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## **Obstructing Defecation Disorders**

### **About the Colon and Rectum**

The colon and rectum is about 5 feet long. Food passes through the stomach, then the small bowel, then the colon, and finally the rectum and anus. The small bowel is 12-20 feet long and is largely responsible for absorption of nutrients and vitamins in food. The colon absorbs water but the small bowel can assume this function in the absence of the colon. In fact, there are several diseases that require removal of the entire colon and rectum. These patients generally lead normal lives and do not develop malnutrition because their small bowel is intact. Removing a portion or all of the colon and rectum may result in diarrhea, urgency, or gas/stool leakage but usually not.

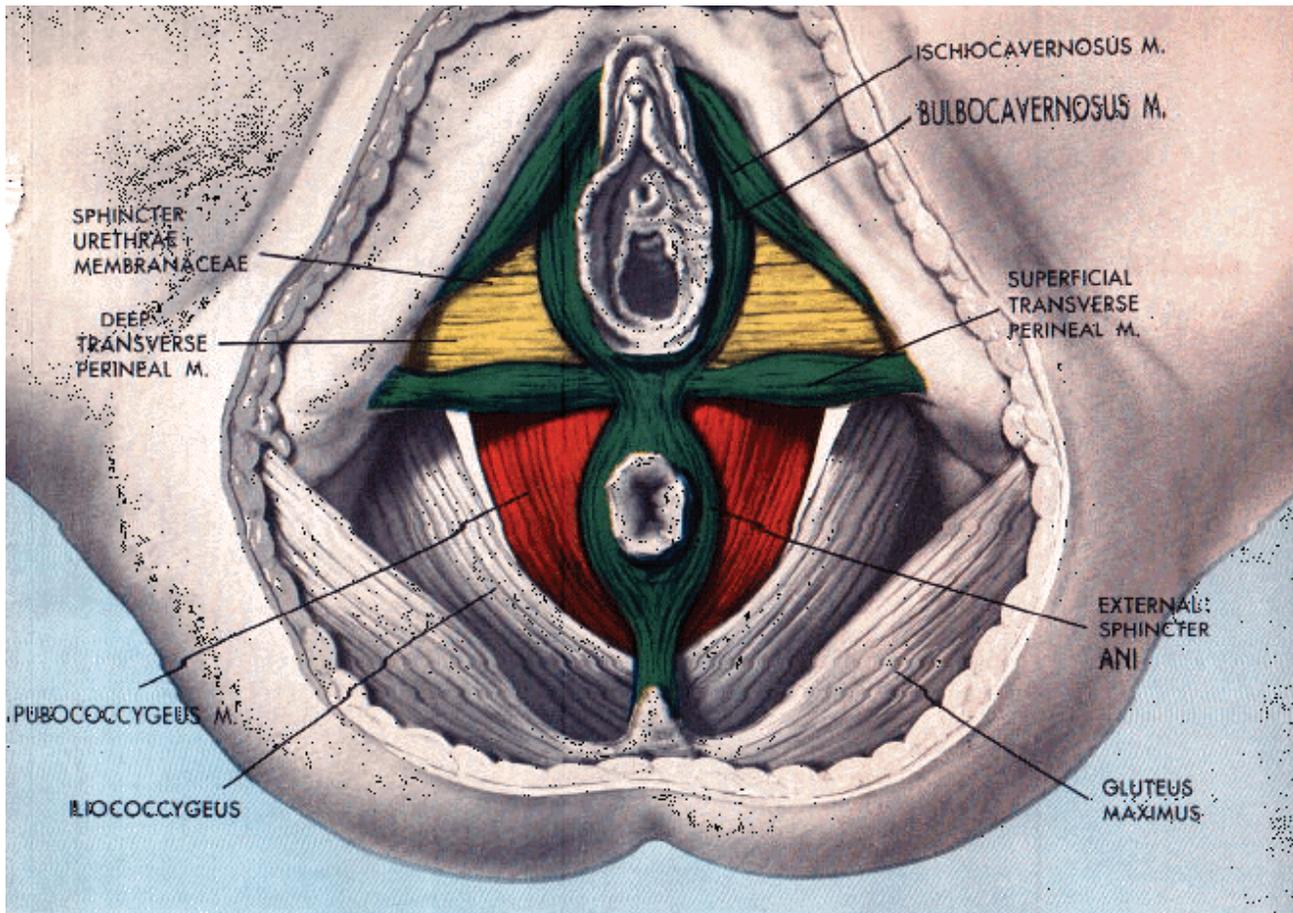
### **About the Pelvic Floor**

The pelvic floor is composed of bowl-shaped muscles through which the rectum, vagina, and urinary urethra pass to the outside world. Abnormalities in the pelvic floor muscles or the nerve supply to the muscles can result in several disorders including leaking urine, leaking gas or stool, genital (vaginal or uterine) prolapse, and rectal prolapse out the anus. Pelvic floor dysfunction can also result in obstructing defecation syndromes, which include rectoceles (stool passes preferentially into weakened wall between rectum and vagina, rather than out anal opening; see below) and internal rectal prolapse (rectum prolapses down but not completely out anal opening resulting in obstructed defecation). Normally, the lower part of the pelvic floor (puborectalis muscle) relaxes to allow the passage of stool when the time is right. In some patients, this muscle contracts instead, making the passage of stool more difficult.

### **Definition of Constipation**

Defecation is the process by which stool is evacuated from the rectum. It is a complex process that coordinates motion of the colon and rectum, pelvic floor muscles, rectal sensation, and timely relaxation of the anal sphincter muscles.

Difficulties with defecation are common and the causes are many and varied. Constipation is defined by infrequent bowel movements or difficult evacuations or both. Difficult evacuations may be defined by 2 or more of the following at least 25% of the time: 1) straining, 2) lumpy or hard stools, 3) sensation of incomplete evacuation, 4) sensation of blockage at the level of the anus and rectum, 5) the need to use fingers or other manual maneuvers to have a bowel movement. Constipation accounts for over 2 million clinic visits per year in the United States. Patients have often already tried over-the-counter laxatives and enemas in an attempt the relieve symptoms. Constipation may be caused by diseases, medications, or constipating diet habits. Sometimes there is no obvious explanation for constipation in which case it is called idiopathic.



