Clinical Practice Guidelines for the Treatment of Rectal Prolapse

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STATEMENT OF THE PROBLEM

Rectal prolapse is a disorder characterized by a full-thickness intussusception of the rectal wall, which protrudes externally through the anus. It is associated with a spectrum of coexisting anatomic abnormalities, such as diastasis of the levator ani, an abnormally deep cul-de-sac, a redundant sigmoid colon, a patulous anal sphincter, and loss or attenuation of the rectal sacral attachments. Some have hypothesized that the condition is associated with (and preceded by) internal rectal intussusception or a traumatic solitary rectal ulcer, although these associations have never been clearly proven.[1–3]

Rectal prolapse is rare and is estimated to occur in ≈0.5% of the general population overall, although the frequency is higher in females and the elderly, and women aged ≥50 years are 6 times more likely as men to prolapse.[4–6] Although it is commonly thought that rectal prolapse is a consequence of multiparity, approximately one third of female patients with rectal prolapse are nulliparous. The peak age of incidence is the seventh decade in women. Interestingly, although fewer men have the condition, the age of incidence for these men is generally ≤40 years. A striking characteristic of younger patients, both male and female, is an increased tendency to have autism, syndromes associated with developmental delay, or psychiatric comorbidities requiring multiple medications.[7]

Although rectal prolapse is a benign condition, it can be debilitating because of the discomfort of prolapsing tissue both internally and externally, associated drainage of mucus or blood, and the common occurrence of concomitant symptoms of fecal incontinence, constipation, or both.[8] Approximately 50% to 75% of patients with rectal prolapse report fecal incontinence, and 25% to 50% of patients report constipation.[9–13] Incontinence in the setting of rectal prolapse may be explained by the presence of a direct conduit (ie, the prolapse), which disturbs the sphincter mechanism, the chronic traumatic stretch of the sphincter caused by the prolapse itself, and continuous stimulation of the rectoanal inhibitory reflex by the prolapsing tissue.[14] Up to one half of patients with prolapse demonstrate pudendal neuropathy,[15] which may be responsible for denervation-related atrophy of the external sphincter musculature.[16] Constipation associated with prolapse may result from intussuscepting bowel in the rectum, creating a blockage that is exacerbated with straining, pelvic floor dyssynergia, and colonic dysmotility, although causality versus correlation remains highly debated.[11,12]

The goals of surgery to correct rectal prolapse are 3-fold: 1) to eliminate the prolapse through either resection or restoration of normal anatomy, 2) to correct associated functional abnormalities of constipation or incontinence, and 3) to avoid the creation of de novo bowel dysfunction. Multiple operations have been developed to achieve this complex 3-fold goal, each with various strengths and weaknesses underscoring the importance of careful patient selection and thorough patient counseling when choosing a surgical approach.

METHODOLOGY

These guidelines were built based on the last set of The American Society of Colon and Rectal Surgeons (ASCRS) practice parameters for treatment of rectal prolapse published in 2011.[17] An organized search of Medline, PubMed, Embase, and the Cochrane Database of Collected Reviews was performed from October 2011 through December

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2016. Retrieved publications were limited to the English language and human participants. The search strategies were based on the concepts of rectal prolapse and internal intussusception as primary search terms. Searches were also performed based on various treatments for rectal prolapse, including rectopexy, suture rectopexy, resection rectopexy, ventral rectopexy, D'Hoore rectopexy, Delorme procedure, and Altemeier procedure. An initial search identified 781 unique citations. These were ultimately categorized into subsets (see Table, Supplemental Digital Content 1, http://links.lww.com/DCR/A390). Directed searches of the embedded references from the primary articles were also performed in certain circumstances. Prospective, randomized controlled trials and meta-analyses were given preference in developing these guidelines. Ultimately, 172 articles were carefully reviewed, and articles with poor control subjects or unclear study end points were excluded. The final guideline was created using 110 unique citations listed in the references below. The final grade of recommendation was performed using the Grades of Recommendation, Assessment, Development, and Evaluation system (Table 1).[18] A panel of members of the ASCRS Clinical Practice Guidelines Committee worked in production of these guidelines from inception to final publication. After initial completion of the article, the entire committee reviewed and edited it. Final recommendations were approved by the ASCRS Chairman and Vice Chairman of the Clinical Practice Guidelines Committee and then ultimately the Executive Council.

