Published in final edited form as:

Am J Obstet Gynecol. 2012 November ; 207(5): 423.e1–423.e5. doi:10.1016/j.ajog.2012.06.054.

Changes in bowel symptoms 1 year after rectocele repair

Vivian W. SUNG, MD, MPH¹, Charles R. RARDIN, MD¹, Christina A. RAKER, ScD², Christine A. LASALA, MD³, and Deborah L. MYERS, MD¹

¹Department of Obstetrics and Gynecology, Division of Urogynecology, Alpert Medical School of Brown University, Providence, RI

²Department of Obstetrics and Gynecology, Division of Research, Women and Infants Hospital of Rhode Island, Providence, RI

³Department of Obstetrics and Gynecology, Hartford Hospital, Hartford, CT

Abstract

OBJECTIVE—To evaluate changes in bowel symptoms after rectocele repair and identify risk factors for persistent symptoms.

STUDY DESIGN—Ancillary analysis of a randomized surgical trial for rectocele repair. Subjects underwent examinations and completed questionnaires for bowel symptoms at baseline and 12 months postoperatively. Outcomes included resolution, persistence, or de novo bowel symptoms. We used multiple logistic regression to identify risk factors for bowel symptom persistence.

RESULTS—160 women enrolled: 139 had baseline bowel symptoms, 85% had 12 month data. The prevalence of bowel symptoms decreased after rectocele repair (56% vs. 23% splinting, 74% vs. 37% straining, 85% vs. 19% incomplete evacuation, 66% vs. 14% obstructive defecation, $P < .001$ for all). On multiple logistic regression, a longer history of splinting was a risk factor for persistent postoperative splinting (AOR 2.25, 95% CI 1.02–4.93).

CONCLUSIONS—Bowel symptoms may improve after rectocele repair but almost half of women will have persistent symptoms.

Keywords

bowel dysfunction; graft augmentation; randomized trial; rectocele; posterior colporrhaphy

Introduction

Bowel symptoms and defecatory dysfunction are common in women with pelvic floor disorders.¹ The term “defecatory dysfunction” broadly includes the need for excessive straining, manual manipulation, the sensation of incomplete evacuation and sensation of

© 2012 Mosby, Inc. All rights reserved.

Corresponding Author: Vivian W. Sung, MD, MPH, Division of Urogynecology, Women and Infants Hospital, 695 Eddy Street, lower level, Providence, RI 02903, Work: (401) 274-1122 x 8740, Fax: (401) 453-7992, vsung@wihri.org.

Reprints are not available

Disclosure: None of the authors have a conflict of interest

Presented at the 38th Annual Society of Gynecologic Surgeons Scientific Meeting April 13-15, 2012, Baltimore, Maryland

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

obstructed defecation. Pelvic organ prolapse has been reported to be a risk factor for bowel symptoms^{2, 3} and it is estimated that 67–80% of women with pelvic organ prolapse also report defecatory symptoms.^{4–6}

The underlying cause of defecatory symptoms may include structural disorders (e.g., rectocele, rectal prolapse), functional disorders (e.g., dyssynergic defecation, metabolic disorders), or even a “normal” range of bowel habits. On clinical exam, patients with these bowel symptoms may have posterior vaginal wall prolapse, or rectocele. However, many studies have not confirmed an association between the severity of posterior vaginal prolapse and increasing bowel symptom prevalence or severity.^{3, 7, 8} In addition, surgery for rectocele does not always lead to resolution of the bowel symptoms.^{9, 10} A study by Gustilo-Ashby et al concluded that resolution or improvement in bowel symptoms can be expected after rectocele repair; however, up to 35% of their patients reported persistent or worsening of bowel symptoms postoperatively.¹¹ We previously found that up to 45% of women who participated in a randomized trial of graft-augmented versus native tissue rectocele repair also reported persistent defecatory symptoms.¹² Therefore, more information on the effect of rectocele repair on bowel symptoms and predictors are needed to most appropriately counsel women regarding expectations after rectocele repair.

The primary objective of this study was to describe changes in bowel symptoms 1 year after rectocele repair. Our secondary objective was to identify risk factors for persistent and/or worsening bowel symptoms.

