Defecography

Policy

*Please see amendment for Pennsylvania Medicaid at the end of this CPB.

I. Aetna considers defecography (evacuation proctography) medically necessary in members with documented chronic constipation* when results of anorectal manometry and rectal balloon expulsion are negative or inconclusive, and in whom any of the following conditions is suspected as the cause of impaired defecation:

- Anterior rectocele (e.g., history of manipulation of the rectal wall per vagina); or
- Enterocele (e.g., after hysterectomy); or
- Inappropriate contraction of the puborectalis muscle; or
- Pelvic organ prolapse

II. Aetna considers defecography experimental and investigational for routine evaluation of constipation and for all other indications because its effectiveness for these indications has not been established.
III. Aetna considers dynamic magnetic resonance imaging (MRI) of defecation (also known as MR defecography) experimental and investigational for the evaluation of rectal prolapse, rectal intussusception, other pelvic floor disorders, and all other indications (e.g., determination of therapeutic options in persons with spinal cord injury suffering from neurogenic bowel dysfunction, evaluation of bowel function following ileal pouch-anal anastomosis, and evaluation of obstructed defecation syndrome; not an all-inclusive list) because its effectiveness for these indications has not been established.

*Note: Chronic constipation is defined as the presence of 2 or more of the following symptoms for at least 3 months:

- Lumpy and/or hard stools at least 1/4 of the time; or
- Sensation of incomplete evacuation at least 1/4 of the time; or
- Straining at defecation at least 1/4 of the time; or
- Two or fewer bowel movements per week.

See also CPB 0132 - Biofeedback (../100_199/0132.html).

**Background**

Defecography (evacuation proctography) is a radiological contrast study that is used to evaluate the anatomy and function of the lower bowel during the process of defecation using fluoroscopic techniques. Contrast material (e.g., barium paste) similar to the consistency of stool is placed into the rectum. The individual is then seated on a specially constructed (i.e., radiolucent) commode and instructed to bear down, cough, relax or squeeze. Fluoroscopy or videofluoroscopy is used to monitor the anatomy of the anorectal activity during squeezing, relaxation and while
Defecography has been proposed as a diagnostic test of constipation to evaluate lower bowel disorders that are not evident by direct visualization.

The American Gastroenterological Association (AGA) guidelines on constipation (2000) recommended a systematic approach to patients with constipation. After the initial history and physical examination, patients may be classified into one of several subgroups: (i) irritable bowel syndrome, (ii) slow-transit constipation, (iii) rectal outlet obstruction, (iv) a combination of slow-transit constipation and rectal outlet obstruction, (v) organic constipation, or (vi) constipation secondary to systemic disease. Organic and neurologic conditions should be addressed or ruled-out before recommending a trial of fiber (and/or dietary changes) and osmotic laxatives. Individuals who fail to respond to this initial approach are appropriate candidates for more specialized testing. However, the AGA guidelines stated that the "sensitivities of these investigations ha[ve] not been established" and interpretation of any single test must be guarded. According to these guidelines, a radiopaque marker study can be used to identify slow transit constipation. The guidelines stated that anorectal manometry and balloon expulsion study can provide supportive data for clinical or physiologic suggestions of pelvic floor dysfunction; if confirmed, defecography will solidify the diagnosis and evaluate anatomic defects. The guidelines noted that defecatory function can be measured either scintigraphically or radiographically. The scintigraphic method evaluates anorectal angulation and pelvic floor descent during evacuation with minimal radiation exposure; however, the anatomic defects may not be seen as well as with barium defecography. Barium defecography can be performed in conjunction with a standard barium enema (for structural evaluation of the whole colon), and thus an anatomic/functional evaluation of defecation can be performed at the same time. According to these guidelines, of the
observations possible with these techniques, the most relevant include the failure of the anorectal angle to open during defecation, and the degree of pelvic floor descent during defecation. Decreased descent is a component of impaired pelvic floor relaxation ("anismus"), and, conversely, excessive descent can also be a pathophysiologic mechanism of constipation. According to the AGA medical position statement on anorectal testing techniques (1999), large randomized controlled studies that validate anorectal tests against other techniques are lacking. The AGA concluded that (i) defecography is not of established value in patients with fecal incontinence, and (ii) it has potential value in patients with constipation in whom the following problems are suspected as the cause of impaired defecation: inappropriate contraction of the puborectalis muscle, enterocele (e.g., after hysterectomy), and anterior rectocele (e.g., history of manipulation of the rectal wall per vagina). A number of criticisms of defecography testing were noted by the AGA, including: (i) poor agreement between independent observers in the measurement of the anorectal angle (an important parameter to the interpretation of the results), (ii) some of the findings reported on examination occur in a large proportion of asymptomatic individuals, (iii) normal values of rectal emptying vary widely, (iv) rectal evacuation does not correlate with symptoms (e.g., infrequent defecation versus impaired defecation), colonic transit, or anal manometry results, and (v) some investigators reported that defecography adds little data to the results of anorectal manometry and does not differentiate patients with impaired defecation from those with fecal incontinence or normal controls. The AGA stated that although defecography may disclose significant differences between constipated patients and controls, the degree of overlap renders these studies of limited importance in management decisions. However, if the results of defecography corroborate the results of other studies of anorectal function, they may serve to
reinforce the validity of such testing. The AGA also stated there is no support for the routine use of the test.

Guidelines on constipation from the American Society of Colon and Rectal Surgeons (Ternent et al, 2007) stated that defecography is probably the most useful diagnostic technique for identifying internal rectal intussusception. The guidelines stated that, in the setting of obstructed defecation, defecography may help to detect structural causes, such as intussusception, rectocele with retained stool, pelvic dyssynergia, and extent of rectal emptying.