[www.incontinet.com/ images/Kegel2.GIF](http://www.incontinet.com/images/Kegel2.GIF)

## Idiopathic Constipation

Idiopathic constipation is classified as

- 1) normal transit
- 2) slow transit
- 3) obstructed defecation.

Sometimes, more than one type of constipation occurs at the same time.

**Normal transit constipation** occurs when the muscles and nerves in the colon and rectum appear normal and stool moves through the small bowel and colon in an appropriate time frame but the stools are hard or pellet-like and difficult to evacuate. These patients have abdominal discomfort and bloating and may have both constipation and diarrhea. Normal transit constipation often coexists with Irritable Bowel Syndrome.

**Slow transit constipation** is characterized by a colon that does not work properly. That is, the motility (muscle and nerve function) is such that mass movements that propel stool through the colon do not occur. The reason this happens is not known. The patient does not have the urge to have a bowel movement (unlike obstructed defecation) and may go many days or even weeks without having a bowel movement. Many of these patients absolutely depend on laxatives.

## **Obstructed defecation (Evacuatory dysfunction)**

- a) **Paradoxical Puborectalis Contraction (anismus)**
- b) **Rectocele**
- c) **Enterocele**
- d) **Sigmoidocele**
- c) **Internal Rectal Prolapse**

**Paradoxical Puborectalis Contraction.** Difficulty with bowel movements due to outlet and pelvic floor dysfunction is often associated with conditions known as paradoxical puborectalis contraction, rectocele, internal rectal prolapse, solitary rectal ulcer, and others. Surgery to remove the uterus (hysterectomy), bearing children, and chronic straining can injure the pelvic floor muscles and the support to the rectum and vagina leading to abnormal descent of the lower rectum. The problem appears to be related to the inability to coordinate pelvic floor muscle function. This ineffective pelvic floor muscle coordination results in inadequate relaxation of the pelvic floor when attempting to defecate. The puborectalis muscle normally relaxes to allow defecation. Paradoxical puborectalis contraction occurs when the puborectalis muscle tightens and contracts when it is supposed to relax to allow the passage of stool.

**Rectocele** is a weakness in the muscular wall that separates the rectum and vagina forming a pouch in the wall. This allows the rectum to protrude into the vagina. Stool preferentially gets stuck in the pouch in this rectovaginal wall rather than passing out the anus. Women with rectoceles may feel vaginal or perineal pressure and may need to splint or use pressure with their fingers to the vagina or perineum to get the stool out.

