Treatment of Obstructed Defecation

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ABSTRACT

Obstructed defecation is a common problem that adversely affects the quality of life for many patients. Known causes of obstructed defecation include pelvic dyssynergy, rectocele, rectal intussusception, enterocele, pelvic organ prolapse, and overt rectal prolapse. Management of this condition requires an understanding of urinary, defecatory, and sexual function to achieve optimal outcomes. The goal of surgical treatment is to restore the various pelvic organs to their appropriate anatomic positions. However, there is a poor correlation between anatomic and functional results. It must be remembered that the pelvis contains many structures and that defects of pelvic support or function frequently affect other pelvic organs. Optimal outcomes can be achieved only by selecting appropriate treatment modalities that address all of the components of an individual patient's problem.

KEYWORDS: Rectocele, pelvic dyssynergy, biofeedback, enterocele, rectal prolapse

Objectives: Upon completion of this article, the reader should understand the evaluation and treatment of the causes of obstructive defecation including: (1) pelvic dyssynergy, (2) rectocele, (3) enterocele, (4) rectal intussusception, and (5) pelvic organ prolapse.

Obstructed defecation is a broad term used to describe the condition of patients with defecatory dysfunction and constipation. While patients frequently complain of constipation, a condition medically defined as less than three stools per week, they describe symptoms of an inability to initiate rectal emptying, incomplete evacuation, pelvic pressure, or excessive straining at stool.

Known causes of obstructed defecation include pelvic dyssynergy, rectocele, rectal intussusception, enterocele, pelvic organ prolapse, and overt rectal prolapse.

All of these conditions represent either a defect of pelvic support or abnormal function of the pelvic floor musculature. The etiology of these defects is controversial but definitely involves damage to the innervation and soft tissues of the pelvis as a direct consequence of vaginal childbirth.^{1,2} Direct trauma to the pelvic soft tissues can result in endopelvic fascial and pelvic support defects.^{3,4} The structural and biochemical integrity of

the collagen affects the strength of the pelvic connective tissues, and many reports have correlated changes in collagen subtype and content with presence of these defects.⁵⁻⁷ Traumatic damage to the pelvic support system does not produce immediate symptoms, suggesting that other factors are important. Cumulative nerve damage from childbirth and conditions that cause chronic and repetitive increases in intra-abdominal pressure, such as obesity and chronic cough, have been suggested to play a role in the development of symptomatic defects.⁵ The etiology of these defects has therapeutic implications. Repair with native tissues may not be the best alternative if defects of collagen integrity are suspected, suggesting a need for prosthetic materials. Likewise, repair of these defects may not achieve the desired results in the patient with a significant, associated neurologic injury.

It would seem reasonable to believe that correction of the pelvic organ prolapse by either resection of

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the prolapsed organs or repair of the defects of pelvic support by shortening redundant tissue or using prosthetic materials and retraining the pelvic floor using biofeedback techniques to correct musculature discoordination would result in excellent outcomes. However, evaluation of these patients not uncommonly reveals that although a satisfactory anatomic result has been achieved, the patient complains of persistent symptoms. Equally often, patients report a marked improvement in symptoms despite a less than ideal anatomic result from surgery.

It must be remembered that the pelvis contains organs other than the rectum and that defects of pelvic floor support or function frequently affect the other pelvic organs and can also lead to symptomatic vaginal vault or uterine prolapse, cystocele, or urethrocele. The incidence of these problems is unknown, but 11% of women have an operative procedure for a defect of pelvic support before age 80 years.⁸

