



Practice patterns in the diagnosis and treatment of fecal incontinence with sacral neuromodulation: Can urologists impact this gap in care?

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ABSTRACT

Objective: The prevalence of fecal incontinence (FI) is 8% in the United States. Many patients will not seek treatment and the condition is underdiagnosed. Sacral neuromodulation (SNM) is effective in treating FI, and so urologists can play a key role in its treatment. We examine the practice patterns and treatment of FI with SNM in our institution.

Material and methods: The electronic medical record was queried for the proportion of patients seen for FI in the institution, the urology department, and among the female pelvic medicine and reconstructive surgery (FPMRS) urologists. The patients who underwent SNM for FI were evaluated for progression to second stage procedure.

Results: The proportion of patients seen for FI is 0.96% in the institution as a whole, 7.9% in the urology department, and 17.9% among FPMRS urologists. Fourteen patients underwent first stage SNM for FI or dual urinary/fecal incontinence, and they all progressed to a second stage procedure. Thirteen of these were performed by FPMRS urologists.

Conclusion: In our institution, the proportion of patients seen for FI was lower than the prevalence of this condition. Because patients with urinary incontinence are more likely to have FI, urologists are in a unique position to identify these patients and offer treatment that can improve their quality of life. We acknowledge a gap in care of the patients with FI and an opportunity for urologists to help patients with this devastating yet treatable condition.

Keywords: Fecal incontinence; transcutaneous electric nerve stimulation; urological surgical procedures.

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Introduction

The prevalence of fecal incontinence (FI) in the United States was estimated to be greater than 8% among non-institutionalized adults from 2005 to 2010.^[1] Given its association with childbirth trauma, FI is even more common among patients seeking treatment for pelvic floor dysfunction, with a prevalence of 29% in one study of a urogynecology clinic.^[2] However, the condition is not isolated to female patients, and the prevalence among men presenting to a pelvic floor center was found to be almost 14 percent.^[3] This leaves urologists, and particularly pelvic floor urologists, in a unique position to be a key contact in the care of patients with FI.

The impact of FI on quality of life (QoL) can be severe, yet many patients do not seek treatment.^[4] The severity of FI correlates inversely with QoL and patients with severe FI also have worse urinary symptoms.^[5] FI is thought to be a major factor in nursing home placement, and the presence of FI can influence the rate at which older patients are referred to nursing homes, independent of other health factors.^[6] Taken together, treatment of FI is critical in improving QoL and preventing its incremental decline with age.

Treatment modalities for FI are varied. Conservative measures include behavioral changes, use of fiber supplements, anti-diarrheals, anal plugs, adjusting fluid and food intake, and

physical therapy. When conservative measures fail, a variety of procedural interventions are available, depending on the cause of FI. Most commonly, these include injection of bulking agents, sacral neuromodulation (SNM), anal sphincteroplasty, and colostomy.^[7] SNM was approved by the Food and Drug Administration for the treatment of FI in 2012. It has been shown to have an 85% success rate in achieving a 50% reduction in incontinent episodes per week for 24 months, with minimal complications.^[8] More recent work has also demonstrated its durability with nearly 90% of the patients having $\geq 50\%$ improvement during more than 5 years follow up.^[9] Because urologists, and particularly pelvic floor urologists, are experts in SNM and often evaluate patients for associated urinary incontinence, they are in a unique position to diagnose and treat FI. The literature is scarce on the prevalence of FI amongst urology patients, and the ways in which urologists contribute to the treatment of FI. The objective of this study is to examine the prevalence of FI within our institution and urology clinic, as well as evaluate the use of sacral neuromodulation for FI or dual fecal/urinary incontinence (DI).

Material and methods

Our institution is a large hospital system with over 400 providers, and a tertiary referral center for urology. All study procedures were reviewed and approved by our institutional review board (IRB) prior to commencing study activities. A waiver of consent was approved by our IRB for this study. We first performed a query of our electronic medical record from 10/1/2015 to 9/30/2016. Diagnosis codes changed from the ICD-9 to ICD-10 system in October 2015 at our institution, therefore this time period was chosen to uniformly search for the diagnoses within ICD-10. To determine the prevalence of FI at our institution, we identified the number of adult patients over 18 years of age seen at our institution, and then the number seen with a diagnosis of FI or DI (ICD-10 codes R15.9 and R32). The number of patients was subcategorized to evaluate the urology department as a whole, as well as the three urologists who were specialized in female pelvic medicine and reconstructive surgery (FPMRS).