**Enterocele** occurs when the small bowel finds its way into a defect in the pelvic fascia near the top of the vagina, causing mechanical obstruction of the rectum during attempted bowel movements.

**Sigmoidocele** is similar to an enterocele, but it is the sigmoid colon rather than the small bowel that causes the obstruction.

**Internal rectal prolapse** is a rectal prolapse that has not yet made its way out the anal canal and, therefore, cannot be seen on inspection.

All of these disorders cause the patient to have a feeling of the need to strain with partial or incomplete evacuations.

## **Investigations**

### **1) Digital Rectal Exam**

After your Colon and Rectal surgeon asks you questions and does a limited heart and lung examination, you may be asked to undress from the waist down at which time a finger is inserted into the rectum. This is done to evaluate the status of your sphincter muscles, to check for masses, rectoceles, and pelvic floor prolapse.

### **2) Colonoscopy**

Some patients may undergo a colonoscopy to rule out a tumor or other mechanical explanation for constipation. This is scheduled at a time different than the office visit.

### **3) Defecography**

You may be scheduled for a special xray whereby contrast is inserted into the rectum. You are then asked to evacuate it into a toilet. An xray is performed during this evacuation. This xray is designed to evaluate the possibility of a rectocele, rectal prolapse, the inability to relax the pelvic floor, and other associated conditions.

#### **4) Anal Manometry**

Some patients may have a test called anal manometry. A thin plastic catheter is placed in the anus and rectum to measure sphincter muscle pressures. In addition, when stool enters the anal canal, the internal sphincter muscle dilates before the external sphincter muscle contracts. Anal manometry evaluates this reflex (rectoanal inhibitory reflex). It may also show higher resting and squeeze pressures in patients with internal rectal prolapse and those with paradoxical puborectalis contraction (nonrelaxing puborectalis syndrome).

#### **5) Electromyography (EMG)**

Some patients may have a test called EMG. Electrodes are placed near the anus or a very thin needle is placed in the sphincter muscle. This test may identify patients who contract part of their sphincter muscle (the puborectalis muscle) when it is supposed to relax.

#### **6) Colonic Transit Study**

Patients who are suspected of having poor colon muscle or nerve function (colonic dysmotility) may have a transit study. The patient stops all laxatives prior to the test and then swallows a capsule that contains 24 tiny rings that can be seen on xray. Plain xrays are then done 3, 5, and 7 days after ingestion of the capsule. 80% of the markers should pass by day 5 and 100% by day 7. Those with slow transit constipation may have markers evenly distributed throughout the colon. Those patients with obstructed defecation may have markers retained in the distal colon and rectum.

## **Treatment**

### **1) Medical**

Patients with constipation should first be treated medically with adequate fluid (1-2 liters) and fiber (20-30 grams) intake. Some patients may benefit from laxatives, enemas, or both. Saline and stimulant laxatives like senna and polyethylene glycol may be helpful but long term use is discouraged because of possible damage to colon nerves (myenteric plexus) over time. Patients should see their Primary Physician to make sure they do not have metabolic causes of constipation like low levels of potassium, magnesium, or calcium, abnormal blood glucose levels, or conditions of the thyroid.

### **2) Biofeedback**

Pelvic floor exercises and Biofeedback may be an option for some patients with obstructed defecation, especially that due to paradoxical puborectalis contraction, though the effectiveness is debated in the literature, and some insurance companies will not pay for it. It can be done with an EMG plug or anal manometry catheter placed in the anus.

Patients with decreased rectal sensation with loss of perception of stool in the rectum may benefit from biofeedback and rectal irrigation with enemas.

### **3) Surgery**

#### **A) Slow Transit Constipation**

Some patients with slow transit constipation may be candidates for surgery that removes the whole colon. The end of the small bowel is then sewn or stapled to the top of the rectum. This option is for those who fail medical management and is performed on a very small percentage of patients. The sense and urge to defecate may return after surgery with relief of abdominal pain and constipation. However, 1/3 of patients develop complications including small bowel obstruction, persistent abdominal pain, frequent bowel movements, fecal urgency, and fecal incontinence (leaking gas and stool 6%). A small percentage of patients have persistent or

recurring constipation after surgery. Other complications of colon surgery for constipation include bleeding, infection (wound and abdomen), abscess, leakage from suture or staple line (may cause severe infection or sepsis, and may require temporary or permanent colostomy or bag), stricture or narrowing of the staple or suture line, injury to the ureter (tube that carries urine from kidneys to bladder), injury to bowel and blood vessels, the possible need for a colostomy (bag), sexual dysfunction, hernia in the incision, blood clots in the legs which can go to the lungs (serious complication), pneumonia, heart attack, other heart and lung complications, and possible death (rare). See appendix A

