# Complete Summary

## GUIDELINE TITLE

American Gastroenterological Association medical position statement on anorectal testing techniques.

## BIBLIOGRAPHIC SOURCE(S)

Barnett JL, Hasler WL, Camilleri M. American Gastroenterological Association medical position statement on anorectal testing techniques. American Gastroenterological Association. Gastroenterology 1999 Mar;116(3):732-60. PubMed

## COMPLETE SUMMARY CONTENT



## SCOPE

### DISEASE/CONDITION(S)

Anorectal conditions, such as:

- Constipation (impaired defecation caused by pelvic floor dyssynergia, enterocele, anterior rectocele, outlet obstruction, anismus, or paradoxical contraction of the pelvic musculature)
- Fecal incontinence
- Levator ani syndrome (puborectalis syndrome, chronic proctalgia, pyriformis syndrome, and pelvic tension myalgia)
- Proctalgia fugax
- Hirschsprung's disease

### GUIDELINE CATEGORY

Diagnosis
Evaluation
Technology Assessment

## CLINICAL SPECIALTY

Family Practice
Gastroenterology
Internal Medicine

## INTENDED USERS

Physicians

## GUIDELINE OBJECTIVE(S)

To direct physicians at all levels as to the usefulness of the various techniques in patients with common anorectal conditions

## TARGET POPULATION

Patients with anorectal conditions, such as constipation (impaired defecation), fecal incontinence, levator ani syndrome, proctalgia fugax, and Hirschsprung´s disease

## INTERVENTIONS AND PRACTICES CONSIDERED

Testing techniques used in diagnosis and management

1. Symptom diaries
2. Symptom questionnaires
3. Physical examination, including assessment of perineal innervation and assessment of anal sphincter
4. Endoscopy
5. Barium enema
6. Evacuation proctography (defacography)
7. Anal ultrasonography
8. Magnetic resonance imaging (MRI)
9. Colon transit studies
10. Anorectal manometry
11. Electromyography
12. Anal endosonography
13. Balloon expulsion
14. Rectal and anal sensory testing
15. Biofeedback training and evaluation

## MAJOR OUTCOMES CONSIDERED

- Results of diagnostic tests
- Sensitivity and specificity of diagnostic tests

# METHODOLOGY

## METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

## DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The articles were gleaned from a MEDLINE search for the 10 years preceding June 1996 and from the bibliography of recent reviews.

## NUMBER OF SOURCE DOCUMENTS

Not stated

## METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Subjective Review

## RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

## METHODS USED TO ANALYZE THE EVIDENCE

Review

## DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

## METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

## RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

## COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

## METHOD OF GUIDELINE VALIDATION

Peer Review

## DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

This document was approved by the Clinical Practice and Practice Economics Committee on May 17, 1998, and by the American Gastroenterological Association (AGA) Governing Board on July 24, 1998.

## RECOMMENDATIONS

### MAJOR RECOMMENDATIONS

#### Testing Techniques

#### History and Physical Examination

Symptom diaries are useful adjuncts to a good history and are recommended for diagnostic evaluation; monitoring of adherence to treatment recommendations; and measuring of treatment efficacy in patients with constipation and fecal incontinence.

At present, no symptom questionnaire satisfactorily addresses anorectal disorders.

Complete physical examination will identify certain structural disorders (e.g., prolapse, perineal disease), local and systematic disease processes, and evidence of more specific neural lesions (e.g., spinal cord tumor) that may impact on anorectal function and dysfunction. In addition, some assessment of perineal innervation can be obtained through observation of perianal sensation and reflex contraction of the external anal sphincter to perianal stimulation and to a cough.

Assessment of the anal sphincter by digital examination can provide limited qualitative assessment of sphincter resting and squeeze pressures.

#### Endoscopy

Endoscopy is necessary for exclusion of organic disease in patients with fecal incontinence, constipation, or proctalgia.

