Are Special Investigations of Value in the Management of Patients with Fecal Incontinence?


From the Central Sydney Continence and Pelvic Floor Clinic, The University of Sydney Department of Colon and Rectal Surgery at Concord Hospital, Concord, New South Wales, Australia

PURPOSE: The aim of this study was to determine whether special investigations significantly alter either the diagnosis or the management plan of patients with fecal incontinence assessed on the basis of a structured history and physical examination alone. METHODS: Fifty consecutive patients with fecal incontinence were prospectively studied in a tertiary referral clinic. Each patient was assessed by two clinicians who independently formulated a diagnosis and treatment plan based on the history and physical examination. The resulting 100 patient assessments were then compared with the final diagnosis and treatment plan formulated on completion of endoanal ultrasound, anal manometry, external sphincter electromyography, and defecating proctography. RESULTS: In the assessment of fecal incontinence, the addition of special investigations altered the diagnosis of the cause of incontinence based on history and examination alone in 19 percent of cases. The management plan was altered in 16 percent of cases. Special investigations were most useful in separating neuropathy from rectal wall disorders and in demonstrating the unexpected presence of internal sphincter defects and neuropathy. CONCLUSIONS: Even experienced colorectal surgeons will misdiagnose up to one-fifth of patients presenting with fecal incontinence if assessment is based on the history and physical examination alone. However surgically correctable causes of incontinence are rarely missed on clinical assessment. [Key words: Fecal incontinence; Electromyography; Ultrasound; Manometry]


Fecal incontinence is a common problem.1,2 The necessity and indeed the usefulness of detailed investigation of its cause and above the information provided by a careful history and an examination with an “educated” index finger has been questioned.3–6 The issue is of more than academic interest because some clinicians asked to assess patients with fecal incontinence (FI) may have limited access to special investigations and most will not have ready access to all the available tests. To quantify the relative value of clinical assessment and special investigations in the management of FI and the influence that each has on a patient’s diagnosis and treatment, we have prospectively studied 50 consecutive patients attending a continence clinic.

PATIENTS AND METHODS

The Central Sydney Continence and Pelvic Floor Clinic is staffed by two colorectal surgeons with a major interest in the pelvic floor and provides a comprehensive assessment of defecatory disorders based on a single clinic visit. Fifty consecutive patients referred with a diagnosis of FI were studied. Patients referred for assessment of constipation or obstructive defecation or for sphincter assessment before resectional surgery were excluded. Patients were referred by general and colorectal surgeons and gastroenterologists for assessment and management of FI.

Three experienced colorectal surgeons participated in the study. Each patient was assessed by two of the three surgeons, and the third surgeon performed the majority of the investigations. Defecating proctographies were performed by one of two radiologists. A detailed history of the presenting complaint was taken. A comprehensive questionnaire was then given to the patient, specifically addressing control of flatus, liquid, and solid bowel movements. The use of pads, frequency of soiling, and urgency of defecation were assessed. A history of the pattern of defecation, rectal sensation, completeness of evacuation, and use of medication and bulking agents was obtained. A comprehensive past obstetric, medical, surgical, and drug history was taken. The effect of the condition on the patients lifestyle was addressed. Responses were entered into a purpose-designed computer database. Anal and digital rectal examinations were then per-
formed according to a standard protocol by both examining surgeons. Anal closure, rectal prolapse, perineal descent, resting and squeeze pressures, sphincter integrity, anal canal length, anterior and posterior sphincter bulk, puborectalis activity, anorectal angle, and the presence, size, and site of a rectocele were examined. The results of the physical examinations were recorded independently by both surgeons, who each then formulated a diagnosis of the likely cause of the patient's symptoms (the provisional diagnosis) and formulated a treatment plan (provisional treatment plan) based on the history and findings on physical examination. One hundred provisional diagnoses and provisional treatment plans were thus obtained from 50 patients.

Anal endosonography was performed with a 7-MHz 360° mechanical sector transducer (Type 1850) coupled to a dedicated endoanal ultrasound (EAUS) machine (B&K Medical Diagnostic ultrasound system 3555, Naerum, Denmark). The integrity of both sphincters was assessed, and sphincter thickness was measured in the upper, middle, and lower anal canal. The site and size of rectoceles were recorded.

Anal manometry was performed using a 2-cm³ air-filled microballoon (Royal Devon & Exeter Hospital, Devon, United Kingdom) attached to a pressure transducer (Stryker® intracompartmental pressure monitor system, Kalamazoo, MI) and a chart recorder. Anal resting pressures were recorded using a stationary pull-through technique at 1-cm intervals from 6 cm to the anal verge. The squeeze pressure was recorded as the highest voluntary squeeze pressure obtained from measurements in the upper, middle, and lower anal canal minus the anal resting pressure at that level. Rectal sensation was assessed by inflating a latex balloon in the rectum while anal canal pressures were recorded simultaneously. The minimum appreciable volume and the maximum tolerated volume were recorded. A transient fall in resting pressure in the upper anal canal below baseline pressure associated with rectal balloon inflation was recorded as a positive rectoanal inhibitory reflex.

Concentric needle electromyography was recorded bilaterally (Medelec V61, Vickers Medical, Surrey, United Kingdom). The perianal skin was infiltrated with 1 percent plain lignocaine, and a concentric needle electrode was used to obtain multiple samples from the external anal sphincter in the left and right lateral positions. The resting electrical activity, voltage, characteristics of the action potentials, augmentation to squeeze and coughing, and suppression with straining were recorded on both sides. Neuropathy was assessed as being present if the number and amplitude of motor unit potentials were reduced at rest or if recruitment was deficient on coughing or squeezing. An abnormal percentage of polyphasic motor unit potentials was also taken as a sign of neuropathy.7

When indicated, a defecating proctogram was ordered after assessment to look for rectal wall disorders. Fifty milliliters of liquid barium sulfate suspension (Tixobar, 1 gm/ml, Astra Pharmaceuticals Pty. Ltd., North Ryde, Australia) and a mixture of 150 ml of barium and cornflower were instilled into the rectum. The patient was seated on a water-filled plastic condom, and lateral rectal imaging was performed. Hard copy images of the lateral rectum were obtained at rest and with squeezing with a full rectum (DSI Philips Medical Systems, Super 80 CP, Eindhoven, Netherlands). A video recording of the patient coughing, squeezing, and defecating was then obtained. At the end of defecation, further hard copy images (rest, squeeze, and strain) were obtained. The images were assessed for pelvic floor tone and contraction. The anal canal length and width were noted as was the presence or development of an anterior rectocele or rectal intussusception. The rate and effectiveness of evacuation were documented.

For the purposes of analysis, all aspects of the history, examination, and physiologic assessment, with the exception of manometric pressures and measurement of sphincter thickness, were recorded on a scale of one to five. On this scale, a score of one was defined as absent or grossly abnormal and a score of five was normal.

On completion of testing, a final assessment of the cause of incontinence and a treatment plan (the final diagnosis and final treatment plan) were formulated by the two examining surgeons working together based on both the history and examination and the results of anal manometry, EAUS, external sphincter electromyography, and defecating proctography. On completion of the study, the provisional diagnoses and treatment plans were compared with the final diagnoses and treatment plans.

The validity of digital pressure assessment was evaluated by correlating it with anal manometry. The interobserver variability in the findings of rectal examination in incontinent patients was calculated. Cohen's kappa statistical analysis was used to compare digital rectal assessment between surgeons and Spearman's ranked correlation coefficient was used to