Exacerbation of Symptom Severity of Pelvic Floor Disorders in Women Who Report a History of Sexual Abuse

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Objective: To examine the effect of previous sexual abuse or assault (SAA) on symptom severity, quality of life, and physiologic measures in women with fecal incontinence or constipation.

Design: A cross-sectional study of a prospectively maintained clinical database.

Setting: A tertiary referral center for evaluation and physiologic testing for pelvic floor disorders.

Patients: Women with fecal incontinence or constipation examined during a 6-year period.

Main Outcome Measures: Symptom severity and quality of life were measured with the Fecal Incontinence Severity Index (FISI), Fecal Incontinence Quality of Life Scale (FIQL), Constipation Severity Instrument (CSI), Constipation-Related Quality of Life measure (CR-QOL), and 12-Item Short Form Health Survey (SF-12). Physiologic variables were ascertained with anorectal manometry, electromyography, and endoanal ultrasonography.

Results: Of the 1781 women included, 213 (12.0%) reported SAA. These women were more likely to be white, to report a psychiatric illness, and to have a prior hysterectomy or episiotomy. On bivariate analysis, women with prior SAA had increased symptom severity on the FISI ($P=.002$) and CSI ($P<.001$) and diminished quality of life on the FIQL ($P<.001$), CR-QOL ($P=.009$), and SF-12 ($P=.002$ to $P=.004$). Physiologic variables did not differ significantly between patients with and without prior SAA.

Conclusions: A history of SAA significantly alters disease perception in fecal incontinence and constipation, but the disorders do not result from increased physiologic alterations. We must elicit a history of SAA in these patients, because the history may play a role in the discrepancy between symptom reporting and objective measurements and may modify treatment recommendations.

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tients with a history of sexual assault. Few studies, however, have evaluated whether this presentation is related to a more severe disease process. Thus, it is not known if the observed increase in disease-related complaints in women with a history of sexual abuse or assault (SAA) and PFD might be explained by a comparable alteration in pelvic floor anatomy or physiology.

We hypothesized that prior SAA would disproportionately influence a patient’s presentation and would not necessarily correlate with the severity of underlying anorectal physiologic alterations. To test this hypothesis, we assessed the prevalence of SAA in women presenting at a pelvic floor physiology testing center with a primary complaint of fecal incontinence or constipation. We also evaluated the effect of previous SAA on symptom severity, quality of life, and standard anorectal physiologic measures. Our goal was to enhance the understanding of the impact of SAA in women with PFD.

METHODS

We conducted a cross-sectional study of a prospectively maintained database of patient information from the Center for Pelvic Physiology at the University of California, San Francisco. This study was approved by the institutional review board at the university.

PATIENTS

We included all women presenting to our center with a primary complaint of fecal incontinence and/or constipation from November 1, 2004, through February 28, 2011. We excluded patients who were male (n = 546) or transgender (n = 4) or who declined to answer questions regarding history of SAA (n = 115) (Figure). Baseline characteristics included demographic data and medical, surgical, obstetric, and social histories. Sexual abuse or assault was defined as an affirmative response to any of the following questions: (1) Have you ever been sexually assaulted or abused? (2) If yes, did it involve vaginal penetration? and (3) If yes, did it involve rectal penetration?

SYMPTOM AND QUALITY-OF-LIFE INSTRUMENTS

Disease-specific symptoms and quality of life were ascertained with questionnaires previously validated in similar disease-specific populations. The Fecal Incontinence Severity Index (FISI) quantifies the severity of fecal incontinence symptoms based on the frequency of incontinence with gas, mucus, liquid, and/or solid stool. Patient responses are weighted and totaled with higher values reflecting worse symptoms (range, 0-61). The Fecal Incontinence Quality of Life Scale (FIQL) is a 29-question survey that establishes life quality in the following 4 areas (subscale range, 1-5): lifestyle, coping and behavior, depression and self-perception, and embarrassment. Lower values reflect diminished quality. For our study, a total FIQL score was calculated by adding the subscales together. The Constipation Severity Index (CSI) consists of 16 questions that ascertain severity by means of a total score (range, 0-73) and the following subtypes of constipation: obstructive defecation (range, 0-28), colonic inertia (0-29), or pain (0-14). Higher values reflect worse symptoms. The Constipation-Related Quality of Life instrument (CR-QOL) is a 29-question survey that quantifies quality-of-life impairment due to constipation with a focus on eating (range, 3-13), bathroom use (4-20), social impairment (5-25), and distress (6-30). Higher scores reflect worse quality. The 12-item Short Form Health Survey (SF-12) quantifies general health. Patient responses are weighted and summed to provide physical and mental component summary scores with higher scores reflecting improved overall health.