In a systematic review of the evidence on the clinical utility of diagnostic tests for constipation in adults, Rao and colleagues (2005) found 10 studies in the published peer-reviewed literature on the use of defecography in patients with constipation that met their inclusion criteria. These studies were all clinical case series and none employed a gold or reference standard. The prevalence of abnormal findings which supported a diagnosis of constipation varied between 25 and 90% and the prevalence of dyssynergia varied between 13 and 37%. The authors reported a number of inherent deficiencies in the studies, including: (i) inconsistency with the definition of dyssynergia; however, most studies used a combination of findings including a decreased anorectal angle and/or impaired evacuation of barium contrast; (ii) normal values of rectal emptying varied considerably; (iii) percentage of rectal evacuation during defecography did not correlate with symptoms; (iv) a significant overlap of findings between patients and healthy controls; (v) poor correlation of symptoms with defecographic findings; and (vi) poor ability to discriminate between the subtypes of constipation. Furthermore, the utility of identifying abnormalities such as a rectocele or mucosal intussusception was unclear and their prevalence was variable. Some investigators considered small rectoceles (less than 2 cm) as inconsequential while other reported rectoceles of all sizes.
Rao and colleagues reported that constipation was not adequately defined in most studies and no single symptom or test defined the condition. Furthermore, a recent study found that defecography did not have any additional diagnostic benefit over and above what was obtained from anorectal manometry, colonic transit study, and balloon expulsion tests (Rao et al, 2004). Rao and colleagues (2005) concluded that defecography should be regarded as an adjunct to clinical and manometric assessment of anorectal function and not relied upon as the sole test for defecatory dysfunction. Commenting on the systematic evidence review by Rao et al, the Centre for Reviews and Dissemination (2006) stated that Rao et al's use of a narrative summary was appropriate given the considerable differences between the included studies, and their conclusion that further research is required follows from the data presented.

At this time, no single test appears to provide a pathophysiological basis for constipation. Well-designed, prospective studies are required to further examine the clinical utility of tests for constipation. However, there is some evidence that defecography can provide useful information regarding the anatomical and functional changes of the anorectum. The AGA has determined that patients who have constipation suspected to be the result of inappropriate contraction of the puborectalis muscle, enterocele or anterior rectocele may benefit from defecography (Barnett, 1999; Rao et al, 2005).

Videlock et al (2013) stated that dyssynergic defecation (DD) results from inadequate relaxation of the pelvic floor on attempted defecation. The prevalence of DD in patients with chronic constipation (CC) is uncertain. In a meta-analysis, these investigators estimated the prevalence of abnormal findings associated with DD across testing modalities in patients referred for physiological testing for CC. Systematic search of MEDLINE, EMBASE and PUBMED databases were conducted. They included full manuscripts reporting DD
prevalence in CC, and specific findings at pelvic floor diagnostic tests. Random effects models were used to calculate pooled DD prevalence (with 95% confidence interval [CI]) according to individual tests and specific findings. A total of 79 studies on 7,581 CC patients were included. The median prevalence of any single abnormal finding associated with DD was 37.2%, ranging from 14.9% (95% CI: 7.9 to 26.3) for absent opening of the anorectal angle (ARA) on defecography to 52.9% (95% CI: 44.3 to 61.3) for a dyssynergic pattern on ultrasound. The prevalence of a dyssynergic pattern on manometry was 47.7% (95% CI: 39.5 to 56.1%). The prevalence of DD was similar across specialty and geographic area as well as when restricting to studies using Rome criteria to define constipation. The authors concluded that dyssynergic defecation is highly prevalent in CC and is commonly detected across testing modalities, type of patient referred, and geographical regions. They believe that the lower prevalence of findings associated with DD by defecography supports use of manometry and balloon expulsion testing as an initial evaluation for CC.

Furthermore, the American Gastroenterological Association medical position statement on "Constipation" (AGE, 2013) stated that:

- Defecography should not be performed before anorectal manometry and a rectal balloon expulsion test.
- Defecography should be considered when results of anorectal manometry and rectal balloon expulsion are inconclusive for defecatory disorders.

**MR Defecography**
Magnetic resonance (MR) defecography (also known as dynamic MR defecography) is defecography with the addition of MR so that three dimensional (3D) images are provided. These images purportedly improve the ability to assess the anatomy and functioning of the pelvic floor muscles.

Dynamic magnetic resonance imaging of defecation (also known as MR defecography), performed either with an open-configuration or closed-configuration unit, has been used to study the underlying anatomic and pathophysiologic background of pelvic floor disorders including rectal intussusception and rectal prolapse. Stoker et al (2002) noted that disorders of the posterior pelvic floor are relatively common. The role of imaging in this field is increasing, especially in constipation, prolapse and anal incontinence. Dynamic MRI of defecation may be a valuable alternative as the pelvic floor muscles are visualized, and is currently under evaluation. Dvorkin et al (2004) examined if open-magnet MR defecography could provide more useful clinical information than evacuation proctography (EP) alone in the evaluation of a cohort of patients with full-thickness rectal intussusception and could aid in decisions concerning management. A total of 10 patients (4 males and 6 females; median age of 43 years, range of 30 to 65) with symptomatic circumferential rectal intussusception diagnosed on EP, underwent open-magnet MR defecography. Pathologies visible with each method were recorded and 12 parameters of anorectal configuration and morphology measured and compared. There was discordance in the diagnosis of rectal intussusception in 3 cases. In another 2 patients, MR defecography demonstrated mucosal descent only. Measurements of anorectal configuration and morphology were similar between techniques; only rectal size and lateral dimensions of the rectoceles were significantly different, being smaller on MR defecography than EP. Two patients were shown on MR defecography to have significant bladder descent and 2 female patients had significant vaginal descent. The authors concluded that EP remains the first line investigation for the
diagnosis of rectal intussusception, but may not distinguish mucosal from full-thickness descent. The sensitivity of MR defecography compared to EP was 70% for the diagnosis of rectal intussusception.

