



Treatment of Difficult/Obstructive Defecation

59

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Key Concepts

- Obstructed defecation syndrome is a subtype of constipation wherein patients usually complain of straining; incomplete, unsuccessful, or painful evacuation; bowel infrequency; abdominal pain and bloating; and the possible need for digitation.
- Initial management is lifestyle advice, laxatives, and bowel retraining programs, including biofeedback and psychological support.
- Diagnostic testing may point to a diagnosis, but clinical correlation should always be used.
- Dyssynergic defecation is a clinical diagnosis and requires knowledge of anatomy and physiology for management.
- Patients with overt rectal or anterior compartment prolapse and symptoms of obstructed defecation should be managed surgically.
- Rectoceles, when symptomatic, require a surgical option.
- Enteroceles and sigmoidoceles need a multimodal approach for effective symptom relief.

Introduction

As the general population is aging in most of the occidental world, pelvic floor disorders are increasingly seen, especially within the elderly female population [1]. The effects of a lifetime of damage to the pelvic floor such as from parity, obesity, and surgical trauma to the pelvic ligaments may directly

lead to evacuation and voiding disorders. In the USA, 16% and 9% of women, respectively, will experience bladder or bowel incontinence. Pelvic organ prolapse affects 3% of women [1]. Constipation is a general term that involves a complex variety of clinical scenarios, commonly divided into three major groups: colonic inertia (abdominal), pelvic (obstructed defecation), and constipation with normal transit time associated with irritable bowel syndrome. In this chapter, we will discuss patients with pelvic constipation and obstructed defecation symptoms.

Physiology of Defecation

The process of defecation is determined by complex and multifactorial mechanisms, involving the integration of somatic and visceral functions, under the control of the central nervous system [2]. Therefore, there is an interaction between the brain, spinal cord, enteric neurons, and the muscle of the colon, rectum, anus, and pelvic floor. The structures that require coordination are dependent on conscious control. The defecation process is very complex and not very well understood.

Defecation is triggered by the entry of feces into the rectum as a result of the peristaltic movements of the colon. As the peristaltic movements increase, the rectum receives a larger quantity of feces, thus triggering the defecation reflex. Involuntary passage of feces and gas are controlled through the voluntary contraction of the external sphincter muscle and the puborectalis muscle and the change in the anorectal angle. At the appropriate time, the defecation reflex initiates the process of elimination of the rectal contents, causing the abdominal muscles to contract, the pelvic floor to relax, and the anal canal angle changes, opening it and allowing the passage of feces.

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Definition and Etiology

Individuals who present with a clinical condition of difficult evacuation are frequently labeled as being constipated although they may have a normal transit. As constipation is a poorly defined symptom, an international working group standardized its meaning creating a consensus document frequently referred to as the Rome Criteria. Using common symptoms described by the patients, this consensus usually requires two or more complaints for at least 12 months without the use of laxatives to qualify. According to the Rome IV criteria [3], functional constipation must include ≥ 2 of the following symptoms (refer also to Table 59.1):

1. Straining during >25% of defecations
2. Lumpy or hard stools in >25% of defecations
3. Sensation of incomplete evacuation >25% of the time
4. Sensation of anorectal obstruction/blockage >25% of the time
5. Manual maneuvers to facilitate defecation >25% of the time
6. Less than three bowel movements per week

Dyssynergic Defecation

Obstructed defecation as a result of a paradoxical contraction or inadequate relaxation of the pelvic floor muscles during attempted defecation and/or inadequate propulsive forces during attempted defecation can occur in up to 40% of all constipated patients [4]. This condition has been variously named dyssynergic defecation, anismus, or paradoxical contraction of the puborectalis. Patient complaints are dominated by a feeling of incomplete evacuation and excessive straining. Physiological testing in these patients shows pathological patterns in inappropriate contraction of the pelvic floor muscles or incomplete relaxation of the anal sphincter or a combination of both [5].

This functional obstructed defecation syndrome is clinically defined by either clinically observing nonrelaxation of the puborectalis or paradoxical contraction of the puborectalis at the anorectal junction during Valsalva or evacuation. This is best done clinically with a digital rectal examination [6]. Testing includes anorectal manometry and/or cinedefecography.

Dyssynergic defecation can be categorized into four types based on anorectal manometry (see Chap. 57). This utilizes the patient's ability to generate an adequate pushing force and the type of sphincter contraction.

Obstructed defecation symptoms may also be a consequence of a structural abnormality within the pelvis such as

Table 59.1 Physiological and imaging testing for obstructed defecation syndrome

Test	Purpose	Message
Anorectal manometry/ high-resolution anal manometry (HRAM)	Measurement of pressures in the anal canal Assessment of the rectoanal inhibitory reflex (RAIR), rectal sensitivity and compliance Assessment of anismus	Resting pressure = function of the internal anal sphincter Squeeze pressure = function of the external anal sphincter Loss of the reflex typically in Hirschsprung patients HRAM: Color differentiated waveform
Cinedefecography	Evaluation of the dynamic of evacuation after filling the rectum with a barium paste and the bowel with barium and/or the vagina with jelly	Evaluation of rectocele, enterocele, internal prolapse, perineal descent, anorectal angle
Echodefecography	Dynamic ultrasonography evaluation of the anal canal. Evaluation of rectocele, enterocele, internal prolapse, perineal descent after filling the rectum with ultrasound gel	Judgment of the integrity of sphincter muscles (defect?) Hypertrophy of the internal anal sphincter? Structural abnormalities
Colonic transit time study with radiopaque markers	Evaluation of the pattern of evacuation and demonstration of retention of the radiopaque markers	Diffuse spread of radiopaque markers typically for STC Collection of markers in the pelvis as sign for ODS
MR defecography	Functional judgment of the pelvic floor and the internal organs and their mobility	Structural substrate (e.g., rectocele) or only functional disorder (e.g., anismus)
EMG of the pelvic floor	Judgment of the motor unit potentials (MUP) Interference pattern	Loss or alteration or signs of denervation or reinnervation; Malfunction of muscle groups (e.g., anismus)
Pudendal nerve terminal motor latency (PNTML)	Function of the nerve supplying the pelvic floor	Useful for prognosis, if surgery is planned

a rectocele, enterocele, and sigmoidocele. In addition, internal and overt prolapse can lead to obstructive defecation symptoms.

