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The association between fecal incontinence and sexual activity and function in women attending a tertiary referral center

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Abstract

Introduction and hypothesis—To determine whether fecal incontinence (FI) is associated with sexual activity and to compare sexual function in women with and without FI.

Methods—We conducted a retrospective chart review of all new patients seen in an academic urogynecology clinic. Women who reported fecal incontinence, as defined by loss of fecal material on the Wexner scale, were compared with those without fecal incontinence. We compared sexual activity and Pelvic Organ Prolapse Incontinence Sexual Questionnaire-12 (PISQ-12) scores between groups.

Results—In our population of women with pelvic floor disorder, 588 women reported FI compared with 527 who did not. On multivariate analysis, FI was not associated with sexual activity status, but was associated with worsened PISQ-12 scores ($p < 0.001$). PISQ-12 item analysis found that women with FI reported more dyspareunia, fear, and avoidance of sexual activity with greater partner problems (all $p < 0.05$) than women without FI.

Conclusions—Women with FI were as likely to engage in sexual relations as women without FI; however, sexually active women with FI had poorer sexual function than those without FI.

Keywords

Fecal incontinence; Sexual activity; Sexual function

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Introduction

Anal incontinence has a negative impact on a woman's quality of life [1–4]. Anal incontinence is defined as the involuntary loss of flatus, liquid, or solid stool that causes a social or hygienic problem [5]. In practices focusing on gynecological care the prevalence of anal incontinence is reported to be as high as 28.4 %, with 25.6 % reporting isolated flatal incontinence, 6.8 % incontinence of mucous material, 12.9 % liquid, and 13.1 % solid stool loss [1]. Prevalence estimates for fecal incontinence range from 4.2 % in the general population up to 24 % in a middle to older age community-based population of women [6, 7].

Fecal incontinence, compared with isolated flatal incontinence, produces a greater negative impact on a woman's quality of life based on validated measures of severity, including the Fecal Incontinence Severity Index and Fecal Incontinence Quality of Life Questionnaire [1]. These validated measures take into account many aspects of quality of life, but neglect to address sexual functioning. The existing literature on the impact of fecal incontinence on sexual function is limited to measures of sexual function pre- and post-surgical interventions, such as sphincteroplasty [8–10]. Data are sparse on the prevalence of sexual dysfunction in women with FI in the urogynecological population.

We aimed to determine if fecal incontinence (FI) was associated with decreased sexual activity among a cohort of women seeking care for pelvic floor dysfunction. In addition, among women with FI who reported sexual activity, we sought to determine the impact of FI on sexual function compared with other pelvic floor disorders using the condition-specific Pelvic Organ Prolapse Incontinence Sexual Questionnaire-12 (PISQ-12) [11]. We hypothesized that FI would be associated with decreased rates of sexual activity and that women with FI would have poorer sexual function as measured by the PISQ.

Materials and methods

Database/study population

We conducted a retrospective chart review of all new patients presenting with FI and/or pelvic organ prolapse and/or urinary incontinence to the Urogynecology Clinic at the University of New Mexico from January 2007 until October 2011 after obtaining institutional review board approval. Starting in 2007 all new patients were interviewed using a standardized intake questionnaire that included basic demographic and clinical information as well as responses to validated questionnaires.

The intake questionnaire included records of the patient's age, BMI, ethnicity (Hispanic or Non-Hispanic White, Native American, other), parity and prior surgical history (incontinence or prolapse surgery, hysterectomy, oophorectomy). Dichotomous answers to queries regarding the following were also recorded: history of depression, dyspareunia, sexual abuse, anxiety, alcohol or tobacco use, and whether the patient had a partner. In addition, women completed the following questionnaires: the Wexner scale, short forms of the Pelvic Floor Distress Inventory (PFDI-20) and Pelvic Floor Impact Questionnaire [12], Incontinence Severity Index (ISI) [13], and the PISQ-12. All women underwent standardized physical examinations including the Pelvic Organ Prolapse Quantification examination (POPQ) [14].

Researchers collected data from the standard intake form and from physician dictation of the initial visit. The study's research nurse and coordinator verified the fidelity of data collection and entry by looking for missing values, outliers, and inconsistencies.

