Site-Specific Rectocele Repair Compared With Standard Posterior Colporrhaphy

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OBJECTIVE: To compare the anatomic and functional outcomes of site-specific rectocele repair and standard posterior colporrhaphy.

METHODS: We reviewed charts of all patients who underwent repair of advanced posterior vaginal prolapse in our institution between July 1998 and June 2002 with at least 1 year of follow-up.

RESULTS: This study comprised 124 consecutive patients following site-specific rectocele repair and 183 consecutive patients following standard posterior colporrhaphy without levator ani plication. Baseline characteristics, including age, body mass index, parity, previous pelvic surgeries, and preoperative prolapse were not significantly different between the 2 study groups. Recurrence of rectocele beyond the midvaginal plane (33% versus 14%, $P = .001$) and beyond the hymenal ring (11% versus 4%, $P = .02$), recurrence of a symptomatic bulge (11% versus 4%, $P = .02$), and postoperative Bp point (–2.2 versus –2.7 cm, $P = .001$) were significantly higher after the site-specific rectocele repair. Rates of postoperative dyspareunia (16% versus 17%), constipation (37% versus 34%), and fecal incontinence (19% versus 18%) were not significantly different between the 2 study groups.

CONCLUSION: Site-specific rectocele repair is associated with higher anatomic recurrence rates and similar rates of dyspareunia and bowel symptoms than standard posterior colporrhaphy. (Obstet Gynecol 2005;105:314–8. © 2005 by The American College of Obstetricians and Gynecologists.)

LEVEL OF EVIDENCE: II-3

A rectocele, or posterior vaginal prolapse, is thought to be a herniation of the anterior rectal and posterior vaginal wall into the lumen of the vagina, which arises from either a tear or an attenuation of the rectovaginal (Denonvilliers') fascia. Common symptoms attributed to this disorder are a bearing-down sensation, pelvic heaviness, and incomplete bowel emptying, often necessitating splinting or manual evacuation.[1] Rectoceles are commonly repaired by gynecologists via a standard posterior colporrhaphy with midline plication of the rectovaginal fascia. Although this procedure is associated with high anatomic cure rates,[2] there are conflicting data with regard to postoperative sexual and bowel function.[3,4] Recent studies have emphasized the importance of identifying and repairing discrete defects in the Denonvilliers' fascia,[5–8] suggesting that this technique may produce more favorable anatomic and functional outcomes, including better sexual and bowel function. All of these studies, however, have been descriptive, and have lacked control groups. The purpose of this study was to compare objective and subjective outcomes after site-specific rectocele repair with outcomes from the standard posterior colporrhaphy.

MATERIALS AND METHODS

Office and hospital charts of all patients who underwent repair of advanced rectocele (defined as ≥ 2nd degree by the modified Baden-Walker halfway system[9]) in our tertiary care referral facility between July 1998 and June 2002, with at least 1 year of follow-up, were systematically reviewed. Women were offered surgical repair when they had symptomatic posterior vaginal wall prolapse including a symptomatic bulge or constipation. All patients were evaluated intraoperatively for discrete defects in the Denonvilliers' fascia. Whenever found, these defects were repaired in a site-specific manner as previously described.[5–8] Standard posterior colporrhaphy with midline plication of the rectovaginal fascia[10–13] was performed in all cases with diffuse weakness of the Denonvilliers' fascia or when an isolated defect could not be found.

One attending urogynecologist (P.K.S.) and a urogynecology fellow under his direct supervision performed all surgeries. A transverse incision was made at the vaginal introitus, and the posterior vaginal wall was incised in the midline to a point cephalad to the rectocele.

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The rectovaginal septum was identified, and the vaginal epithelium and smooth muscle were dissected away from it by means of sharp and blunt dissections. This was extended laterally to the arcus tendineus levator ani muscles and inferiorly to the perineal body. An effort was made to leave as much endopelvic connective tissue on the rectum as possible in an avascular plane. A rectal examination was performed to identify location of site-specific defects in the Denonvilliers' fascia. The rectal wall was brought forward with the rectal finger to distinguish fascial defects from an intact rectovaginal septum. After the defects were identified, Allis clamps were used to grasp the connective tissues, which were pulled together over the defects to facilitate repair. All identified defects were repaired by using interrupted 0 polygalactin 910 sutures (Vicryl; Ethicon Inc, Somerville, NJ). The rectally placed finger was then used to determine whether the defect had been fully corrected.