In a review on dynamic MRI on outlet obstruction syndrome, Bolog and Weishaupt (2005) stated that conventional defecography has played an important role in the radiological assessment of these patients but the technique is limited by its projectional nature and its inability to detect soft-tissue structures. Dynamic pelvic MRI using either closed-configuration or open-configuration MR systems is a rapidly evolving technique that has been gaining increased interest over the last years. Chu et al (2007) assessed the feasibility of dynamic breath-hold MRI for evaluating changes in the anorectal angle and movements of the pelvic-floor musculature (puborectalis) during resting and straining states in pediatric patients presenting with anismus. A total of 6 pediatric patients (7 to 13 years old) with chronic constipation and manometric evidence of anismus were assessed by dynamic breath-hold MRI. Changes in the anorectal angle, the degree of pelvic-floor descent, and the thickness and length of the puborectalis muscles were measured during rest and straining. The findings were compared with those obtained in 6 age- and sex-matched controls. The children with anismus had a smaller anorectal angle during straining, and the angle decreased from rest to defecation. The puborectalis also became paradoxically shortened and thickened during straining in the anismus group. There were significant differences between the two groups in terms of the change of degree of the anorectal angle, and the thickness and length of the puborectalis muscle during straining. The authors concluded that fast dynamic MRI is feasible for evaluating pelvic-floor movement in pediatric patients. These preliminary results suggested that children with anismus have a smaller anorectal angle and a different puborectalis configuration compared to controls.
Groenendijk et al (2009) attempted to establish the effects of additional diagnostic tests compared to a consensus outcome on treatment selection in primary pelvic organ prolapse. Three expert gynecologists individually defined a management plan in 53 patients after MRI, defecography, urodynamic, and anorectal function test information was provided. These management plans were compared with basic treatment advices in the absence of any test and with consensus advices (opinion-based references). The experts assigned a subjective score (assigned diagnostic value [ADV], 0 to 100 %) to rate the test's relative importance. On average, additional diagnostic testing resulted in a revised initial management plan in 38 % of the cases; 24 % of the individual management plans did not meet the consensus reference. Overall, defecography was regarded most valuable (ADV range of 19 to 65 %) versus MRI rated least (ADV range of 0 to 37 %). The authors concluded that although additional diagnostic tests frequently led to adaptations of basic treatment proposals, consensus was not reached in a quarter of the cases. Furthermore, in a review on established and new diagnostic approaches for constipation, Bussen and Bussen (2009) discussed often used methods such as taking a specific and structured history, performing a clinical examination, use of diagnostic tools such as colon transit time, anal manometry, defecography, endorectal ultrasonography as well as electrophysiological investigations such as anal sphincter electromyography and pudendal nerve terminal motor latency measurement. Dynamic MRI of defecation was not mentioned as an option.

Fiaschetti et al (2011) examined the capabilities of an open-configuration, low-field, tilting, MR system for investigating pelvic floor disorders and compared the results obtained with the patient in the semi-orthostatic and supine positions. A total of 18 female patients with a diagnosis of pelvic floor disorder (physical examination and conventional defecography) underwent dynamic MR defecography with a 0.25-T tilting MR system (G-scan, Esaote). Images were obtained after
administration of contrast agent into the rectum, bladder and vagina in both the orthostatic and supine positions. Three-dimensional T2-weighted hybrid contrast-enhanced (HYCE) sequences and dynamic T1-weighted gradient echo (GE) sequences were acquired at rest, during maximal contraction of the anal sphincter, straining and defecation. Good image quality was obtained in 15/18 patients; 3 presented severe artefacts due to motion, and 3 had incontinence, which hampered the functional studies. Better anatomical detail was obtained with MR defecography compared with conventional defecography. Three prolapses were observed in the semi-orthostatic position only, and 7 were found to be more severe in the orthostatic than in the supine position. The authors concluded that dynamic MR defecography with an open-configuration, low-field, tilting MR system is a feasible and promising tool for studying the pelvic floor. They stated that larger series are needed to evaluate its real diagnostic value.

Cappabianca and colleagues (2011) compared the diagnostic efficacy of dynamic MR defecography (MR-D) with enterocolpo-cysto-defecography (ECCD) in the assessment of midline pelvic floor hernias (MPH) in female pelvic floor disorders. From August 2004 to August 2010, a total of 3,006 female patients who required ECCD for the evaluation of pelvic floor disorders were enrolled in this study. All the 1,160 patients with ECCD findings of MPH were asked to undergo MR-D; 1,142 accepted to undergo MR-D and constituted the object of analysis. Overall, the prevalence of MPH at ECCD was higher if compared with that at MR-D. Concerning the hernia content, there were significantly more enteroceles and sigmoidoceles on ECCD than on MR-D, whereas, in relation to the hernia development modalities, the prevalence of elyroceles, edroceles, and Douglas' hernias at ECCD was significantly higher than that at MR-D. In spite of a 100 % specificity, the sensibility of MR-D in the detection of an omentocele, sigmoidocele, and enterocele was, respectively, 95 %, 82 %, and 65 %, showing an inferior diagnostic capacity if compared with that of ECCD. The authors concluded
that MR-D shows lower sensitivity than ECCD in the detection of MPH development. The less-invasive MR-D may have a role in a better evaluation of the entire pelvic anatomy and pelvic organ interaction especially in patients with multi-compartmental defects, planned for surgery.