Evaluation of Rectal Prolapse

1. The initial evaluation of a patient with rectal prolapse should include a complete history and physical examination with focus on the prolapse, on anal sphincter structure and function, and on concomitant symptoms and underlying conditions. Recommendation: strong recommendation based on low-quality evidence, 1C.

A careful history and physical examination should be performed before considering any operative intervention. If a patient's history suggests the diagnosis but no prolapse is detected on physical examination, the patient can be asked to reproduce the prolapse by straining while on a toilet with or without the use of an enema or a rectal balloon. The perineum can then be inspected with the patient in the sitting or squatting position. One should be careful, however, to avoid confusing rectal prolapse with prolapsing internal hemorrhoids or rectal mucosal prolapse.

	Description	Benefit versus risk and burdens	Methodologic quality of supporting evidence	Implications
TABLE 1. The GRADE system: grading recommendations				
1A	Strong recommendation, high-quality evidence	Benefits clearly outweigh risks and burdens or vice versa	RCTs without important limitations or overwhelming evidence from observational studies	Strong recommendation, can apply to most patients in most circumstances without reservation
1B	Strong recommendation, moderate-quality evidence	Benefits clearly outweigh risks and burdens or vice versa	RCTs with important limitations (inconsistent results, methodologic flaws, indirect or imprecise) or exceptionally strong evidence from observational studies	Strong recommendation, can apply to most patients in most circumstances without reservation
1C	Strong recommendation, low- or very low-quality evidence	Benefits clearly outweigh risks and burdens or vice versa	Observational studies or case series	Strong recommendation but may change when higher-quality evidence becomes available
2A	Weak recommendation, high-quality evidence	Benefits closely balanced with risks and burdens	RCTs without important limitations or overwhelming evidence from observational studies	Weak recommendation, best action may differ depending on circumstances or patient or societal values
2B	Weak recommendation, moderate-quality evidence	Benefits closely balanced with risks and burdens	RCTs with important limitations (inconsistent results, methodologic flaws, indirect or imprecise) or exceptionally strong evidence from observational studies	Weak recommendation, best action may differ depending on circumstances or patient or societal values
2C	Weak recommendation, low- or very low-quality evidence	Uncertainty in the estimates of benefits, risks and burdens; benefits, risks, and burdens may be closely balanced	Observational studies or case series	Very weak recommendations; other alternatives may be equally reasonable

Adapted with permission from *Chest*. 2006;129:174–181.[18]
GRADE = Grades of Recommendation, Assessment, Development, and Evaluation; RCT = randomized controlled trial.

Full-thickness rectal prolapse will always have concentric folds of prolapsed tissue, whereas prolapsed hemorrhoids or rectal mucosa will have radial invaginations. If the prolapse is elusive, patients can be asked to photograph the prolapse at home or undergo an echography.

Full inspection of the perineum and complete anorectal examination are equally important. Usually, these will reveal a patulous anus with diminished sphincter tone. In 10% to 15% of cases, proctoscopy will show an anterior solitary rectal ulcer.

Initial evaluation should also include a careful assessment of the possible coexisting symptoms of constipation and fecal incontinence. Furthermore, a careful review of symptoms pertaining to anterior compartment prolapse, such as urinary incontinence and vaginal/uterine prolapse, needs to be evaluated, because 20% to 35% of patients with rectal prolapse report urinary incontinence, and ≈15% to 30% have significant vaginal vault prolapse.[6,19] Patients with multivisceral prolapse require a multidisciplinary approach.[20]

2. Additional testing, such as a fluoroscopy or MRI defecography, colonoscopy, barium enema, and urodynamics, may be used selectively to refine the diagnosis and identify other important coexisting pathology. Recommendation: strong recommendation based on moderate-quality evidence, 1B.