Variable definitions

We defined fecal incontinence based upon patient responses to the Wexner scale; women who affirmed loss of solid or liquid stool, and/or the use of pads or lifestyle alterations due to stool loss were included in the FI group. Those who did not meet these criteria were considered not to have FI. Pelvic organ prolapse was defined by responses to PFDI-20 and confirmed by POP-Q. Women who answered “yes” to the question: “Do you usually have a bulge or something falling out that you can see or feel in the vaginal area?” on the PFDI-20 and who had stage 2 prolapse on POP-Q examination were considered to have prolapse. Urinary incontinence was defined by the ISI; women with an ISI score ≥ 3 were considered to have urinary incontinence [13]. Sexual activity status was defined by the patient’s answer to the question, “Are you currently (or within the past 6 months) sexually active?” Sexual function was based upon answers to the PISQ-12 and scored as recommended [11]. Higher scores reflect better sexual function and lower scores poorer sexual function. We also analyzed sexual function scores based on the PISQ-9. The PISQ-9 is valid in women with and without pelvic floor dysfunction and excludes the three condition-specific items on the PISQ-12 [15].

Statistical analysis

Descriptive statistics identified demographic and clinical characteristics of participants. For between-group comparisons, we used *t* tests for continuous variables and Fisher’s exact tests for categorical variables. For analyses of sexual activity status, we included the entire cohort; for analyses of sexual function, we included only those women who reported sexual activity. Therefore, we completed two separate univariate analyses. The first univariate analysis was between women with FI and women without FI. Using candidate differences found on univariate analysis between groups, we then performed multivariate step-wise regression analysis to determine which variables were independently associated with sexual activity. The second univariate analysis was between women with FI who were sexually active and women without FI who were sexually active. Multivariate step-wise regression analysis was performed to identify characteristics independently associated with sexual function based on candidate differences in these sexually active cohorts. Last, we analyzed responses to individual PISQ questions to determine how responses differed between women with and those without FI.

The PISQ five-point Likert scale responses range between “never” and “always.” Responses were dichotomized so that two favorable responses for the desired outcome were compared with three responses representing adverse outcomes. For example, for the question, “Do you feel pain during intercourse?,” responses of “always or usually” were compared with responses of “sometimes, seldom or never.” These cut-off points dichotomized groups as equally as possible. Pearson’s correlation coefficients were calculated to describe the association between PISQ and FISI scores. All data were analyzed using SAS 9.3 (SAS Institute, Cary, NC, USA).

Results

We identified 1,899 new patients with complete information; 1,115 of these patients met the inclusion criteria for UI and/or POP and/or FI. Of these patients with pelvic floor disorders, 588 were identified as having FI, and 527 patients as not having FI. As is common with pelvic floor dysfunction, women often had more than one diagnosis. In the cohort of 588 women with FI only 10 women had isolated FI. Univariate analysis was performed on the entire population comparing women with and without FI (Table 1). Women with FI were older, had higher BMI, were more likely to carry a diagnosis of depression and/or anxiety, were more likely to smoke, and were more commonly without a partner (all $p < 0.05$).

Women with FI were also more likely to report increased bother in all areas of the PFDI-20: POPDI, UDI-6, and CRADI-8 (all $p < 0.001$) than women without FI. This indicates that women with FI had greater distress in all domains, including prolapse, urinary incontinence, and bowel domains. On univariate analysis, women with FI were less likely to be sexually active than women without FI (42.61 % vs 54.25 %, $p < 0.001$).

The first multivariate model compared women who were or were not sexually active. All significant differences between groups on the univariate analysis were placed in the regression model. Stepwise logistic regression identified age and BMI as being negatively associated with sexual activity, while the presence of a partner (OR 7.25 95 % CI 5.32–9.87) and use of alcohol (1.97 95 % CI 1.43–2.71) were positively associated with sexual activity. FI was no longer associated with sexual activity status in the multivariate model (Table 2).

Univariate analysis was again performed, but only on the sexually active women. Sexually active women with FI were older, heavier, reported more depression, dyspareunia, were less likely to have a partner, and had higher ISI scores (all $p < 0.01$). Women with FI had lower scores than women without FI on both the PISQ-12 (30.14±7.82 vs 33.30±6.89 $p = 0.0012$) and PISQ-9 (22.05±5.91 vs 23.70±5.60 $p < 0.001$), indicating poorer sexual function.

The second multivariate model evaluated sexual function in women with and without FI and included only sexually active women. In this analysis, FI remained strongly associated with lower PISQ 12 and PISQ 9 scores ($p < 0.001$). Older age, pessary use and an ISI score 6 were also associated with poorer sexual function. However, FI was associated with a greater score decrease for the PISQ-12 than ISI, meaning that FI was associated with a greater negative impact on sexual function scores than urinary incontinence. In fact, FI was associated with decreasing the PISQ score by 3.5 points. In comparison, an ISI score 6 was associated with lowering PISQ scores by 1.9 points. As expected, the presence of a sexual partner was positively associated with better PISQ-12 scores (Table 3). PISQ-9 score analysis confirmed that even after questions specific to POP and UI were excluded, worsened sexual function scores remained in women with FI.

