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Postoperative Bowel Function, Symptoms and Habits in Women After Vaginal Reconstructive Surgery

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Abstract

Introduction and Hypothesis—To characterize postoperative bowel symptoms in women undergoing vaginal prolapse reconstructive surgery randomized to preoperative bowel preparation versus regular diet.

Methods—Subjects (N = 121) completed two bowel diaries: a 7-day bowel diary immediately prior to surgery and a 14-day diary postoperatively. Self-reported bowel diary data and symptoms included the time to first bowel movement (BM), daily number of BMs, Bristol Stool Form Scale score, pain and urgency associated with BM, episodes of fecal incontinence, and use of laxatives. Antiemetic use was abstracted from medical records. Outcomes were compared between groups using chi-squared/Fisher's exact test or Student's t-test as appropriate.

Results—Mean time to first postoperative BM was similar between the bowel prep (n=60) and control groups (n=61), 81.2 ± 28.9 vs 78.6 ± 28.2 hrs, $p=0.85$. With the first BM, there were no differences between bowel preparation and control groups regarding pain (17.2% vs 27.9%, $p=0.17$), fecal urgency with defecation (56.9% vs 52.5%, $p=0.63$), fecal incontinence (14% vs

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15%, $p=0.88$) and >1 use of laxatives (93.3% vs 96.7% $p=0.44$), respectively. Antiemetic use was similar in both groups (48.3% vs 55.7%, respectively, $p=0.42$).

Conclusions—There were no differences in return of bowel function and other bowel symptoms postoperatively between randomized groups. Lack of bowel preparation does not impact the risk of painful defecation postoperatively. This information may be used to inform patients regarding expectations for bowel function after vaginal reconstructive surgery.

Keywords

bowel preparation; postoperative bowel function; vaginal reconstructive surgery

Introduction

Surgical intervention for pelvic organ prolapse (POP) treatment is increasing. It is estimated that by 2050, the number of women suffering from symptomatic POP in the United States will increase from 3.3 to 4.9 million women. [1] Current estimates reflect 22.7 surgical procedures per 10,000 women, with an additional 25% of women undergoing procedures for prolapse recurrence. [2-6]

Preoperative mechanical bowel preparation is applied inconsistently among pelvic reconstructive surgeons, despite that Level 1 studies in colorectal and minimally invasive gynecologic surgery reflect no benefit of universal preoperative mechanical bowel preparation. [7-10]

A recent randomized controlled trial examining the use of a mechanical bowel preparation prior to vaginal prolapse surgery, reported no benefit regarding improving surgeons' intraoperative acceptability of the operative field. [11] Additionally, preoperative mechanical bowel preparation was associated with decreased patient satisfaction and increased abdominal cramping, fatigue, anal irritation, and hunger pain compared to women maintaining a regular diet. [11]

Return to bowel function, concern for painful defecation, and gastrointestinal symptoms, such as nausea and fecal urgency, is a significant source of anxiety for women after vaginal reconstructive surgery. Complaints of constipation and incomplete bowel evacuation are symptoms reported by 52% of women with pelvic organ prolapse. [12]

The objective of this study was to characterize the impact of bowel preparation on postoperative bowel symptoms and return of bowel function in a cohort of women undergoing vaginal POP reconstructive surgery.

Materials and Methods

This was a planned secondary analysis of a single-blind, randomized trial conducted within the Division of Urogynecology and Pelvic Reconstructive Surgery Division at the University of Alabama at Birmingham. IRB approval was obtained. Eligible participants were women, older than 19 years of age, scheduled to undergo, at a minimum, vaginal prolapse surgery with a planned apical suspension and posterior compartment repair. Other prolapse and

incontinence surgery was allowed. Women were excluded if they had colorectal cancer, inflammatory bowel disease, a history of bowel resection, neurological disorders, undergoing chemotherapy or radiation, or were pregnant. Women with symptoms indicative of constipation according to Rome III guidelines were also excluded. [13]

All participants were randomized at the time of their preoperative visit to receive mechanical bowel preparation (intervention group) or not (control group). [11] The surgeons were blinded to the patient treatment assignment, and randomization was conducted with a 1:1 ratio. Control group patients were allowed a regular diet the day prior to surgery. Intervention group patients were instructed to eat nothing after midnight on the day of surgery. In addition, these patients were instructed to intake a clear-liquid diet and to self-administer 2 saline enemas (institutional standard) in the late afternoon the day prior to surgery.