If prolapse is suggested but cannot be seen during physical examination, fluoroscopic defecography, MRI defecography, or balloon expulsion testing may reveal the problem. Defecography may also reveal associated anterior pelvic floor support defects, such as cystocele, vaginal vault prolapse, and enterocele. These coexisting conditions, depending on symptoms, may require treatment as well.[21,22] Patients with anterior compartment disorders and patients with urinary incontinence may benefit from urodynamics and urogynecologic examination to complete the evaluation and allow for concomitant surgical intervention to both the anterior and posterior pelvic compartments.[23–25] Rarely, a neoplasm may form the lead point for a rectal prolapse.[26] For this reason and because prolapse often occurs in the older population, colonoscopy should typically be performed before surgery, because this may change the operative plan.

3. Anal physiologic testing may be considered to assess and treat coexisting functional disorders associated with rectal prolapse, such as constipation or fecal incontinence. Recommendation: weak recommendation based on low-quality evidence, 2C.

Constipation is commonly encountered in patients with rectal prolapse. Patients with severe constipation require special consideration in accordance with the ASCRS constipation clinical practice guideline.[27,28] Patients with constipation and/or evidence of pelvic dyssynergia on testing may not be ideal candidates for certain surgical maneuvers known to exacerbate constipation after surgery, such as posterior rectal mobilization, transection of the lateral ligaments during suture rectopexy, or levatorplasty during a perineal proctectomy, as discussed further in these guidelines.

Fecal incontinence, another commonly associated finding in patients with rectal prolapse, is thought to be caused by the chronic dilation of the anal sphincter preceded by years of diminished internal anal sphincter pressures. In general, because many patients with fecal incontinence secondary to rectal prolapse experience improvement in their symptoms once the prolapse is treated, rectal prolapse should be corrected as a first step in patients reporting of rectal prolapse and fecal incontinence. Patients with pre-existing fecal incontinence or incontinence thought to be attributed to a process other than prolapse should be evaluated in accordance with the ASCRS clinical practice guideline for fecal incontinence.[29] If testing reveals decreased pudendal nerve terminal motor latencies, this may have postoperative prognostic significance: patients with evidence of nerve damage appear to have a higher rate of incontinence after surgical correction of the prolapse, although more studies are necessary to confirm the finding.[30–32] Other maneuvers, such as additional bowel resection, may also diminish continence.

In general, many patients with fecal incontinence secondary to rectal prolapse experience some improvement in their symptoms once the prolapse is treated. Thus, in general, rectal prolapse should be corrected as a first step in patients reporting rectal prolapse and fecal incontinence. Conversely, constipation-inducing maneuvers, such as transection of the lateral ligaments during suture rectopexy, may be beneficial in these situations.

Nonoperative Management

1. Rectal prolapse cannot be corrected nonoperatively, although some of the symptoms associated with this condition, such as fecal incontinence, pain, and constipation, can be palliated medically. Recommendation: weak recommendation based on low-quality evidence, 2C.

There are no reports of rectal prolapse being resolved through medical therapy alone. Although surgical treatment is under consideration, prolapse-associated symptoms of constipation and fecal incontinence can be treated nonsurgically to improve quality of life. Fiber and stool softeners may be used to treat constipation.[33] Table sugar can be used topically to reduce edema and assist in reduction maneuvers with incarcerated rectal prolapse.[34] Attention to skin care to avoid skin maceration may also be beneficial.

