



Obstructed defecation syndrome

Anders Mellgren, Muhammad Huzaifa Zafar

Division of Colon & Rectal Surgery, University of Illinois at Chicago, Chicago, IL, USA

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Correspondence to: Anders Mellgren, MD, PhD, FACS, FASCRS. Division of Colon & Rectal Surgery, University of Illinois at Chicago, 840 S Wood Street (MC 958), Chicago, IL 60612, USA. Email: afmellgr@uic.edu.

Abstract: Constipation is a frequent symptom in the general population. The prevalence depends on the utilized definition. We usually divide constipation in two types: obstructed defecation or prolonged bowel transit time. In patients with irritable bowel syndrome, constipation is associated with abdominal pain and transit times are normal. In this article, we will discuss the clinical diagnosis of obstructed defecation syndrome (ODS). It is important to obtain a detailed history to identify possible underlying pathology, for instance neurological or endocrine disorders. Colonoscopy is needed in most patients to exclude underlying pathology. Anatomic causes of ODS can be visualized with defecography. Patients without an identifiable anatomic cause should be further evaluated for dyssynergia. Anorectal manometry and anorectal electromyography (EMG) can establish this diagnosis. Ultrasound is useful in diagnosing various pelvic floor abnormalities, including anal sphincter injuries, anismus, rectocele, rectal procidentia, vaginal vault prolapse and enterocele. Initial treatment of ODS patients usually starts with nonsurgical management, appropriate water intake, diet rich in fibers, and laxatives. Treatment of dyssynergic defecation is primarily biofeedback therapy and this treatment should be tailored to the individual patient. Surgical intervention with ventral rectopexy (VR) can be considered for some patients with rectal intussusception and/or rectocele. Rectocele repair can help some patients. Other less frequently used surgical alternatives include stapled transanal rectal resection (STARR), stapled repair of rectocele, and sacral nerve stimulation (SNS).

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Introduction

Constipation is common, but in some patients the severity will affect patients' quality of life. Depending on the definition used, the prevalence varies greatly between 2% to 27% (1,2). Patients may have prolonged bowel transit time or outlet difficulties (obstructed defecation, dyssynergic defecation) and some patients have a combination of these symptoms.

Obstructed defecation may be caused by paradoxical contraction of the external anal sphincter at rectal emptying, and this may be demonstrated at testing with poor balloon expulsion and paradoxical contraction at

manometry and electromyography (EMG) (3). Preston and Lennard-Jones (4) named this anismus and the term obstructed defecation syndrome (ODS) was introduced by Lubowski and King (5) to include anatomic and physiologic causes of defecatory problems.

Dyssynergic defecation may be caused by rectoanal coordination failure (6), which may result in incomplete evacuation, excessive straining, bloating, infrequent bowel movements, etc. Digital rectal examination has a rather high sensitivity (6), but patients are frequently diagnosed with OD after physiologic testing. Recently published consensus statement (7) suggested the inclusion of high resolution manometry, balloon expulsion test, defecography and echo

defecography (3).

Diagnostic work-up

ODS symptoms, such as incomplete evacuation, hard stools, and excessive straining may require some patients to use digital support to facilitate rectal emptying (8). It is important to obtain a detailed history to identify possible underlying pathology, for instance neurological or endocrine disorders. An appropriate diagnostic evaluation is also essential. In addition, validated instruments to help in the diagnostic process are currently utilized, such as the Cleveland Clinic Constipation Score, the ODS score and the TAPE score. Colonoscopy is needed in most patients to exclude underlying pathology such as tumors or strictures (2,9).

Anatomic causes of ODS can be visualized with defecography, which can be performed with fluoroscopic or MRI technique. Anismus, internal prolapse/rectal intussusception, and rectocele are readily diagnosed with fluoroscopic defecography, while central compartment pathology is better diagnosed with MRI defecography. At fluoroscopic defecography, the rectal emptying process is studied with the patient in the sitting position. The assessment can be optimized with the use of simultaneous vaginal contrast. The examination evaluates the rectal shape and function in the sitting position during evacuation. MRI defecography is usually performed with the patient in a lying supine position and the pelvic organs are evaluated during evacuation. This position is less physiologic than the sitting position.

Patients without an identifiable anatomic cause should be further evaluated for dyssynergia (3). Anorectal manometry can discriminate between anismus, central nervous system causes, and anal sphincter abnormalities. Anorectal EMG measures the muscle activity and identify anal sphincter relaxation or contraction during defecation. Ultrasound is useful in diagnosing various pelvic floor abnormalities, including anal sphincter injuries, anismus, rectocele, rectal procidentia, vaginal vault prolapse and enterocele.

Treatment of ODS

Non-surgical management of obstructed defecation

Lifestyle management and medical treatment

Initial treatment of ODS patients usually starts with nonsurgical management, appropriate water intake, diet rich

in fibers, and laxatives. Colonic lavage or rectal irrigation can be of benefit (2,9). Injection of botulinum toxin is sometimes tried in patients with anismus, but it usually provides only short-term relief.

Pelvic floor exercises with biofeedback

Dyssynergic pattern of defecation is seen with paradoxical anal contraction, which is an increase in anal sphincter pressures instead of a decrease of the pressures at attempted rectal emptying. Other patients have an inadequate relaxation of pressures. Abnormal relaxation can be studied with manometry, EMG, ultrasound and/or defecography.