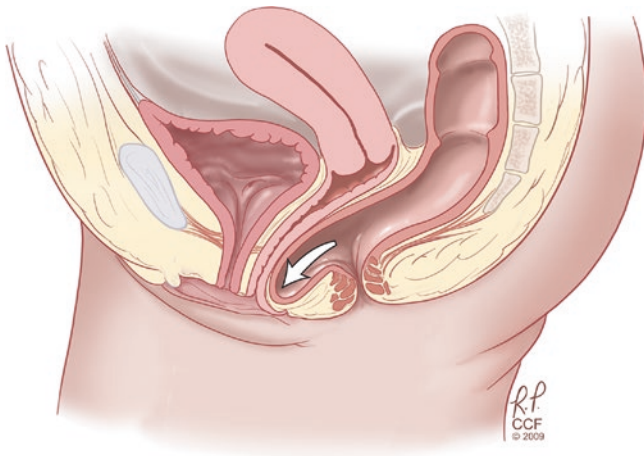


Fig. 59.1 Rectocele: Invagination of the anterior wall of the rectum into the vagina. (Reprinted with permission, Cleveland Clinic Center for Medical Art & Photography © 1999–2020. All Rights Reserved)

Rectocele

A rectocele is a herniation of the rectal wall typically into the vagina (Fig. 59.1). Risk factors for developing a rectocele are age, obesity, obstetric injury, and/or multiple vaginal deliveries. On cindefecography, a rectocele is a bulging of the rectal wall into the vagina. An observation regarding its size and whether the rectocele empties with defecation with or without digitation can help to guide treatment. Radiologically, rectoceles are graded as small (<2 cm), moderate (2–4 cm), and large (>4 cm) based on size [7]. Non-emptying or emptying with digitation are those that are considered for a surgical option based on symptoms.

Enterocele

On defecography, an enterocele is classified as presence of the small bowel between the rectum and vagina, reaching lower than the upper third of the vagina during the evacuation effort (Fig. 59.2). A first-degree enterocele lies above the pubococcygeal line. A second-degree enterocele is that which lies below the pubococcygeal line but above the ischiococcygeal line, and a third-degree enterocele lies below the ischiococcygeal line. Herniations of the peritoneal sac with other organs/structures contained can result in peritoneoceles, omentoceles, sigmoidoceles, and enteroceles. These can be graded as small (<3 cm), moderate (3–6 cm), and large (>6 cm) by measuring the largest distance between the pubococcygeal line and the most inferior point of the sac on cindefecography [7] or dynamic MRI.

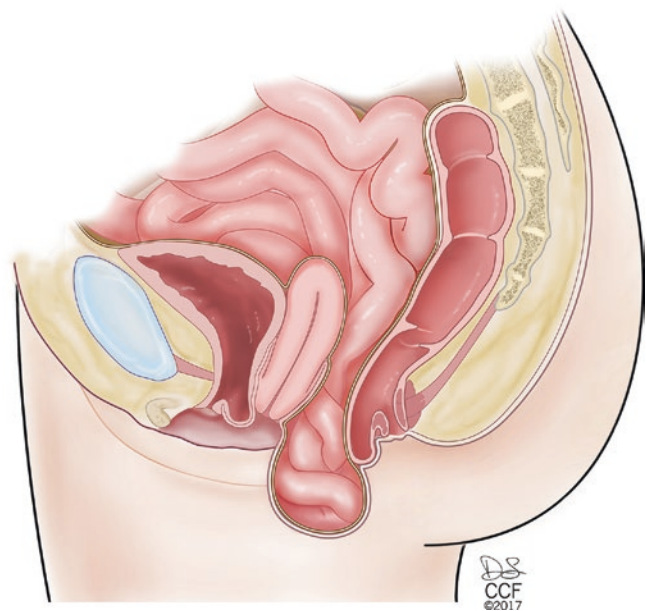


Fig. 59.2 Anatomical depiction of an enterocele. (Reprinted with permission, Cleveland Clinic Center for Medical Art & Photography © 1999–2020. All Rights Reserved)

Internal Prolapse

Internal or occult rectal prolapse or rectal intussusception is a funnel-shaped infolding of the rectal wall that occurs during defecation. This infolding does not protrude out the anus.

Rectal Prolapse

Rectal prolapse is a circumferential full-thickness intussusception of the rectal wall with protrusion beyond the anal canal.

Scoring Systems

The Constipation Severity Instrument (CSI) [8] is a tool consisting of 78 items which aims at identifying and quantifying different subtypes of constipation. Another scoring system worth mentioning is the obstructed defecation syndrome score (ODS) [9] which has been prospectively validated. To assess the quality of life of constipated patients, the Constipation-Related Quality of Life (CRQOL) is a statistically validated questionnaire [10]. For patients with symptoms of both the anterior and posterior pelvic compartments, the Pelvic Floor Distress Inventory (PFDI) utilizes a pelvic