Material and Methods

We performed a planned ancillary analysis of 160 women enrolled in a randomized, double-masked controlled trial of porcine subintestinal submucosal graft-augmented rectocele repair versus native tissue repair. The details and methods for this trial have been previously published.¹² This ancillary analysis includes the subset of women who reported baseline bowel symptoms. The study was conducted at 2 sites: Women and Infants Hospital in Providence, Rhode Island and Hartford Hospital in Hartford, Connecticut and the protocol was approved by both institutional review boards. Patients and outcome assessors were masked to randomization assignment. All women provided written informed consent. No funding or support was provided by the manufacturer of the graft for any portion of the study.

As previously described, women with symptomatic stage II rectocele electing surgical repair were eligible. Other concomitant vaginal prolapse repairs and anti-incontinence procedures were allowed. Women younger than 18 years of age, women undergoing concomitant sacrocolpopexy or colorectal procedures, history of porcine allergy, connective tissue disease, pelvic malignancy, pelvic radiation, and non-English speaking patients were excluded.

All women underwent a complete history and physical examination, including the Pelvic Organ Prolapse Quantification (POP-Q) examination in a 30 degree supine lithotomy position at baseline and 12 months postoperatively.¹³ All women also completed a self-administered symptom questionnaire at baseline and 12 months postoperatively, which included relevant items from the Pelvic Floor Distress Inventory (PFDI-20).¹⁴ Although “abnormal” bowel behavior can encompass a wide range of symptoms, the American College of Gastroenterology defines constipation as “unsatisfactory defecation characterized by infrequent bowel movement, difficult stool passage, or both, with difficult stool passage including straining, sense of incomplete evacuation, hard/lumpy stool, prolonged time to defecate, or need for manual maneuvers.¹⁵ Therefore, we included bowel symptoms of

splinting (PFDI item #4), straining (PFDI item #7), incomplete evacuation (PFDI item #8), and obstructed defecation (sensation that “stool gets trapped”). We also measured anal incontinence (inability to control gas and/or stool). Women with affirmative responses were asked additional detailed questions regarding bowel symptom characteristics including the severity of bother, the frequency of occurrence of each bowel symptom (occurring everyday, more than once a week, once a week, once a month, less than once a month) and duration of symptoms prior to surgery (less than 12 months, 1–2 years, longer than 2 years).

Women reporting any bowel symptom at baseline with 12 month data were included in this analysis. We assessed changes in bowel symptoms between baseline and 12 months postoperatively. We defined resolution of symptoms as symptoms present at baseline that completely resolved at 12 months. We defined persistence of symptoms as symptoms which were present at baseline and either stayed the same or worsened in severity of bother at 12 months. We defined improvement of symptoms as symptoms which were present at baseline that improved in severity of bother at 12 months. We defined de novo symptoms as bowel symptoms which were absent at baseline but present postoperatively.

Student's *t* tests were used to compare means between groups. Chi square was used for categorical variables. We compared baseline and 12 month changes in bowel symptoms using McNemar's test or Cochran-Mantel-Haenszel test to account for within-person comparisons. For women reporting any degree of bowel symptoms postoperatively, we also evaluated in detail changes in frequency of occurrence and severity of bother after rectocele repair. We used multiple logistic regression to identify risk factors for persistent bowel symptoms at 12 months, constructing 3 separate models for straining, splinting, incomplete evacuation, and obstructed defecation. Variables based on the literature and those that statistically changed our effect estimates were included in our models. $P < .05$ was considered statistically significant. Statistical analyses were performed using SAS 8.2 (SAS Institute, Cary, NC).

Results

One hundred and sixty women were randomized in this trial. All women received a rectocele repair: 81 received native tissue repair and 79 received graft-augmented rectocele repair. There was a high prevalence of at least one bowel symptom. Of the 160 women randomized, 139 (87%) had bowel symptoms at baseline and 117 (85%) of these had 12 month data and were included in this analysis. At baseline, the mean age of women with bowel symptoms was 56.2 years (SD 11), the majority (99%) of women were Caucasian, 27% had undergone a prior urogynecologic procedure, 80% had Stage II rectocele, and 21% had Stage III rectocele on baseline POPQ. Ninety-four percent of women underwent concomitant procedures, including 13% who underwent vaginal hysterectomy and vault suspension. Table 1 presents additional clinical characteristics of the study population.