PELVIC DYSSYNERGY

During defecation, the puborectalis sling muscle and the external anal sphincter should relax and permit defecation. However, some chronically constipated patients fail to coordinate the relaxation of these muscles appropriately with the result of obstructed defecation. It is estimated that 25% to 50% of patients with constipation or obstructed defecation have a pelvic floor dyssynergy type of outlet obstruction.⁹⁻¹² This muscular discoordination affects all the pelvic musculature and is an equally common cause of urinary complaints. The concept of pelvic floor dyssynergy encompasses many diagnoses including anismus, spastic pelvic floor syndrome, and paradoxical puborectalis contraction. Anal electromyography (EMG) and balloon expulsion test are arguably the best modalities for the diagnosis of pelvic dyssynergy.¹³ Defecography is reported to be too sensitive and can lead to a false-positive diagnosis but does have the advantage of evaluating any coexistent pelvic pathology.¹⁴

Pelvic dyssynergy is present in 60% of patients with a rectocele and has been proposed as the cause of this condition. Rectal intussusception and descending perineum syndrome are also frequently associated with this problem.¹⁵

Biofeedback

Biofeedback is a technique that is frequently used as first-line therapy to manage the pelvic floor dyssynergy type of constipation.¹⁶⁻¹⁸ Attempts to draw conclusions about the usefulness of biofeedback for the treatment of constipation related to pelvic floor dyssynergy are difficult given the lack of adequately controlled trials of sufficient sample size to demonstrate the effectiveness

of biofeedback. There is controversy over the criteria that should be used to select patients for biofeedback and the testing that should be performed prior to treatment. In addition, there is no consensus regarding the technique for conducting biofeedback teaching, the number of sessions needed, or which components of treatment are most effective. How to assess the outcome of treatment and the long-term efficacy of biofeedback are also debated.

One large retrospective study found that neither the patients' characteristics of age, gender, duration of symptoms, and rectal pain nor the physiologic parameters of anal resting pressures, sensory threshold, and rectal capacity correlated with the outcome of biofeedback therapy.¹⁹ Likewise, this study and others reported that the anatomic findings of a rectocele, rectal intussusception, or pelvic floor descent were not associated with the results after biofeedback.^{15,19} In these studies, the only predictor of a successful outcome was the patient attending five or more treatment sessions with the therapist discharging the patient, a 63% success rate, compared with a 25% success rate if the treatment was discontinued by the patient prematurely.¹⁹ Functional testing by balloon expulsion or with colonic transit studies is also not predictive of the treatment outcome with biofeedback.^{20,21} Given these results, it has been suggested that pretreatment physiologic, anatomic, or functional testing is not useful for selecting patients for biofeedback.²²

Biofeedback training for constipation resulting from pelvic dyssynergy attempts to coordinate pelvic floor muscle relaxation with a downward intra-abdominal propulsive force. Techniques of biofeedback fall into two categories, depending on whether EMG or an intra-rectal pressure monitor is used to assess pelvic floor muscle relaxation. Although EMG is more commonly used, there are no studies with sufficient power to compare the two techniques reliably. A recent meta-analysis addressed this issue with the findings that the outcomes of studies using intrarectal pressure-monitored biofeedback were superior to those of studies using EMG-monitored biofeedback.²³ A comparison of intra-anal and perianal EMG monitoring showed no differences in the outcomes between the two methods.²³

Anxiety and psychological distress are definitely associated with pelvic floor dyssynergy, although there is debate whether the psychopathology is a cause²⁴⁻²⁶ or a consequence²⁷ of the condition. Whichever is true, establishing an effective psychotherapeutic relationship may be necessary to achieve the best outcomes with biofeedback. The quality of the therapeutic relationship between the patient and the biofeedback therapist certainly improves motivation and outcomes to the degree that "the success of biofeedback training depends on the skill of the trainer/therapist."^{28,29}

Table 1 Results of Biofeedback for the Treatment of Constipation

Study	Number of Patients	Success Rate (%)
McKee et al ³⁰	30	30
Rhee et al ³¹	45	69
Karlbom et al ³²	28	43
Rao et al ³³	25	92
Patankar et al ³⁴	86	73
Glia et al ³⁵	26	90
Ho et al ³⁶	62	90
Koutsomanis et al ²⁸	60	69

With the differences in the techniques of biofeedback, the selection criteria for patients, and the varying lengths of follow-up, the success rates of biofeedback for the treatment of pelvic dyssynergy are reported to be 30% to 92% (Table 1^{28,30-36}). Despite the paucity of well-controlled trials of sufficient power to make firm recommendations and the wide range of reported results, given the low incidence of adverse effects associated with biofeedback therapy, it would seem reasonable to select biofeedback as the initial therapy for patients with outlet obstruction associated with pelvic floor dyssynergy.

