

Evaluation of the Fascial Technique for Surgical Repair of Isolated Posterior Vaginal Wall Prolapse

K. Singh, MRCOG, E. Cortes, MD, and W. M. N. Reid, FRCOG

OBJECTIVE: To study the anatomic and functional efficacy and assess long-term success of the fascial technique in the repair of rectocele.

METHODS: Forty-two women with symptomatic posterior vaginal wall prolapse of at least stage II underwent a surgical repair using the technique of reconstruction of the rectovaginal septum. These women were evaluated at 6 weeks and 18 months postoperatively for anatomic improvement in the grade of their rectocele and a functional improvement in their vaginal, bowel, and sexual symptoms.

RESULTS: Ninety-five percent (40 of 42) were assessed at 6 weeks and 78.5% (33 of 42) attended follow-up at 18 months. Preoperative symptoms included 1) vaginal protrusion (78%); 2) defecation symptoms (76%), which included fecal incontinence alone in 9.5%, evacuation difficulties in 57%, and both fecal incontinence and evacuation difficulties in 9.5%; and 3) sexual dysfunction (33%). At 6-week follow-up there was resolution of vaginal protrusion in 87.5%, and bowel symptoms in 87%. At 18 months there was anatomic cure in 92%, improvement in defecation in 81%, and improvement of sexual dysfunction in 35%. No major complications were seen.

CONCLUSION: This technique is effective in providing relatively long anatomic cure of the rectocele and resolution of its symptoms. (*Obstet Gynecol* 2003;101:320-4. © 2003 by The American College of Obstetricians and Gynecologists.)

Rectocele may result from tears in the rectovaginal septum, detachment from the perineal body, or attenuation and thinning of the septum. Various surgical techniques have been used in the past for the repair of rectocele,¹⁻⁶ including the traditional vaginal approach with plication of the levator ani muscles, different meshes and collagen implants, graft reinforcements, and the transanal plication of the rectal muscularis used by the colorectal surgeons. Each of these methods has its limitations^{7,8} in terms of their different cure rates, postoperative de novo complications, and relapse or worsening of the initial

symptoms. Marek⁹ in 1969 proposed a transverse repair of the rectovaginal septum for midvaginal rectoceles found more commonly in younger women. Richardson more recently^{10,11} described the site-specific repair of the rectovaginal septum for the surgical correction of the rectocele. We believe that the traditional levator ani plication hides rather than cures the prolapse, whereas the technique of fascial repair of the rectovaginal septum appears anatomically more rational and improves the accompanying symptomatology.

Cundiff et al,¹² Kenton et al,¹³ Porter et al,¹⁴ and Glavind and Madsen¹⁵ have evaluated this fascial technique, but the majority of their cases have had rectocele repair combined with other pelvic floor repair surgery. It is difficult to evaluate a surgical procedure if it has been combined with other concomitant pelvic floor surgery due to the existing anatomic interrelation between the different compartments of the pelvic floor. We have therefore prospectively evaluated this fascial technique of vaginal wall repair where it has not been combined with any other concomitant pelvic floor surgery. We have studied the anatomic and functional efficacy and long-term success of this fascial technique in the repair of a posterior wall prolapse.

MATERIALS AND METHODS

Forty-two consecutive women presenting with a symptomatic rectocele were prospectively recruited from October 1997 to October 2000 for this study after ethical approval by the Ethics Committee board at the Royal Free Hospital was obtained. They were evaluated pre- and postoperatively for bowel, sexual, urinary, and prolapse protrusion symptoms using a standardized pro forma used in our pelvic floor clinic. At the time of this study no validated questionnaire was available. This standard pro forma enumerated the different symptoms associated with prolapse (Table 1). These women's pelvic floor dysfunction was evaluated by their history and clinical examination in the left lateral and dorsal position. In women whose symptoms of prolapse did not correlate with the examination findings, prolapse was then exam-

From the Department of Obstetrics and Gynaecology, Royal Free and University College Medical School, London, United Kingdom.

Table 1. Showing the Improvement in Various Symptoms After Rectocele Repair at 6 Weeks and 18 Months of Follow-up

Symptoms	Preoperative	6 wk postoperative	18 mo postoperative
Vaginal protrusion	78% (33/42)	87.5% (29/33)	92% (24/26)
Defecatory symptoms	76% (32/42)	87% (27/31)	80% (21/26)
FI	9.5% (4/42)	50% (2/4)	50% (2/4)
ED	57% (24/42)	87.5% (21/24)	62.5% (15/24)
Both FI and ED	9.5% (4/42)	100% (4/4)	100% (4/4)
Sexual dysfunction	31% (13/42)	—	38.4% (5/13)

FI = fecal incontinence; ED = evacuation difficulties.