Foti et al (2013) prospectively compared the diagnostic capabilities of magnetic resonance (MR) imaging with conventional defecography (CD) in outlet obstruction syndrome. A total of 19 consecutive patients with clinical symptoms of outlet obstruction underwent pelvic MR examination. The MR imaging protocol included static T2-weighted fast spin-echo (FSE) images in the sagittal, axial and coronal planes; dynamic midsagittal T2-weighted single-shot (SS)-FSE and fast imaging employing steady-state acquisition (FIESTA) cine images during contraction, rest, straining and defecation. MR images (including and then excluding the evacuation phase) were compared with CD, which is considered the reference standard. Comparison between CD and MR with evacuation phase (MRWEP) showed no significant differences in sphincter hypotonia, dyssynergia, rectocele or rectal prolapse and significant differences in descending perineum. Comparison between CD and MR without evacuation phase (MRWOEP) showed no significant differences in sphincter hypotonia, dyssynergia or enterocele but significant differences in rectocele, rectal prolapse and descending perineum. Comparison between MRWEP and MRWOEP showed no significant differences in sphincter hypotonia, dyssynergia, enterocele or descending perineum but significant differences in rectocele, rectal prolapse, peritoneocele, cervical cystoptosis and hysteroptosis. The authors concluded that MR imaging provides morphological and functional study of pelvic floor structures and may offer an imaging tool complementary to CD in multi-compartment evaluation of the pelvis. An evacuation phase is mandatory. The findings of this small study need to be validated by well-designed studies.
Bharucha and Rao (2014) noted that gastroenterologists frequently encounter pelvic floor disorders, which affect 10% to 15% of the population. The anorectum is a complex organ that collaborates with the pelvic floor muscles to preserve fecal continence and enable defecation. A careful clinical assessment is critical for the diagnosis and management of defecatory disorders and fecal incontinence. Newer diagnostic tools (e.g., high-resolution manometry and MR defecography) provide a refined understanding of anorectal dysfunctions and identify phenotypes in defecatory disorders and fecal incontinence. Conservative approaches, including biofeedback therapy, are the mainstay for managing these disorders; new minimally invasive approaches may benefit a subset of patients with fecal incontinence, but more controlled studies are needed.

An UpToDate review on "Etiology and evaluation of chronic constipation in adults" (Wald, 2015) states that "Tests such as magnetic resonance (MR) and dynamic MR defecography can evaluate global pelvic floor anatomy and sphincter morphology and assess dynamic motion, thereby providing more valuable information without radiation. These tests are expensive, not widely available, and have uncertain added clinical value compared to standard defecography".

Francesca and co-workers (2016) stated that a standardized MRI technique for assessing pelvic floor disorders is not yet established.

In a prospective, single-center study, Putz and associates (2017) examined if MR-defecography can be employed in sensorimotor complete spinal cord injury (SCI) subjects as a potential diagnostic tool to detect defecational disorders associated with neurogenic bowel dysfunction (NBD) using standard parameters for obstructed defecation. These researchers developed MR-defecography in traumatic sensorimotor complete paraplegic SCI patients with upper motoneuron type injury (neurological level of injury T1 to T10)
using a conventional 3T scanner. Defecation was successfully induced by eliciting the defecational reflex after rectal filling with ultrasonic gel, application of 2 lecicarbon suppositories and digital rectal stimulation. Examination was performed with patients in left lateral decubitus position using T2-weighted turbo spin echo sequence in the sagittal plane at rest (TE 89 ms, TR 3220 ms, FOV 300 mm, matrix 512 × 512, ST 4 mm) and ultrafast-T2-weighted-sequence in the sagittal plane with repeating measurements (TE 1.54 ms, TR 3.51 ms, FOV 400 mm, matrix 256 × 256, ST 6 mm). Changes of anorectal angle (ARA), anorectal descent (ARJ) and pelvic floor weakness were documented and measured data was compared to reference values of asymptomatic non-SCI subjects in the literature to assess feasibility. MR-defecography provided evaluable imaging sequences of the induced evacuation phase in SCI patients. Measurement results for ARA, ARJ, hiatal width (H-line) and hiatal descent (M-line) deviate significantly from reference values in the literature in asymptomatic subjects without SCI. The overall mean values in this clinical trial for SCI patients were: ARA (rest) 127.3°, ARA (evacuation) 137.6°, ARJ (rest) 2.4 cm, ARJ (evacuation) 4.0 cm, H-line (rest) 7.6 cm, H-line (evacuation) 8.1 cm, M-line (rest) 2.6 cm, M-line (evacuation) 4.2 cm. The authors concluded that MR-defecography is feasible in sensorimotor complete SCI patients. They noted that individual MR-defecography findings may help to determine specific therapeutic options for respective patients suffering from severe NBD.