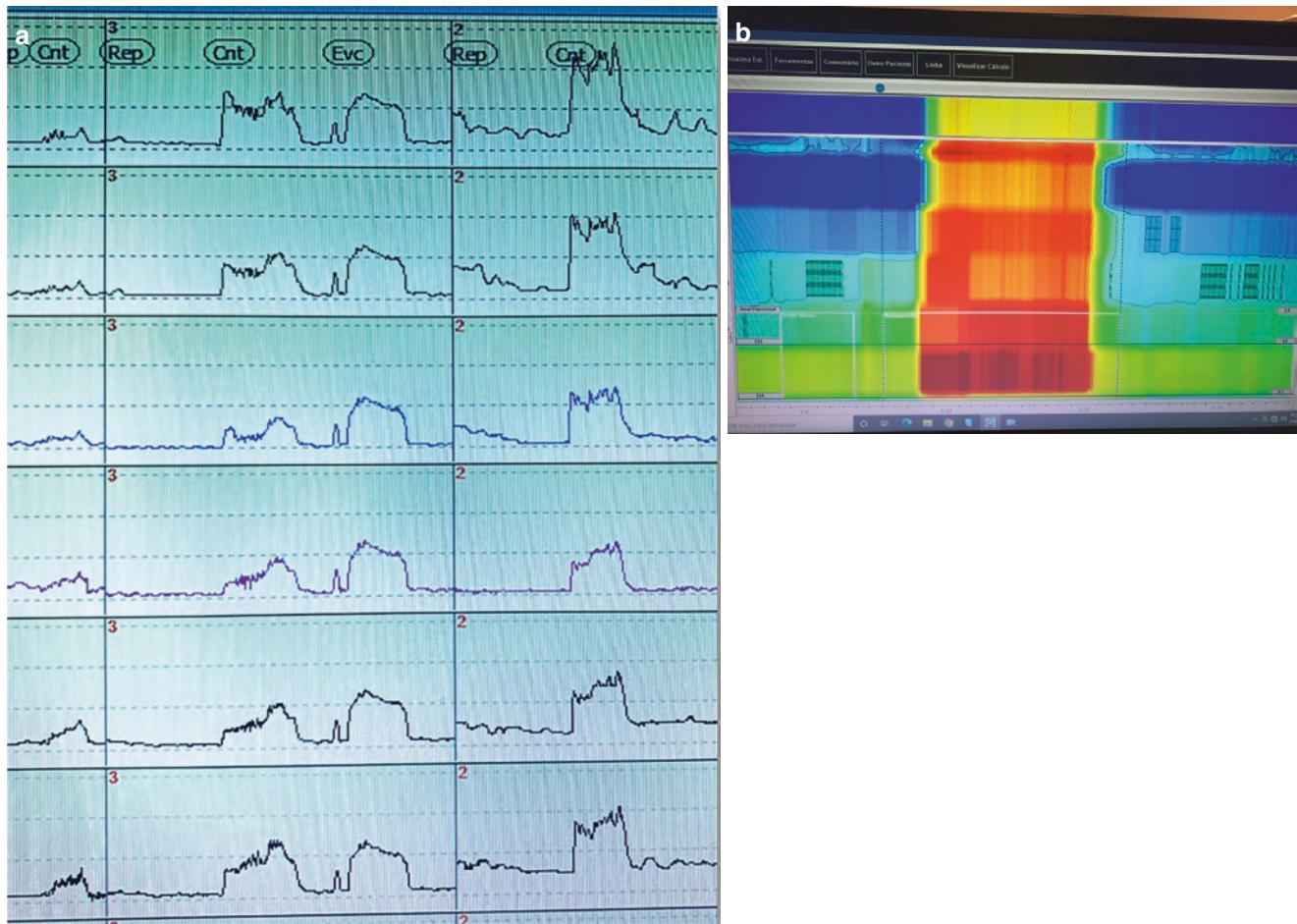


Fig. 59.3 (a) Water perfused anal manometry with patient simulating evacuation (bearing down) with non-relaxation of the puborectalis. (b) High-resolution manometry when patients bear down with non-relaxation of the puborectalis

organ prolapse score and a Colorectal-Anal Distress Inventory (CRADI) score [11].

It is essential to evaluate the number of evacuations, stool consistency, presence of mucus or blood in the stool, evacuation pain, sensation of incomplete evacuation, and the necessity of digital maneuvers to aid in defecation. It should be noted that most patients with dyssynergic defecation have greater difficulty evacuating soft stool. Detailed information about laxative and diet habits must also be obtained. Other bowel problems (e.g., irritable bowel syndrome, cancer, celiac, and diverticular disease) should be considered in patients that have symptoms such as abdominal pain particularly if located in the left lower quadrant. Abdominal bloating and recent altered bowel habits may also be related to other bowel disorders. Painful evacuation can be present in patients with anorectal inflammatory pathologies.

Physical exam should include the inspection of the anorectal area in order to exclude rectal tumors, anal stenosis, internal prolapse, thrombosed hemorrhoids, or anal fissures.

A complete proctologic exam may reveal the presence of melanosis coli (which indicates chronic abuse of laxatives), solitary rectal ulcer, rectal prolapse, descending perineal syndrome, and rectoceles. The presence of fecal impaction requires further investigation in the elderly and children.

Testing for Obstructed Defecation Syndrome

Although a medical history and physical examination may provide an adequate evaluation of patients with symptoms of obstructed defecation, anorectal physiology testing and imaging modalities may aid in defining functional situations from a structural abnormality. Testing may also be helpful in planning a surgical option [4, 8, 12–15]. Anorectal manometry (Fig. 59.3), static and dynamic endoanal ultrasound (Fig. 59.4), colonic transit study (Fig. 59.5), cinedefecography [7] (Fig. 59.6), and electromyography and pelvic MRI (Fig. 59.7) are commonly utilized tests (Table 59.1).