Table 1. Patients seen with FI in comparison to the entire patient population

	Patients seen, n	Patients seen with FI, n (%)
Whole institution	205.138	1.974 (0.96)
All urology	9.553	754 (7.9)
FPMRS urology providers	3.081	553 (17.9)

FI: fecal incontinence; FPMRS: Female Pelvic Medicine and Reconstructive Surgery

Gastroenterologists, gynecologists, and colorectal surgeons also evaluated and treated FI at our institution, however the focus of this study was to examine the unique roles of the urologists and FPMRS urologists in treating FI. We then identified and reviewed the patients who underwent SNM for FI or DI to see if they progressed to a second stage procedure (a marker of success in SNM).

Results

The prevalence of FI diagnosis by billing code in our institution as a whole was less than 1 percent. In the urology department, the prevalence was 8%, and among patients seen by our pelvic floor providers, the prevalence was almost 18 percent. Results are listed in Table 1.

During the year assessed, thirteen patients underwent SNM for DI, and one patient for FI. Thirteen SNM procedures for DI were performed by FPMRS physicians, 12 by urologists, and one by a gynecologist. One FI patient was managed collaboratively by a colorectal surgeon and FPMRS urologist. All patients achieved greater than 50% improvement in their symptoms, leading them to undergo a second stage procedure. Our cohort treated for DI or FI with SNM was exclusively female. Although we do treat male patients for these conditions at our institution, the one-year time frame did not capture any male patients.

Discussion

The proportion of patients seen at our institution as a whole for FI is much lower than the prevalence of the condition. It is likely that patients either do not report their symptoms or the physician does not inquire about this issue. However, among FPMRS urologists the number of patients seen for FI is higher. This is likely due to 2 factors: firstly, FI likely has a higher prevalence among our pelvic floor patients^[3] and secondly, our FPMRS physicians regularly ask about bowel symptoms including constipation and FI during consultations. In all 14 patients who underwent SNM for DI and FI, the procedure was performed by FPMRS physicians. All patients in this study who underwent SNM for DI or FI progressed to a second stage procedure. This rate of success is consistent with the high rate of success (90%) seen in a previous multicenter study on the use of SNM for FI.^[8]

The most notable strength of our study is that it is the first of its kind to examine the prevalence of FI within a medical system to differentiate the prevalence amongst pelvic floor providers by urology subspecialty. We have been able to demonstrate that FI is not treated at the same rate as its prevalence in the population. Perhaps this is because health care providers within our system are either not inquiring about FI among their patients, or if they

do inquire about it, they are not coding it as a diagnosis in the medical record. Either of these hypotheses is consistent with the idea that FI is not considered as an important and treatable condition, and/or there is a lack of education and awareness about this condition among healthcare providers.^[10]

We acknowledge several weaknesses in our study. The scope of our study was quite limited and focused on FPMRS providers within the urologic specialty and on SNM as a treatment option for refractory FI. FI is treated with many different modalities and across multiple specialties (primary care, physical therapy, gastroenterology, gynecology, colorectal surgery, and urology). We did not capture the number of patients who were diagnosed and treated successfully using behavioral and diet changes, medications, and physical therapy. We did not look specifically at FI patients seen by other healthcare providers, and the prevalence of the diagnosis was estimated based on coding. We also did not examine the number of surgical procedures (i.e. colostomy or anal sphincteroplasty) colorectal surgeons performed during this time frame for FI. Another limitation is potential regional or institutional differences that may reflect providers' interests and expertise in treating FI. Despite these limitations, our data does highlight a gap in care for an underreported, undertreated condition for which excellent treatment options exist. Based on these findings there is an opportunity to improve quality of life in many patients.

Fecal incontinence is undertreated due to both patient and physician factors. Patients find it as an embarrassing topic, and they

do not raise the issue. Patients are unaware of the availability of treatments such as conservative medical therapy, pelvic floor physical therapy with or without biofeedback, and minimally invasive options such as SNM. In fact, one online survey showed that only 29% of the patients with FI sought treatment, and those who had an awareness of the condition were more likely to seek care.^[11] In a survey of FI patients published in 2015, patients preferred that the physician asked them about it, rather than having to initiate the discussion.^[10] Patients also prefer the term "accidental bowel leakage" over the terms "fecal incontinence" or "bowel incontinence."^[12]

Physician factors also contribute to underdiagnosis and undertreatment. Primary care physicians can only spend limited time with their patients, and struggle with a multitude of health problems in older patients, so FI may not be their priority. In addition, a survey of General Practitioners in England showed that only 32% of the general practitioners were aware of any diagnostic testing or surgical treatment options for FI.^[13] Given this lack of knowledge on the part of both patients and physicians in the treatment of FI, urologists should routinely inquire about FI and be prepared to provide at least a basic evaluation and offer conservative measures for this condition. Guideline recommendations for FI evaluation and treatment from the American Society of Colon and Rectal Surgeons are summarized in Tables 2 and 3.^[14]