El Sayed and colleagues (2017) developed recommendations that can be used as guidance for standardized approach regarding indications, patient preparation, sequences acquisition, interpretation and reporting of magnetic resonance imaging (MRI) for diagnosis and grading of pelvic floor dysfunction (PFD). The technique included critical literature between 1993 and 2013 and expert consensus about MRI protocols by the pelvic floor-imaging working group of the European Society of Urogenital Radiology (ESUR) and the
European Society of Gastrointestinal and Abdominal Radiology (ESGAR) from 1 Egyptian and 7 European institutions. Data collection and analysis were achieved in 5 consecutive steps. A total of 82 items were scored to be eligible for further analysis and scaling. Agreement of at least 80% was defined as consensus finding. Consensus was reached for 88% of 82 items. Recommended reporting template should include 2 main sections for measurements and grading. The pubo-coccygeal line (PCL) is recommended as the reference line to measure pelvic organ prolapse. The recommended grading scheme is the "Rule of three" for Pelvic Organ Prolapse (POP), while a rectocele and ARJ descent each has its specific grading system. The authors concluded that based on an extensive literature review and analysis and of expert consensus, these proposed recommendations can be used as guidance for standardized MR imaging and reporting of PFD. Nevertheless, the joint ESUR-ESGAR pelvic floor-working group is aware about the complexity of the topic and that further studies are mandatory to achieve additional refinements of guidelines for MR imaging, diagnosing and reporting of PFD.

Ramage and associates (2018) stated that MR defecography (MRD) is an alternative to conventional defecography (CD) that allows for dynamic visualization of the pelvic floor. These investigators examined if MRI features indicative of pelvic floor dysfunction correlated with patient-reported symptom severity; MR proctograms were matched to a prospectively-maintained functional database. Uni-variate and multi-variate analyses were performed using pre-treatment questionnaire responses to the Birmingham Bowel, Bladder and Urinary Symptom Questionnaire (BBUSQ), Wexner Incontinence Score (WIS), and modified Obstructed Defecation Symptom (ODS) Score. A total of 302 MRI proctograms were performed between January 2012 and April 2015; 170 patients were included. Patients with a rectocele of greater than 2 cm (p = 0.003; odds ratio [OR] 5.756) or MRD features suggestive of pubo-rectalis syndrome (p = 0.025; OR 8.602) were more likely to
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report a higher ODS score on multi-variate analysis. Lack of rectal evacuation was negatively associated with an abnormal WIS (p = 0.007; OR 0.228). Age greater than 50 (p = 0.027, OR 2.204) and a history of pelvic floor surgery (p = 0.042, OR 0.359) were correlated with an abnormal BBUSQ incontinence score. Lack of rectal evacuation (p = 0.027, OR 3.602) was associated with an abnormal BBUSQ constipation score. Age greater than 50 (p = 0.07, OR 0.156) and the presence of recto-anal intussusception (p = 0.010, OR 0.138) were associated with an abnormal BBUSQ evacuation score. The authors concluded that while MRD is a useful tool in aiding multi-disciplinary decision making, overall, it is poorly correlated with patient-reported symptom severity, and treatment decisions should not rest solely on results.

The main drawback of this study was the lack of a control group of "healthy volunteers". All patients who were studied had been referred due to the presence of symptoms, and therefore, this may explain both the high prevalence of symptoms and radiological abnormalities. Although not fully discussed in this study, the authors did additionally analyze the data having moved the threshold of what was considered significant in terms of both PROMs and MRD parameters to examine if correlations were more evident for more severe disease. Findings were not dissimilar to those already discussed; therefore, this was omitted from the manuscript. Moving forward, these researchers suggested that any future work ensured a control group was used as a comparator.

Another drawback worthy of note was the use of the BBUSQ, which has only been validated in female patients. The authors felt that this questionnaire gave a comprehensive assessment of both the anterior and posterior compartments, and omitted the one question not applicable to men and adjusted the scoring system accordingly. Despite the inclusion of 2 other scoring systems, which assessed bowel function, there was still little significance on multi-variate analysis to allow the development of a scoring system to predict symptom severity and guide management. The exception to this was the ODS
score that did show correlation with moderately-sized rectoceles and paradoxical pubo-rectalis syndrome features on MRI, but not with other MRI factors such as descent.

Schawkat and co-workers (2018a) evaluated the extents of pelvic floor descent both during the maximal straining phase and the defecation phase in healthy volunteers and in patients with pelvic floor disorders, studied with MRD, and defined specific threshold values for pelvic floor descent during the defecation phase. A total of 22 patients (mean age of 51 ± 19.4 years) with obstructed defecation and 20 healthy volunteers (mean age of 33.4 ± 11.5 years) underwent 3.0T MRD in supine position using mid-sagittal T2-weighted images. Two radiologists performed measurements in reference to PCL-lines in straining and during defecation. In order to identify cut-off values of pelvic floor measurements for diagnosis of pathologic pelvic floor descent [anterior, middle, and posterior compartments (AC, MC, PC)], receiver-operating characteristic (ROC) curves were plotted. Pelvic floor descent of all 3 compartments was significantly larger during defecation than at straining in patients and healthy volunteers (p < 0.002). When grading pelvic floor descent in the straining phase, only 2 healthy volunteers showed moderate PC descent (10 %), which was considered pathologic. However, when applying the grading system during defecation, PC descent was over-estimated with 50 % of the healthy volunteers (10 of 20) showing moderate PC descent. The AUC for PC measurements during defecation was 0.77 (p = 0.003) and suggested a cut-off value of 45 mm below the PCL to identify patients with pathologic PC descent. With the adapted cut-off, only 15 % of healthy volunteers showed pathologic PC descent during defecation. The authors concluded that MRD measurements during straining and defecation could be used to differentiate patients with pelvic floor dysfunction from healthy volunteers. However, different cut-off values should be used during straining and during
defecation to define normal or pathologic PC descent. This was a small (n = 22 patients); its findings need to be validated by well-designed studies.