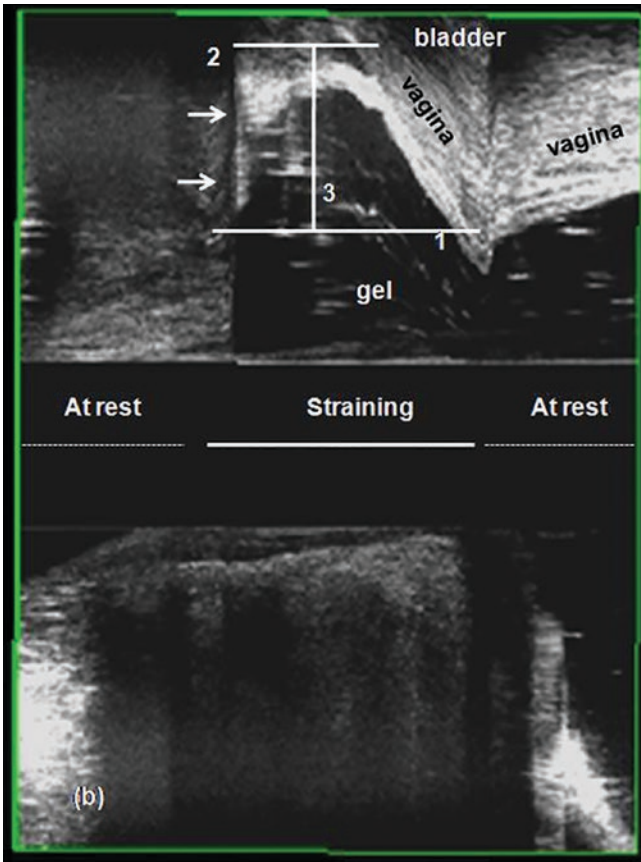


Fig. 59.4 Dynamic 360-degree endoanal ultrasound with ultrasound gel in the rectum showing an anterior rectocele



Fig. 59.5 Colonic transit study showing radiopaque markers in the rectum and rectosigmoid

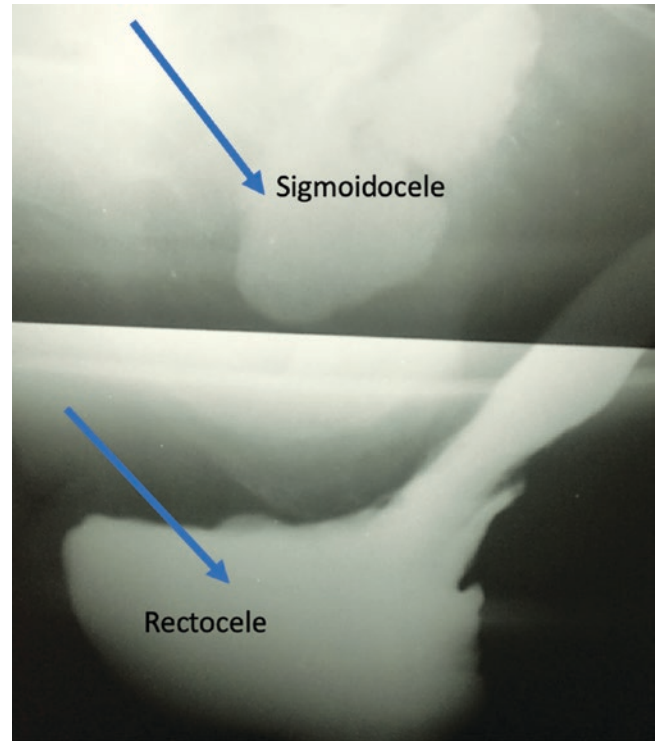


Fig. 59.6 Cinedefecography with barium paste showing a rectocele and sigmoidocele

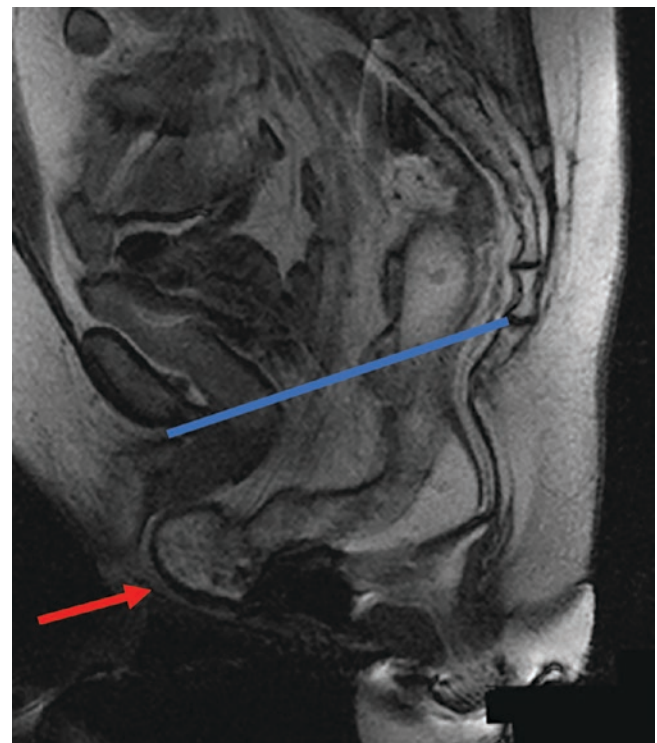


Fig. 59.7 Dynamic MRI in evacuation phase showing an enterocele (red arrow). There is herniation of small bowel loops in the middle compartment, between the bladder and vagina and rectum, due to rupture of the endopelvic fascia and the retovaginal septum. Blue line represents pubococcygeal line

Treatment of Obstructed Defecation

Treatment is individualized and based on a detailed history and physical with additional testing as needed. An algorithm is presented in Fig. 59.8 as a guide to possible therapy.

