UROGYNECOLOGY

Symptoms of anal incontinence and difficult defecation among women with prolapse and a matched control cohort

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OBJECTIVE: The purpose of this study was to quantify the risk for anal incontinence and difficult defecation among women with prolapse by comparing them with women without prolapse of similar age, body mass index, race, and hysterectomy status, and to determine whether there are characteristics or findings in women with prolapse that are associated with greater symptom severity.

STUDY DESIGN: Women with primary pelvic organ prolapse (n = 151) were compared with women without prolapse (n = 135). All subjects underwent pelvic examination and completed symptom questionnaires regarding how frequently anal incontinence and difficult defecation were experienced. Incontinence of flatus was considered to be present if it occurred on "most" or "every" day; difficult defecation was considered to be present if it was experienced with "most" or "every" bowel movement. Symptoms that occurred "on occasion" or "never" were considered to be absent.

RESULTS: Incontinence of flatus was reported by 23.1% of cases vs 8.3% of control subjects ($P = .006$). Incontinence of liquid or solid stool was present in 4.7% and 3.5%, respectively, and was not reported by control subjects ($P < .001$ and .009, respectively). Difficult defecation, which was characterized by pushing on the vaginal walls to complete defecation, was present in 19.7% vs 4.4% of control subjects ($P = .001$). Cases that reported symptoms were compared with those that did not report symptoms. Among those reporting difficult defecation, the length of the perineal body length was greater when straining (4.0 vs 3.4 cm; $P = .020$). Among those reporting incontinence of flatus, mean parity was higher (3.3 vs 2.5; $P = .012$), and a positive standing cough stress test was more likely (39.3% vs 18.5%; $P = .025$). Symptoms of anal incontinence and/or difficult defecation were present in 35.3% of subjects (52/147).

CONCLUSION: Women with prolapse are more likely than control subjects to have symptoms of anal incontinence or difficult defecation; approximately one-third of these women will have symptoms.

Key words: anal incontinence, difficult defecation, pelvic organ prolapse

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Pelvic organ prolapse is a distressing condition that leads to 200,000 operations each year.[1] It can be manifested by many different symptom complexes. Studies that have described the type and frequency of symptoms in women with symptomatic prolapse have been identified as a research priority by the National Institute of Child Health and Human Development.[2] Although associations between defects in vaginal support and certain symptoms have been reported in case series,[3-5] studies have not compared rates of women with and without prolapse.

Bowel dysfunction is a symptom complex that can affect women with and without prolapse. Common symptoms include anal incontinence (ie, the involuntary loss of flatus or feces) and difficult defecation. Anal incontinence has been reported in 16%-31%[6-9] and difficult defecation in 24%-52% of women with pelvic organ prolapse.[3] Nichols et al[10] recently reported that anal incontinence was several times more common among women with prolapse and urinary incontinence than among control subjects, but there is a lack of similar information that quantifies the risk for symptoms of difficult defecation.

The objectives of this study, which was a secondary analysis of cohorts who were recruited to determine whether levator ani defects are more common among women with prolapse compared with women without prolapse, were to determine whether there are increased risks in these cohorts for anal incontinence and difficult defecation and whether there are characteristics or findings of women with prolapse that are associated with greater symptom severity.

Materials and Methods

Subject recruitment

Between November 2000 and October 2004, 286 women were recruited to participate in a study of soft tissue defects that lead to pelvic organ prolapse. The study was approved by the University of Michigan Medical School Institutional Review Board, and all subjects signed an

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informed consent document. The inclusion and exclusion criteria have been described elsewhere.[11] Briefly, the cohorts consisted of 151 cases with prolapse at least 1 cm beyond the hymen (ie, cases) and 135 women with all areas of vaginal support at least 1 cm above the hymen (ie, control subjects). Control subjects were recruited to match for age, body mass index, parity, race, and hysterectomy status.

Questionnaire protocol

The questionnaire protocol included a section on age, race, reproductive and surgical histories, and multiple items regarding bowel dysfunction.

The items for anal incontinence were: (1) Do you lose gas from the rectum beyond your control? (2) Do you lose stool beyond your control if your stool is loose or liquid? and (3) Do you lose stool beyond your control other than during an episode of diarrhea? Patients were given the following options to estimate how frequently these events occurred: never, on an occasional day, on most days, or on everyday.