Schawkat and co-workers (2018a) examined the performance of MRD in lateral body position as an alternative to supine position. A total of 22 consecutive patients (16 women; mean age of 51 ± 19.4 years) with obstructed defecation and 20 healthy volunteers (11 women; mean age of 33.4 ± 11.5 years) underwent MRD in a closed-configuration 3T-MRI in supine and lateral position. MRD included T2 weighted images at rest and during defecation after filling the rectum with 250 ml water-based gel. Measurements were performed in reference to the pubo-coccygeal line and grade of evacuation was assessed. Image quality (IQ) was rated on a 5-point-scale (5 = excellent). In patients grades of middle and posterior compartment descent were similar in both body positions (p > 0.05). Grades of anterior compartment descent were significantly higher in lateral position (21/22 versus 17/22 patients with normal or small descent, p < 0.034). In volunteers grades of descent were similar for all compartments in supine and lateral position (p > 0.05). When attempting to defecate in supine position 6/22 (27 %) patients showed no evacuation, while in lateral position only 3/22 (14 %) were not able to evacuate. IQ in patients was equal at rest (4.4 ± 0.5 and 4.7 ± 0.6, p > 0.05) and slightly better in supine compared to the lateral position during defecation (4.5 ± 0.4 versus 3.9 ± 0.9, p < 0.017). IQ in volunteers was equal in supine and lateral position (p > 0.05). The authors concluded that in lateral position, more patients were able to evacuate with similar grades of pelvic floor descent compared to supine position. These researchers stated that MRD in lateral position may be a valuable alternative for patients unable to defecate in supine position.
MR Defecography for Determination of Therapeutic Options in Persons with Spinal Cord Injury Suffering from Neurogenic Bowel Dysfunction

Putz and colleagues (2017) examined if MRD can be employed in sensorimotor complete spinal cord injury (SCI) subjects as a potential diagnostic tool to detect defecational disorders associated with neurogenic bowel dysfunction (NBD) using standard parameters for obstructed defecation. In a prospective, single-center study, these researchers developed MRD in traumatic sensorimotor complete paraplegic SCI patients with upper motoneuron type injury (neurological level of injury T1 to T10) using a conventional 3T scanner. Defecation was successfully induced by eliciting the defecational reflex after rectal filling with ultrasonic gel, application of 2 lecicarbon suppositories and digital rectal stimulation. Examination was performed with patients in left lateral decubitus position using T2-weighted turbo spin echo sequence in the sagittal plane at rest (TE 89ms, TR 3220ms, FOV 300mm, matrix 512 × 512, ST 4mm) and ultrafast-T2-weighted-sequence in the sagittal plane with repeating measurements (TE 1.54ms, TR 3.51ms, FOV 400mm, matrix 256 × 256, ST 6mm). Changes of ano-rectal angle (ARA), ano-rectal descent (ARJ) and pelvic floor weakness were documented and measured data were compared to reference values of asymptomatic non-SCI subjects in the literature to assess feasibility; MRD provided evaluable imaging sequences of the induced evacuation phase in SCI patients. Measurement results for ARA, ARJ, hiatal width (H-line) and hiatal descent (M-line) deviated significantly from reference values in the literature in asymptomatic subjects without SCI. The overall mean values in this study for SCI patients were: ARA (rest) 127.3°, ARA (evacuation) 137.6°, ARJ (rest) 2.4 cm, ARJ (evacuation) 4.0 cm, H-line (rest) 7.6 cm, H-line (evacuation) 8.1 cm, M-line (rest) 2.6 cm, M-line (evacuation) 4.2 cm. The authors concluded that MRD was feasible in sensorimotor complete SCI patients. Moreover, they stated
that individual MRD findings may help to determine specific therapeutic options for respective patients suffering from severe NBD.

**MR Defecography for Evaluation of Obstructed Defecation Syndrome**

Piloni and associates (2017) described the abnormalities at MR imaging and related complaints in patients with poor outcome after stapled trans-anal rectal resection (STARR) from 3 centers. The medical records of 21 symptomatic patients from center 1, 31 patients from center 2, and 63 patients from center 3 were reviewed with regard to findings at MRD and related symptoms. Regardless of the center, most relevant imaging features and related complaints were (a) impaired emptying (82.11 %), related complaint ODS; (b) persistent rectocele of greater than 2 cm and intussusception (39.3 %), split evacuation and digitation; (c) pelvic organ descent on straining (39.8 %), prolapse sensation; (d) small neo-rectum and loss of contrast (32.5 %), urgency and incontinence; (e) anastomotic stricture and granuloma (28.4 %), pain; and (f) non-relaxing pubo-rectalis muscle (19.5 %), tenesmus. Less frequent findings included rectal pocket formation (5.6 %) and rectovaginal sinus tract (1.6 %). Patients were referred to MR imaging with an average time interval of 5 ± 2, 4 ± 1, and 2 ± 1 years in the 3 centers, respectively, and only rarely by the same surgeon who performed the operation: 1/21 (4.8 %) in center 1, 3/39 (7.7 %) in center 2, and 9/63 (14.3 %) in center 3. The authors concluded that most surgeons involved in STARR operation with subsequent poor outcome did not rely on MR imaging.