Treatment of Obstructed Defecation Syndrome Due to Puborectalis Pathology

A tight or dysfunctional puborectalis or levator ani muscle can give rise to dyssynergia leading to paradoxical contractions as described by the Rome IV criteria. The incidence is about 4.6% in patients without IBS [9]. These patients are diagnosed clinically and tested as described above. Many of these patients may have concurrent constipation and may need bowel management as part of their treatment. This is especially problematic as one may lead to the other; however both problems need to be addressed simultaneously for effective results.

An honest discussion with the patient, highlighting the etiology and allaying fears that patients may have, is the initial step. It is important to emphasize that this abnormal muscle contraction can be “unlearned.” The next step is physical therapy with a trained pelvic floor physical therapist. Often the patient returns to the referring physician, and when questioned it becomes apparent that the physical therapy was actually focused on Kegel exercises, which is the exact oppo-

site of the intended treatment; therefore, it is important to question the patient on what they actually did during physical therapy. In order to teach relaxation of the pelvic muscles, physical therapy may use sensory biofeedback, electrical stimulation, visual manometry, and simulated defecation techniques to aid the patient in understanding when their muscles are paradoxically contracting [10]. This should involve diaphragmatic breathing and relaxation for efficient relaxation. Patients should continue with physical therapy for multiple visits before considering this therapy a failure. In patients with no access to a trained physical therapist, home-based physical therapy may be offered [16]. If physical therapy is unsuccessful, the next available options are either injections of botulinum toxin A (BOTOX™) or electrogalvanic stimulation (EGS).

EGS is an office procedure where a rectal probe attached to an electrical stimulating device is inserted into the anal canal. The muscle is stimulated transanally at different current amplitudes using galvanic current as tolerated by the patient with an aim to fatigue the muscle. Multiple treatments are required to achieve the desired result [17]. Recommended treatment is three times a week for the first week, two times for the next week, and once a week for several weeks. Maintenance treatments as indicated are provided based on response to treatment and patient tolerance. Most studies have not shown a greater result of EGS over biofeedback, and this may be in part due to nonstandardization of the method of administration. At the Cleveland Clinic,

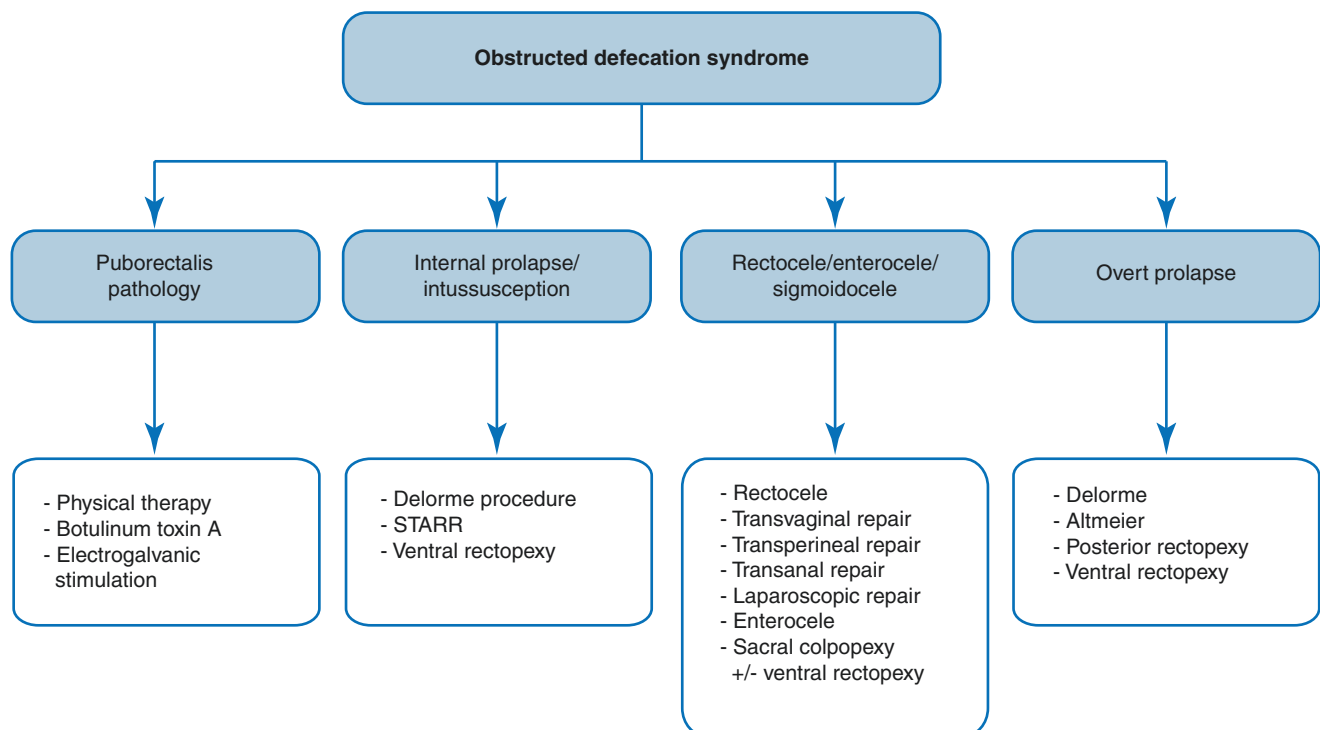


Fig. 59.8 Treatment algorithm for patients with obstructed defecation

EGS is administered over 1 hour and at the frequency described above with anecdotal good results in a selected population. The adverse effects of the treatment are increased pain, rectal irritation, and bleeding. EGS treatment results are varied and few centers offer this treatment.