Although none of these palliative interventions addresses the prolapse itself, they may improve patient

condition and ultimate quality of life. In addition, one recent retrospective study of 139 women showed that pretreatment of incontinence symptoms before surgery led to a better improvement in postoperative continence.[35]

Any surgical treatment must, of course, be tailored to the patent's overall medical condition, history of previous procedures, and patient willingness to undergo an operation. However, all of the patients who are candidates for surgical treatment of rectal prolapse–including the elderly–should be advised to act quickly, where possible, and avoid unnecessary delays and occasional bowel incarceration. Although consideration of surgical treatment should be tailored to a patent's overall medical condition and history of previous procedures, patients who are reasonable candidates for surgical treatment of rectal prolapse, including the elderly, should be advised to avoid unnecessary delays, because avoiding surgery can lead to significant deterioration in function. In the long term, patients with rectal prolapse who do not undergo surgery and are only managed medically will develop irreversible fecal incontinence.[36] In addition, allowing prolapse to continue untreated beyond 4 years may lead to higher rates of subsequent rectal prolapse recurrence, presumably secondary to a secondarily weakened pelvic floor.[37]

Operations for Rectal Prolapse

Surgery is the main form of treatment for rectal prolapse, and many operative procedures have been described in the historical literature, including anal encirclement, mucosal resection, perineal proctosigmoidectomy, anterior resection with or without rectopexy, suture rectopexy alone, and a host of procedures involving the use of synthetic or biologic meshes affixed to the presacral fascia, including D'Hoore ventral rectopexy with mesh. Only a few procedures are actually routinely advocated. In general, these procedures adopt 1 of 2 predominant general approaches, abdominal versus perineal, which is usually dictated by the comorbidities of the patient, the surgeon's preference and experience, and the patient's age and bowel function.[8,38–40] Another important decision involves the choice of pelvic dissection, either posterior or ventral. Here we discuss the procedures that are in common practice and are most commonly reported in the literature.

Abdominal Procedures for Rectal Prolapse

1. In patients with acceptable risk, the procedure of choice for the treatment of rectal prolapse should typically incorporate transabdominal rectal fixation. Recommendation: weak recommendation based on moderate-quality evidence, 2B.

According to numerous retrospective reports, recurrence rates after abdominal surgery for rectal prolapse are approximately one fourth those after perineal surgery, and the abdominal approach is associated with better functional outcomes.[9,33,41] Because of these superior overall results, the abdominal approach is advocated by many, including our previous guideline,[17] as the preferred treatment for younger and healthier patients.[33,42] However, the data to support these lower recurrence rates have recently been called into question. A 2000 systematic Cochrane database review comparing 274 patients in 8 randomized or quazirandomized trials reported no significant differences in recurrent prolapse between abdominal and perineal approaches.[43] A 2008 update of the Cochrane review including 12 randomized controlled trials involving 380 participants reached a similar conclusion,[33,44] while lamenting the lack of large-scale, randomized controlled trials powered to measure these outcomes adequately. A third 2015 review of 15 randomized controlled trials involving 1007 patients was also unable to demonstrate a difference in recurrence rates between the 2 approaches.[33,44]

Some have raised concerns that patient selection bias (ie, the fact that perineal surgery is offered disproportionately to older, less healthy patients who may have higher rates of recurrence due to poor tissues and longer prolapse duration) may influence reported recurrence rates after perineal repairs. One study, in which all patients were treated with perineal proctectomy, showed that after 21 months of follow-up, rates of recurrent rectal prolapse in patients <50 years of age were comparable with those of patients generally offered abdominal repairs (<8%).[45] A 2013 randomized controlled trial of 293 patients, the Prolapse Surgery Perineal or Rectopexy trial, devised by the Association of Coloproctology of Great Britain and Ireland to answer these questions, also reported no statistically significant difference in the rate of rectal prolapse recurrences based on the surgical approach.[46] However, this study has been criticized for methodologic flaws and being underpowered.