Botulinum Toxin

Patients in whom an adequate trial of dietary management and biofeedback fails can be considered for injection of botulinum toxin into the puborectalis muscle and external anal sphincter. Of patients treated this way, 75% improve, although the benefit is short term, ranging from 1 to 3 months in most patients.^{37,38} The most significant side effect was transient fecal incontinence, which occurred in 25% and also resolved in 1 to 3 months. Given the expense of the botulinum toxin and the short duration of benefit, this regimen should probably be used only for the very symptomatic patient in whom all else has failed.

Surgery

Surgical division of the puborectalis muscle in the posterior midline has been utilized for patients with intractable pelvic dyssynergy who are debilitated by their symptoms. With one exception,³⁹ the results have been disappointing, with very few patients obtaining any benefit from the procedure.^{40,41} The current opinion is that there is little, if any, role for this procedure.

RECTOCELE

A rectocele is a herniation of the anterior rectal wall into the posterior vagina. The true incidence of this anomaly

and its pathogenesis are debated, as are the indications and techniques for surgical repair. Anatomically, the most common defect is a transverse separation of the fibers of the rectovaginal fascia occurring just proximal to the attachments to the perineal body. This defect may or may not be associated with disruption of the soft tissues of the perineal body resulting from obstetric trauma.⁴²

The symptoms associated with a rectocele are listed in Table 2.⁴³⁻⁵⁰ Fecal incontinence is not a symptom that most associate with rectoceles, although it is not infrequently present. The etiology is debated, but it may be the result of a synchronous defect of the external anal sphincter. Traction pudendal neuropathy from long-standing, excessive straining to defecate has also been proposed as a cause, as has an overflow-type mechanism resulting from the filling of a large rectocele.^{49,50}

The clinical diagnosis is made by physical examination. During the examination it is important to evaluate for the possibility of a coexistent enterocele or prolapse of other pelvic organs. Defecography is the usual means to assess a rectocele objectively with the size and ability to empty the rectocele being measured. Defecography can also be used to investigate the possibility of pelvic dyssynergy or rectal intussusception. If opacification of the vagina, bladder, and small bowel is utilized, defecography is useful to assess for an enterocele or prolapse of other pelvic organs. Most studies however, have failed to show any clear association between either the depth of the rectocele or the completeness of emptying and the clinical symptoms or outcomes following surgical repair.⁵¹⁻⁵³

The initial management of a symptomatic rectocele is dietary, with adequate fluid and fiber intake. Biofeedback can be considered, if available, for bowel retraining and treatment of the associated pelvic dyssynergy that is present in 60% of patients.^{15,54} If these fail, most surgeons recommend operative repair. Specific selection criteria for the surgical repair of a rectocele are debated. Surgical repair has been recommended when the rectocele is greater than 3 cm in depth, if there is significant barium trapping on defecography, or if digital assistance of defecation is frequently necessary for satisfactory emptying.^{55,56} However, multiple studies have shown no correlation between the size of a rectocele or the extent of barium trapping and the degree of

Table 2 Symptoms Associated with Rectoceles

Symptom	Prevalence (%)
Obstructed defecation ^{43,44}	75-100
Manual assistance of defecation ^{45,46}	20-75
Rectal pain ^{47,48}	12-70
Rectal bleeding ^{47,48}	20-60
Incontinence ^{49,50}	10-30