### **B) Paradoxical Puborectalis Contraction (Nonrelaxing Puborectalis)**

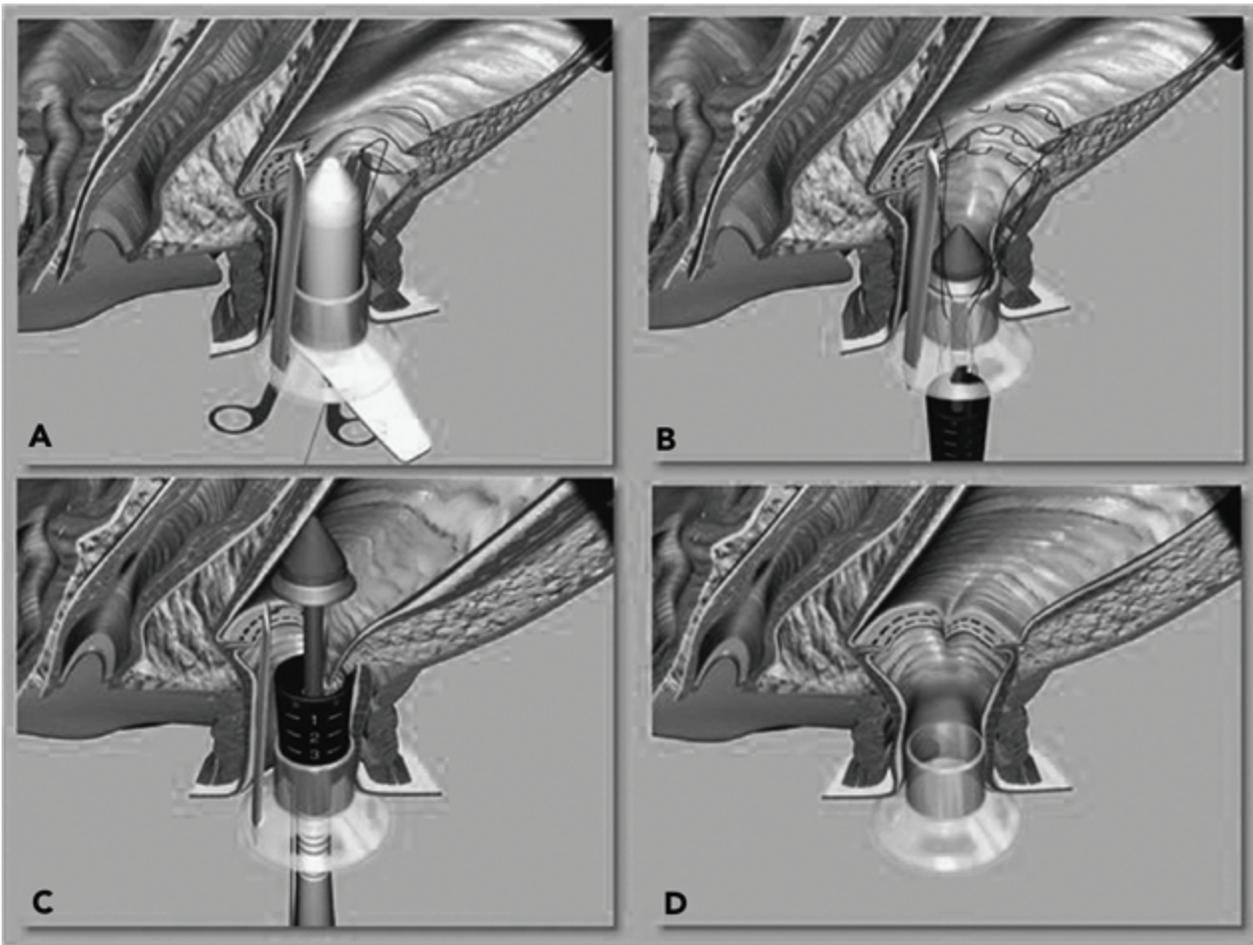
Generally, surgery is not indicated for this condition. Medical management, including Biofeedback pelvic floor retraining, may be helpful for this condition. Some patients have both slow transit constipation and paradoxical puborectalis contraction. This may be difficult to determine but if they coexist, the paradoxical puborectalis contraction is treated before considering surgery for slow transit.