PATIENT ASSESSMENT

Study participants were asked to fill out a disease-specific survey only if they identified that particular disease as their chief complaint. These surveys were introduced at different points during the study. Of the 1781 study participants, 1591 (89.3%) completed the FISI and constituted the group with fecal incontinence. The FIQL was subsequently introduced, and 1172 (73.7% with fecal incontinence) completed it. The CSI, introduced in 2008, was provided to 646 participants, of whom 464 (71.8%) completed it and constituted the group with constipation. The CR-QOL was introduced subsequently, and 374 (80.6% with constipation) completed it. A total of 274 participants identified both diseases as main complaints. The SF-12 was introduced in 2008, and all participants were asked to complete it.

All patients underwent anorectal physiologic examinations using standard procedures described for fecal incontinence and constipation. These procedures included resting and squeeze pressures, first rectal sensation, and maximum tolerated volume. For participants with fecal incontinence, assessment included pudendal-nerve terminal motor latency and endoanal ultrasonography. For those with constipation, assessment included a balloon expulsion test and a sponge test to determine puborectalis muscle function.

STATISTICAL ANALYSIS

Most variables evaluated were distributed nonnormally. Data for these variables were analyzed using χ² tests for categorical variables and Mann-Whitney tests for continuous variables. For
RESULTS

A total of 1781 women with fecal incontinence, constipation, or both were included in this study, of whom 214 (12.0%) reported previous SAA (Figure). Of this group, abuse was characterized as vaginal penetration in 75 cases (35.0%), anal penetration in 7 (3.3%), and both in 32 (15.0%). The remaining 100 women (46.7%) reported previous SAA but declined to describe it further.

BASELINE CHARACTERISTICS

Women with and without a history of SAA were similar in age, number of pregnancies, and vaginal and cesarean section deliveries (Table 1). Both groups reported similar rates of anorectal operations and surgical repairs for cystocele, rectocele, or urinary incontinence. They differed, however, in several ways. More women with previous SAA were white (70.6% vs 58.6%; \( P < .001 \)) and were diagnosed as having a psychiatric illness (69.7% vs 38.1%; \( P < .001 \)). They were more likely to have had an episiotomy (57.5% vs 43.7%; \( P < .001 \)), a hysterectomy (44.9% vs 37.2%; \( P = .04 \)), or a repair of vaginal prolapse (10.4% vs 6.1%; \( P = .03 \)) than nonabused women. Women with prior SAA smoked tobacco more frequently (\( P < .001 \)). Women who declined to answer questions about SAA were younger than women in the other groups (mean [SD] age, 54.7 [11.5] years); 46.7% reported a psychiatric illness and 14.1% used tobacco.

ANALYSIS OF FECAL INCONTINENCE

Of the 1781 women included, 1591 (89.3%) reported a chief complaint of fecal incontinence and completed the FISI. Of these, 1172 (73.7%) completed the FIQL and 237 (14.9%) completed the SF-12. Women with a history of SAA reported significantly worse symptoms (mean FISI score, 33.2 vs 29.9 in women without SAA; \( P = .002 \)) and impaired quality of life (mean total FIQL score, 7.4 vs 8.4 in women without SAA; \( P < .001 \)) compared with women without SAA (Table 2). Scores for each FIQL subscale reflected inferior quality of life due to fecal incontinence in women with prior SAA. Furthermore, both components of the SF-12 showed decreased functioning in women with fecal incontinence and a history of SAA (Table 2). Mean resting pressures were higher in patients with a history of SAA (42.2 vs 38.5 mm Hg; \( P = .004 \)). Squeeze pressure, overall squeeze, first sensation, maximum volume, and the percentage with a defect in the internal or external sphincter did not differ significantly between the 2 groups. The par-