Botulinum toxin A injections may be given to patients with refractory symptoms. Botulinum toxin A acts by binding to nerves which use acetylcholine. This blocks its release, so the nerve is not signaled to contract and leads to paralysis. The process is reversible and results in temporary paralysis of the muscle fibers. The injections are given under anesthesia followed by an aggressive anal massage [18]. Briefly, 200 units of botulinum toxin A is diluted in 6–7 cc of saline and loaded in six tuberculin syringes. The injections are carried out from the perineum with a finger in the rectum guiding the needle into the levator muscle. The mixture is injected posteriorly, posterior-laterally, laterally, and anterolaterally in the direction of the fibers of the levator muscle (Fig. 59.9). If digital examination reveals a tight internal anal sphincter, this may be included. However, if the internal sphincter is injected, the patient should be warned about temporary fecal incontinence.

Results of botulinum toxin A injections are varied. No consistent dose nor technique is used across various centers. We recommended to continue physical therapy while the

effects of botulinum toxin A are in effect. The injections may be repeated at 3-month intervals if good results are obtained. It is unclear if repeated injections dilute the effects over time.

Another treatment with uncertain results is a myomec-tomy of the puborectalis muscle. This technique has been described but not popularized [19].

Patients who fail all treatments may be offered fecal diversion as a last resort. Patients with both slow transit constipation and dyssynergia and have failed medical treatments are a challenging group to treat. They may be offered colectomy for slow transit constipation (possibly with an ileostomy) followed by treatment of dyssynergia after surgery.

Treatment of ODS Due to Internal Prolapse/ Rectal Intussusception

Internal intussusception may be clinically suspected and demonstrated on cinedefecography. The radiological results should be correlated with the clinical findings. Symptomatic patients may be offered surgery and many treatment options have been described. A decade ago stapled transanal rectal resection or the STARR procedure was popularized. Initially after acceptable results, the procedure has lost favor in the

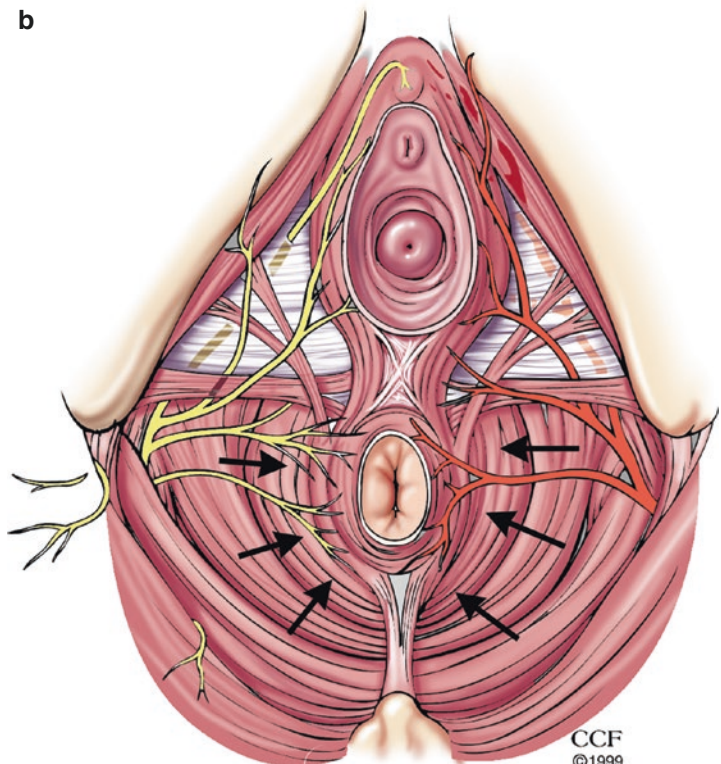


Fig. 59.9 (a) Injection technique of botulinum toxin A into the levator ani muscle. (b) Diagrammatic representation of the levator ani muscle with other pelvic floor muscle. Arrows indicate the sites of injection of

botulinum toxin A. (Reprinted with permission, Cleveland Clinic Center for Medical Art & Photography © 1999–2020. All Rights Reserved)

USA. Currently few centers offer it. Although results were good, it has been postulated that the positive effect is overestimated due to the variety of patient-reported outcome measures used to calculate ODS [20]. The procedure is still popular in some countries, and variations have been described and include using different stapling techniques like the Transtar™ [21, 22].

Ventral rectopexy has emerged as the newest technique to address symptomatic internal intussusception. Complications related to nonabsorbable mesh have been published [23]. Similar outcomes have been reported using absorbable/biodegradable mesh. The procedure will be discussed in detail in Chap. 60 which focuses on rectal prolapse.

Treatment of ODS Due to Overt Rectal Prolapse

The approach for surgical treatment of rectal prolapse is based on surgeon preference and patient characteristics. Based on this data, it is either a perineal or abdominal approach. Patients who have constipation associated with rectal prolapse may need further testing and further consideration of a sigmoid resection based on findings. The decision-making details and surgical procedures will be discussed in Chap. 60 (rectal prolapse).

Treatment of ODS Due to Rectocele/Enterocoele/Sigmoidocoele

Optimal therapy for ODS due to a rectocele, enterocele, or sigmoidocoele may involve a team approach which includes urogynecologists and colorectal surgeons. Diagnosis is based on a thorough history and physical examination. Further investigations with a cindefecography and anal physiology interpreted in a multidisciplinary manner guide therapy.

Rectoceles may be treated surgically when symptomatic, usually manifested by requiring vaginal support to aid defecation. Defecography may demonstrate that the rectocele does not empty. Rectoceles may be treated surgically via a laparoscopic, vaginal, transperineal, or transanal approach. Most of these patients may have associated urological/gynecologic issues which should be addressed at the same time.

Transanal repairs require an incision in the anterior wall of the rectum with excision of the mucosa over the rectocele

and plication of the rectovaginal septum. The mucosal defect is then closed (Fig. 59.10). Results show a 30–90 percent decrease in the symptoms; however there may be a recurrence of symptoms in about 48 months [24, 25]. Complications include dyspareunia, fecal incontinence, and rectovaginal fistulas.