If diffuse attenuation of the Denonvilliers' fascia was noted, a standard posterior colporrhaphy was performed. With the surgeon's finger in the patient's rectum, the rectovaginal fascia was plicated in the midline with a running 0 polygalactin 910 suture. Levator ani plication was not performed in any of these cases. The redundant vaginal wall was excised in an attempt to reconstruct a vaginal diameter of 2–3 fingers' width. A 2–0 delayed absorbable running suture was used to close the posterior vaginal epithelium. Perineorrhaphy was performed after either a site-specific defect repair or a standard posterior colporrhaphy in all patients in whom separation of the perineal muscles was noted during surgery. The deep and superficial transverse perineal and the bulbocavernosus muscles were plicated in the midline with interrupted 0 polygalactin 910 sutures.

The patients were reevaluated in a standardized fashion 1 year after the operation. For each patient, we recorded preoperative and 1-year postoperative pelvic exams by the modified Baden-Walker halfway[9] and pelvic organ prolapse quantification[14] systems. All pelvic exams were performed by urogynecology fellows pre- and postoperatively. Dyspareunia and bowel symptoms, including constipation, diarrhea, abdominal pain, and fecal and flatal incontinence were assessed using Likert scales from 0 to 4 (where 0 designates absence of the symptom and 4 designates the highest severity) before and 1 year after surgery. Data were analyzed using the Student t test, χ^2 test, and a multivariable logistic regression model. Test-retest reliability of the symptom questionnaire was determined by comparing severity of symptoms as recorded in 2 different preoperative visits at least 2 weeks apart, using the Cronbach's α reliability coefficient. A P value of .05 was considered statistically significant for all comparisons. Data management and

Table 1. Baseline Characteristics and Preoperative Prolapse

	Site-Specific Repair (n = 124)	Posterior Colporrhaphy (n = 183)
Age (y)	69 ± 8	68 ± 7
Parity	2.7 ± 1.1	2.8 ± 1.1
Body mass index (kg/m²)	26.5 ± 3.9	26.1 ± 3.2
Previous surgeries		
Hysterectomy	61 (49)	97 (53)
Posterior colporrhaphy	15 (12)	26 (14)
Anterior colporrhaphy	17 (14)	42 (23)
Incontinence procedures	6 (5)	11 (6)
Vaginal vault suspension	3 (2)	4 (2)
Preoperative rectocele*		
2nd degree	72 (58)	104 (57)
3rd degree	32 (26)	51 (28)
4th degree	20 (16)	27 (15)
Preoperative mean Bp point (cm)†	–0.4 ± 0.1	–0.3 ± 0.08

Values are presented as mean ±standard deviation or n (%).
* By the modified Baden-Walker halfway system.
† By the pelvic organ prolapse quantification system.

statistical analysis were performed with SPSS 11.0.1 for Windows (SPSS Inc, Chicago, IL). The study was approved by the Institutional Review Board Committee for Human Subjects.

RESULTS

Three hundred sixty-eight patients underwent posterior vaginal repair at our institution during the specified time period. Three hundred seven patients had at least 1 year of postoperative follow-up and were included in the study. Of these patients, 124 underwent site-specific repair, and 183 underwent standard posterior colporrhaphy. Of the site-specific defects repaired, 96 (77%) were combined distal and lateral, 14 (11%) were distal, 8 (7%) were proximal, and 6 (5%) were midline defects. Baseline characteristics and previous surgeries of the study patients are summarized in Table 1. Patients in the site-specific repair and the standard posterior colporrhaphy groups did not significantly differ in age, parity, body mass index, previous surgeries, and preoperative prolapse. Concomitant procedures, intraoperative bleeding, perioperative complications, and mean follow-up time were not statistically different between the 2 patient groups (Table 2). Recurrence rates of posterior vaginal prolapse, both beyond the midvaginal plane (33% versus 14%, $P = .001$) and beyond the hymenal ring (11% versus 4%, $P = .02$), as well as mean postoperative Bp point (–2.2 ± 0.3 versus –2.7 ± 0.4, $P = .001$), were significantly higher in the site-specific repair group (Table 3). In addition, recurrence of a symptomatic bulge was significantly more common among the site-specific group (11% versus 4%, $P = .02$).

Table 2. Surgical Data

	Site-Specific Repair (n = 124)	Posterior Colporrhaphy (n = 183)
Concomitant procedures		
Vaginal hysterectomy	42 (34)	55 (30)
Anterior colporrhaphy	100 (81)	150 (82)
Vaginal vault suspension	40 (32)	60 (33)
Transvaginal sling	94 (76)	141 (77)
Burch colposuspension	6 (5)	13 (7)
Paravaginal repair	7 (6)	11 (6)
Perineorrhaphy	92 (74)	139 (76)
Intraoperative bleeding (mL)	298 ± 48	314 ± 39
Perioperative complications		
Hemorrhage	4 (3)	5 (3)
Wound infection	1 (1)	2 (1)
Medical complications	3 (2)	3 (2)
Follow-up time (mo)	12.2 ± 2.1	12.4 ± 2.2

Values are presented as mean ± standard deviation or n (%).