Subjects completed a 7-day bowel diary prior to surgery and a 14-day bowel diary following surgery. Women were considered having completed the diary if they completed the 7-day preoperative diary and at least of 10 days of the 14 day postoperative diary. The time of day, daily number of bowel movements, responses to the Bristol Stool Form Scale pain and urgency associated with the bowel movement, fecal incontinence, (defined as “yes” or “no” to question ascertaining presence of fecal leakage) and use of medications (e.g. laxatives – osmotic, softener, stimulant, fiber, other) to assist with bowel movements were recorded by the subjects. [14] Pain and urgency associated with bowel movements were assessed using a simple “yes” or “no” response for each bowel movement. The time to first bowel movement was calculated by abstracting the start day/time of the procedure from the medical record and the day/time of first bowel movement from the bowel diary. Antiemetic medications administered while in the hospital were abstracted from the medical record. All antiemetics were administered I.V. and consisted of Phenergan 12.5/25mg, Zofran 4mg, and Reglan 5mg corresponding to 1 dose.

Demographics, clinical and intraoperative characteristics were summarized using descriptive statistics. Chi-squared test (or Fisher's exact test) and Student's t-test were performed to make the statistical comparisons of categorical and continuous variables, respectively. Twenty five subjects who did not meet the diary criteria were excluded with a final sample size consisting of 121 subjects. A p-value < 0.05 was considered statistically significant in two-tailed statistical tests. All analyses were conducted using SAS 9.3 (SAS Institute, Cary NC) software.

Results

From the initial 150 women who enrolled and randomized to a bowel preparation or no bowel preparation, 4 women withdrew or had surgery cancelled and were excluded; 25 subjects did not meet the criteria regarding bowel diary. A total of 121 women completed the bowel diaries and met the minimal bowel diary criteria for this analysis. There was no difference in baseline characteristics in those women with a valid diary versus those without including age, parity, baseline pain with BM, fecal leakage, fecal urgency, number of baseline BMs, or proportion undergoing apical and posterior repairs (all $p>0.05$).

Age, parity, and type of surgery performed were similar between the two randomization groups (Table 1). Seven-day bowel diary data was also similar between the two groups at baseline: bowel movement frequency per day (1.68 ± 0.8 vs 1.67 ± 0.9 , $p=0.96$), proportions of subjects with pain (23.3% vs 34.4%, $p=0.18$), fecal incontinence (28.3% vs 24.6%, $p=0.64$) and fecal urgency (70% vs 59%, $p=0.21$).

After surgery, the mean time (hour) to first bowel movement was similar between the bowel preparation and control group (81.2 ± 28.9 vs 78.6 ± 28.2 , $p=0.85$). On the day of their first postoperative bowel movement (the first postoperative day which they recorded a bowel movement), there were no differences between groups regarding pain or fecal urgency with defecation and stool transit scales ($p>0.05$) and 47.4% vs 45.9% in the bowel prep versus control group reporting Bristol stool scores in the “Normal” transit category ($p=0.8$) (Table 2).

Most of the women used laxatives more than one time postoperatively in both the bowel preparation group and the group without a bowel preparation (93.3% vs 96.7%, $p=0.44$). The most common postoperative laxative type used was osmotic laxatives, followed by stool softeners, stimulants, and fiber. The use of different laxatives was similar between the two groups ($p>0.05$) except for fiber where women in the no bowel preparation group were more likely to report post-operative daily fiber use (21.3%) compared to those receiving a bowel preparation group (5%, $p=0.008$). No differences were found in the use of postoperative antiemetics between the two groups ($p=0.42$).

Discussion

Preoperative mechanical bowel preparations are invariably used by pelvic reconstructive surgeons specifically when posterior compartment prolapse is involved to decrease soiling of the surgical field with stool. Perioperative bowel function is a significant concern for both the surgeon and patients facing vaginal reconstructive surgery. Patients often anticipate painful defecation and constipation. Our planned secondary analysis shows that the average time to first bowel movement after vaginal reconstructive surgery with or without a bowel preparation was 3.32 days and 17-28% of patients had pain during the first postoperative bowel movement. In addition, the majority of stools reflected normal transit time (type 3-5 on Bristol Stool Scale). Collectively, our data shows that preoperative mechanical bowel preparation appears to have no effect on postoperative bowel function.

The role of mechanical bowel preparation in minimally invasive approaches to gynecologic surgery has been in question over the past decade. The majority of level I data do not support the routine use of mechanical bowel preparation to improving bowel handling with laparoscopic gynecologic procedures. [15] The data in the urogynecologic population is yet to be well defined as our study is the first to directly assess the effect of pre-operative mechanical bowel preparation on postoperative bowel function.