At baseline, 56% of women reported manual splinting, 74% reported straining, 85% reported incomplete evacuation, 66% reported sensation of obstructed defecation, and 63% reported anal incontinence. Fifteen percent of women reported having only 1 bowel symptom, 14% reported 2 bowel symptoms, 24% reported 3 bowel symptoms, 23% reported 4 bowel symptoms, and 25% reported all five bowel symptoms.

Changes in bowel symptoms are presented in Table 2. At 12 months postoperative, the prevalence of all bowel symptoms significantly decreased; however, 23% reported persistent splinting, 37% persistent straining, and 19% persistent incomplete evacuation ($P < .001$ for all). The prevalence of obstructed defecation also improved (14%) as did anal incontinence (26%) ($P < .001$ for all). The total number of bowel symptoms reported postoperatively per

patient also significantly decreased with 29% now reporting 0 symptoms, 21% reporting 1 symptom, 23% reporting 2, 16% reporting 3, 10% reporting 4, and <1% reporting 5 bowel symptoms ($P<.0001$, data not shown).

Table 3 presents additional details regarding bowel symptom characteristics for the women reporting unresolved bowel symptoms at 12 months (includes those reporting symptoms improved, same, or worse). The frequency of experiencing each symptom daily, weekly, or monthly significantly improved only for the symptom of incomplete evacuation, although there were trends of improvement in frequency for all other bowel symptoms as well. Overall the severity of bother improved for splinting, straining, incomplete evacuation, and obstructed defecation.

On multiple logistic regression, (Table 4) only longer duration of splinting was a risk factor for persistent splinting (AOR 2.25, 95% CI 1.02–4.93). Age, graft use, postoperative rectocele stage, and duration of symptoms were not significant risk factors for persistent straining, incomplete evacuation, or obstructed defecation.

Comment

Bowel symptoms and anorectal dysfunction cause significant bother, discomfort and embarrassment to women. Traditionally, patients with bowel symptoms and clinical evidence of posterior vaginal prolapse were often treated with rectocele repair; however, although the vaginal bulge is often repaired many still have persistent or recurrent bowel symptoms. In our study, although many women reported improvement in symptom bother for bowel symptoms, up to 37% had at least 1 persistent symptom at 1 year. Longer preoperative duration of splinting was a risk factor for persistent splinting postoperatively. Postoperative rectocele stage was not a risk factor for any persistent symptom in our study.

What defines “normal” bowel habits may be debatable because a patient’s assessment may include the frequency of bowel movements, the consistency or quantity of stools, and/or associated qualitative symptoms. In a study by Bellini et al including 140 subjects who perceived their defecation behavior as normal, stool frequency ranged from three times per day to three times per week.¹⁶ For women, only 6% reported the need to strain, 6% incomplete evacuation, and 0% required manual maneuvers for >25% of defecations. These findings were supported in another study by Walter et al assessing normal bowel habits in 124 adults in the general population who did not have any gastrointestinal abnormality.¹⁷ The majority (64%) had normal stool consistency 75% of the time. In addition, the authors concluded that some degree of urgency (12% of normal population), straining (19% of normal population), and incomplete evacuation (19% of normal population) should be considered normal.

Compared to these studies on normal general adult populations, the prevalence of baseline bowel symptoms in our study was high (84%) and this is consistent with other studies of women undergoing surgical treatment for prolapse and/or rectocele. In a secondary analysis of a randomized trial for 3 different approaches to rectocele repair, the presence of at least 1 bowel symptom at baseline ranged from 80–97%.¹¹ A study by Bradley et al of women undergoing sacrocolpopexy for vaginal vault prolapse with or without rectocele repair, reported a 45% prevalence of at least 1 bowel symptom.⁷ When the same cohort of women was separated by whether a concurrent posterior procedure was performed, the prevalence of defecatory symptoms and severity scores were higher in the group who underwent posterior procedures versus those who did not.⁶ Of note, 22% of that study population had undergone previous rectocele repair.

There are few published large randomized trials specifically assessing defecatory outcomes after rectocele repair. Our findings are consistent with Gustilo-Ashby in that at 1 year after transvaginal rectocele repair, women have significant improvement in bowel symptoms; however, almost half of women have some degree of persistent symptoms. In our study, overall severity of bother improved for all symptoms; however the frequency of experiencing these symptoms only significantly decreased for the symptom of obstructed defecation.