Two hundred twenty-three (73%) patients had at least 2 recordings of symptom severity on a Likert scale preoperatively. Based on these patients' data, the test-retest reliability coefficient of the symptom questionnaire was calculated to be high (Cronbach's α 0.90). When examining the entire cohort, overall dyspareunia rates were significantly higher postoperatively than preoperatively (17% versus 8%, $P = .001$). Overall rates of constipation (31% versus 35%), diarrhea (11% versus 12%), abdominal pain (11% versus 10%), fecal incontinence (17% versus 19%), and flatal incontinence (49% versus 46%) were not significantly different pre- and postoperatively. When comparing postoperative outcomes of the 2 surgical techniques, rates of dyspareunia (16% versus 17%), constipation (37% versus 34%), diarrhea (15% versus 10%), abdominal pain (11% versus 10%), fecal incontinence (19% versus 18%), and flatal incontinence (47% versus 45%) were not significantly different between the site-specific repair and the posterior colporrhaphy groups (Table 3). De novo occurrence and improvement in all of these symptoms were not significantly different between the 2 surgical techniques (Tables 3 and 4).

DISCUSSION

The study suggests that site-specific rectocele repair is associated with higher anatomic recurrence rates than the standard posterior colporrhaphy. Although there are several different approaches to the surgical correction of posterior vaginal wall prolapse, all share similar goals: to relieve symptoms, restore anatomy, and maintain visceral and sexual function.[15] Although mild rectoceles may be asymptomatic, larger ones can cause symptoms of incomplete bowel emptying, vaginal mass, pain, and pressure. The traditional surgical technique for rectocele repair performed by gynecologists has been posterior colporrhaphy, which consists of rectovaginal fascia reinforcement with side-to-side approximation and levator ani muscle plication. This technique, however, has been criticized for being associated with high rates of postoperative dyspareunia and bowel dysfunction.[3,4]

Some investigators have assumed that the lack of consistent functional improvement with the standard posterior colporrhaphy is attributable to improper restoration of the normal vaginal anatomy. Richardson[11] was among the first to advocate reapproximating discrete fascial breaks in the Denonvilliers' fascia to restore the original anatomic integrity. He described the most common break as being a transverse separation above the attachment to the perineal body, resulting in a low posterior vaginal prolapse. Another common fascial

Table 3. Anatomic and Sexual Function Outcomes of Site-Specific Repair Versus Standard Posterior Colporrhaphy

	Site-Specific Repair (n = 124)	Standard Colporrhaphy (n = 183)	P
Rectocele recurrence rates			
2nd degree*	41 (33)	26 (14)	**.001**
≥ 3rd degree*	14 (11)	7 (4)	**.02**
Mean postoperative Bp point (cm)†	−2.2 ± 0.3	−2.7 ± 0.4	**.001**
Symptomatic bulge‡	14 (11)	7 (4)	**.02**
Dyspareunia			
Preoperative	10 (8)	15 (8)	1.00
Postoperative	20 (16)	31 (17)	.81
De novo§	12/114 (11)	18/168 (11)	1.00
Improved‖	3/10 (33)	5/15 (33)	1.00

Values are presented as mean ±standard deviation or n (%); boldface *P* values are statistically significant.
* By the modified Baden-Walker halfway system.
† By the pelvic organ prolapse quantification system.
‡ When the patient had a recurrent rectocele and complained of a vaginal lump.
§ Of all patients who were asymptomatic preoperatively.
‖ Of all patients who were symptomatic preoperatively.

Table 4. Bowel Function After Site-Specific Repair Versus Standard Posterior Colporrhaphy

