Functional Anorectal Disorders

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ABSTRACT

Functional anorectal disorders include solitary rectal ulcer syndrome, rectocele, nonrelaxing puborectalis syndrome, and descending perineal syndrome. Patients usually present with “constipation,” but the clinical picture of these disorders includes rectal pain and bleeding, digitalization, incomplete evacuation, and a feeling of obstruction. Diagnosis is difficult because many findings can be seen in normal patients as well. The diagnosis is made by using a combination of clinical picture, defecography, pathology, and occasionally anometry and pudendal terminal motor nerve latency. These disorders are generally treated medically with dietary changes and biofeedback. Surgical intervention is reserved for patients with intractable symptoms and has not been universally successful.

KEYWORDS: Solitary rectal ulcer syndrome, rectocele, nonrelaxing puborectalis syndrome, functional anorectal disorders

Objectives: On completion of this article, the reader should be familiar with the evaluation and management of functional anorectal disorders.

Constipation is functionally separated into the following subgroups: slow colonic transit, normal colonic transit, and defecatory or rectal evacuation abnormalities.¹ Disorders that are associated with pelvic floor dysfunction (nonrelaxing puborectalis syndrome, descending perineal syndrome), solitary rectal ulcer syndrome, and rectocele are considered functional anorectal disorders and are the focus of this article.

Symptoms of “constipation” are difficult to associate with a specific pathophysiologic subgroup. Koch et al examined 190 patients with constipation and attempted to correlate subgroups with symptoms. Digitalization and a feeling of obstruction were specific but not sensitive for disorders of defecation.² A second study in 1999 examined the symptoms in 108 patients with constipation. Incomplete evacuation, prolonged time in the bathroom, trips to the bathroom for bloating and rectal fullness but without being able to pass stool, lack

of normal bowel movements once begun, hard stools, and straining were symptoms thought to define pelvic floor dysfunction. However, there was no difference in these symptoms between patients with pelvic floor dysfunction and those without it.³

Diagnosing functional anorectal disorders is difficult. A detailed history can be difficult to elucidate, subjective sensations may not be easily described in consistent terms, and symptoms are frequently variable in manifestation and transient in nature. Defecography, anometry, and electromyography (including pudendal nerve terminal motor latency) are frequently used for diagnosis. However, many findings in normal, asymptomatic individuals overlap with values considered diagnostic for disorders of defecation. For example, a study of 47 individuals without a history of constipation who underwent defecography found that perineal descent, a key diagnostic indicator for descending perineal

Constipation and Functional Bowel Disease; Editor in Chief, David E. Beck, M.D.; Guest Editor, David E. Beck, M.D. *Clinics in Colon and Rectal Surgery*, volume 18, number 2, 2005. Address for correspondence and reprint requests: Craig A. Reickert, M.D., Division of Colon & Rectal Surgery, Henry Ford Hospital, K-7, 2799 W, Grand Blvd., Detroit, MI 48202. E-mail: Creicke1@hfhs.org. ¹Division of Colon & Rectal Surgery, Henry Ford Hospital, Detroit, Michigan. Copyright © 2005 by Thieme Medical Publishers, Inc., 333 Seventh Avenue, New York, NY 10001, USA. Tel: +1(212) 584-4662. 1531-0043,p;2005,18,02,109,115,ftx,en;ccrs00216x.

syndrome, ranged from 0 to 5.4 cm in women and 0.2 to 3.9 cm in men.^{3a} Articles describing perineal descent on defecography for descending perineal syndrome use a baseline of 3.5 to 4.0 cm.^{4,5} Some authors have even gone so far as to state that the clinical significance of measuring perineal descent by defecography is "nil."⁶ In addition to overlapping values, interobserver variation in measurements of perineal descent and anorectal angle^{7,8} and different methods of measuring these two parameters lead to the high variability found in clinical settings.⁹