Table 3 Results of Transvaginal Defect-Specific Rectocele Repair

Study	Number of Patients	Improvement (%)			Dyspareunia (%)
		Evacuatory Difficulty	Digital Assistance	Constipation	
Glavind and Madsen ⁶³	67	63	NS	NS	18
Kenton et al ⁶⁴	66	41	42	37	36
Porter et al ⁶⁵	125	28	43	17	37
Cundiff et al ⁶⁶	69	NS	37	66	27

NS, not stated.

symptoms or outcome of rectocele repair.^{52,57} Likewise, the preoperative need for digital assistance for defecation is not predictive of a good result after surgical intervention.⁵⁴ Pelvic dyssynergy has been suggested as a causative factor in the formation of a rectocele¹⁵ and to be associated with a poor result from surgery,⁵⁶⁻⁵⁸ although others would disagree.^{59,60} All would agree, however, that delayed colonic transit or the long-term use of laxatives or stimulants is predictive of a less favorable outcome following rectocele repair.^{54,56,60} Once the decision for surgery has been made, rectoceles can be approached by a transvaginal, a transrectal, or a transperineal approach.

Transvaginal Repairs

The traditional technique for transvaginal rectocele repair involves a posterior colporrhaphy with vaginal mucosectomy, anterior levator plication, and repair of any soft tissue defects of the perineal body. The procedure involves the excision of a diamond-shaped piece of vaginal mucosa and perineal skin from the posterior vaginal wall. Dissection is performed through this defect to free the puborectalis and transverse perineal muscles from the overlying vagina and perineum. The rectovaginal fascial defect is plicated longitudinally with the repair continuing onto the perineal body, where the puborectalis and perineal muscles are also reapproximated. Excess vaginal tissue is excised and the vaginal wound is closed.⁶¹ This technique is a nonanatomic longitudinal repair of a transverse defect but is successful in preventing vaginal bulging in 80% and corrects the need for digital assistance of defecation in 67%.^{54,62} Others have reported less favorable clinical results, with an incidence of failure to relieve evacuatory difficulty and lower rectal symptoms of 33%. Postoperative dyspareunia is present in 25% of patients, and 10% develop a recurrent clinical rectocele requiring reoperation.^{47,62}

Recently, the concept of anatomic "defect-specific" transvaginal repair of rectoceles has been advocated. In this procedure, an incision is made in the posterior vaginal wall with dissection carried out through this defect to identify the edges of the rectovaginal fascial

defect, which is then closed transversely. Any associated defects in the soft tissues of the perineal body are also repaired. Excess vaginal tissue is excised and the wound closed.⁴² Although long-term results are not available, over the short term this technique seems encouraging (Table 3). This procedure seems to have a very low incidence of recurrent clinical rectocele or a postoperative need for digital assistance of defecation, and the symptom of constipation is improved in over 80% of patients.⁶²⁻⁶⁶ However, 25% of patients complain of postoperative dyspareunia and 36% report a problem with fecal incontinence.⁶⁵⁻⁶⁸

Transvaginal approaches do have the advantage of providing adequate access for the repair of coexistent enteroceles, cystoceles, and apical vaginal vault prolapse. Vaginal hysterectomy can also be performed if necessary for uterine prolapse or other problems. Transvaginal rectocele repair has been recommended as the procedure of choice in these situations.⁶⁹

Transrectal Repair

Although transrectal repairs of rectoceles were described in the mid-1960s, the poor results in terms of bowel and sexual function of the transvaginal repairs led to the rediscovery and popularity of these techniques in the 1980s.^{45,48,70} As with the transvaginal approach, there is no consensus on the method of transrectal repair and the absence of studies directly comparing the various techniques precludes reaching any definite conclusions. Randomized studies comparing transvaginal with transrectal rectocele repair have found the incidence of postoperative dyspareunia to be significantly less with the latter technique.^{47,71} Another benefit of transanal repair is the ability to address the coexistent anorectal pathology that is present in 80% of patients. Hemorrhoids, anterior mucosal prolapse, and fissures are the most frequently encountered anorectal conditions associated with rectoceles.⁷²