	Site-Specific Repair (n = 124)	Standard Colporrhaphy (n = 183)	P
Constipation			
Preoperative	41 (33)	55 (30)	.68
Postoperative	46 (37)	62 (34)	.66
De novo*	9/83 (11)	13/128 (10)	.68
Improved†	8/41 (20)	10/55 (18)	.67
Diarrhea			
Preoperative	17 (14)	18 (10)	.32
Postoperative	19 (15)	19 (10)	.30
De novo*	5/107 (5)	5/165 (3)	.27
Improved†	3/17 (18)	4/18 (22)	.56
Abdominal pain			
Preoperative	15 (12)	19 (10)	.56
Postoperative	14 (11)	18 (10)	.68
De novo*	2/109 (1)	3/164 (2)	.25
Improved†	3/15 (20)	5/19 (26)	.35
Fecal incontinence			
Preoperative	19 (15)	32 (17)	.55
Postoperative	24 (19)	33 (18)	.72
De novo*	7/105 (7)	6/146 (4)	.31
Improved†	3/19 (16)	6/32 (19)	.44
Flatal incontinence			
Preoperative	61 (50)	90 (49)	.88
Postoperative	58 (47)	82 (45)	.77
De novo*	5/63 (8)	5/93 (5)	.36
Improved†	8/61 (13)	14/93 (15)	.40

Values are presented as n (%).
* Of all patients who were asymptomatic preoperatively.
† Of all patients who were symptomatic preoperatively.

break was a midline vertical defect involving the lower vagina and extending to the vaginal apex. In the current study, we found 77% of the defects in the Denonvilliers' fascia to be combined distal and lateral, 11% to be distal, 7% to be proximal, and 5% to be in the midline.

Previous studies have reported favorable anatomic outcomes after both the standard posterior colporrhaphy[2] and the site-specific rectocele repair.[5–8] In the current study, however, the site-specific technique was associated with significantly higher anatomic recurrence rates, both beyond the midvaginal plane and beyond the hymenal ring.

One could argue that these results reflect an inadequate surgical technique used for the site-specific repair. However, because we followed the surgical guidelines set by the founders of this technique[5–8,10] and because our recurrence rates were even lower than those reported by others,[8] we tend to believe that our surgical technique was adequate. Another possible argument is that the higher recurrence rates observed with the site-specific technique are attributable to the use of delayed absorbable sutures as opposed to the permanent sutures used by others.[6] However, because the same suture material was used for both the site-specific repair and the standard posterior colporrhaphy, this factor cannot account for any difference in outcomes between the 2 techniques. Moreover, some investigators have also reported favorable anatomic outcome for the site-specific repair when using delayed absorbable sutures.[7]

Site-specific rectocele repair has been advocated as being superior to the standard posterior colporrhaphy for postoperative sexual and bowel function.[5,6,8,16] A more accurate restoration of the normal vaginal anatomy has been assumed to account for these improved outcomes. To date, all of the studies on the site-specific technique have been descriptive and did not compare outcomes with those of the standard posterior colporrhaphy. In the current study, we compared these 2 surgical techniques and found no advantage to the site-specific repair over the standard colporrhaphy in terms of either sexual or bowel function. Although the rates of dyspareunia increased somewhat following both techniques, those of bowel symptoms did not significantly change with either one. These results are consistent with those reported by Kenton et al,[7] who found no reduction in constipation rates or in the need for manual evacuation following the site-specific defect repair.

Levator ani plication between the rectum and vagina has been implicated as a possible etiology for sexual dysfunction after standard posterior colporrhaphy,[13,17] mostly attributable to atrophy and scarring of the levator ani muscles. In this study however, none of the patients underwent levator ani plication. Although dyspareunia rates increased somewhat after the standard colporrhaphy, they were still substantially lower than those reported by others.[4,15,18] Considering our high anatomic cure rates, it seems that levator ani plication can safely be omitted from a standard posterior colporrhaphy without compromising anatomic cure rates. We performed meticulous dissection of the vaginal epithelium away from the underlying Denonvilliers' fascia and attempted to leave as much fascia on the rectum as possible. We consider this to be an important prerequisite if levator ani plication is omitted from the standard posterior colporrhaphy.

Some limitations should be considered with regard to this study. The study's retrospective design precludes definite conclusions about cause and effect of observed differences. Because patients were not randomly allocated to either surgical technique, a selection bias may impact our results. Patients who underwent standard posterior colporrhaphy may have been at a higher risk for recurrence of posterior vaginal prolapse, given that their rectovaginal fascia was diffusely attenuated or absent. Such a selection bias would favor the site-specific group. Validated sexual or bowel function question-

naires were not used in this study, although the test-retest reliabilities of the questionnaire used were high. Despite these limitations, upon reviewing the English literature since 1966, (search engine: MEDLINE; search terms: "colporrhaphy," "posterior," "rectocele," "repair," "site-specific defect"), we found this study to be the first to compare anatomic and functional outcomes of site-specific rectocele repair with standard posterior colporrhaphy. Moreover, it includes the largest reported cohort of patients undergoing posterior vaginal repair and the second largest cohort of patients undergoing site-specific defect repair. Both site-specific repair and standard posterior colporrhaphy should be further evaluated with randomized controlled trials.

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