Despite the variability in symptoms and diagnostic parameters and tests, one unifying theme does appear. Women continue to make up the majority of patients with constipation and disorders of defecation. Over the past decade there have been numerous articles associating hysterectomy, the most common major gynecological procedure performed, with bowel dysfunction. In 1989 the first article to associate the two was published. It was a case-controlled, retrospective review of women with bowel complaints after hysterectomy compared with age-matched controls. Women who had been treated with hysterectomy were likely to report decreased number of bowel movements, hard stools, and increased use of laxatives.¹⁰ A study by Weber et al in 1999 assessed the outcomes of 43 women who had undergone hysterectomy and found that there were no statistical differences before and after surgery related to bowel function.¹¹ The largest study to examine bowel function and hysterectomy reviewed the responses to a questionnaire completed pre- and postoperatively by 120 women. Their responses did not support an association between hysterectomy and new-onset or worsening constipation.¹² However, these data do not adequately describe long-term effects of the procedure on pelvic floor function.

To complete this discussion, there has been some evaluation of the relationship between sexual abuse and functional anorectal disorders. A study of 239 women seen in the gastroenterology clinic at the University of North Carolina found that 60% had a history of sexual or physical abuse.¹³ Individuals with functional gastrointestinal disorders had more severe types of abuse, such as rape or life-threatening physical abuse, than patients with organic disorders. Women who had been sexually abused had more pain, more surgeries during their lifetime, functional disability, and worse overall health outcomes.¹⁴ Leroi et al have written extensively on the subject and found that 39 of 40 women referred for functional disorders met anometric criteria for nonrelaxing puborectalis syndrome.¹⁵ A survey of 344 women seen in either a tertiary referral clinic in a university setting or private practice demonstrated that 40% of patients with functional disorders had been sexually abused compared with only 10% of women with organic disease. Abused patients reported both constipation

($p < 0.03$) and diarrhea ($p < 0.04$).¹⁶ A study of 15 abused patients who underwent biofeedback with or without psychotherapy showed that 8 women had complete resolution of their symptoms. The authors speculated that biofeedback can be the entry point for abused women, who may later add psychotherapy to their behavioral modification program.¹⁷

NONRELAXING PUBORECTALIS SYNDROME

Nonrelaxing puborectalis syndrome was initially described by Wasserman¹⁸ in 1964 as a syndrome composed of clinical signs and symptoms related to hypertrophy of the puborectalis. During normal defecation, the pelvic floor muscles relax and permit evacuation. However, in this syndrome, the puborectalis paradoxically contracts, giving rise to symptoms of pelvic outlet obstruction and frequently the diagnosis of constipation. This syndrome is frequently referred to in the literature as anismus; the name is derived from the gynecologic entity vaginismus, a spasm of the pelvic floor musculature.¹⁹ Nonrelaxing puborectalis syndrome has also been called spastic floor syndrome,²⁰ rectoanal dyssynergia,²¹ and paradoxical puborectalis contraction.²² The specific etiology of this disorder is unknown. Wasserman attributed it to hypertrophy of the anal ring, and Kuipers associated the syndrome with abnormal function of a normal muscle based on anometry and electromyography, which showed normal function of the external sphincter. Other proposed etiologies include psychological and behavioral factors,^{23,24} impaired rectal sensation,²⁵ and a generalized disorder of the entire pelvic floor.²⁶

Wasserman's initial description of clinical symptoms included painful, difficult, and incomplete evacuation. Straining and tenesmus are frequently noted as well as the use of laxatives and enemas, with patients resorting to finger insertion to initiate bowel movements.

The incidence of nonrelaxing puborectalis syndrome is unknown. In a series of 2816 patients referred for defecography for defecation disorders, 3.9% (110 of 2816) had nonrelaxing puborectalis syndrome.²⁷ A study of 308 patients with chronic constipation, incontinence, or rectal pain referred for physiologic testing found that 33% (59 of 180) of the constipated patients had nonrelaxing puborectalis syndrome.²⁸

Physical examination does not play a definitive role in the diagnosis of nonrelaxing puborectalis syndrome except to assess any other obvious anal pathology. Unfortunately, proving paradoxical contraction of the puborectalis does not effectively establish a diagnosis. A series of 79 patients with constipation, perineal pain, and solitary rectal ulcer syndrome underwent electromyograms. Paradoxical contraction of the puborectalis was seen in 76% of the patients with constipation, 48% of the

patients with perineal pain, and half of the patients with solitary rectal ulcer syndrome.²² Another study examined paradoxical puborectalis contraction in patients with constipation, incontinence, and no anorectal pathology. Anal manometry found that paradoxical contraction occurred in 41.2% of the constipated patients and 22.2% of the controls.²⁹ These studies support the ubiquity of paradoxical puborectalis contraction and its abandonment as a diagnostic entity for the syndrome.