#### Imaging Techniques

Barium enema: Barium enema is not usually necessary for assessment of the anorectal area in patients with fecal incontinence or constipation, except to help exclude intraluminal mucosal disease or to assess bowel dilation.

Evacuation proctography (defacography): Evacuation proctography involves imaging of the rectum with contrast material and observation of the process, rate, and completeness of rectal evacuation using fluoroscopic techniques. Structural and functional alterations can also be observed and include rectocele, internal rectal intussusception, external rectal prolapse, enterocele and pelvic floor dysfunction, or dyssynergia.

An alternative to proctography involves quantitatively measuring the rate and completeness of rectal evacuation of the contrast or of a paste containing

radioisotope. Measurement of rectal emptying by this technique does not give anatomic information about rectal and anal configuration or about the dynamic changes during emptying.

Another technique, balloon proctography, was introduced to outline the rectum during rectal evacuation. A balloon filled with radiolabeled water ("scintigraphic balloon topography") has also been used to measure the anorectal angle. These techniques are dependent on the balloon contour's conforming to the rectum and have been superseded by evacuation proctography with direct contrast instillation into the rectum.

Therefore, evacuation proctography is of potential value in patients with constipation in whom the following problems are suspected as the cause of impaired defecation: pelvic floor dyssynergia (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). Otherwise, there is no support for the routine use of this technique.

Anal ultrasonography: Ultrasonography has been compared with mapping of the external anal sphincter with needle electromyography and has been found to be slightly more accurate and better tolerated. Ultrasonography is also more accurate than anorectal manometry, including vectormanometry (mapping of the symmetry of anal canal pressures).

Therefore, anal ultrasound examination is presently the simplest, most reliable, least invasive test for definition of anatomic defects in the external and internal anal sphincters.

Magnetic resonance imaging and computed tomographic scanning: Computed tomographic (ct) scanning has no place in the evaluation of anal disease because of its poor resolution of this small area and because of the radiation exposure.

Magnetic resonance imaging (MRI) may have a role, but further studies are needed to establish its value.

Colon transit studies: Colon transit studies are useful for objective confirmation of the patient's subjective complaint of constipation and/or decreased bowel frequency, confirmation of slow transit, and documentation of regional delays in transit.

Anorectal Manometry

Satisfactory measurements of anal canal pressures and anal sphincter responses can be obtained with open-tipped or side-opening water-perfused catheters, direct online solid-state microtransducers, or air- or water-filled balloons of various sizes and configurations. Large balloon probes are sufficient for assessment of sphincter responses to rectal distention and other stimuli, but they are not able to measure resting and squeeze pressures of the anal canal quantitatively. Knowledge of normal values for each technique is required, especially in age and sex differences.

Therefore, clinical practice and uncontrolled studies suggest the following indications for anorectal manometry:

1. Fecal incontinence: to define functional weakness of one or both sphincter muscles, in which anal endosonography is complimentary in demonstrating whether this weakness is caused by anatomic derangement, and to perform and predict response to biofeedback training
2. Pelvic floor dyssynergia: to support findings of other tests and to perform, monitor outcome, and possibly predict response to biofeedback training
3. Hirschsprung's disease
4. Anatomic defects of the anal sphincters: vectormanometry, if no other method (e.g., ultrasonography) is available, in which six to eight radially oriented recording sites are necessary for adequate resolution. Prolonged anorectal manometry is as yet not established as clinically useful.

Sensory Testing

Rectal Sensation: Balloon distention is used to detect the threshold (smallest volume of rectal distention) for three common sensations, the first detectable sensation (rectal sensory threshold), the sensation of urgency to defecate, and the sensation of pain (often defined as maximum tolerable volume). The clinical significance of the last two thresholds is less well established than that of the first. An electrical stimulus passed across the rectal mucosa can be used to obtain a quantitative guide to distal colon and anorectal innervation, but the value of this technique is yet to be established.