### **C) Rectocele Repair**

Rectocele is a weakening of the structural fascial support in the septum that separates the rectum from the vagina, resulting in a herniation of the rectum into the vagina. Stool follows the path of least resistance. If the rectocele is clinically significant, stool may preferentially get stuck in a pouch in this septum (rectocele) rather than pass through the anal opening. Patients often complain of a bulge in the vagina and the need to push on the vagina or area between the vagina and rectum to get the stool out. In addition, these patients may have prolonged difficulty straining at stool, the feeling of incomplete evacuations, and fractionated bowel movements.

Rectoceles are initially treated with fiber supplements, enemas, or suppositories. Some also advocate colon irrigation. In those that fail medical management, surgery may be an option to repair the rectocele. Surgery may be done by an incision in the vagina or an incision in the rectum or an incision between the vagina and rectum. All of these approaches are designed to strengthen the support in the septum between the rectum and vagina so that the stool then preferentially passes through the anus. Some surgeons prefer to use mesh in the repair.

Another option is the STARR procedure (stapled transanal rectal resection). This technique is used in selected patients with obstructed defecation disorders due to internal rectal prolapse, rectocele, and mucosal prolapse. The stapler is used twice to remove a full thickness segment of the front and back wall of the lower rectum. Several studies have shown improvement in obstructed defecation symptoms with a mean follow up of 24 months with correction of the rectocele and internal rectal prolapse. Though the STARR procedure holds promise for those with obstructed defecation, there is not enough data yet to confirm the long term durability of the procedure. Complications include pneumonia (1%), bleeding (4-15%), inability to temporarily pass urine (6%), urgency 18% (feeling of having to have a BM), leaking gas and/or stool (up to 20%), narrowing of the rectum (3%), painful intercourse, connection between the rectum and vagina (rare), recurrence of constipation and rectocele (up to 33%).



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#### **D) Internal Rectal Prolapse (Rectoanal Intussusception) Repair**

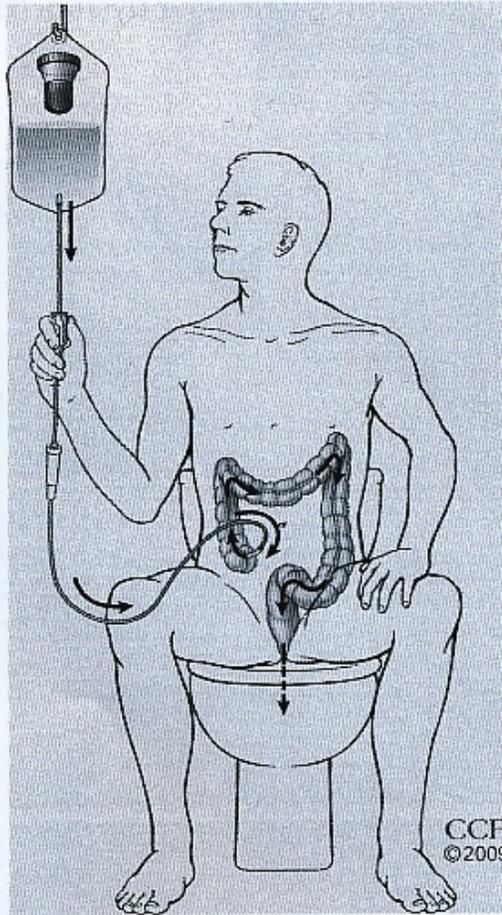
Rectal prolapse occurs when the rectum telescopes out of the anus. It can be a dramatic event for the patient who can be frightened by the appearance. It can and often is mistaken for prolapsing hemorrhoids, a very different condition treated quite differently. Rectal prolapse is internal when it does not protrude outside the anus. Rectal prolapse is external when the full thickness of the rectum protrudes through the anal opening. External rectal prolapse is almost unmistakable when examined by an experienced observer.

The treatment of external rectal prolapse is more straight forward than for internal rectal prolapse. 40% of women without symptoms have internal rectal prolapse at defecography. Those who have symptoms typically have obstructed defecation and sometimes, lower abdominal pain and rectal bleeding. Other associated pelvic floor disorders including rectocele and enterocele may be present in up to 50% of patients. Defecography may be helpful in the diagnosis of these patients as it may identify concomitant internal rectal prolapse, rectocele, enterocele, non-relaxing puborectalis, and increased perineal descent.