In a prospective, cohort test accuracy study, Martín-Martín and co-workers (2017) evaluated the diagnostic accuracy of MRD and compared it with video-defecography (current test of choice) in the evaluation of obstructed defecation syndrome (ODS). This trial was conducted at one major tertiary referral center on patients with a diagnosis of ODS who were referred
to the colorectal surgery clinic in a consecutive series from 2009 to 2012. All patients underwent a clinical examination, video-defecography, and MRD in the supine position. These investigators analyzed diagnostic accuracy for MRD and performed an agreement analysis using Cohen's kappa index (κ) for each diagnostic imaging examination performed with video-defecography and MRD. These researchers included 40 patients with Rome III diagnostic criteria of ODS. The degree of agreement between the 2 tests was as follows: almost perfect for anismus (κ = 0.88) and rectal prolapse (κ = 0.83), substantial for enterocele (κ = 0.80) and rectocele grade III (κ = 0.65), moderate for intussusception (κ = 0.50) and rectocele grade II (κ = 0.49), and slight for rectocele grade I (κ = 0.30) and excessive perineal descent (κ = 0.22); 18 cystoceles and 11 colpoceles were diagnosed only by MRD. Most patients (54%) stated that video-defecography was the more uncomfortable test. The authors concluded that MRD could become the imaging test of choice for evaluating ODS. This was a small study (n = 40); its findings need to be validated by well-designed studies.

Piloni and colleagues (2018) examined the relationship between symptoms of obstructed defecation and findings on MRD in men with ODS. A total of 36 men with ODS who underwent MRD at the authors’ institution between March 2013 and February 2016 were asked in a telephone interview about their symptoms and subsequent treatment, either medical or surgical. Patients were divided into 2 groups, one with anismus (Group 1) and one with prolapse without anismus (Group 2). The interaction between ODS type and symptoms with MR findings was assessed by multi-variate analysis for categorical data using a hierarchical log-linear model; MRI findings included lateral and/or posterior rectocele, rectal prolapse, intussusception, ballooning of levator hiatus with impingement of pelvic organs and dyskinetic pubo-rectalis muscle. There were 21 men with ODS due to anismus (Group 1) and 15 with ODS due to rectal prolapse/intussusception (Group 2). Mean age of the entire group was 53.6 ± 4.1 years.
(range of 18 to 77 years). Patients in Group 1 were slightly older than those in Group 2 (age peak, 6th decade in 47.6 versus 20.0 %, p < 0.05). Symptoms most frequently associated with Group 1 patients included small volume and hard feces (85.0 %, p < 0.01), excessive strain at stool (81.0 %, p < 0.05), tenesmus and fecaloma formation (57.1 % and 42.9 %, p < 0.05); symptoms most frequently associated with Group 2 patients included mucous discharge, rectal bleeding and pain (86.7 %, p < 0.05), prolonged toilet time (73.3 %, p < 0.05), fragmented evacuation with or without digitation (66.7 %, p < 0.005). Voiding outflow obstruction was more frequent in Group 1 (19.0 % versus 13.3 %; p < 0.05), while non-bacterial prostatitis and sexual dysfunction prevailed in Group 2 (26.7 % and 46.7 %, p < 0.05). At MRD, 2 major categories of findings were detected: a dyskinetic pattern (Type 1), seen in all Group 1 patients, which was characterized by non-relaxing pubo-rectalis muscle, sand-glass configuration of the ano-rectum, poor emptying rate, limited pelvic floor descent and final residue of greater than or equal to 2/3; and a prolapsing pattern (Type 2), seen in all Group 2 patients, which was characterized by rectal prolapse/intussusception, ballooning of the levator hiatus with impingement of the rectal floor and prostatic base, excessive pelvic floor descent and residue ≤ of less than or equal to 1/2. Postero-lateral out-pouching defined as perineal hernia was present in 28.6 % of patients in Group 1 and were absent in Group 2. The average levator plate angle on straining differed significantly in the 2 patterns (21.3° ± 4.1 in Group 1 versus 65.6° ± 8.1 in Group 2; p < 0.05). Responses to the phone interview were obtained from 31 patients (18 of Group 1 and 13 of Group 2, response rate, 86.1 %). Patients of Group 1 were always treated without surgery (i.e., biofeedback, dietary regimen, laxatives and/or enemas), which resulted in symptomatic improvement in 12/18 cases (66.6 %). Of the patients in Group 2, 2/13 (15.3) underwent surgical repair, consisting of STARR, which resulted in symptom recurrence after 6 months and laparoscopic ventral rectopexy, which resulted in symptom improvement. The other 11 patients of Group 2 were treated
without surgery with symptoms improvement in 3 (27.3%). The authors concluded that the appearance of various abnormalities at MRD in men with ODS showed 2 distinct patterns, which may have potential relevance for treatment planning, whether conservative or surgical.

Furthermore, an UpToDate review on "Etiology and evaluation of chronic constipation in adults" (Wald, 2018) does not mention MR defecography as a management tool.

**MR Defecography for Evaluation of Bowel Function Following Ileal Pouch-Anal Anastomosis**

Sundle and colleagues (2018) stated that variability in functional outcome after ileal pouch-anal anastomosis (IPAA) is to a large extent unexplained. These investigators used MRI to evaluate the morphology, emptying pattern and other pathology that may explain differences in functional outcome between well-functioning and poorly functioning pouch patients. A second objective was to establish a reference of normal MRI findings in pelvic pouch patients. From a previous study, the best and worst functioning patients undergoing IPAA surgery between 2000 and 2013 had been identified and examined with manovolumetric tests (n = 47). Participants were invited to do a pelvic MRI investigating pouch morphology and emptying patterns, followed by a pouch endoscopy. A total of 43 patients underwent MRI examination. These researchers found no significant morphological or dynamic differences between the well-functioning and poorly functioning pouch patients. There was no correlation between urge volume and the volume of the bony pelvis, and no correlation between emptying difficulties or leakage and dynamic MRI findings. Morphological MRI signs of inflammation were present in the majority of patients and were not correlated to histological signs of inflammation. Of the radiological signs of inflammation, only pouch wall thickness correlated to endoscopic pouchitis disease activity index scores. The authors concluded that it appeared that MRI did
not increase the understanding of factors contributing to functional outcome following IPAA. They stated that unless there is a clinical suspicion of peri-anal/peri-pouch disease or pelvic sepsis, MRI did not add value as a diagnostic tool for pelvic pouch patients; endoscopy remains the golden standard for diagnosing pouch inflammation.