Therefore,

1. Significant loss of the ability to sense rectal distention (rectal sensory threshold) is a sufficient but not necessary condition for fecal incontinence.
2. The first detectable sensation (rectal sensory threshold) to rectal balloon distention is of value in the biofeedback training of patients with fecal incontinence (normalization or reduction of the threshold correlates with success), and poor or absent sensation makes a good response unlikely.
3. The maximum tolerable volume, if less than 100 mL, may have value in indicating the presence of visceral hypersensitivity, poor rectal compliance, or rectal irritability, and thereby influence the direction of therapy.
4. In patients with constipation, there is insufficient information to support use of sensory thresholds for diagnosis and biofeedback training.

Anal canal sensation: Electrical current is passed between bipolar electrodes positioned in the anal canal. Sensory thresholds measured in this way are reproducible.

At present, assessment of anal canal sensation is not of established value for the diagnosis and management of constipation or fecal incontinence.

Sensory evoked potentials: Sensory evoked potentials are not currently established as clinically useful for the investigation of anorectal sensation.

Muscle Tone, Compliance, and Wall Tension

At present, measurement of muscle tone, compliance, and wall tension are not of established clinical value.

Electromyography

Electromyography of the external anal sphincter and pelvic floor muscles is performed for three purposes:

1. To identify areas of sphincter injury by mapping the sphincter
2. To determine whether the muscle contracts or relaxes (by the number of motor units firing)
3. To identify denervation-reinnervation potentials indicative of nerve injury

Electromyography can be performed using a needle electrode, a surface electrode on the perianal skin, or an anal plug. Interpretation of results, especially with needle electrodes, requires specialized training and experience. Useful information can be obtained from surface electromyography results recorded within the anal canal, with less discomfort to the patient and less risk of infection.

Therefore,

1. In defining external sphincter trauma, anal endosonography has largely supplanted needle electromyography
2. Needle electromyography is of use in patients with imperforate anus to confirm proper surgical placement of the bowel if ultrasound examination is not possible or available
3. Surface electromyography appears to have a definite role in the evaluation of sphincter function and in the use of biofeedback training
4. At present, measurement of smooth muscle electromyography is not of established clinical value

Nerve Latency Measurements

A stimulating and recording electrode has been developed to measure the conduction of the pudendal nerves, the pudendal nerve terminal motor latency (PNTML). This technique is operator dependent and requires accurate placing of the examining finger as close as possible to the pudendal nerve as it courses around the pelvic rim, thereby obtaining the shortest latency possible. The technique has been suggested for distinguishing between muscle weakness caused by pudendal nerve injury and muscle weakness caused by muscle injury in patients with fecal incontinence but has a poor correlation with clinical symptoms and histological findings.

The pudendal nerve terminal motor latency cannot be recommended for evaluation of patients with fecal incontinence.

Other Functional Tests

Balloon expulsion: Balloon expulsion from the rectum is a test of motor function and coordination. It is a simple test, and failure to expel the balloon when there is

an adequate increase in intra-abdominal pressure should be an indication for further testing.

Saline infusion: Infusion of saline or substances with stool-like consistency into the rectum is a test designed to "stress" the anal sphincter. At present, the saline infusion test is not of established clinical value.

Rectal motor response to distention of fluid infusion: The threshold volume of distention or fluid for induction of a motor response has been used to assess irritability of the rectum in conditions such as the irritable bowel syndrome and inflammatory bowel disease.

At present, the rectal motor response to distention or fluid infusion is not of established clinical value.

## Tests for Specific Diagnosis or Management

### Fecal Incontinence

Continence depends on multiple physiological mechanisms. Therefore, no one test should be expected to yield positive results in all patients with fecal incontinence. There is no standard protocol for anorectal physiological assessment. The following procedures and tests are of value or possible value in the diagnosis and management of patients with fecal incontinence.