Outcomes after colo-rectal approaches to rectoceles do not appear to be significantly better. In a small study of 48 women randomized to transperineal repair with levatorplasty, transperineal repair without levatorplasty, and transanal rectocele repair, similarly symptoms of constipation improved significantly in all groups. However, similar to transvaginal repair, at short term follow up of 6 months, 12–56% had persistent bowel symptoms, with the worst outcomes after transanal repair.¹⁸ In a systematic review and meta-analysis by Maher et al, anatomic failure was lower after transvaginal versus transanal rectocele repair.¹⁹ There are few studies directly comparing the effect of these different approaches on bowel symptoms.

The fact that almost half of women have persistent bowel symptoms after rectocele repair is likely due to their multifactorial nature. Based on radiologic imaging, the presence of incidental small rectoceles has been reported to be 76% in healthy, nulliparous women using defecography.²¹ Even after an anatomic cure, the function may not improve because patients may have underlying causes such as dyssynergic defecation, irritable bowel syndrome, symptoms exacerbated by pharmacologic agents, other neurologic conditions, or even other etiologies of anatomic outlet obstruction. Often by the time a patient presents to a Urogynecologist, it is not possible to clearly determine which came first: the defecatory symptom(s) or the rectocele. Although there are many cross-sectional studies evaluating the association between defecatory symptoms and rectocele, there are limited studies assessing the long-term effect of defecatory symptoms on the pelvic floor.

There are limitations to our study. The majority of our study population presented with vaginal bulge as the primary symptom and did not undergo extensive anorectal testing or detailed evaluation of their defecatory symptoms. Therefore, we do not have additional anorectal testing or imaging for these patients. We did not assess bowel habits based on Rome III criteria; however, we did assess the severity of bother using validated questions and the frequency of bowel symptoms. Also, we did not assess pain with defecation which can also be a common symptom in women with defecatory problems. Finally, we do not have follow-up beyond 12 months and it is possible that a higher proportion of women may experience recurrent symptoms beyond this time.

Our study adds to the growing body of literature regarding bowel symptoms after rectocele repair that will be helpful in discussing expectations for women considering surgical treatment. In women with a primary and/or significant complaint of defecatory symptoms who have a co-existing rectocele, clinicians should consider further anorectal testing and conservative management including education, counseling, and behavioral therapies prior to proceeding to surgery.²² Women electing surgical repair of rectocele who have significant defecatory symptoms should be counseled appropriately regarding expected outcomes if their primary goal is to improve these defecatory symptoms.

Acknowledgments

Funding:

Dr. Sung is supported by grant K23HD060665 from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development. The content is solely the responsibility of the author and does not necessarily represent

the official views of the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development or the National Institutes of Health.