Anorectal manometry has been used to diagnose nonrelaxing puborectalis syndrome with a 20% to 97% success rate in studies between 1974 and 1993.³⁰ Ger et al examined anorectal myometry, electromyography, and defecography in 116 consecutive patients with a history of chronic constipation. Anorectal manometry correlated with electromyography in 70% and with defecography in 63% of the studies.³⁰ A study by Jorge et al³¹ evaluated the correlation between electromyography and defecography for diagnosing nonrelaxing puborectalis syndrome in patients with constipation. The sensitivity, specificity, and predictive values were not adequate to make the diagnosis reliably if each test was used individually. The authors concluded that a combination of defecography and electromyography should be used in diagnosing nonrelaxing puborectalis syndrome.

In 1995, a retrospective review of the proctographic findings of 24 patients with chronic constipation demonstrated that incomplete evacuation of contrast material after 30 seconds was the single identifying factor for anismus between patients with constipation and normal controls.³² A prospective study of 31 patients with impaired defecation found that delayed evacuation had a positive predictive value of 90% in diagnosing nonrelaxing puborectalis syndrome.³³ Based on these studies, the diagnosis of nonrelaxing puborectalis syndrome should be made by defecography.

The treatment for nonrelaxing puborectalis syndrome in patients without an underlying motility disorder is biofeedback. A review of biofeedback for constipation found seven studies between 1988 and 1992 that demonstrated success rates of 18.2% to 100%.³⁴ These studies included outpatient and inpatient settings and varying modes of treatment and follow-up. Rao et al examined the effect of biofeedback on objective and subjective parameters in 25 patients with obstructive defecation and found that 76% of patients showed improvement in objective parameters of anorectal function.³⁵ Improvements were seen in rectal sensation, laxative use, digitization, and frequency of bowel movements. Biofeedback therapy has been found to be most effective in patients who are willing to complete therapy,³⁶ have had symptoms for a short period of time, have relied on laxatives less, and have had fewer associated symptoms.²³

PERINEAL DESCENT

Perineal descent was first described by Parks et al in 1966³⁷ and was considered the final outcome of a cycle that included regularly straining with bowel movements that caused the anterior rectal wall to balloon into the anal canal. Patients had a feeling of inadequate evacuation of stool, resulting in more straining and finally weakness of the pelvic floor musculature. Henry et al explored the idea that constant straining and the resulting perineal descent stretched the pudendal nerve and lead to incontinence. Their review of 20 patients demonstrated that abnormal perineal descent resulted in changes to the external sphincter consistent with neuropathy.³⁸ Perineal descent has been pathognomonic for pelvic floor weakness resulting from neuropathy, trauma during pregnancy or childbirth, and abnormal defecation behaviors.^{39,40} However, studies have refuted the claim that increased perineal descent and pudendal neuropathy are related. In one study, 213 consecutive patients with constipation, incontinence, and rectal pain underwent defecography and bilateral pudendal nerve terminal motor latency evaluation.⁴¹ Sixty-five patients had perineal descent but only 25% had neuropathy. Of the 148 patients without perineal descent, 28% had neuropathy. A more recent study in 1998 reviewed a cross section of healthy, Danish women randomly selected to undergo defecography and pudendal nerve terminal motor latency assessment. There was no association between perineal descent and pudendal neuropathy despite a prolonged terminal motor latency seen with increasing number of vaginal deliveries.⁴² Descending perineal syndrome may represent a disease continuum in which individuals in the early phase present with constipation and, as damage continues to the pelvic floor, these individuals become incontinent.³⁹

Diagnosis of descending perineal syndrome is based on clinical symptoms, physical examination, and defecography. On physical examination in the left lateral position, the perineum is seen ballooning outward during straining.³⁸ Despite the variance in the measurements of perineal descent, defecography can be used to document descent (> 4 cm) and assess for any other pathology.