Previously, investigations regarding perioperative bowel function after urogynecologic procedures have focused only on the effect of postoperative regimens on time to first bowel movement. Patel and colleagues conducted a randomized trial investigating the efficacy of

Senna with docusate compared to placebo used after pelvic reconstructive surgery. They showed that time to first bowel movement was 3.0 ± 1.5 days in the treatment group compared to 4.0 ± 1.5 days with placebo, $p < 0.002$. [16] The use of a postoperative bowel regimen was further investigated by McNanley and colleagues conducted a randomized study ($n=72$) to investigate the efficacy of two post-operative bowel regimens after laparoscopic or vaginal reconstructive surgery. In this study, the average time to first bowel movement was 2.95 days ($p=0.03$). Mean scores of painful defecation during first bowel movement measured on visual analog scale were 3.7. [17]

Perioperative bowel function remains a priority to pelvic reconstructive surgeons as postoperative constipation and straining may threaten the integrity of a recently reconstructed pelvic floor. Based on long-term data from the Colpopexy and Urinary Reduction Efforts study, we can appropriately counsel our patients that obstructive defecatory symptoms will improve after pelvic reconstructive surgery and remain improved at 1 and 5 years postoperatively. [18,19] The use of laxatives after pelvic reconstructive surgery is supported by our data in conjunction with those of Patel and McNanley. However, the efficacy of routine use of docusate is not proven.

To date, there is a paucity of data investigating the role of routine preoperative bowel preparation for vaginal reconstructive procedures specifically where at a minimum, posterior and apical compartment prolapse is involved. Our data showing the lack of clinical utility of routine preoperative mechanical bowel preparation in women undergoing vaginal reconstructive surgery significantly advances the knowledge regarding perioperative bowel function. These data reflect similar time to first postoperative bowel movement as those discussed previously. Further, complementary information characterizing consistency of and symptoms associated with the first bowel movement postoperatively to be of normal type and transit time was collected and similar between groups. These data collectively reflect that both preoperative mechanical bowel preparation and postoperative bowel regimens are not effective in changing time, type, or transit time of the first bowel movement or the occurrence of painful defecation postoperatively.

Our study should be viewed with inherent strengths and weaknesses. The interpretation of our data is strengthened by a randomized design with a surgically homogeneous patient population that allows for the data to be generalizable to the normal urogynecologic population in tertiary care centers. Our data is further strengthened by the use of a commonly applied preoperative mechanical bowel preparation and collection of postoperative agents used for bowel stimulation. However, postoperative pain medication utilization as well as quantifiable pain (VAS scores) was not collected in either group. It is well known that postoperative opioid usage may affect bowel function and result in decreased transit time and stool frequency. While this is a limitation of our data, the intervention and control groups were managed postoperatively in an identical manner and this factor was likely similar between groups as well.

In conclusion, bowel preparation for vaginal reconstructive surgery has no effect on return of bowel function and other bowel symptoms postoperatively. In addition, the lack of bowel preparation did not impact the prevalence of painful defecation postoperatively. This

information will be useful to inform patients regarding expectations for bowel function after vaginal reconstructive surgery.

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Table 1
Clinical - Demographic Characteristics

Characteristic, n (%)	Bowel Prep (n = 60)	Control (n=61)	Missing	p
Age, mean (SD)	61.5 (10.4)	59.7 (10.1)	5	0.35
Parity, mean (SD)	2.4 (1.03)	2.32 (1.1)	13	0.83
Baseline Pain	14 (23.3)	21 (34.4)		0.18
Baseline Fecal Leakage	17 (28.3)	15 (24.6)		0.64
Baseline Fecal Urgency	42 (70)	36 (59)		0.21
Number of BM per day, mean (SD)	1.68 (0.8)	1.67 (0.9)		0.96
Apical Suspension	58 (96.7)	61 (100)		0.24
Posterior Repair	57 (95)	59 (96.7)		0.68

Table 2
Post-operative Bowel Activity, Bowel Symptoms, Laxative Use, and Antiemetic Use

Variable, n (%)	Bowel Prep (N=60)	Control (N=61)	Missing	p
Time (hr) to first bowel movement, mean (SD)	81.2 (28.9)	78.6 (28.2)	3	0.85
Pain (first BM ^I)	10 (17.2)	17 (27.9)	2	0.17
Fecal leakage (first BM ^I)	8 (14)	9 (15)	4	0.88
Fecal urgency (first BM ^I)	33 (56.9)	32 (52.5)	2	0.63
Bristol Stool Scale (first BM ^I)			3	0.8
Slow (1,2)	13 (22.8)	17 (27.9)		
Normal (3-5)	27 (47.4)	28 (45.9)		
Fast (6,7)	17 (29.8)	16 (26.2)		
Laxative Use (more than one)	56 (93.3)	59 (96.7)		0.44
Type of Laxative				
Osmotic	51 (85)	50 (82)		0.65
Docusate	16 (26.7)	19 (31.2)		0.59
Stimulant	11 (18.3)	10 (16.4)		0.78
Fiber	3 (5)	13 (21.3)		0.008*
Antiemetic Use	29 (48.3)	34 (55.7)		0.42

* Denotes statistical significance at $p < 0.05$

^I Bowel movement