On PISQ item analysis, we found that sexually active women with and without FI had similar frequencies of sexual desire, orgasm, and satisfaction with sexual activities, as measured by individual PISQ items (all $p > 0.05$). Women with FI were significantly more likely to report pain, urinary incontinence with sexual activity, negative emotional reactions, and partner problems than women without FI (all $p < 0.5$; Table 4). To further investigate the association of fecal incontinence with poorer sexual function, Pearson's coefficient was used to model the interaction between increasing Wexner score (worsening fecal incontinence) and decreasing PISQ-12 score (worsening sexual function). The regression coefficient for this interaction was -0.26 ($p = 0.0003$) indicating that worse FI, as measured by the Wexner score, was associated with worse sexual function as measured by the PISQ-12.

Discussion

Our findings describe the sexual activity status and sexual function of women with FI compared with women without FI in a large cohort of women with pelvic floor disorders. We found that women with FI were as likely as women without FI to report sexual activity. However, among women who engaged in sexual activity, women with FI reported poorer sexual function than those without FI.

Few studies have evaluated the relationship between FI and sexual activity status and sexual function. Only two other studies have reported on sexual function in a nonsurgical population with FI [16, 17]. The first study retrospectively evaluated sexual function in women with FI compared with women with POP and/or UI. In that cohort, 227 women (112

with anal incontinence and 115 without AI) PISQ-12 scores did not differ between groups, when controlled for age and stage of POP-Q. Differences in our study findings may be due to their study using the broader definition of anal incontinence, which included women with isolated flatal incontinence, while we used the narrower FI population [16].

The second report prospectively investigated sexual function in 2,269 women aged 40–80 years in a general Kaiser–Permanente population with and without FI. Findings were based on the FISQ and the Female Sexual Function Index. Like our study, this latter study reported that sexual activity did not differ between women with and without FI. And, similar to our study, this study reported that sexually active women with FI had more sexual difficulties than women without FI [7].

When we reviewed specific PISQ items, we found that women with FI demonstrated similar sexual desire, orgasm, and satisfaction with sexual activities as women without FI. Diminished sexual function was associated with increased pain during intercourse, fear of coital urinary incontinence, fear of urinary or FI during sexual activity, avoidance of sexual relations because of symptoms, and negative emotions associated with sexual activity, as well as partner issues. Lower scores on the condition-specific questions, “Does fear of incontinence (either stool or urine) restrict your sexual activity?”, “Are you incontinent of urine (leak urine) with sexual activity?”, and “Do you avoid sexual intercourse because of bulging in the vagina (the bladder, rectum, or vagina falling out)?” are likely explained by FI, higher ISI scores, and greater POP bother, as indicated by the POPDI scores in our FI group.

The two other PISQ questions that differed between groups were, “Do you feel pain during intercourse?” and “When you have sex with your partner, do you have negative emotional reactions such as fear, disgust, shame, or guilt?” FI has not previously been reported to be associated with dyspareunia. Imhoff et al. reported that women with FI had decreased lubrication compared with women without FI [7]. Whether the dyspareunia reported in our study was due to decreased lubrication merits further exploration. Finding that women with FI may have greater “...fear, disgust, shame or guilt?” than women with other pelvic floor disorders is disturbing, though not unexpected. FI has been associated with a negative psychological impact on quality of life. One study interviewed 2,818 men and women aged 65 years or older and found a 4-fold increase in anxiety and a 5-fold increase in depression for both men and women who had FI. This may explain our findings of the negative impact of FI on sexual health [17].

This study’s strengths include its large population, its measurement of sexual function based on a commonly used questionnaire, its use of a multivariate analysis to evaluate the association between FI and sexual function, and the fact that it is one of the few studies that specifically addresses the relationship between FI and sexual activity and function. Although sexual activity was not associated with FI, FI was associated with diminished sexual function after controlling for other potential confounders. The relationship between worse FI and worse sexual function adds validity to the association between the two.

Our study does have limitations. First, we acknowledge that the PISQ-12 has yet to be validated in women with FI. The PISQ-9, however, excludes questions specific to urinary incontinence and prolapse in the PISQ-12. When the analysis was performed using the PISQ-9, FI was still found to be independently associated with poorer sexual function scores. Second, our population was derived from a referral practice and findings from this potentially older and more severely affected population may not be generalizable to younger or less affected women. Finally, since all women in our cohort were affected by pelvic floor dysfunction, we can only discuss the impact of FI compared with UI and/or POP, and cannot

comment on the impact of FI on sexual function compared with a cohort of women without pelvic floor dysfunction.