The transrectal, anatomic, defect-specific rectocele repair was described by Sullivan et al⁷³ and is the most widely used method. The technique involves the elevation of mucosal flaps over the lax rectocele with transverse closure of the defect by an interrupted

plication of the muscularis anteriorly akin to Delorme's procedure for rectal prolapse. Excess mucosa and submucosa are then trimmed and the mucosal defect is closed.⁷⁴ This method results in a relative foreshortening of the anal canal with diminished internal sphincter function and resting anal pressures, leading some to conclude that this procedure is contraindicated in patients with combined fecal incontinence and rectocele.⁷⁵

A nonanatomic repair is a technique used by many. This technique also begins with the elevation of mucosal flaps over the lax rectocele, but the defect is repaired longitudinally by approximating the musculo-fascial edges of the defect. Again, excess mucosa and submucosa are trimmed and the mucosal defect is closed.^{45,48} This repair tends to be under tension resulting in a greater risk of sepsis and separation of the wound⁷⁶ but does lengthen the anal canal,⁷⁷ which may address the potential for worsening of fecal incontinence with the anatomic repair.

The results with either of these techniques are variable but generally acceptable (Table 4^{49,50,55,75,78,79}). Most of the differences in results seem to be related to selection of patients, with the studies having more strict selection criteria reporting better results than those with less stringent criteria.

A third technique is not currently performed as frequently as the others. This method uses an obliterative suture to incorporate the redundant mucosa and submucosa of small rectoceles where the anterior prolapse does not extend distally beyond the dentate line or proximally for more than 5 cm.⁸⁰ This procedure does not require the development of mucosal flaps but does have the potential for soft tissue necrosis and sepsis.⁶⁹ This technique may be best used in patients with relatively asymptomatic rectoceles and good sphincter function.⁵⁰

Although the resection of rectoceles using endo-anal linear staplers has been reported,⁸¹ this methodology has not been widely used. There has been a resurgence of interest in this technique with the development of endoanal staplers specifically for this purpose. Initial results with the stapled rectocele repair are encouraging in terms of evacuatory improvement, but

currently there are no studies comparing it with the other methods, nor are long-term outcomes known.^{82,83}

Transperineal Repair

There are only limited data regarding the use and outcome of transperineal surgery for rectoceles, although the technique has been recommended in combination with a conventional sphincteroplasty or levatorplasty or both for the patient with a symptomatic rectocele and incontinence secondary to a sphincter defect.⁶⁹ Short-term results of this combined procedure show an improvement in evacuation and continence in 75% of patients.⁵⁰ The transperineal insertion of a prosthetic mesh for the anatomic restoration of a disrupted recto-vaginal septum has been described with a significant reduction in the need for digital assistance of defecation and in the size and amount of barium retained in rectoceles.⁸⁴ Controlled clinical trials of this technique need to be performed before the role of this procedure in the management of rectoceles can be determined.

RECTAL INTUSSUSCEPTION

In the past, rectal intussusception, also called internal procidentia and incomplete or occult rectal prolapse, was considered to be a preliminary stage in the development of complete or overt rectal prolapse and one of the principal causes of obstructed defecation.⁸⁵ Subsequent investigation has shown that occult rectal prolapse progresses to overt rectal prolapse in only 2% of patients⁸⁶ and that some degree of intussusception of the recto-sigmoid and upper rectum into the lower rectum is a finding that is noted on defecography in approximately a third of asymptomatic volunteers.^{87,88}

Fifty percent of patients with rectal intussusception, in addition to the usual symptoms associated with obstructed defecation, evacuatory difficulty, a feeling of incomplete emptying, pelvic pain and pressure, and rectal bleeding, complain of fecal incontinence.^{89,90} Possible mechanisms for this include an occult defect of the external anal sphincter or a traction pudendal neuropathy resulting from long-standing, excessive