The denominators in parentheses indicate the follow-up attenders.

ined in the standing position with maximal straining. International Continence Society staging¹⁶ of their prolapse was performed and grouped as follows: International Continence Society grades of the posterior wall from -3 to -1 were classified as stage I, -1 to +1 as stage II, and +1 to total vaginal length-2 as stage III, and any prolapse greater than stage III was classified as stage IV. A bimanual rectovaginal examination was performed to identify any areas of defects in the rectovaginal septum. Anorectal manometry (Table 2) and endoanal ultrasound were preoperatively performed to identify any associated functional and anatomic defects in the anal sphincter. Patients were excluded if they had symptomatic multicompartmental prolapse or required any concomitant urinary incontinence or anal sphincter surgery. Women with asymptomatic less than grade 2 prolapse of any of the other two compartments were included.

A transverse incision was made in the vagina at the level of the hymen, which corresponds to the apex of the perineal body. The rectovaginal space was sharply dissected with a finger in the rectum to prevent any accidental rectal injury. The vaginal flap was elevated until the area of maximal bulge was reached. The tears in the septum were either obviously visible or bimanually palpated by rectovaginal examination. The edges of the septum (Figure 1) were grasped with Allis forceps and approximated in the direction of the tear with 2-0 delayed absorbable suture. If the septum was detached

from the perineal body, it was reattached. If there were no clear defects but only attenuation of the septum, then thick septal tissue was grasped from its lateral edges and buttressed in the center. External plication of the rectal wall was also performed if there was an obviously dilated rectum, usually in women with long-standing rectocele and constipation. Perineorrhaphy was performed to reconstitute the perineal body if this appeared to be thin and flattened.

Note was made of the defects identified and type of septal repair done. Any immediate complication was also recorded. These women were mostly discharged on day

Table 2. Preoperative and Postoperative Staging of Rectoceles

	Preoperative	Postoperative				
		Stage 0	Stage I	Stage II	Stage III	No follow-up
Stage I	0	0	0	0	0	0
Stage II	13	9	2	0	0	2
Stage III	27	18	2	1	0	6
Stage IV	2	0	0	1	0	1
Total	42	27	4	2	0	9



Figure 1. A surgical photograph showing a central defect in the rectovaginal septum (asterisk) and the margin of the septum all around (arrowheads). The inferior edge of the septum is grasped with Allis forceps.

Singh. Fascial Technique in the Repair of Rectocele. *Obstet Gynecol* 2003.

Table 3. Type of Defects Found at the Surgical Correction of Rectoceles

Central	14
Left lateral	3
Right lateral	4
Attenuated rectovaginal septum	21
Detached rectovaginal septum from perineal body	14

More than one defect was present in some patients.

2 after they had opened their bowels and were given laxatives (lactulose with or without glycerine suppositories) for 14 days postoperatively.

All patients were assessed at 6 weeks and again at 18 months when they were reevaluated for their bowel and sexual function and symptoms of prolapse. International Continence Society grading of their prolapse was again performed. They were also asked by one of the doctors not directly involved in their surgical repair about satisfaction after surgery and whether they would recommend this operation to others.

Outcome measures concerning changes in binary variables pre- and postoperatively were analysed using the McNemar test. Exact confidence intervals for proportions were calculated using the Confidence Interval Analysis program. Changes in stage of the disease were analyzed using the Wilcoxon signed rank test. Statistical significance was regarded as $P < .05$.

RESULTS

This is a prospective longitudinal study where each patient becomes her own control. Our cohort consisted of nine premenopausal and 33 postmenopausal women. They were all parous, with a mean parity of 3 (range 1–7). Their mean weight was 69 kg and 51.5% (17 of 33) of the postmenopausal women were taking hormone replacement therapy preoperatively. Primary indication for surgery was either perception of vaginal protrusion or evacuation difficulties in the presence of a clinically diagnosed posterior vaginal wall prolapse. Associated anal incontinence and sexual dysfunction were symptoms also observed in this case series. Symptoms are listed in Table 1.

Preoperative staging of rectocele is shown in Table 3. There were two stage IV, 27 stage III, and 13 stage II rectoceles. No stage I rectocele was entered for operation. All of the premenopausal women had a primary rectocele. Fifty percent of our study group had undergone previous pelvic floor surgery.