Treatment consists of biofeedback and high-fiber diets for constipated patients. Unfortunately, the Mayo Clinic experience found that two thirds of their patients did not improve after biofeedback,⁴ and palliative strategies were all that could be offered.

PROCTALGIA FUGAX

Proctalgia fugax is an enigmatic disorder. It has been a source of controversy since it was named in 1935 in an article entitled "Proctalgia fugax: a little known form of pain in the rectum."⁴³ The majority of observations made in the 1935 article hold today. The etiology

remains unknown, with theories focused on spasm of the levator ani muscle^{44,45} and sigmoid colon.⁴⁶ Thaysen described proctalgia fugax as irregular attacks of rectal pain followed by complete resolution without any untoward effects. The pain was further delineated as "gnawing, aching, cramp-like, or stabbing."⁴³ A survey of healthy individuals found that 14% reported at least one episode of proctalgia fugax per year.⁴⁷

Diagnosis is based on a careful history and physical examination after ruling out any other anorectal pathology as the source of the pain. There are no tests specific for proctalgia fugax. An anometric study of 18 patients with proctalgia fugax identified two patients undergoing an acute attack. These patients demonstrated an increase in anal resting tone.⁴⁸

In 1935, Thaysen wrote, "It is of course difficult to devise a treatment for attacks of pain of such short duration and of such varying frequency as proctalgia fugax." Clonidine,⁴⁹ diltiazem,⁵⁰ and salbutamol⁵¹ have been used for treatment with little success. Therapy today consists of reassurance⁵² and possibly biofeedback. Gilliland et al retrospectively reviewed the results of biofeedback in 86 patients with idiopathic rectal pain. Twenty-six (34.7%) patients showed improvement, with success dependent on the patient's ability to complete the course of therapy.⁵³

SOLITARY RECTAL ULCER SYNDROME

A solitary rectal ulcer was first described by Cruveilhier⁵⁴ in 1829, and the term "solitary rectal ulcer" was credited to Lloyd-Davies in 1937.⁵⁵ In 1969, Madigan and Morson⁵⁶ characterized the disease process clinically and pathologically. Because of the multiple symptoms and signs associated with a solitary rectal ulcer, Rutter referred to the addition of "syndrome" in his 1975 article, describing syndrome as having "crept into the terminology."⁵⁵ Solitary rectal ulcer syndrome is seen equally in men and women, and in both Madigan's and Rutter's articles the majority of patients are in their 20s. However, other studies have shown the mean age of the patients to be in the 30s and 40s.⁵⁷⁻⁶⁰

The majority of patients present with rectal bleeding.⁵⁶⁻⁶⁰ Rectal bleeding in conjunction with mucus, straining, and a long history of these symptoms is the most common presentation. Other symptoms reported are difficulty initiating evacuation, need for rectal digitation, anal pain, and diarrhea. Patients usually have symptoms for many years before seeking help. For example, in Madigan and Morson's article, patients had symptoms on average for 5.3 years.

Endoscopy and biopsy are required to make the diagnosis. The ulcer is shallow with a white or yellow slough and is demarcated from the surrounding edematous mucosa by a thin line or rim of erythema.^{56,61} Ulcers do not have to be present for the diagnosis, with

polypoid lesions seen in 44% and hyperemic mucosa seen in 27% of cases.⁶⁰ Multiple ulcers are present in 10% to 30% of patients.^{56,60} The majority of ulcers are located anteriorly and are between 5 and 10 cm from the anal verge. The classic histological finding, colitis cystica profunda, is obliteration of the lamina propria by fibroblasts and muscle fibers from the muscularis mucosa.⁵⁶ Solitary rectal ulcer syndrome has been shown to be misdiagnosed in 25 of 98 patients in the largest study examining this topic.⁶² The most common misdiagnoses were Crohn's disease and mucosal ulcerative colitis. The misdiagnosis that is most worrisome is cancer.