Table 4 Results of Transanal Rectocele Repair

Study	Number of Patients	Improvement (%)			Incontinence (%)
		Evacuatory Difficulty	Digital Assistance	Constipation	
Ayabaca et al ⁵⁰	60	NS	NS*	62	14
van Dam et al ⁴⁹	89	71	100	48	18
Jansen et al ⁷⁸	76	NS	NS	71	19
van Laarhoven et al ⁷⁹	26	47	54	NS	NS
Ho et al ⁷⁵	21	84	100	NS	0
Murthy et al ⁵⁵	33	NS	NS	58	27

*NS, not stated.

straining to defecate.⁹¹ An overflow incontinence type of mechanism in which distention of the lower rectum by the intussusceptum activates the rectoanal inhibitory reflex resulting in relaxation of the internal anal sphincter has also been proposed.⁹²

Although not all would agree,⁹³ it has been suggested that surgical repair of a rectal intussusception is beneficial in patients with associated incontinence.⁹⁰ Significant improvement in the continence score has been reported in 38% to 55% of incontinent patients who underwent surgical repair of an associated rectal intussusception.^{90,93}

Proctoscopic examination of patients with an occult rectal prolapse may reveal hyperemia and edema of the anterior rectal wall, colitis cystica profunda, or a solitary rectal ulcer in 49% of patients.⁹⁴ Solitary rectal ulcer syndrome is a difficult clinical problem that is associated with obstructed defecation. Defecography demonstrates internal rectal prolapse in 45% to 63% and pelvic dyssynergy in 7% to 26% of these patients.⁹⁵⁻⁹⁷ The results of dietary measures and pelvic floor retraining using biofeedback are less likely to be successful in patients having a solitary rectal ulcer, with healing of the ulcer reported to occur in 20% and a recurrence rate of 30%.^{98,99} Also, despite healing of the ulcer, symptoms persist in 29%.⁹⁸ Surgical management of solitary rectal ulcers associated with rectal intussusception seems to have much better results with ulcer healing and symptom resolution in 74% to 100% and may be the treatment of choice.^{89,100}

Initial studies reported significant improvement in the symptoms of obstructed defecation with the surgical repair of an associated internal rectal prolapse,^{85,101} but subsequent studies have had disappointing results with complete resolution of symptoms in ~20% of patients and worsening of the symptoms in 33% to 48%.^{93,102-104}

Currently, most would agree that rectal intussusception is more a consequence of excessive straining to defecate than a cause and that pelvic floor retraining using biofeedback is a reasonable initial therapy with symptomatic improvement reported in 20% to 90% of patients as already discussed. Surgical therapy is considered only for those with an incomplete rectal prolapse that extends distal to the puborectalis sling and is associated with either fecal incontinence or a solitary rectal ulcer.^{89,90,100,103,105} Surgical repair of a rectal intussusception associated with severe, intractable symptoms of obstructed defecation alone should be considered only as a last resort, if at all.

Surgery

As with overt rectal prolapse, abdominal and perineal approaches have been used to manage rectal intussusception with inconsistent results. The paucity of good

comparative studies precludes definite recommendations about the optimal approach. It would seem that for patients with an incomplete rectal prolapse associated with intractable symptoms of obstructed defecation, the few good results following surgery have occurred after a Delorme procedure.¹⁰¹

Abdominal approaches with either a suture rectopexy or an Ivalon wrap procedure have been most commonly reported for repair of rectal intussusception associated with incontinence or a solitary rectal ulcer with results as described earlier.^{89,90,100}

ENTEROCELE

An enterocele is a herniation of the peritoneal cavity between the uterosacral ligaments at the apex of the vagina that extends distally in the rectovaginal septum separating the rectum from the vagina.¹⁰⁶ The herniated peritoneal sac usually contains small intestine, an enterocele, but may contain the sigmoid colon, a sigmoidocele. Although an enterocele may be present alone, the majority are associated with a rectocele, prolapse of other pelvic organs, and/or abnormal descent of the pelvic floor.^{107,108}

The incidence of symptomatic enteroceles is unknown but is probably ~18% to 42%.¹⁰⁷ They are most common in multiparous women older than 65 and those who have had a hysterectomy.¹⁰⁶ Symptoms of enteroceles are reported to include obstructed defecation with a false sense of the need to defecate and evacuatory difficulty, pelvic pressure, lower abdominal and back pain, and fecal incontinence.¹⁰⁹ However, given the usual coexistence with other abnormalities of pelvic support,¹⁰⁷ it is difficult to be certain which symptoms are actually attributable to the enterocele. Rarely, an enterocele may cause ulceration of the vaginal mucosa and progress to perforation with evisceration.