Some surgeons who prefer a perineal approach have pointed to data suggesting that the morbidity and mortality rates of the abdominal approach are slightly higher. However, these studies have also been called into question recently by National Surgical Quality Improvement Program data, which suggest that the morbidity and mortality of the perineal approach have been underestimated. A recent comparison of 1469 patients reported a 4-fold increase in the risk of mortality in the high ASA patients treated by perineal approaches.[47]

Although many experts continue to advocate transabdominal repairs when feasible, the choice between perineal and abdominal approaches continues to be debated. We recommend careful consideration of patient comorbidities and associated bowel dysfunction with the goal of performing the operation with the highest chance of immediate success while also potentially alleviating coexisting bowel dysfunction.[8,33,40,42,44,48]

2. There is insufficient evidence to argue that posterior rectal prolapse repairs, such as suture rectopexy or resection with suture rectopexy, are better or worse than anterior rectal prolapse repairs, such as ventral mesh rectopexy. Recommendation: strong recommendation based on low-quality evidence, 1C.

Retrospective reviews suggest equivalent rates of recurrent rectal prolapse after posterior prolapse repair or anterior prolapse repair (both <10% at 10-year follow-up). However, these numbers may be viewed with some skepticism, because there is less long-term data available regarding ventral rectopexy patients and there have been few studies directly comparing the techniques. One article compared 28 patients treated with either standard resection rectopexy or ventral rectopexy and suggested similar improvement in functional symptoms, such as constipation, with a statistically significant increase in postoperative complications in the patients who underwent resection.[49] However, the conclusion is marred by significant methodologic concerns, because the study amounts to a retrospective comparison of 2 groups of patients treated preferentially by one or the other approach in 2 different countries. Two additional single-center retrospective comparisons of 70 and 40 patients compared ventral rectopexy versus suture rectopexy without resection and demonstrated similar recurrence rates regardless of technique.[50,51] Given the paucity of high-quality data, the choice of technique needs to be driven by surgical expertise and patient surgical history, comorbidities, and preference.[52]

Posterior Rectal Dissection Techniques to Repair Rectal Prolapse

1. Posterior rectal mobilization without a rectopexy (with or without a concomitant anterior resection) is associated with higher recurrence rates and complications and is typically not recommended. Recommendation: strong recommendation based on moderate-quality evidence, 1B.

Posterior dissection is a method of treatment in which the rectum is mobilized in the plane between the mesorectal fascia and the presacral fascia. This dissection usually starts at the sacral promontory and is carried down to the levators. It may be performed in isolation or in combination with an anterior resection.

Several studies show that posterior dissection alone (without rectopexy) does not provide lasting rectal prolapse repair.[53] Even when the procedure is combined with a low anterior resection (not a sigmoid resection), several shortcomings are evident. In 1 review of 113 patients, the recurrence rate continued to climb after 2, 5, and 10 years to 3%, 6%, and 12%, with an operative morbidity of 29%, including 3 anastomotic leaks.[54] Another review confirmed that, with an average follow-up of 6 years, recurrence occurred in 7% of cases.[55] Moreover, low pelvic

anastomoses in those with borderline continence may lead to additional loss of function. Given the lack of functional advantages for this procedure, the high recurrence and complication rates, and the availability of options that can achieve better outcomes with lower risk, low anterior resection or posterior rectal mobilization without additional added steps is not typically recommended.

Posterior Suture Rectopexy With and Without Sigmoid Resection

1. Rectopexy is a key component in the abdominal approach to rectal prolapse. Recommendation: strong recommendation based on high-quality evidence, 1A.