References

1. Raza-Khan F, Cunkelman J, Lowenstein L, Shott S, Kenton K. Prevalence of bowel symptoms in women with pelvic floor disorders. *Int Urogynecol J*. 21:933–8. [PubMed: 20449569]
2. Morgan DM, DeLancey JO, Guire KE, Fenner DE. Symptoms of anal incontinence and difficult defecation among women with prolapse and a matched control cohort. *Am J Obstet Gynecol*. 2007; 197:509, e1–6. [PubMed: 17714680]
3. Saks EK, Harvie HS, Asfaw TS, Arya LA. Clinical significance of obstructive defecatory symptoms in women with pelvic organ prolapse. *Int J Gynaecol Obstet*. 111:237–40. [PubMed: 20817179]
4. Ellerkmann RM, Cundiff GW, Melick CF, Nihira MA, Leffler K, Bent AE. Correlation of symptoms with location and severity of pelvic organ prolapse. *Am J Obstet Gynecol*. 2001; 185:1332–7. discussion 1337–8. [PubMed: 11744905]
5. Arya LA, Novi JM, Shaunik A, Morgan MA, Bradley CS. Pelvic organ prolapse, constipation, and dietary fiber intake in women: a case-control study. *Am J Obstet Gynecol*. 2005; 192:1687–91. [PubMed: 15902178]
6. Bradley CS, Nygaard IE, Brown MB, et al. Bowel symptoms in women 1 year after sacrocolpopexy. *Am J Obstet Gynecol*. 2007; 197:642, e1–8. [PubMed: 18060963]
7. Bradley CS, Brown MB, Cundiff GW, et al. Bowel symptoms in women planning surgery for pelvic organ prolapse. *Am J Obstet Gynecol*. 2006; 195:1814–9. [PubMed: 16996465]
8. Weber AM, Walters MD, Ballard LA, Booher DL, Piedmonte MR. Posterior vaginal prolapse and bowel function. *Am J Obstet Gynecol*. 1998; 179:1446–9. discussion 1449–50. [PubMed: 9855579]
9. Omotosho TB, Rogers RG. Evaluation and treatment of anal incontinence, constipation, and defecatory dysfunction. *Obstet Gynecol Clin North Am*. 2009; 36:673–97. [PubMed: 19932421]
10. Cundiff GW, Weidner AC, Visco AG, Addison WA, Bump RC. An anatomic and functional assessment of the discrete defect rectocele repair. *Am J Obstet Gynecol*. 1998; 179:1451–6. discussion 1456–7. [PubMed: 9855580]
11. Gustilo-Ashby AM, Paraiso MF, Jelovsek JE, Walters MD, Barber MD. Bowel symptoms 1 year after surgery for prolapse: further analysis of a randomized trial of rectocele repair. *Am J Obstet Gynecol*. 2007; 197:76, e1–5. [PubMed: 17618766]
12. Sung VW, Rardin CR, Raker CA, Lasala CA, Myers DL. Porcine subintestinal submucosal graft augmentation for rectocele repair: a randomized controlled trial. *Obstet Gynecol*. 119:125–33. [PubMed: 22183220]
13. Bump RC, Mattiasson A, Bo K, et al. The standardization of terminology of female pelvic organ prolapse and pelvic floor dysfunction. *Am J Obstet Gynecol*. 1996; 175:10–7. [PubMed: 8694033]
14. Barber MD, Walters MD, Bump RC. Short forms of two condition-specific quality-of-life questionnaires for women with pelvic floor disorders (PFDI-20 and PFIQ-7). *Am J Obstet Gynecol*. 2005; 193:103–13. [PubMed: 16021067]
15. An evidence-based approach to the management of chronic constipation in North America. *Am J Gastroenterol*. 2005; 100 (Suppl 1):S1–4. [PubMed: 16008640]
16. Bellini M, Alduini P, Bassotti G, et al. Self-perceived normality in defecation habits. *Dig Liver Dis*. 2006; 38:103–8. [PubMed: 16263343]
17. Walter SA, Kjellstrom L, Nyhlin H, Talley NJ, Agreus L. Assessment of normal bowel habits in the general adult population: the Popcol study. *Scand J Gastroenterol*. 45:556–66. [PubMed: 20205503]
18. Farid M, Madbouly KM, Hussein A, Mahdy T, Moneim HA, Omar W. Randomized controlled trial between perineal and anal repairs of rectocele in obstructed defecation. *World J Surg*. 34:822–9. [PubMed: 20091310]
19. Maher C, Feiner B, Baessler K, Adams EJ, Hagen S, Glazener CM. Surgical management of pelvic organ prolapse in women. *Cochrane Database Syst Rev*. :CD004014.
20. Davis K, Kumar D. Posterior pelvic floor compartment disorders. *Best Pract Res Clin Obstet Gynaecol*. 2005; 19:941–58. [PubMed: 16198148]

21. Shorvon PJ, McHugh S, Diamant NE, Somers S, Stevenson GW. Defecography in normal volunteers: results and implications. *Gut*. 1989; 30:1737–49. [PubMed: 2612988]
22. Rao SS, Go JT. Treating pelvic floor disorders of defecation: management or cure? *Curr Gastroenterol Rep*. 2009; 11:278–87. [PubMed: 19615303]

Table 1Demographic and clinical characteristics of women with baseline bowel symptoms (n=117) ^{*†}

Variable	
Age (mean, std)	56.2 (10.9)
Preoperative rectocele stage	
Stage II	93 (79.5)
Stage III	24 (20.5)
Stage IV	0
Preoperative POPQ measurements (median centimeters, range)	
Point AP	0.0 (−1.0 to 4.0)
Point BP	0.0 (−1.0 to 4.0)
GH	4.0 (2.0 to 6.5)
PB	3.5 (0.0 to 6.0)
Postoperative rectocele stage	
Stage 0	69 (61.1)
Stage I	32 (28.3)
Stage II	10 (8.9)
Stage III	2 (1.8)
Stage IV	0
Postoperative POPQ measurements (median centimeters, range)	
Point AP	−3.0 (−3.0 to 3.0)
Point BP	−3.0 (−3.0 to 3.0)
GH	3.0 (0 to 5.0)
PB	4.0 (0 to 6.0)