Although physical examination may suggest an enterocele, it is frequently difficult to distinguish from a rectocele or vaginal vault prolapse. Most enteroceles are found at colpocystodefecography or dynamic magnetic resonance imaging (MRI) for evaluation of other pelvic floor conditions. Colpocystodefecography, however, is reported to be too sensitive and can lead to a false-positive diagnosis but does have the advantage of evaluating coexistent pelvic pathology.¹⁴ Dynamic MRI is more specific but not as readily available.¹¹⁰

Enteroceles are classified according to their etiology. Congenital enteroceles do occur but are rare, resulting from abnormal development of the rectovaginal septum, and represent less than 1% of enteroceles. Acquired enteroceles result from pelvic surgery, most commonly a bladder neck suspension^{111,112} or a hysterectomy,^{113,114} and account for about one fourth of enteroceles. The majority of enteroceles are created when the pelvic cul-de-sac is pulled down by a

prolapsing pelvic organ, usually the rectum or uterus. These are considered to be traction enteroceles.¹¹³

Treatment of an enterocele should be considered when it is symptomatic or there is evidence of rectal or vaginal ulceration. As with other pelvic floor conditions, the initial therapy is dietary and lifestyle modification with adequate fluid and fiber intake and the avoidance of straining. Biofeedback may also be helpful. Surgical repair of an enterocele is indicated rarely for intractable symptoms or rectal or vaginal ulceration. More commonly, surgical repair is performed prophylactically at the time of hysterectomy or in conjunction with the treatment of coexistent pelvic floor pathology, particularly rectal or vaginal vault prolapse.¹⁰⁹

The goal of enterocele repair is excision or obliteration of the peritoneal sac with approximation of the uterosacral ligaments in the midline.^{108,109,115} This is accomplished by placing sequential purse-string sutures in the peritoneal cul-de-sac with care taken to avoid ureteral injury. This obliteration of the enterocele sac can be accomplished in conjunction with an abdominal procedure for coexistent pathology or, more commonly, by a vaginal approach at the time of hysterectomy or cystocele or rectocele repair. There is only one report directly comparing transvaginal with transabdominal techniques.¹¹⁶ Reviewing this and other published reports, there seems to be less morbidity with the vaginal approaches compared with transabdominal repairs, but relapse rates are increased and dyspareunia related to vaginal shortening and decreased vaginal capacity occurs in 20% of patients.^{109,117,118}

Both transvaginal and transabdominal repairs yield excellent anatomic results with successful obliteration of the defect in over 80% of women.^{108,117,118} Determining functional outcomes is more problematic because the vast majority of enteroceles are associated with other pelvic floor pathology, especially vaginal vault or rectal prolapse. Although rectopexy and vaginal vault suspension are reported to be effective for the treatment of symptomatic enterocele,^{108,119,120} it is unclear whether the reported benefit is related to the repair of the enterocele or correction of the coexistent pathology. Despite the lack of evidence of improved outcomes with enterocele repair, given the low risk of complications with these procedures, it would seem reasonable to repair these defects at the time of surgery to correct other defects of pelvic floor support.

TOTAL PELVIC ORGAN PROLAPSE

Although the incidence is not known, prolapse of all the pelvic organs does occur. The management of the genitourinary prolapse associated with this condition is outside the scope of this article, and the discussion is limited to the posterior components of the syndrome. Suffice it to say that the management of this condition

does require an understanding of urinary, defecatory, and sexual function to achieve optimal outcomes.