Treatment of dyssynergic defecation is primarily biofeedback therapy and this treatment should be tailored to the individual patient. The exercises are frequently combined with medical treatment of constipation, timed toilet training, and other behavioral treatment techniques. Biofeedback is physical therapy training, usually assisted with a measuring device, and designed to improve the coordination of the pelvic floor musculature and improve rectal sensation. Randomized controlled trials have shown an efficacy in 70–80% of patients in several studies (10-12).

Surgical management of obstructed defecation

Ventral rectopexy (VR)

VR was introduced in 2004 by D'Hoore *et al.* (13) and has become an increasingly popular surgical method for rectal prolapse. Broden and Snellman (14) demonstrated already in the 1960ies that rectal intussusception usually starts in the anterior aspect of the rectum. VR aims to support this area to avoid a descent of the posterior and middle compartment (15).

VR was initially introduced for patients with external rectal prolapse. Already in the first publication (13), it was noted that functional outcomes were excellent in patients with external prolapse; 16 out of 19 patients had resolution of their ODS symptoms. Therefore, VR has been advocated also for patients with internal rectal prolapse, rectocele, ODS, and/or vaginal vault prolapse and indications for VR have been expanding.

Degasperi *et al.* (16) evaluated 50 consecutive patients operated with VR for rectal intussusception with prospectively collected data. The mean Wexner Constipation Score significantly improved from 14.1 preoperatively to 10.4 after surgery ($P < 0.0001$) and fecal incontinence was cured in 8 of 11 patients ($P = 0.036$). No

patient experience worsening of continence, constipation, or sexual function.

In a retrospective analysis of prospectively collected data of 51 patients operated with VR for rectal intussusception and/or rectocele, Tsunoda *et al.* (17) evaluated functional outcomes. Median CSS and FISI scores were significantly reduced at 1 year and remained significantly reduced for 6 years later. Sustained improvement of constipation was found in half of patient (18/38). Quality of life scales (PAC-QOL and FIQL) improved over time for 5 years. No mesh-related complications occurred.

In a recent systematic review and meta-analysis after surgery with VR, Manatakis *et al.* (18) evaluated 14 studies including 963 patients. They found a significant improvement in OD symptoms after 12-months ($P < 0.0001$). They concluded that VR offers symptomatic improvement of constipation and fecal incontinence symptoms for at least 1–2 years postoperatively in ODS patients.

Stapled transanal rectal resection (STARR)

STARR resects portions of the rectal wall with a surgical stapler. STARR has been primarily used in patients with internal rectal prolapse and/or rectocele (19). In their initial study, Boccasanta *et al.* (20) reported excellent short-term results with improved defecation in a majority of patients. In a more recent study, the Italian Society of Colo-Rectal Surgery (21) reported that 55% of patients still had at least three ODS related symptoms of ODS at 18 months after STARR. Nineteen percent of the patients required another intervention.

Regadas *et al.* (22) evaluated the results of stapled repair of rectocele with a single circular stapler (TRREMS) in 81 patients. Almost all patients (79/81) had significant reduction of the CCS constipation score (median from 13 to 4; $P = 0.0001$). Patients with anismus previously treated with biofeedback had a lower degree of improvement.

There have been a few studies comparing the STARR technique with VR for patients with ODS. Altomare *et al.* (23) compared the functional outcome after STARR ($n = 21$) and VR ($n = 28$) in patients with ODS. Preoperative median ODS and TAPE scores were comparable. ODS scores improved in both groups, but more in the VR group. The TAPE score improved significantly only after VR.

Rectocele repair

Rectocele is common finding in patients with constipation and frequently coexists with non-relaxation of the pelvic floor (24). Transvaginal rectocele repair is popular and

allows repair of the rectocele as well as the perineum and the vaginal opening. Transanal approach has a benign postoperative course, but allows only for limited repair of the rectocele.

In a prospective study (25) using posterior colporrhaphy, we found that constipation improved in 88% of patients and 52% of patients were completely relieved of their constipation on follow-up after one year. Yamana *et al.* (26) assessed the clinical and physiological outcomes after transvaginal rectocele repair and they demonstrated that difficult evacuation improved in 90% of the patients.

The transanal approach is also popular. In a recent study, Tsunoda *et al.* (27) assessed the functional outcome of transanal repair of rectocele in 30 patient using prospective symptom scores and quality of life instruments. Postoperative defecography demonstrated a reduction in rectocele size and constipation was improved in 15/21 patients at 1 year and in 14/20 patients at mid-term follow-up.

Sacral nerve stimulation (SNS)

SNS is popular in the treatment of fecal incontinence. The treatment modality has also been tried in constipated patients and a few studies have demonstrated moderate beneficial effects in some patients. Kamm *et al.* (28) reported in a prospective multicenter trial that SNS increased defecation frequency and a decrease in the Cleveland Clinic constipation score. However, SNS has not gained widespread use in patients with constipation and constipation is not an approved indication for SNS in the United States.

Subtotal colectomy for slow transit constipation

Subtotal colectomy is sometimes tried in patients who have failed conservative management for severe, handicapping constipation. Long-term results are frequently disappointing, especially in patients with OD (29).

Conclusions

Patients with OD should initially be treated with conservative and medical therapies. Surgical approaches vary and they should be tailored towards the specific condition causing ODS, which can be delineated by appropriate assessment.

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