Procedures of value: Procedures of value include:

1. Symptom diaries (for diagnostic evaluation and for monitoring of adherence to and efficacy of treatment)
2. Digital examination (a simple qualitative assessment of resting and squeeze pressures)
3. Anal ultrasonography (simple, reliable, relatively noninvasive assessment of structural damage to the anal sphincter, especially the internal anal sphincter)
4. Anorectal manometry (to define functional sphincter weakness and to perform and predict response to biofeedback training)
5. Rectal and anal sensory testing (for rectal response to biofeedback training, as an indication of rectal irritability or poor compliance, and for identification of patients wit afferent nerve injury as a contributing cause of incontinence)
6. Rectal compliance (more direct assessment of poor compliance and rectal irritability)

Procedures of possible value: Procedures of possible value include:

1. Surface electromyography (for the evaluation of sphincter function and for performance of biofeedback training)
2. Evacuation proctography (when rectal prolapse is suspected)

Other considerations: Neither the diagnosis of overflow incontinence nor treatment with habit training requires anorectal testing.

### Constipation/Impaired Defecation

Constipation falls into two broad categories with regard to pathophysiological mechanisms: slow colonic transit and anorectal dysfunction. The two may coexist. In terms of the anorectal area, terms such as outlet obstruction, anismus, pelvic floor dyssynergia, and paradoxical contraction of pelvic musculature are included under the definition of constipation. The following anorectal procedures and tests are of value or possible value in the diagnosis and management of constipation, including impaired defecation.

Procedures of value: Procedures of value include:

1. Symptom diaries (for diagnostic evaluation and for monitoring of adherence to and efficacy of treatment)
2. Colon transit studies (to confirm complaint of constipation and/or decreased stool frequency and to assess slow transit and regional delay)
3. Anorectal manometry (to exclude Hirschsprung's disease and support findings of other tests of pelvic floor dysfunction; in the use of biofeedback training and for vectormanometry, if ultrasound is unavailable)
4. Surface electromyography (for the evaluation of sphincter function and for performance of biofeedback training)

Procedures of possible value: Procedures of possible value include:

1. Evacuation proctography (to support symptoms of inability to defecate)
2. Balloon expulsion (to support symptoms of inability to defecate)
3. Rectal sensory testing (to help distinguish between functional and neurological disorders causing constipation)

Biofeedback Treatment

Neurogenic fecal incontinence associated with weakness of the external anal sphincter and/or decreased ability to perceive rectal distention because of nerve injury can be treated with biofeedback training. Anorectal dysfunction in patients with associated pelvic floor dyssynergia has been treated with biofeedback techniques, with an overall improvement rate of 84%.

For fecal incontinence: Biofeedback training and objective monitoring of outcome require the use of anorectal study techniques, including:

1. A measure of sphincter contraction (e.g., anal canal pressures or pelvic floor electromyography)
2. A measure of abdominal wall contraction (e.g., pressures in a rectal balloon)
3. Distention of the rectum with graded volumes of air in a balloon

For constipation/impaired defecation: Diagnosis of impaired defecation requires confirmation by at least two different tests, and electromyographic biofeedback training is of value in the management of pelvic floor dyssynergia.

Proctalgia and Other Sensory Syndromes

Levator ani syndrome: Diagnosis of the levator ani syndrome is based on clinical symptoms and physical examination. Treatments are usually directed at relaxation of the pelvic floor muscles.

Therefore, anorectal testing is not required for diagnosis of the levator ani syndrome.

Biofeedback training for the syndrome requires a biofeedback signal (e.g., averaged electromyographic results from the pelvic floor muscles recorded from a sponge or anal plug electrode).

Proctalgia fugax: Anorectal physiological measurement plays no role in the diagnosis or treatment of proctalgia fugax unless a specific sphincter myopathy is suspected.