The posterior components of this entity include rectocele, enterocele, and rectal intussusception or overt rectal prolapse, frequently in combination with pelvic dyssynergy. Although these problems have already been discussed individually, they are usually more severe when combined in total pelvic organ prolapse. Symptoms attributed to total pelvic organ prolapse include obstructed defecation, pelvic pain and pressure, and incontinence as described for the individual problems plus the genitourinary symptoms of urinary incontinence and incomplete emptying of the bladder. Physical examination may reveal prolapse of multiple pelvic organs, excessive perineal descent, and other findings such as a solitary rectal ulcer, also as already described for the individual components. Although it is very sensitive and may lead to a false-positive diagnosis, colpocystodefecography is useful to evaluate the full anatomic extent of the problem. A component of this syndrome that has not yet been discussed is abnormal perineal descent. The descending perineum syndrome is defined on defecography as descent of the anorectal junction below a line drawn from the lower border of the pubic symphysis to the tip of the coccyx during defecation.¹²¹ Abnormal perineal descent is a result of long-standing, excessive straining to defecate.^{1,122} Dynamic MRI, EMG, and urodynamic studies may be useful to determine the degree of pelvic dyssynergy.²³ Colonic transit studies should be performed if colonic hypomotility cannot be excluded.^{123,124}

Surgery

The goal of surgical treatment is to restore the various pelvic organs to their appropriate anatomic positions. In the past, this has been accomplished by a combination of resection of the prolapsing organs and shortening and repair of supporting tissues. This could be accomplished either transabdominally or transvaginally. Although associated with less morbidity, vaginal approaches resulted in a surgically induced perineal neuropathy and worse outcomes.^{125,126} In a direct comparison of the two techniques, the probability of surgical failure requiring reoperation was twice as great with the vaginal approach and the abdominal procedures were associated with improved resolution of symptoms.¹¹⁵

More recently, given the concerns about the integrity of the pelvic soft tissues, prosthetic materials have been used to resuspend and support prolapsing pelvic organs without the necessity of resection.^{123,124,127,128} The results of pelvic restoration using prosthetics show improvement in symptoms of obstructed defecation and constipation in 83% and 89% of patients, respectively. Continence was improved in 85% of patients with preoperative fecal incontinence.

Dyspareunia was reported in 3% of patients. Overall, 74% of patients were either satisfied or very satisfied with the surgical results after 6 years of follow-up.¹²³

Although the techniques and materials of prosthetic pelvic restoration differ, in general, they involve excision of the associated enterocele sac, with attachment of one end of a prosthetic mesh to the perineal body with the other end attached to the periosteum of the second sacral vertebrae. The vagina and rectum are sutured to this prosthesis. This technique reinforces the rectovaginal septum and corrects any rectocele, enterocele, vaginal or rectal prolapse, or excessive perineal descent present. Additional strips can be secured between the sacroperineal prosthesis and iliopubic ligaments on either side to provide support for the bladder. This procedure can be combined with a colon resection if there is redundancy or hypomotility of the colon.¹²⁴ Infection or erosion of the prosthesis is a major concern and occurs in up to 11% of patients,^{123,124,129} requiring either partial or complete removal of the mesh. Additional procedures for persistent, symptomatic low rectocele or rectal mucosal prolapse are necessary for 28% of patients.¹²³

With the concerns about the integrity of the pelvic soft tissues, it would seem prudent to manage this complex problem with prosthetic materials. Results from the few studies available suggest that transabdominal techniques are superior to tranvaginal approaches and that these procedures have an acceptable complication risk and good outcomes.

CONCLUSIONS

Obstructed defecation is a common problem that adversely affects the quality of life for many patients. It is frequently associated with other problems of pelvic support and function, and any therapy that does not address all of the components will result in less than optimal outcomes. This underscores the importance of objectively assessing the symptoms and quality of life as well as measuring bowel, urinary, and sexual function both before and after treatment to determine the outcome of the management of these conditions.

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