The pathogenesis of solitary rectal ulcer syndrome has not been elucidated. Multiple theories abound and include trauma,⁵⁵ mucosal prolapse,⁶³ ischemia,^{64,65} and a larger systemic process.⁶⁶ Solitary rectal ulcer syndrome has been associated with perineal descent, nonrelaxing puborectalis, and rectal prolapse.⁶¹

Multiple anophysiologic and radiologic tests have been used to evaluate solitary rectal ulcer syndrome, but the diagnosis is based on clinical symptoms, endoscopy, and pathology.^{62,67-70} The only recommendation would be for defecography to assess for rectal prolapse or internal intussusception.

Treatment for solitary rectal ulcer syndrome consists of medical management with a high-fiber diet and attempts to decrease straining.⁷¹ Local treatments consisting of topical steroids and sulfasalazine enemas have not been successful. Another option is biofeedback.⁷²⁻⁷⁵ The most recent study examining biofeedback assessed 16 patients and found that 75% had improved symptoms.⁷² Another study demonstrated that one third had continued benefit at 3 years.⁷⁵ Patients with full rectal prolapse can be considered for surgery. The most common surgeries are rectopexy and Delorme procedure. A retrospective review of 66 patients with solitary rectal ulcer syndrome who underwent surgery determined that a satisfactory outcome occurred in 55% to 60% of patients. Preoperative incontinence and incomplete evacuation predicted poor outcomes. In that series the stoma rate was 30%.⁷⁶ Surgery is not the standard of care for solitary rectal ulcer syndrome but may provide benefit for patients with rectal prolapse or patients who have failed to improve with conservative measures.⁷⁷

RECTOCELE

Rectocele is a protrusion or herniation of the rectal wall. The herniation is usually anteriorly, and patients describe either having to push the posterior vaginal wall or rectal digitation to have a bowel movement. Rectocele is more common in women because of obstetric factors such as multiparity and traumatic births.⁷⁸ Patients present either to gynecologists with predominantly vaginal symptoms or to colorectal surgeons with symptoms related to constipation.

The diagnosis of rectocele is based on both the clinical picture and the results of defecography. In a study of 2816 patients with constipation, 27% had rectocele (of these 27% > 4 cm).²⁷ In a study of 23 nulliparous, healthy women who underwent defecography, 81% had a rectocele^{3a} but only one woman had a rectocele greater than 2 cm. Rectoceles greater than 2 cm are associated with impaired rectal emptying on defecography.⁷⁹ The relevance of rectoceles has varied in the literature, with some authors emphasizing size greater than 3 cm⁸⁰ or rectoceles with retained contrast material as rectoceles that are clinically significant.⁸¹ Other authors have used rectoceles greater than 4 cm with delayed or absent emptying as their guidelines for rectocele relevance.⁸² Defecography does not predict the outcome of rectocele repair but identifies the anatomy and any other pathologic abnormalities.⁸³

Rectoceles can be repaired in multiple ways. In the gynecological literature, posterior colporrhaphy is the most common procedure. In the surgical literature, transanal repairs dominate. A recent prospective, randomized study compared transanal and vaginal approaches to rectocele repair and found that symptoms improved with either repair.⁸⁴ Murthy et al demonstrated that selection of patients is crucial to successful surgical repair of rectocele.⁸⁵ Thirty-three patients who had the sensation of a vaginal bulge that necessitated support or digitization for defecation, retained barium in the rectocele, or had a large rectocele with anterior rectal wall prolapse underwent surgical repair, with 92% reporting improvement after 31 months of follow-up. Poor outcome after rectocele repair is associated with less than one bowel movement per week and no urge to defecate on a daily basis.⁸⁶ Surgical repair can be performed successfully with a vaginal or transanal approach with emphasis on selection of patients and surgical technique. Additional information on surgical treatment is presented in the article by Dr. Ellis in this issue of *Clinics* ("Treatment of obstructed defecation").

In summary, functional disorders are a group of disorders with a common overall presentation of constipation. These disorders have overlapping symptoms and radiologic findings that make a definitive diagnosis difficult. Functional disorders are not surgical diseases even though these patients present routinely to colorectal surgery clinics. Dietary management and biofeedback remain the mainstay of therapy for these disorders with the exception of rectocele. In evaluating a patient with a functional disorder, one should exclude malignancy and attempt to provide symptomatic relief.

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