Rectopexy refers to the fixation of the rectum in the pelvis with suture and was first described by Cutait[56] in 1959. Suturing the rectum to the sacral promontory aims to prevent the telescoping of the redundant bowel. Successful outcomes appear to be attributed, in part, to the fixation of the rectum with permanent suture and the scarring and fibrosis from the posterior dissection. Recurrence rates for suture rectopexy are generally reported to be from 3% to 9% at 2 years,[57–62] although data from the Rectal Prolapse Recurrence Study Group suggests that the 10-year recurrence rate may rise to 29%.[62]

Placement of the pexy sutures is critical. A recent randomized controlled trial comparing 116 no-rectopexy patients (mobilization of rectum only) with 136 rectopexy patients demonstrated an 8-fold increase in recurrence rates in the patients treated with mobilization alone.[53]

Suture rectopexy with posterior rectal mobilization can produce or worsen constipation. At least 50% of patients with preoperative constipation report that their condition worsened after rectopexy, and ≈15% of patients with no preoperative constipation experienced constipation after the procedure.[63] The precise etiology of constipation is unclear, but it is thought to be attributed to posterior mobilization of the rectum. Patients presenting with severe constipation and rectal prolapse should probably undergo more than a suture rectopexy; current options include resection suture rectopexy, ventral rectopexy, or perineal repairs (discussed below).

2. Sigmoid resection may be added to posterior suture rectopexy in patients with prolapse and preoperative constipation. Recommendation: strong recommendation based on moderate-quality evidence, 1B.

Resection rectopexy refers to the addition of a sigmoid resection to the standard suture rectopexy discussed above. The technique was first described by Frykman in 1955[64] and was popularized in articles in 1969[65] and 1989,[66] which showed low prolapse recurrence rates (<2%) with an acceptable 4% complication rate and low rates of anastomotic leak. Subsequent retrospective reports have

confirmed low recurrence rates, ranging from 2% to 5%, and reasonable major complication rates, ranging from 0% to 20%. The addition of sigmoidectomy to the rectopexy lowers the recurrence rate and improves functional outcome with a minimal increase in morbidity.[67,68] In general, resection should be avoided in patients with recurrent rectal prolapse after a failed previous perineal rectosigmoidectomy, because transabdominal resection in this situation can lead to ischemic bowel. In addition to its favorable outcomes, the appeal of the resection rectopexy procedure includes the lack of artificial mesh, ease of operation, and the resection of a redundant sigmoid colon. In addition, 2 randomized controlled trials of patients who reported preoperative constipation found lower rates of postoperative constipation after resection rectopexy compared with rectopexy alone.[33,44,67,69] However, the operation may present concerns for rectal prolapse patients with fecal incontinence; the resolution of fecal incontinence appears to be lower when sigmoid resection is performed.[33,44] Some experts argue that sigmoid resection should not be offered to patients with markedly reduced anal pressures on manometry or patients with severe baseline incontinence.[8,70] Sigmoid resection is not usually advocated in combination with repairs involving mesh.

3. Division of the lateral stalks during posterior rectal dissection may worsen postoperative constipation but is associated with decreased recurrence rates. Recommendation: weak recommendation based on moderate-quality evidence, 2B.

The division of lateral stalks during rectal dissection leads to lower recurrence rates for rectal prolapse[33,44,71,72] but is generally associated with worsening constipation.[33,44,55,61,68,71–74] A recent Cochrane review of 15 randomized controlled trials involving 1007 patients with and without lateral stalk division found that the division of the lateral stalks was associated with less recurrent rectal prolapse but more postoperative constipation, making this maneuver especially attractive in the patients presenting with fecal incontinence without constipation.[8,44]

Posterior Mesh Rectopexy

1. Posterior mobilization of rectum with mesh fixation of the anterior rectal wall to the sacral promontory may be used for treatment of rectal prolapse but is associated with higher morbidity. Recommendation: strong recommendation based on low-quality evidence, 1C.