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No History of SAA (n = 1587)</th>
<th>History of SAA (n = 214)</th>
<th>P Valueb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age, mean (SD), y</td>
<td>57.1 (15.5)</td>
<td>55.2 (13.5)</td>
<td>.06</td>
</tr>
<tr>
<td>White</td>
<td>58.6</td>
<td>70.6</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Obstetric history</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>History of pregnancy</td>
<td>84.7</td>
<td>87.8</td>
<td>.27</td>
</tr>
<tr>
<td>Total No. of deliveries, mean (SD) [range]</td>
<td>2.4 (1.3) [1-9]</td>
<td>2.6 (1.3) [1-9]</td>
<td>.07c</td>
</tr>
<tr>
<td>History of vaginal delivery</td>
<td>94.1</td>
<td>92.3</td>
<td>.40</td>
</tr>
<tr>
<td>History of cesarean section</td>
<td>14.0</td>
<td>17.0</td>
<td>.33</td>
</tr>
<tr>
<td>History of episiotomy</td>
<td>43.7</td>
<td>57.5</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Medical and surgical history</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychiatric diagnosis</td>
<td>38.1</td>
<td>69.7</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Anorectal operation</td>
<td>26.4</td>
<td>29.1</td>
<td>.43</td>
</tr>
<tr>
<td>Hysterectomy</td>
<td>37.2</td>
<td>44.9</td>
<td>.04</td>
</tr>
<tr>
<td>Operation for vaginal prolapse</td>
<td>6.1</td>
<td>10.4</td>
<td>.03</td>
</tr>
<tr>
<td>Operation for bladder suspension</td>
<td>12.0</td>
<td>16.6</td>
<td>.08</td>
</tr>
<tr>
<td>Operation for cystocele or rectocele</td>
<td>7.2</td>
<td>8.8</td>
<td>.43</td>
</tr>
<tr>
<td>Social history</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed at time of examination</td>
<td>60.2</td>
<td>54.0</td>
<td>.31</td>
</tr>
<tr>
<td>Tobacco use</td>
<td>10.1</td>
<td>20.1</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Alcohol consumption</td>
<td>54.7</td>
<td>47.7</td>
<td>.07</td>
</tr>
</tbody>
</table>

Abbreviation: SAA, sexual abuse or assault.

*Data were missing for 422 participants for pregnancy, 682 for number of deliveries, 683 for vaginal delivery, 686 for cesarean delivery, 980 for episiotomy, 425 for psychiatric history, 418 for anorectal operation, 417 for hysterectomy, 431 for operations for vaginal prolapse and bladder suspension, 427 for cystocele or rectocele, 1301 for employment status, 448 for use of tobacco, and 433 for alcohol consumption. Unless otherwise indicated, data are expressed as percentage of women.

*b Derived from \( \chi^2 \) or Mann-Whitney test unless otherwise indicated.

c Indicates normally distributed and derived from the 2-tailed \( t \) test.

d Includes anxiety, depression, bipolar disorder, and/or obsessive compulsive disorder.

e Includes any procedure on anus/rectum and those for hemorrhoids, fistulas, fissures, masses, incontinence, or prolapse.
Participants with fecal incontinence who dismissed questions about SAA reported symptoms similarly to those without previous SAA.

**ADJUSTED ANALYSIS OF TOTAL FIQL AND PATIENT-WEIGHTED FISI**

The mean patient-weighted FISI (symptom severity) score was associated with a 2.4-point increase (95% CI, 0.2-7.1; P < .001) in participants with a history of SAA after controlling for age, psychiatric illness, episiotomy, and hysterectomy. The mean total FIQL (quality of life) score was associated with a 0.81-point decrease (95% CI, −1.45 to 0.16; P = .04) in participants with a history of SAA after controlling for the same confounding factors.

**ANALYSIS OF CONSTIPATION**

Of the 689 women who provided the constipation-specific surveys, 464 (67.3%) reported a chief complaint of constipation and completed the CSI; 374 (54.7%) completed the CR-QOL and 268 (57.8%) completed the SF-12. Women with a history of SAA reported worse constipation-related symptoms and compromised quality of life, reflected by a higher mean total CSI score of 42.1 vs 36.0 for women with no history of SAA (P < .001) (Table 3). The obstructive defecation and colonic inertia subscales similarly demonstrated escalated symptoms in women with a history of SAA, although the pain subscale did not explicitly differ between women with and without SAA. Quality of life due to constipation was compromised in women with SAA (mean CR-QOL scores, 57.6 vs 50.9 for women without SAA; P = .009). The mean subscale scores of eating, bathroom, and social impairment were also worse in women with SAA, but the mean distress subscale score was not. The SF-12 mental component summary was reduced with a 3.7-point decrease (95% CI, −1.1 to 8.3; P = .13) in women with SAA after controlling for constipation and previous SAA compared with those without SAA, but the physical component summary did not differentiate the groups (Table 3). The objective anorectal physiologic findings and balloon expulsion and sponge test results did not distinguish physiologic features in women with a history of SAA (Table 3). Mean resting and squeeze pressures, overall squeeze, first sensation, maximum volume, and percentage with impaired balloon and sponge test results did not differ between the 2 groups. Among the women with constipation, 25 declined to answer the questions about SAA, and this did not provide enough statistical power to distinguish their unique features.