Irritable bowel syndrome: It has been suggested that the threshold for pain or discomfort from distention of the rectum may be used as a diagnostic marker for the irritable bowel syndrome. However, it is premature to recommend this for clinical evaluation of patients because:

1. The mechanism for altered sensitivity has not been established (including the possible contribution of perceptual response bias)
2. There is as yet no consensus on the best method for testing of sensory thresholds in the gastrointestinal tract

Therefore, at present, sensory testing is not of established value for clinical evaluation and management of the irritable bowel syndrome.

### CLINICAL ALGORITHM(S)

None provided

## EVIDENCE SUPPORTING THE RECOMMENDATIONS

### TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically given for each recommendation. The guidelines are based on a comprehensive literature review that directed most of its attention to studies that used sample sizes larger than 25, used objective physiological assessments for comparison, and, in treatment trials, included adequate assessments before and after treatment.

## BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

### POTENTIAL BENEFITS

Appropriate use of anorectal testing techniques in the diagnosis and management of patients with various anorectal conditions

### POTENTIAL HARMS

Not stated

## QUALIFYING STATEMENTS

### QUALIFYING STATEMENTS

Few large-scale studies are found that have attempted to validate anorectal tests against other techniques, and that include properly controlled treatment trials with placebo components, and adequate control populations, and careful outcome assessment. Therefore, most attention has been directed to studies that use sample sizes larger than 25, use objective physiological assessments for comparisons, and, in treatment trials, include adequate assessments before and after treatment.

## IMPLEMENTATION OF THE GUIDELINE

### DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

## INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

### IOM CARE NEED

Getting Better
Living with Illness

### IOM DOMAIN

Effectiveness

## IDENTIFYING INFORMATION AND AVAILABILITY

### BIBLIOGRAPHIC SOURCE(S)

Barnett JL, Hasler WL, Camilleri M. American Gastroenterological Association medical position statement on anorectal testing techniques. American Gastroenterological Association. Gastroenterology 1999 Mar;116(3):732-60. PubMed

### ADAPTATION

Not applicable: The guideline was not adapted from another source.

### DATE RELEASED

1998 Jul 24 (reviewed 2001)

## GUIDELINE DEVELOPER(S)

American Gastroenterological Association - Medical Specialty Society

## SOURCE(S) OF FUNDING

American Gastroenterological Association

## GUIDELINE COMMITTEE

American Gastroenterological Association Clinical Practice and Practice Economics Committee

## COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Not stated

## FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

## GUIDELINE STATUS

This is the current release of the guideline.

An update is not in progress at this time.

According to the guideline developer, the Clinical Practice Committee meets 3 times a year to review all American Gastroenterological Association guidelines. This review includes new literature searches of electronic databases followed by expert committee review of new evidence that has emerged since the original publication date.

This guideline has been reviewed by the developer and is still considered to be current as of Dec 2001.

## GUIDELINE AVAILABILITY

Electronic copies: Available from the American Gastroenterological Association (AGA) Gastroenterology journal Web site.

Print copies: Available from American Gastroenterological Association, 4930 Del Ray Avenue, Bethesda, MD 20814.

## AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Diamant NE, Kamm MA, Wald A, Whitehead WE. AGA technical review on anorectal testing techniques. Gastroenterology. 1999 Mar;116(3):735-60. [239 references].

  Electronic copies: Available from the American Gastroenterological Association (AGA) Gastroenterology journal Web site.

The following is also available:

- The American Gastroenterological Association standards for office-based gastrointestinal endoscopy services. Gastroenterology. 2001 Aug;121(2):440-443 [8 references].

  Electronic copies: Available from the American Gastroenterological Association (AGA) Gastroenterology journal Web site.

Print copies: Available from American Gastroenterological Association, 4930 Del Ray Avenue, Bethesda, MD 20814.

## PATIENT RESOURCES

None available

## NGC STATUS

This summary was completed by ECRI on June 5, 2002. The information was verified by the guideline developer on July 12, 2002.

## COPYRIGHT STATEMENT



Date Modified: 11/15/2004