While the minimally important difference for the PISQ-12 and PISQ-9 has not been published, our analysis remains that FI, independent of other pelvic floor disorders, partner status, and age has an impact on sexual function in a negative way. The degree of this effect and the causality of this effect cannot be determined from this study. The sexual well-being of women with FI warrants further exploration. Importantly, a measure of sexual function validated in FI patients is needed. Although it may seem intuitive that FI would be associated with sexual dysfunction, this is one of the few large studies that confirms this association.

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Table 1

Demographics of the fecal incontinence study population compared with the population with no fecal incontinence

	Fecal incontinence N=588 (%)	No fecal incontinence N=527 (%)	p value
Age (mean \pm SD ^a)	58 \pm 13	54 \pm 15	<0.001
BMI (kg/m ²) (mean \pm SD)	31 \pm 8	30 \pm 7	<0.001
Ethnicity/race %			0.29
Hispanic	33	43	
Non-Hispanic	47	38	
White	12	10	
Native American Other	8	9	
Depression	175 (30)	106 (20)	<0.001
Alcohol use	188 (32)	172 (33)	0.84
Partner	302 (52)	310 (60)	0.009
Sexually active	242 (43)	278 (54)	0.001
ISI (mean \pm SD)	7 \pm 4	6 \pm 4	<0.001
CRADI-8 (mean \pm SD)	39 \pm 24	14 \pm 16	<0.001
POPDI (mean \pm SD)	39 \pm 26	30 \pm 24	<0.001
UDI-6 (mean \pm SD)	58 \pm 25	44 \pm 25	<0.001
PFDI-20 (mean \pm SD)	135 \pm 62	87 \pm 50	<0.001
^a PISQ-12 (mean \pm SD)	30 \pm 8	33 \pm 7	0.001
^a PISQ-9 (mean \pm SD)	22 \pm 6	24 \pm 6	<0.001

^aOnly completed by sexually active women

Table 2

Determinants of sexual activity in the multivariate model

	OR (95 % CI) <i>p</i> values all <0.001
Age(for each year increased risk of decreasing sexual activity)	0.931 (0.919, 0.943)
BMI continuous	0.956 (0.937, 0.976)
Positive partner	7.247 (5.321, 9.868)
Positive EtOH use	1.970 (1.434, 2.707)

Table 3

Variables independently associated with PISQ-12 score identified from multivariate analyses

	Score change	Standardized β^b	<i>p</i> value
FI	-3.509	-0.169	<0.001
Age	-0.144	-0.184	<0.001
Pessary	-5.586	-0.099	0.007
Partner	+4.155	0.188	<0.001
ISI ^a	-1.925	-0.093	0.011

^aISI Incontinence Severity Index Score 6^bExplains strength of impact on score change; higher numbers demonstrate greater impact

Table 4

Comparing responses to individual PISQ-12 questions in women with and without fecal incontinence

	No fecal incontinence N=274 n (%)	Fecal incontinence N=242 n (%)	P value
Similar in the two groups			
How frequently do you feel sexual desire? This may include wanting to have sex, planning to have sex, feeling frustrated owing to lack of sex, etc. (always/usually)	206 (77)	180 (75)	0.57
Do you climax (have an orgasm) when having sexual intercourse with your partner? (always, usually)	142 (55)	143 (61)	0.18
Do you feel sexually excited (turned on) when having sexual intercourse with your partner? (always, usually)	99 (39)	107 (46)	0.11
How satisfied are you with the variety of sexual activities in your current sex life? (always, usually)	109 (44)	104 (46)	0.63
Compared with orgasms you have had in the past, how intense are the orgasms you have had in the past 6 months? (much less intense, less intense)	215 (91)	196 (91)	0.79
Different in the two groups			
Do you feel pain during sexual intercourse? (always, usually, sometimes)	164 (61)	169 (71)	0.02
Are you incontinent of urine (leak urine) with sexual activity? (always, usually, sometimes)	116/261 (44)	153 (65)	<0.01
Does fear of incontinence (either stool or urine) restrict your sexual activity?	91 (34)	141 (60)	<0.01
Do you avoid sexual intercourse because of bulging in the vagina (the bladder, rectum, or vagina falling out)? (always, usually, sometimes)	80 (30)	107 (46)	<0.01
When you have sex with your partner, do you have negative emotional reactions such as fear, disgust, shame, or guilt? (always, usually, sometimes)	84 (32)	109 (46)	<0.01
Does your partner have a problem with erections that affects your sexual activity? (always, usually, sometimes)	64 (25)	95 (42)	<0.01
Does your partner have a problem with premature ejaculation that affects your sexual activity? (always, usually, sometimes)	62 (24)	74 (33)	0.03