**ADJUSTED ANALYSIS OF TOTAL CSI AND CR-QOL SCORES**

A history of SAA remained a vital factor in symptom severity (CSI) after controlling for age, race, psychiatric illness, and episiotomy, with a mean 3.7-point increase (95% CI, 0.2-7.1; P = .04) in women with a history of SAA. The total CR-QOL score was associated with a 3.5-point increase (95% CI, −1.1 to 8.3; P = .13) in women with a history of SAA but was not statistically significant after controlling for the confounding factors.

**COMMENT**

In this study, we hypothesized that among women seeking specialty consultation for the management of fecal...
The history of gynecological procedures, including hysterectomy, episiotomy, and repairs for vaginal prolapse, was increased in women with prior SAA, but this finding did not correlate with differentially abnormal anorectal pathophysiology. In fact, mean anal resting pressures did not differ between women with and without prior SAA. Similarly, in our study of women seeking specialty care for fecal incontinence and constipation, those with prior SAA were more likely to describe severe symptoms and reduced quality of life due to their disease. Further, the objective measures for fecal incontinence and constipation did not distinguish women with or without prior SAA. Sexual abuse persisted as a risk factor for exacerbated disease perception after controlling for potential confounders, including psychiatric illness.

Obstetric injury is a commonly cited cause of fecal incontinence in women, and in our study, this history did not differ between women with and without prior SAA. The history of gynecological procedures, including hysterectomy, episiotomy, and repairs for vaginal prolapse, was increased in women with prior SAA, but this finding did not correlate with differentially abnormal anorectal pathophysiology. In fact, mean anal resting pressures were higher in patients with prior SAA despite more disruptive symptoms caused by the loss of voluntary control of gas and/or feces. Further assessment demonstrated no notable differences in squeeze pressure, over-

### Table 3. Constipation Disease–Related Survey Scores and Physiologic Testing Results by History of SAA

<table>
<thead>
<tr>
<th>Symptom severity, quality of life, and general health scores</th>
<th>No History of SAA (n = 382)</th>
<th>History of SAA (n = 82)</th>
<th>P Value&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSI total</td>
<td>36.0 (15.2)</td>
<td>42.1 (14.3)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>CSI obstructive defecation subscale</td>
<td>18.8 (6.4)</td>
<td>20.7 (6.3)</td>
<td>.007</td>
</tr>
<tr>
<td>CSI colonic inertia subscale</td>
<td>12.9 (7.7)</td>
<td>15.5 (7.2)</td>
<td>.009</td>
</tr>
<tr>
<td>CSI pain subscale</td>
<td>5.6 (4.3)</td>
<td>6.6 (4.5)</td>
<td>.053</td>
</tr>
<tr>
<td>CR-QOL total</td>
<td>50.9 (17.7)</td>
<td>57.6 (18.7)</td>
<td>.009</td>
</tr>
<tr>
<td>CR-QOL eating subscale</td>
<td>8.6 (4.1)</td>
<td>9.9 (4.3)</td>
<td>.01</td>
</tr>
<tr>
<td>CR-QOL bathroom subscale</td>
<td>10.9 (5.5)</td>
<td>12.9 (5.2)</td>
<td>.004</td>
</tr>
<tr>
<td>CR-QOL social impairment subscale</td>
<td>9.5 (5.8)</td>
<td>12.1 (6.7)</td>
<td>.001</td>
</tr>
<tr>
<td>CR-QOL distress subscale</td>
<td>22.8 (7.0)</td>
<td>24.5 (4.9)</td>
<td>.19</td>
</tr>
<tr>
<td>SF-12 physical component summary&lt;sup&gt;c&lt;/sup&gt;</td>
<td>39.9 (8.8)</td>
<td>38.3 (8.5)</td>
<td>.20</td>
</tr>
<tr>
<td>SF-12 mental component summary&lt;sup&gt;c&lt;/sup&gt;</td>
<td>42.4 (11.7)</td>
<td>37.6 (10.2)</td>
<td>.004</td>
</tr>
</tbody>
</table>