CPT Codes / HCPCS Codes / ICD-10 Codes

Information in the [brackets] below has been added for clarification purposes. Codes requiring a 7th character are represented by "+":

<table>
<thead>
<tr>
<th>Code</th>
<th>Code Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>CPT codes covered if selection criteria are met:</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Defecography:</strong></td>
</tr>
<tr>
<td>74270</td>
<td>Radiologic examination, colon; barium enema, with or without KUB</td>
</tr>
<tr>
<td></td>
<td><strong>ICD-10 codes covered if selection criteria are met:</strong></td>
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<tr>
<td>K59.00</td>
<td>Constipation [not covered for routine evaluation]</td>
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<tr>
<td>K59.09</td>
<td></td>
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<tr>
<td>K59.4</td>
<td>Anal spasm [proctalgia fugax] [inappropriate contraction of the puborectalis muscle]</td>
</tr>
<tr>
<td>K62.89</td>
<td>Other specified diseases of anus and rectum [proctalgia] [inappropriate contraction of the puborectalis muscle]</td>
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<tr>
<td>N81.0</td>
<td>Urethrocele</td>
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<tr>
<td>N81.10</td>
<td>Other female genital prolapse</td>
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<tr>
<td>N81.12</td>
<td></td>
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<tr>
<td>N81.2</td>
<td>Uterovaginal prolapse [enterocele (e.g., after hysterectomy)]</td>
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<tr>
<td>N81.4</td>
<td></td>
</tr>
<tr>
<td>N81.5</td>
<td>Vaginal enterocele</td>
</tr>
<tr>
<td>Code</td>
<td>Code Description</td>
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<td>----------------------------------------------------------------------------------</td>
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<tr>
<td>N81.6</td>
<td>Rectocele [anterior (e.g., history of manipulation of the rectal wall per vagina)]</td>
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<tr>
<td>N81.81 - N81.89</td>
<td>Other female genital prolapse</td>
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<tr>
<td>N81.9</td>
<td>Female genital prolapse, unspecified</td>
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</table>

**MR Defecography:**

**CPT codes not covered for indications listed in the CPB:**

<table>
<thead>
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<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>72195</td>
<td>Magnetic resonance (e.g., proton) imaging, pelvis; without contrast material(s)</td>
</tr>
<tr>
<td>72196</td>
<td>Magnetic resonance (e.g., proton) imaging, pelvis; with contrast material(s)</td>
</tr>
<tr>
<td>72197</td>
<td>Magnetic resonance (e.g., proton) imaging, pelvis; without contrast material(s), followed by contrast material(s) and further sequences</td>
</tr>
</tbody>
</table>

**Other CPT codes related to this CPB:**

<table>
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<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>44157</td>
<td>Colectomy, total, abdominal, with proctectomy; with ileoanal anastomosis, includes loop ileostomy, and rectal mucosectomy, when performed</td>
</tr>
<tr>
<td>44158</td>
<td>Colectomy, total, abdominal, with proctectomy; with ileoanal anastomosis, creation of ileal reservoir (S or J), includes loop ileostomy, and rectal mucosectomy, when performed</td>
</tr>
</tbody>
</table>

**ICD-10 codes not covered for indications listed in the CPB:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>K56.1</td>
<td>Intussusception</td>
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<tr>
<td>K59.02</td>
<td>Outlet dysfunction constipation [obstructed defecation syndrome]</td>
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<tr>
<td>K59.2</td>
<td>Neurogenic bowel, not elsewhere classified</td>
</tr>
<tr>
<td>K62.2</td>
<td>Anal prolapse</td>
</tr>
<tr>
<td>Code</td>
<td>Code Description</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>K62.3</td>
<td>Rectal prolapse</td>
</tr>
<tr>
<td>N81.0 - N81.4</td>
<td>Female genital prolapse [other than anterior rectocele or enterocle]</td>
</tr>
<tr>
<td>N81.81 - N81.9</td>
<td></td>
</tr>
<tr>
<td>N99.3</td>
<td>Prolapse of vaginal vault after hysterectomy [other than anterior rectocele or enterocle]</td>
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<tr>
<td>S12.000A - S12.391S</td>
<td>Fracture of vertebral column with spinal cord injury (cervical, C1-C4)</td>
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<tr>
<td>S14.101A - S14.109S</td>
<td>Injury of nerves and spinal cord at neck level</td>
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<tr>
<td>Numerous options</td>
<td>Spinal cord injury, sequelae</td>
</tr>
</tbody>
</table>

The above policy is based on the following references:


40. Ternent CA, Bastawrous AL, Morin NA, et al.; Standards Practice Task Force of The American Society of Colon
and Rectal Surgeons. Practice parameters for the
evaluation and management of constipation. Dis
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42. Turnbull GK, Bartram CI, Lennard-Jones JE. Radiologic
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43. Varma M, Rafferty J, Buie WD, Standards Practice Task
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44. Videlock EJ, Lembo A, Cremonini F. Diagnostic testing
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46. Wald A. Etiology and evaluation of chronic constipation
in adults. UpToDate [online serial]. Waltham, MA:
UpToDate; reviewed June 2015; May 2018..
Amendment to
Aetna Clinical Policy Bulletin Number: 0718 Defecography

There are no amendments for Medicaid.