The STARR procedure has been extensively studied as a treatment for rectoceles. The procedure is done under general anesthesia in the lithotomy position. It consists of full-thickness excision of the rectal wall using two staplers (PPH01) one used anteriorly and one posteriorly. Care should be taken to prevent drawing the vaginal wall in the purse string suture or including it in the staple line. Complications include bleeding, anastomotic leak, rectovaginal fistula, and rectal pain. In the short term good results were reported, but long-term data shows that recurrence of symptoms occurs in about 40% of patients [26]. Currently the STARR procedure is on the decline in Europe [27].

Repairs through the transperineal route have an advantage of not breaching the vaginal mucosa. This involves a transperineal incision with dissection up to the vaginal apex. The surgical procedure is a simple fascial repair from the apex to the perineum. The repair may be augmented using mesh although the use of synthetic mesh has been controversial.

The transvaginal route starts with a vaginal incision followed by separation of the vaginal mucosa from the fascia. Several fascial stitches close the rectocele. The repair may be augmented as in the transperineal repair with mesh. Excess mucosa is trimmed (Fig. 59.11). Recurrence rates are about 7.1% [28]. Complications include dyspareunia, bleeding, and wound infection. In a meta-analysis native tissue transvaginal repairs are preferentially recommended over other repairs [29].

Treatment of an Enterocoele/Sigmoidocoele

Enterocoeles and sigmoidocoeles are described as a pelvic floor herniation of the bowel into the pouch of Douglas. Treatment is not recommended on the basis of radiological diagnosis alone. Demonstration of an outlet obstruction along with a substantial hernia warrants surgical consideration. The treatment plan is usually made in conjunction with a urogynecologist. All pelvic surgical problems may be addressed at the same procedure. The preferred repair is a sacrocolpopexy using a monofilament nylon mesh (Fig. 59.12).

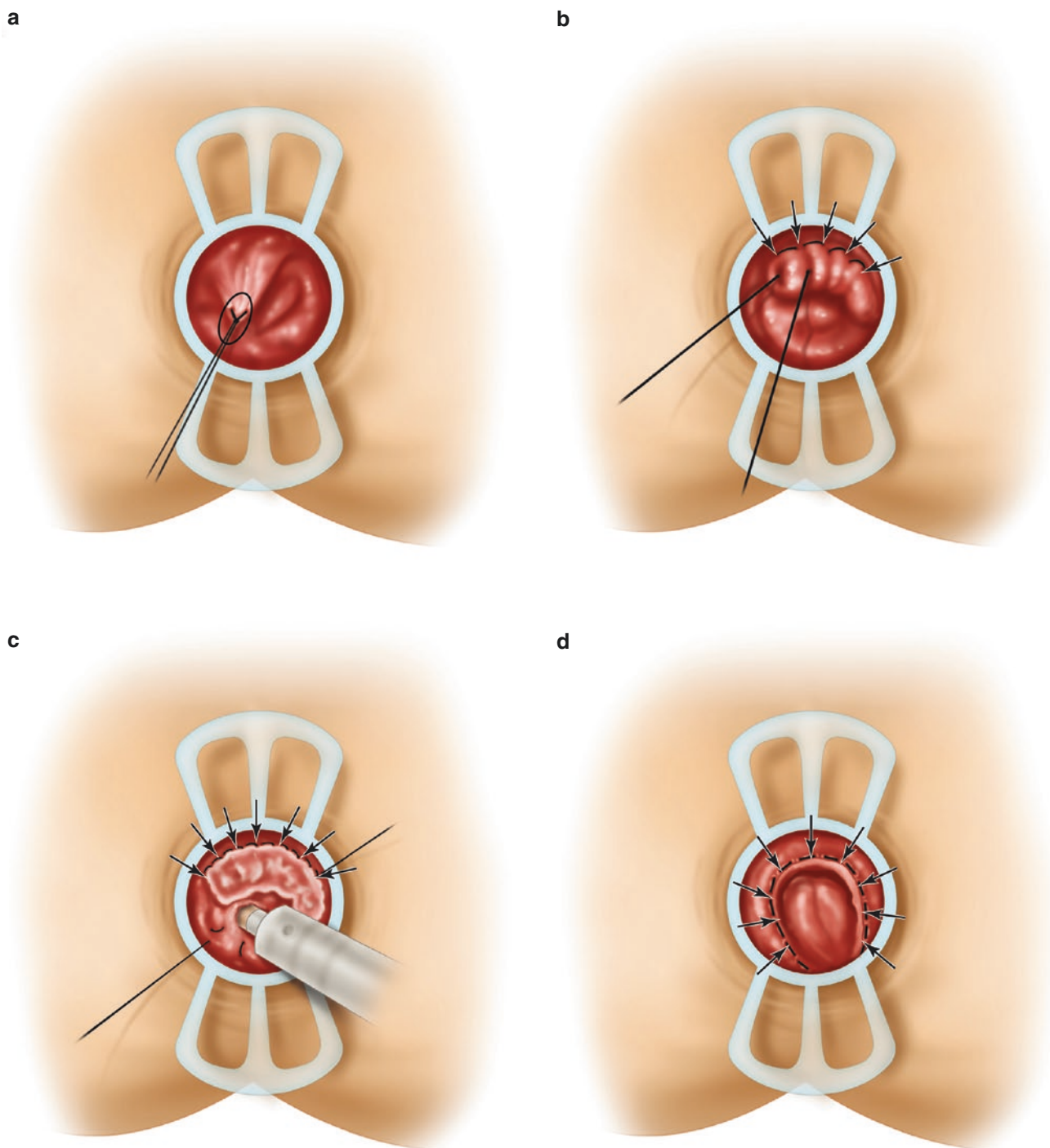


Fig. 59.10 Transanal rectocele repair and mucosectomy (with a circular stapler). (a) The apex of the rectocele is identified and pulled down through a stitch (circle). (b) A running horizontal suture is placed through the base of the rectocele (arrows). (c) The exceeded prolapsed

mucosa and the muscular layer were excised, keeping an opened wound with the edges joined by the previous manual suture (arrows). The purse-string suture is tied around the stapler's center rod. (d) The remaining stapled suture line (arrows). (From 3rd Edition ASCRS Textbook)