The Ripstein repair[75] (and its many iterations) involves placement of a prosthetic mesh around ("around" or "to"?) the mobilized rectum and attaching the mesh to the presacral fascia below the sacral promontory.[11] In the original procedure, after mobilization of the rectum, Ripstein and Lanter[75] placed a band of rectangular mesh

around the anterior aspect of the rectum at the level of the peritoneal reflection, and sutures were used to secure the mesh to the rectum anteriorly, pulling the rectum upward and posterior. Then, both sides of the mesh were sutured to the presacral fascia. Recurrence rates ranged from 4% to 10%, but complication rates were excessive, <50%, primarily because of the placement of a foreign material on the anterior rectal wall.[75–77] Complications included large-bowel obstruction, erosion of the mesh through the bowel, ureteral injury or fibrosis, small-bowel obstruction, rectovaginal fistula, and fecal impaction. As a result, McMahan and Ripstein[78] modified the technique to include posterior fixation of the mesh to the sacrum with attachment of the ends of the mesh to the rectum laterally. This modified procedure produced similar recurrence rates (2%–5%) with a 20% postoperative morbidity rate (most of these complications were minor). Mesh rectopexy results in significant improvement in fecal incontinence in 20% to 60% of patients.[6]

2. A modified Wells procedure using a variety of foreign materials for posterior fixation of the rectum may be used for treatment of rectal prolapse. Recommendation: weak recommendation based on moderate-quality evidence, 2B.

The Wells procedure, as originally described, involved fixation of the rectum using an Ivalon (polyvinyl alcohol) sponge and transection of the lateral ligaments. Wells reported excellent results with minimal complications.[79] However, a randomized trial of Ivalon sponge versus suture rectopexy found increased complication rates and postoperative constipation in the Ivalon group, with no improvement in recurrence rates. As a result, the study recommended that this technique be abandoned.[61]

Although the Ivalon sponge is no longer commercially available, the modified Wells technique using other materials, such as polyester, polypropylene, and biological mesh,[80,81] continues to be popular, especially for laparoscopic approaches. There are no data, however, to suggest the superiority of these materials over sutures alone.

Anterior Rectal Dissection Techniques to Repair Rectal Prolapse
Ventral Rectopexy

1. Ventral mesh rectopexy offers an alternative approach to the repair of rectal prolapse with acceptable short- and long-term complication rates. Recommendation: strong recommendation based on low-quality evidence, 1C.

Ventral mesh rectopexy, developed by D'Hoore and Penninckx,[82] is the only technique for rectal prolapse repair that uses only a limited anterior rectal mobilization. The technique involves careful separation of the rectum from the vagina (or prostate) down to the perineal body anteriorly with no posterior dissection of the rectum from the sacrum (other than to clear a small spot of sacrum for the

rectopexy). After this limited rectal mobilization, a ventral rectopexy is performed using synthetic or biologic mesh. The mesh buttresses the anterior wall of the rectum at the point of its intussusception and resuspends the rectum to the sacral promontory. This is in contrast to the Orr-Loygue procedure,[83] where the rectum is mobilized both anteriorly and posteriorly before fixation to the sacrum.

In addition to being reported as being effective in repairing the prolapse, D'Hoore et al[84] reported an 84% improvement in postoperative constipation and no incidence of new de novo constipation. They postulated that avoiding posterior rectal dissection decreases injury to the parasympathetic and sympathetic innervation of the rectum. Others followed with similarly promising retrospective results showing recurrence rates comparable to traditional suture rectopexy with less postoperative constipation.[85] A subsequent systematic review comparing 728 nonrandomized patients treated with either posterior rectal dissection/rectopexy or ventral mesh rectopexy suggested that patients undergoing ventral rectopexy reported a recurrence rate of 3.4% and a weighted decrease in the postoperative constipation rate estimated to be 23.0%.[86] These observations, combined with reports purporting reassuring rates of postoperative complications, have led many in Europe to believe that this new approach is the preferred method of treatment for rectal prolapse. A recent international consensus panel pertaining to this procedure suggested using this technique in patients with pre-existing constipation and abnormalities in the anterior compartment, such as enterocele.[85] However, this technique has yet to gain full acceptance in the United States given the limited data on long-term efficacy when compared with more traditional approaches and the possibility of mesh-related complications. These concerns appear to be ameliorated, to some degree, by a recent retrospective report of 919 consecutive ventral rectopexy patients showing a 10-year recurrence rate of 8.2% and a 4.6% rate of mesh-related complications,[86] but additional data are needed.