Pediatric urologists routinely treat bowel dysfunction along with bladder dysfunction and recognize that this is essential to their

Table 2. Summary of the Guidelines of American Society of Colon and Rectal Surgeons for the evaluation of fecal incontinence^[12]

Recommendation	Grade	Who?	Background
Thorough disease history	1C	All patients	Identify risk, contributing or exacerbating factors (e.g., diet, medications)
Use validated tools to assess severity	1B	All patients	Most common instruments: Fecal Incontinence Severity Index, St. Marks Incontinence Score, Cleveland Clinic Florida Fecal Incontinence Score. Patients with higher severity and quality of life impact may warrant more aggressive treatment
Detailed physical examination	1C	All patients	External inspection, digital examination, perineal sensation
Anorectal physiology testing	1C	Select patients	Manometry, anorectal sensation, volume tolerance and compliance may be used to define the elements of dysfunction, monitor responses to treatment, and may influence choice of treatment strategy
Endoanal ultrasound	1B	Suspected anal sphincter injury	Sensitive tool in the evaluation of the patients with history of vaginal delivery or anorectal surgery to identify sphincter defects
Pudendal nerve terminal motor latency	1B	Select patients	Controversies exist concerning the value of testing as the results do not predict outcomes after a sphincter repair
Endoscopic evaluation	1B	Select patients	Should be performed in patients who meet general screening guidelines or present with concerning symptoms such as bleeding or obstruction

Table 3. Summary of FI management guidelines from the American Society of Colon and Rectal Surgeons^[12]

Recommendation	Grade	Background
Dietary and medical management	1C	First line therapy: Avoid aggravating factors, especially caffeine, sugar replacements, and lactose
		Use of pharmacologic agents such as fiber and loperamide to normalize stool consistency depending on patient factors
Bowel management programs	2C	Timed enemas and suppositories can be helpful in patients with constipation and overflow incontinence
Biofeedback	1B	Initial treatment for patients with preserved voluntary sphincter contraction who do not respond to dietary and medical management
Correct anatomic defects	1C	Correction of rectovaginal fistula, rectal prolapse, anal fistula may eliminate FI
Sphincter repair	1B	Benefits of sphincteroplasty may diminish over time. Plication of external anal sphincter is not recommended due to its questionable benefit. Avoid repeat sphincter reconstruction after a failed overlapping sphincteroplasty (Grade 1C)
Injection of bulking agents	2B	Injectable bulking agents may play a role in mild FI, however the evidence, especially in long-term durability, is limited
Radiofrequency energy delivery	2B	Thermo-controlled delivery of radiofrequency energy to the anal canal has shown some beneficial effects in small studies with only short-term results
Sacral neuromodulation	1B	First line surgical treatment for patients with and without sphincter defects
Artificial bowel sphincter	1C	Because of a very high rate of complications, it is reserved for patients who have very extensive sphincter defects or in whom other measures have failed
Colostomy	1C	Shown to improve quality of life in patients in whom other therapies have failed

outcomes. With the newly recognized specialty of Female Pelvic Medicine and Reconstructive Surgery (FPMRS), the breadth and depth of fellowship training for urologists is enhanced, with cross training in gynecology and colorectal surgery. Female pelvic floor disorders include urinary incontinence, pelvic prolapse and fecal incontinence, so urologic FPMRS specialists receive training in FI as part of FPMRS fellowships. The urologists' knowledge about the anatomy and function of the pelvic floor is vast and leaves us equipped to manage FI, either alone or as part of a multidisciplinary team. Urologists and FPMRS urologists have the opportunity to serve their patient communities by identifying and treating FI as part of their comprehensive care of the pelvic floor.

Future studies on FI prevalence and access to care should examine the differences in training for specialties such as urology, gynecology, gastroenterology, and colorectal surgery that may affect treatment of FI. Barriers to FI care should also be investigated. There are many opportunities to study and address this gap in care, in a multidisciplinary fashion that draws on the strengths of each specialty.

Overall, FI is devastating to quality of life, and as urologists we have an opportunity to fill this gap in its management. Our patients have a higher prevalence of FI than the general population, and we can serve them better by inquiring about FI at office visits. Because we are experts in SNM we also have a suc-

cessful treatment option to offer to those patients with FI who have failed conservative measures. Adult urologists, specifically those trained in FPMRS, have a unique opportunity to provide a meaningful and impactful treatment to maximize the quality of life of the patients who suffer from FI.

Ethics Committee Approval: All study procedures were reviewed and approved by our institutional review board (IRB) prior to commencing study activities.

Informed Consent: A waiver of consent was approved by our IRB for this study.

Peer-review: Externally peer-reviewed.

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