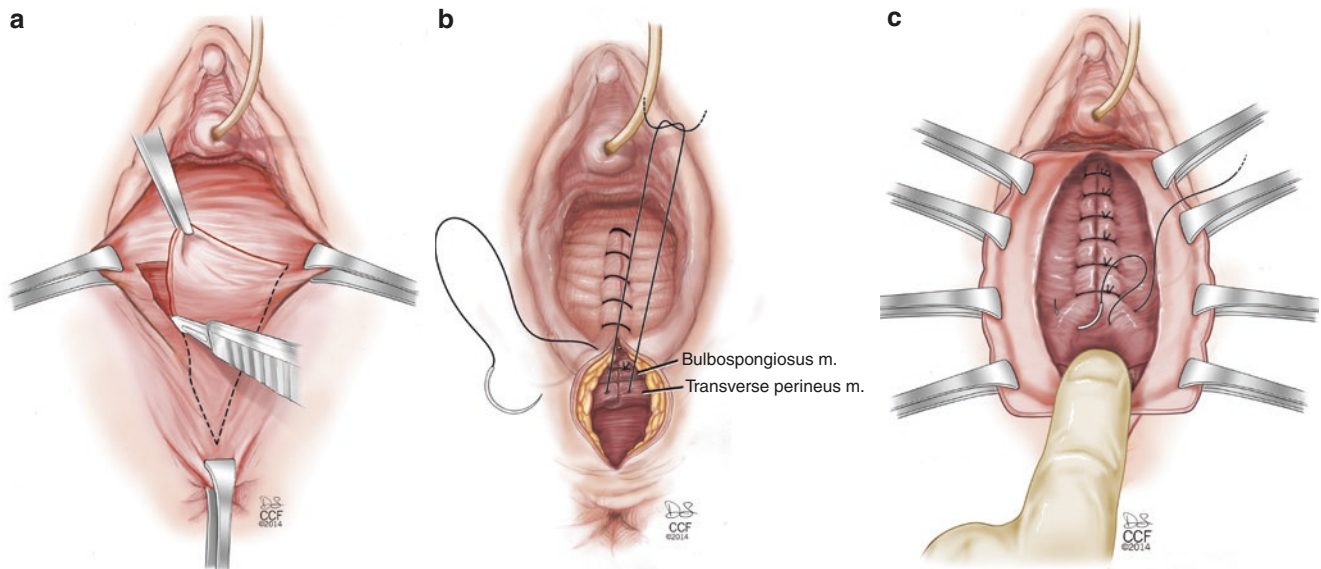


Fig. 59.11 Transvaginal rectocele repair. (a) Incision in the vagina. (b) Excision of redundant vaginal mucosa after dissection from fascia. (c) Plication of the rectovaginal fascia and transverse perineal and bulbospongiosus muscle and suture of the defect in layers

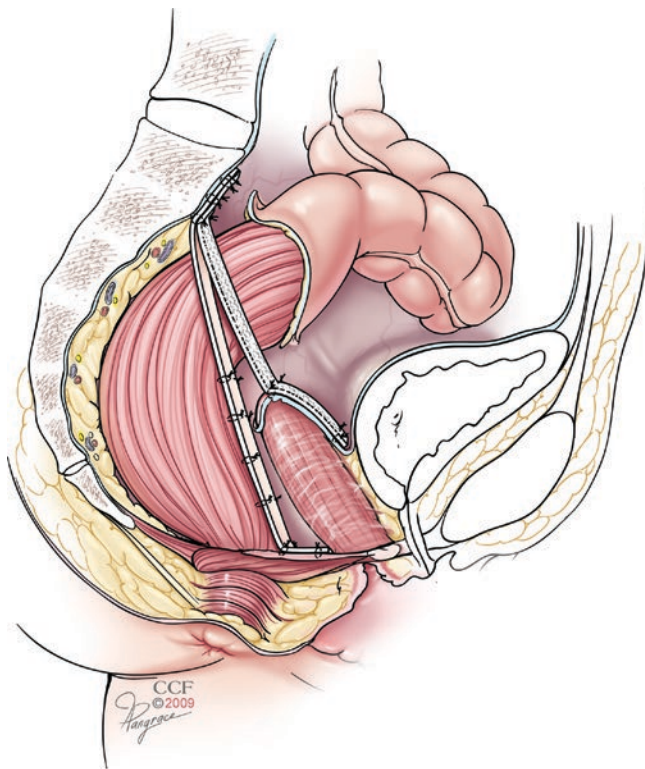


Fig. 59.12 Mesh placement in a sacrocolpopexy and ventral mesh rectopexy showing mesh placement in the pelvis from the vagina and rectum to the sacrum. (Reprinted with permission, Cleveland Clinic Center for Medical Art & Photography © 1999–2020. All Rights Reserved)

Conclusions

Patients who suffer from obstructed defecation are a special category of patients. Knowledge of normal pelvic anatomy and physiology are essential to make a clinical diagnosis. A detailed history and physical examination are essential. Testing should be complementary to aid in diagnosis or to plan a surgical option. Radiological evidence of mild structural abnormalities may not necessarily be associated with a successful surgical outcome. Recurrent symptoms after a surgical repair or complications may lead to patient dissatisfaction. Patient education and obtaining the patient's trust is an important aspect of treatment.

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