Defects, detachments, and attenuation of the septum were noted at the time of surgery (Table 4). There were 14 central, three left lateral, and four right lateral defects noted in the rectovaginal septum. Detachment of the septum from the perineal body was seen in 14 of 42 women and attenuation of the septum was seen in 21 of 42 patients. Combination of more than one type of defect was also noted in some women. Reconstruction of the perineal body was done in nine of 42 cases. No immediate or early complications were noted apart from infection of the vaginal sutures in one woman, which was successfully managed with antibiotics.

The 6-week follow-up was attended by 95% of the women (40 of 42). There were resolution of the symptoms of the vaginal protrusion in 87.5% of the women and improvement of bowel symptoms in 87% of the women; improvement in sexual difficulties was not ascertainable as it was too soon after the operation for many women to resume sexual intercourse (Table 1).

The second follow-up visit at 18 months was attended by 78.5% of the women (33 of 42). Of 33 women who had initially complained of feeling of vaginal protrusion, 26 attended the follow-up and 24 of these women (92%, $P < .01$) had resolution of this symptom. If the nonattenders are included in the failure group, then 73% had resolution of their symptom of vaginal protrusion. The true success in relieving the vaginal symptoms with this repair method should therefore be between 73% and 92%. Two women who had stages III and IV rectocele preoperatively had persistence of stage II rectocele postoperatively (Table 2). There was an overall improvement in bowel symptoms in 81% ($P < .01$) of the attendees (26 of 32). If nonattendees (six women) were included in the failure group, then bowel symptoms would improve in 65%. The true resolution of bowel symptoms would be between 65% and 81%. Women

Table 4. Comparison of Results of Fascial Repair of Rectocele in Various Published Studies

Authors	Total no. of rectoceles repaired	Isolated rectoceles	Follow-up	Anatomic cure (%)	Improvement in defecation (%)	Improvement in sexual dysfunction (%)
Cundiff (1998) ¹²	67	5	1 y	82	63	66
Porter (1999) ¹⁴	125	8	6 mo	82	44	73
Kenton (1999) ¹³	66	0	1 y	90	54	92
Glavind (2000) ¹⁵	67	29	3 mo	100	85	75
Present study	—	42	18 mo	92	65	38

with anal incontinence associated with evacuation difficulties had higher symptomatic relief than women who had isolated fecal incontinence (Table 1). This may be because the isolated fecal incontinence is secondary to abnormality of the anal sphincters, whereas fecal incontinence associated with evacuation difficulties may be secondary to a large rectocele compromising the function of the anal sphincter (Table 2). There was improvement of sexual function in 35.7% (five of 14) ($P < .05$) of patients. Two women (14.2%) had worsening of their sexual discomfort after surgery, and 21.4% (three of 14) did not experience any change postoperatively. Four women initially presenting with dyspareunia did not attend follow-up. No woman had de novo dyspareunia or bowel symptomatology after her surgical repair. All except two women who had persistent stage II rectocele were satisfied with the surgery and would recommend it to others.

DISCUSSION

Rectocele is prolapse of the rectum through the posterior vaginal wall, which may result from either anatomic defects in the rectovaginal septum or follow intrinsic rectal wall dysfunction. A defect or detachment of the rectovaginal septum results in an anterior rectal wall rectocele and has been referred to as a displacement rectocele.¹⁷ This type of rectocele improves with the reconstruction of the rectovaginal septum. The second type of rectocele due to intrinsic rectal wall dysfunction is associated with a circumferential enlargement of the rectum and results in a "distention" rectocele, which is mostly associated with chronic constipation and an increased maximum tolerated volume on anorectal manometry. The distention rectoceles because of the enlarged rectum may be clinically diagnosed by rectal examination when there is a failure to touch all the walls of the rectum with a single sweep of a finger. The distension type of rectoceles may not dramatically improve with rectovaginal septal repair. These distension rectoceles may be associated with pelvic floor dyssynergia and have an impaired rectoanal inhibitory reflex.¹⁷ It is beneficial to do a preoperative anorectal manometry in these cases to not only identify any abnormal function but also give a prognosis to the patient regarding which of the bowel symptoms will not resolve with vaginal repair of the posterior wall prolapse.