Additional Abdominal Surgery Considerations

1. A minimally invasive approach to rectal prolapse by experienced surgeons is associated with improved morbidity and comparable recurrences compared with open surgery and should be considered when technically feasible. Recommendation: strong recommendation based on moderate-quality evidence, 1B.

Minimally invasive treatment of rectal prolapse, first described in 1992, with a laparoscopic rectopexy, has the same goals as open surgery, which are eradicating full-thickness rectal prolapse, improving bowel function and continence, and minimizing recurrence rates,[13] and the results do not appear to differ materially.[33,50,51,87,88] Numerous studies comparing laparoscopic with open repair have shown equivalent recurrence rates (4%–8%) and morbid-

ity (10%–33%) but clear benefits to the laparoscopic approach in terms of pain control, length of stay, and return of bowel function.[50]

Robotic rectal prolapse surgery seems to produce outcomes comparable with laparoscopic approaches, although there are no well-powered randomized controlled trials clearly describing long-term recurrence rates.[62,89,90] Advocates of robotic approaches emphasize the ease of suturing and tying and superior visualization of the deep pouch of Douglas.[91,92] Perceived disadvantages of robotic surgery, as compared with laparoscopy, are longer operating times and increased costs, although longer operating times may be a result of learning curves. One recent randomized controlled trial comparing the 2 minimally invasive approaches for ventral rectopexy performed by expert surgeons failed to show differences in the length of procedure or in outcomes.[93] A meta-analysis of ventral rectopexy comparing robotics and laparoscopy showed no strong benefit of one approach over the other.[94]

Perineal Operations for Rectal Prolapse

1. Patients with a short segment of full-thickness rectal prolapse can be treated with mucosal sleeve resection. Recommendation: strong recommendation based on low-quality evidence, 1C.

The Delorme procedure, appropriate for patients with a short (<5 cm) full-thickness rectal prolapse, involves a circumferential mucosal sleeve resection and imbrication of the muscularis layer. Retrospective studies suggest that recurrence rates after Delorme in the range of 10% to 15% may be higher than recurrence rates after abdominal approaches,[95–98] but a recent randomized controlled trial showed that recurrence rates and functional outcomes after Delorme procedures were comparable to perineal rectosigmoidectomy or abdominal procedures.[46] The Delorme procedure, historically used more in elderly patients, is generally considered very safe. Approximately 4% to 12% of patients experience early complications mostly involving infection, urinary retention, bleeding, and fecal impaction.[95,98] The procedure can improve constipation and fecal incontinence, but urgency and tenesmus do occur. One study of postoperative manometric findings found that mean resting and squeeze pressures were significantly increased from baseline, with an associated increase in continence.[97]

2. Rectal prolapse may be treated with a perineal rectosigmoidectomy. Recommendation: strong recommendation based on low-quality evidence, 1C.

Perineal rectosigmoidectomy, the Altemeier procedure, involves a transanal full-thickness resection of the prolapsed rectum and a coloanal anastomosis.[99] The operation can be performed without general anesthesia and

involves a shorter hospital stay and lower complication rates compared with transabdominal surgery. However, recurrence rates of 16% to 30% at 2 years are high[9,48,100–102] and may be affected by the length of resected intestine.[9] Recurrence rates after perineal rectosigmoidectomy might be decreased using a levatorplasty, which was shown in 1 study to reduce recurrence rates from 21% to 7%,[103,104] presumably by treating the concomitant levator diastasis.

Generally speaking, patients undergoing perineal rectosigmoidectomy are older, with significantly more comorbidities than those who are considered for transabdominal repair.[9,48,100] There are relatively little data comparing perineal rectosigmoidectomy with an abdominal approach. Neither of the 2 randomized controlled trials comparing the approaches showed a statistically significant difference in recurrence rates, but both studies were underpowered.[46]

ACKNOWLEDGMENTS

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