The items for difficult defecation were: (1) Do you have to push on the vagina or around the rectum to have a complete bowel movement? (2) Do you need to strain hard to have a bowel movement? (3) Do you feel that you have not completely emptied your bowels? Patients were given the following options to estimate how frequently these events occurred: never, with an occasional bowel movement, with most bowel movements, or generally with every bowel movement.

Clinical examination

Each subject's height and weight were measured. Subjects were examined in a semirecumbent position. Vaginal support was described with the pelvic organ prolapse quantification (POP-Q).[12] The strength of the pelvic floor muscles with voluntary contraction was assessed as "good," "fair," "poor," or "absent" with digital palpation. An instrumented vaginal speculum was used to assess resting vaginal closure force and maximum vaginal closure force; the augmentation of vaginal closure was calculated as the difference between maximum vaginal closure force and resting vaginal closure force. The speculum is similar in size and shape to a standard speculum and is equipped with a strain gauge at the handle. Subjects were asked to contract the pelvic floor muscles in 3 separate trials when supine. The sum of the forces (Newtons) on the anterior and posterior bills of the speculum from the 3 trials were averaged and reported. Intravesical pressure was measured concomitantly to verify that a subject did not inadvertently Valsalva when trying to contract. A full-bladder cough stress test was done with subjects standing. Testing was carried out by 1 of the authors or another member of the female pelvic medicine and reconstructive surgery group.

Categorization of prolapse size

POP-Q stages of the cases with prolapse were stage II, 46 cases (30.5%), stage III, 101 cases (66.9%), and stage IV, 4 cases (2.6%). Because this staging did not provide satisfactorily sized groups, 3 more equally distributed groups of cases with prolapse beyond the hymen were developed: small (+1 cm; n = 46), medium (+2 to +3 cm; n = 64), and large (≥+4 cm; n = 41).

Levator ani muscle imaging

The magnetic resonance imaging protocol for these cohorts of patients has been described previously.[11] An established system,[13] with known interrater reliability,[14] was used to categorize patients into groups of women with no defects, minor defects, and major defects.

Statistics

Each of the questionnaire items was analyzed by dichotomization into groups that "never" or "occasionally" had symptoms and groups that had incontinence of flatus on "most" or "every" day or difficult defecation with "most" or "every" bowel movement. The prevalence of symptoms among cases and control subjects was compared with the use of a chi-square test. Among women with prolapse, we explored the relationship of incontinence of flatus (question 1) and difficult defecation (questions 4-6) with vaginal topography (ie, POP-Q findings), strength of pelvic floor muscle contraction by palpation, resting vaginal closure force and augmentation of vaginal closure force, levator ani defect status (none vs minor vs major), size of prolapse, and a standing cough stress test. Differences in continuous measures (eg, POP-Q) were evaluated with *t*-tests. The distribution of findings (eg, percentage with positive stress test results) was evaluated with χ^2 tests.

RESULTS

Prevalence of anal incontinence and difficult defecation among cases and control subjects

Among cases, more than one-third of patients (35.2%; 52/147) had symptoms of either incontinence of flatus or difficult defecation. Symptoms of both were experienced by only 6.1% of the patients (9/147). A comparison of how frequently symptoms of anal incontinence and difficult defecation are reported by cases and control subjects is summarized in Table 1. Symptoms of anal incontinence and difficult defecation, which were each characterized by 3 items, were more common among women with prolapse, when compared with age-, race-, and hysterectomy-matched control subjects. The likelihood of incontinence of flatus was 3-fold greater and the likelihood of difficult defecation ranged from 5- to 19-fold greater for cases, compared with control subjects. Odds ratios for the increased likelihood of incontinence of liquid and solid stool were not calculated because the symptoms were not present in the control group. The items regarding anal incontinence or difficult defecation were completed by 95.3%-99.3% of the women with prolapse and by 97.7%-99.2% of the control subjects

The characteristics of the case and control cohorts were reported previously.[11] In summary, the matching of the cohorts for age, hysterectomy status, and race was successful, but they differed with respect to parity. Mean parity was 3.0 ± 1.8 for women with prolapse and 2.3 ± 1.5 for control subjects ($P = .002$). The primary aim of this study was to de-