It is thought that the risk of internal rectal prolapse progressing to external rectal prolapse may be low. Patients are asked to avoid straining and take fiber supplements. Enemas or suppositories may be helpful. Biofeedback may be helpful in some patients. Standard surgery options for external full thickness rectal prolapse (rectal resection, rectopexy with or without sigmoid colon resection, others) may not have the same success rates for internal rectal prolapse. The STARR procedure, mentioned above for the treatment of rectoceles, may be of benefit in patients with internal rectal prolapse.

### E) Antegrade Colonic Enemas

This procedure requires the surgical placement of a catheter into the appendix, small bowel, or colon. The catheter is then flushed with several liters of saline thereby flushing stool through the colon and rectum. The small opening in the abdominal wall through which the catheter passes can narrow or stricture and sometimes requires surgical revision.



**Figure 5** Antegrade colonic enema. (Color version of figure is available online.)

### F) Fecal Diversion

Some patients who fail other options, or are not candidates for other options, can improve their quality of life by having a colostomy constructed, thereby relieving pain and evacuation dysfunction.

#### References

- 1) [www.fascrs.org](http://www.fascrs.org)
- 2) Boccasanta P, et al *Dis Colon Rectum* 47:1285, 2004
- 3) Ommer A, et al *Arch Surg* 391:32, 2006
- 4) Steele SR, et al *Clin Colon Rectal Surg* 20:110, 2007

# Appendix A

The more common risks of colon surgery for slow transit constipation include

- 1) bleeding
- 2) infection
  - abdominal wound or intra-abdominal infection or abscess
- 3) anastomotic leak (suture or staple line leak)
  - a. may require antibiotics, longer hospitalization, drainage with CT scan guidance, or another surgery to resolve
  - b. may require temporary or permanent colostomy or ileostomy
  - c. may result in death from sepsis
- 4) abscess
  - may require antibiotics, longer hospitalization, drainage with CT scan guidance, or another surgery to resolve
- 5) increased bowel movement frequency
- 6) bowel movement leakage
- 7) bowel movement urgency
- 8) injury to ureter (structure than carries urine from kidneys to bladder)
- 9) injury to other bowel and blood vessels
- 10) injury to or dysfunction of urinary bladder
- 11) bowel obstruction
  - a. usually from adhesions from surgery
  - b. can occur in 10-20% of patients
  - c. may require another operation
- 12) ileus
  - The bowels normally stop working for a few days after surgery. If they continue not to function after this, it is referred to as an ileus
- 13) sexual dysfunction
  - impotence or retrograde ejaculation in men (rare)
- 14) possible temporary or permanent colostomy (bag) or ileostomy
- 15) recurrent constipation and other function bowel disorders
- 16) general operative complications
  - a. heart attack : especially those with heart history
  - b. pneumonia
  - c. sepsis
  - d. blood clot in leg
  - e. blood clot from leg to lung (can be life threatening)
  - f. urinary tract infection
  - g. leg nerve injuries (result of retractors or leg stirrups: rare)

- 17) incisional hernia
  - may require operation to repair
- 18) anastomotic stricture
  - a. may result in constipation (unusual)
  - b. may require dilation through scope to repair
  - c. may require operation to repair
- 19) functional bowel problems
  - a. persistent abdominal pain
  - b. persistent constipation
  - c. small frequent BMs
  - d. other
- 20) possible death (very rare)

## Appendix B

The more common risks of stapled transrectal rectal resection (STARR) include

- 1) bleeding 4-15%
- 2) difficulty urinating 6-23%
- 3) fecal urgency 18-26% (feeling of having to have a BM)
- 4) incontinence (leaking) flatus 9-20% (decreases to 1%)
- 5) rectal narrowing 2-3%
- 6) rectal pain/discomfort 88%
- 7) rectovaginal fistula (connection between rectum and vagina)
- 8) bowel injury or perforation
- 9) nausea 40%
- 10) abdominal discomfort 23%
- 11) diarrhea 23%
- 12) pneumonia 1%
- 13) heart attack
- 14) blood clots in legs
- 15) blood clots in legs going to lungs
- 16) staple line dehiscence/leak
- 17) sepsis
- 18) painful intercourse
- 19) recurrence of constipation and rectocele (up to 33%)