^{*} Data presented as N (%) unless otherwise indicated

[†] Numbers may not add to 100% as a result of missing data

POPQ – Pelvic Organ Prolapse Quantification

Table 2

Changes in bowel symptoms after rectocele repair*

Bowel symptom	Baseline N (%)	12 months postoperative N (%)	
Splinting	66 (57)	Persistent	15 (22.7) [†]
		Resolved	40 (60.6)
		Improved	11 (16.7)
		De novo	0
Straining	80 (69)	Persistent	32 (36.8) [†]
		Resolved	35 (40.2)
		Improved	13 (14.9)
		De novo	7 (8.1)
Incomplete evacuation	92 (80)	Persistent	19 (19.0) [†]
		Resolved	50 (50.0)
		Improved	23 (23.0)
		De novo	8 (8.0)
Obstructed defecation	73 (66)	Persistent	11 (14.3) [†]
		Resolved	53 (68.8)
		Improved	9 (11.7)
		De novo	4 (5.2)

* Resolved – symptom present at baseline, absent postoperatively

Persistent – symptom present at baseline, same or worse bother postoperatively

Improved – symptom present at baseline and postoperatively, but improved bother severity

De novo – symptom absent at baseline, present postoperatively

[†]P<.001 for comparison of baseline versus persistent postoperative symptoms

Table 3Bowel symptom details in women reporting unresolved postoperative symptoms after rectocele repair^{* †}

Bowel symptom and characteristic	Baseline	12 month postoperative	P-value
Splinting (N=26)			
Frequency of splinting			
Everyday	8 (30.8)	4 (16.0)	0.06
Once a week to once a month	15 (57.7)	13 (52.0)	
Less than once a month	3 (11.5)	8 (32.0)	
Severity of splinting bother			
Quite a bit	16 (61.5)	7 (26.9)	0.01
Somewhat/moderately bothersome	7 (26.9)	11 (42.3)	
Not at all	3 (11.5)	8 (30.8)	
Straining (N=45)			
Frequency of straining			
Everyday	8 (17.8)	8 (18.2)	0.3
Once a week to once a month	30 (66.7)	25 (56.8)	
Less than once a month	7 (15.6)	11 (25.0)	
Severity of straining bother			
Very	22 (48.9)	12 (26.7)	0.03
Somewhat/moderately bothersome	21 (46.7)	31 (68.9)	
Not at all	2 (4.4)	2 (4.4)	
Incomplete evacuation (N=42)			
Frequency of incomplete evacuation			
Everyday	14 (33.3)	6 (14.6)	0.08
Once a week to once a month	26 (61.9)	30 (73.2)	
Less than once a month	2 (4.8)	5 (12.5)	
Severity of incomplete evacuation bother			
Very bothersome	26 (61.9)	12 (28.6)	<0.0001
Somewhat/moderately bothersome	16 (38.1)	20 (47.6)	
Not at all	0	10 (23.8)	
Obstructed defecation (N=20)			
Frequency of obstructed defecation			
Everyday	7 (35.0)	3 (15.0)	0.02
Once a week to once a month	13 (65.0)	13 (65.0)	
Less than once a month	0	4 (20.0)	
Severity of obstructed defecation bother			
Very bothersome	11 (55.0)	7 (35.0)	
Somewhat/moderately bothersome	9 (45.0)	10 (5.0)	

Bowel symptom and characteristic	Baseline	12 month postoperative	P-value
Not bothersome	0	3 (15.0)	0.1

* Numbers may not add to totals due to missing data

[†] Comparisons by McNemar's test or Mantel-Haenszel test to account for paired data

Table 4

Multiple logistic regression for risk factors for persistent splinting (N=63)

Variable	Unadjusted OR	Adjusted OR
Graft use	0.73 (0.22–2.35)	0.49 (0.13–1.86)
Age	0.97 (0.92–1.03)	0.97 (0.91–1.04)
Postoperative rectocele stage	1.02 (0.44–2.36)	0.97 (0.40–2.37)
Duration of splinting	1.91 (0.91–4.02)	2.25 (1.02–4.93)
Perineal body length	1.71 (0.84–3.46)	1.87 (0.88–3.94)