48 had vaginal prolapse. Complications included presacral bleeding ($n = 2$), ureteral injury ($n = 2$), wound infection ($n = 8$), and pulmonary embolism ($n = 2$). Preoperatively, 93% reported constipation and postoperatively 82% reported resolution or improvement. Constipation severity, measured with the Patient Assessment of Constipation Symptom Questionnaire, demonstrated improvement (1.86–1.17; $p < 0.001$). Fecal incontinence severity scores (fecal incontinence severity index) improved (39–24; $p < 0.01$), and 82% of the incontinent patients reported cure or improvement. Quality-of-life scores also improved significantly.¹¹ The authors conclude that sacral colpopexy and rectopexy for combined middle and posterior compartment prolapse is a safe procedure, with low risk for recurrence, and improves bowel function and quality of life in most patients.

In a recent study, Unger et al (2014) retrospectively analyzed 406 women who underwent minimally invasive abdominal sacral colpopexy. A total of 36 women underwent concomitant rectopexy. Twelve procedures were performed by conventional laparoscopy and 24 procedures were performed robotically. There were no differences between the women in these two groups. The authors note that concomitant rectopexy compared with sacral colpopexy alone was associated with a higher risk of transfusion (2.8 vs. 0.3%, respectively; $p = 0.04$), pelvic/abdominal abscess formation (11.1 vs. 0.8%, respectively; $p < 0.001$), and osteomyelitis $n = 2$ (5.6 vs. 0%, respectively; $p < 0.001$). The mesh erosion rate for all the women was 2.7% and was not statistically different between conventional laparoscopy and robotic surgery.¹²

In cases where a sigmoid resection is performed, there is a higher rate of complication mainly due to the presence of the anastomosis. The complication rate is up to 20% in some studies. Recently, VanderPas Lamb et al published their data on

Fig. 3 Operating room setup for a robotic-assisted prolapse repair. (Reprinted with permission, Cleveland Clinic Center for Medical Art & Photography © 2010–2015. All Rights Reserved.)

133 patients undergoing combined prolapse repair with sigmoid resection and noted that the rate of postoperative ileus is 22%.¹³

Perineal Repair of Pelvic Organ Prolapse

A perineal approach to prolapse tends to be favored for the frail individual given that the procedures are less invasive, typically cause less postoperative pain, and are associated with a reduced length of stay. In addition, it is usually the preferred approach in patients suspected of having extensive abdominopelvic adhesions and in those who decline the use of abdominal mesh. Perineal rectosigmoidectomy for rectal prolapse repair carries, however, a risk of infection and complication related to the suture line.¹⁴

Operative Setup and Pertinent Anatomy

The patient is usually placed in the dorsal lithotomy position with Allen, Yellofins, or Candy (Candy Cane, AliMed, Dedham, MA) Cane stirrups. Arms are not tucked in. Patients are typically under general anesthesia; however, regional spinal anesthesia is also an option.

Typically, a uterosacral ligament suspension or a sacrospinous ligament fixation is performed to treat the vaginal

prolapse. Adequate knowledge of the anatomy is crucial particularly due to the proximity of the sacrospinous ligament to the rectum. If a rectocele repair is performed vaginally, care should be taken to avoid the rectum. Alternatively, in cases of advanced vaginal prolapse or in frail individuals not interested in retained sexual function, a total or partial colpocleisis can be performed.

The two most common rectal prolapse repairs are the Delorme and the Altemeier procedures. Prolapse recurrence after the Delorme procedure varies from 10 to 15% in different series.¹⁴ The procedure is well tolerated in high-risk patients but still carries a risk for complications of bleeding, urinary retention, and fecal impaction in up to 12% of the patients.¹⁴ The Altemeier procedure carries a higher risk of anastomotic leak, infection, and stricture. A concomitant rectal levatorplasty could be considered in patients with prolapse associated with fecal incontinence.¹⁴

Clinical Results

A recent meta-analysis by Siddiqui et al (2015) comparing mesh sacral colpopexy with native tissue vaginal repair showed moderate-quality evidence supporting improved anatomic outcomes after mesh sacral colpopexy and very

low-quality evidence showing no differences in reoperation between sacral colpopexy and native tissue vaginal repairs. Low-quality evidence showed no differences in postoperative sexual function. Ileus or small bowel obstruction (2.7% compared with 0.2%, $p < 0.01$), mesh or suture complications (4.2% compared with 0.4%, $p < 0.01$), and thromboembolic phenomena (0.6% compared with 0.1%, $p = 0.03$) were more common after mesh sacral colpopexy compared with native tissue vaginal repairs.¹⁵

Kapoor et al¹⁶ assessed patient satisfaction in a retrospective study on 113 patients undergoing surgery for complex pelvic floor disorders. They noted that combined multidisciplinary pelvic floor clinics led to a more pragmatic approach in treating patients' symptoms. Combined surgery was associated with cost savings, a single recuperation period, and higher patient satisfaction.

Conclusion

The choice of minimally invasive abdominal prolapse surgery versus perineal repair depends on the patient's comorbidities, previous surgeries, preference to avoid mesh, and physician's expertise. A multidisciplinary approach to POP may improve surgical outcomes and patient symptoms. It appears that when anatomic durability is a priority, an abdominal minimally invasive repair with mesh may be the preferred surgical option. A perineal approach is usually favored in the frail individual.

Surgeons should at least be able to identify patients with concomitant rectal and vaginal prolapse and provide the appropriate treatment or refer them to specialized centers.

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