#### Anorectal physiologic findings

- Resting pressure, mm Hg: 49.1 (22.7) vs. 44.7 (20.9), P < .001
- Squeeze pressure, mm Hg: 45.3 (22.9) vs. 47.8 (29.1), P < .001
- Overall squeeze, mm Hg: 87.8 (33.9) vs. 87.8 (38.8), P < .001
- First sensation, mL: 53.4 (31.4) vs. 50.7 (24.1), P = .83
- Maximum volume, mL: 146.8 (61.6) vs. 137.1 (52.7), P < .001
- Balloon expelled, %: 14.1 vs. 17.1, P = .51
- Sponge test, %: 79.1 vs. 73.2, P = .60
- Equivocal: 11.9 vs. 16.1, P = .07
- Normal: 9.0 vs. 10.7, P = .07

Abbreviations: CR-QOL, Constipation-Related Quality of Life measure; CSI, Constipation Severity Instrument; SAA, sexual abuse or assault; SF-12, 12-Item Short Form Health Survey.

<sup>a</sup>Data were missing in 90 subjects for CR-QOL; 196 for SF-12; 8 for resting, squeeze, and overall squeeze; 21 for first sensation; 32 for maximum volume; 47 for balloon expulsion test; and 130 for sponge test. Unless otherwise indicated, data are expressed as mean (SD).

<sup>b</sup>Derived from χ² or Mann-Whitney test unless otherwise indicated.

<sup>c</sup>Indicates normally distributed and derived from the 2-tailed t test.
all squeeze, first rectal sensation, maximum tolerable rectal volume, pudendal-nerve terminal motor latency, and percentage with sphincter defects. The FISI (symptom severity) and FIQL (quality of life) scores, however, demonstrated that women with a history of SAA face greater challenges with fecal incontinence than do women without such a history. When we controlled for age, race, psychiatric illness, hysterectomy, and episiotomy, the symptom severity and quality-of-life scores reflected aggravated disease presentation in women with a history of SAA.

In patients with constipation, a primary objective in the specialty setting is to determine the underlying pathophysiological feature, whether dyssynergic defecation, slow colonic transit, irritable bowel syndrome, functional constipation, or a combination of these alterations. In our study, women with previous SAA reported more constipation symptoms and greater life disruption than did women without a history of SAA. However, mean scores on the CSI pain subscale (which correlates to irritable bowel syndrome–type constipation) and CR-QOL distress subscale did not differ between the 2 groups of women. This finding suggests that the effect of SAA on patients’ complaints of constipation is not all encompassing. Like the findings in patients with fecal incontinence, the exacerbated complaints owing to constipation in women with previous SAA could not be explained by aberrant anorectal dysfunction. In fact, on average, constipated women with prior SAA had lower resting pressures, higher squeeze pressures, decreased maximum volumes, and higher frequency of normal puborectalis function on sponge test results. After we controlled for age, race, psychiatric illness, and episiotomy, CSI (symptom severity) scores were magnified in women with previous SAA. The statistical significance of CR-QOL scores diminished after this adjustment.

The strength of our findings, which rest on a large sample size and a similar outcome despite 2 different types of PFD, provide important insights for colorectal surgeons who evaluate and treat patients with fecal incontinence or constipation. However, our study has several limitations. First, the severity and chronicity of SAA is not accounted for; neither is a description of the time from SAA to presentation. Second, the self-reported nature of SAA may be subject to recall bias. Third, 115 of the 1896 patients’ complaints of constipation is not all encompassing. Like the findings in patients with fecal incontinence, the exacerbated complaints owing to constipation in women with previous SAA could not be explained by aberrant anorectal dysfunction. In fact, on average, constipated women with prior SAA had lower resting pressures, higher squeeze pressures, decreased maximum volumes, and higher frequency of normal puborectalis function on sponge test results. After we controlled for age, race, psychiatric illness, and episiotomy, CSI (symptom severity) scores were magnified in women with previous SAA. The statistical significance of CR-QOL scores diminished after this adjustment.

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REFERENCES