The site-specific repair of rectocele was proposed by Richardson,¹¹ who recommended three steps in the rectocele repairs: 1) repair of defects in the rectovaginal septum, 2) levator ani plication if the levator hiatus was enlarged, and 3) colpoperineorrhaphy. All of these steps are complementary to each other but cannot be individ-

ually replaced. Therefore evaluation of rectoceles should require assessment of the grade of rectocele prolapse, transverse diameter of the levator hiatus, and assessment of the perineal body. We, however, do not agree with levator ani plication in front of the rectum. Magnetic resonance imaging study of the levator ani muscles from our center shows that there is no proximation of the puborectalis in front of the rectum (Singh K, Reid WMN, Berger LA. MRI study of levator ani anatomy and functions [abstract]. *Neurourol Urodyn* 2000;19(4):276), and therefore plication of the levator ani muscles is nonanatomic and may cause more harm than benefit to the patient. Puborectalis forms a belt or a U-shaped band encasing the urethra, vagina, and anorectum and contributes towards formation of the external anal sphincter and thereby its continence.¹⁸ Plication of the levator ani muscles would not only make a functional muscle dysfunctional but would also cause pain and affect the function of the external anal sphincter. The levator hiatus is widened because of the weight of the prolapse, and reducing the prolapse will prevent the stretching of the levator ani muscles and thereby reduce the size of the levator hiatus. Colpoperineorrhaphy is required in women with a dysfunctional perineal body. The perineal body needs to be assessed for length of its base, its height, and its mobility. A shortened and hypermobile perineal body is associated with detachment of the rectovaginal septum from the perineal body. The women may then present with low or perineal rectocele. The size of the genital hiatus is also dependent on the integrity of the perineal body, and if the superficial muscles are detached from it, a widened genital hiatus may result. Reconstitution of the perineal body therefore results in a decrease in the size of the hiatus, as has also been shown by Cundiff et al.¹²

Among the various studies that have looked at the effectiveness of the rectovaginal septal repair, Cundiff et al.¹² noted an improvement in the International Continence Society staging in 82% of the rectocele repair at 12-month follow-up, with improvement in bowel symptoms in 63% and sexual dysfunction in 66%. Reduction in the size of the genital hiatus was also noted without any perineorrhaphy, which may be secondary to stabilization of the perineal body by resuspending it from the rectovaginal septum. Porter et al.¹⁴ did a retrospective review of the case notes of 125 women who had undergone rectocele repair and also noted an anatomic improvement in 82% on their 6-month follow-up. Kenton et al.¹³ noted a 90% resolution of the vaginal protrusion and 92% resolution of the dyspareunia, but only 54% of the bowel symptoms improved after their fascial repair of rectocele. Partial improvement in bowel symptoms highlights the fact that all the bowel symptoms may not be

because of the rectocele itself, and it is therefore appropriate to do preoperative anorectal manometry and endoanal ultrasound to exclude rectoanal dysfunction. The majority of the rectocele repairs in the above studies have been combined with other pelvic repair surgery. Concomitant surgery in one pelvic floor compartment can influence the repair of the other compartments. We therefore recruited patients with only isolated symptomatic posterior vaginal wall prolapse. More than the stated number of the posterior vaginal wall repairs have been performed in our unit during this period, but only those that were not combined with any other pelvic floor surgical procedure were recruited for this study.

We feel that the International Continence Society grading of prolapse alone is not sufficient for the assessment of rectocele, as it is not only the descent of the rectocele but also the area of the posterior vaginal wall involved that influences the clinical presentation and outcome of prolapse. Assessment of any rectal dilatation and the integrity of the perineal body is also useful.

In conclusion, the reconstruction of the rectovaginal septum appears to be a suitable technique for the repair of the posterior vaginal wall prolapse. Colpoperineorrhaphy is a useful adjunct to this repair if there is a wide genital hiatus with a low rectocele. We acknowledge that the small sample size may be a limitation in this study, but this is due to the difficulties experienced in the recruitment of women presenting with isolated symptomatic posterior vaginal wall prolapse.

REFERENCES

1. Arnold MW, Stewart WR, Aguilar PS. Rectocele repair. Four years' experience. *Dis Colon Rectum* 1990;33:684-7.
2. Oster S, Astrup A. A new vaginal operation for recurrent and large rectocele using dermis transplant. *Acta Obstet Gynecol Scand* 1981;60:493-5.
3. Nichols DH. Posterior colporrhaphy and perineorrhaphy: Separate and distinct operations. *Am J Obstet Gynecol* 1991;164:714-21.
4. Watson SJ, Loder PB, Halligan S, Bartram CI, Kamm MA, Phillips RK. Transperineal repair of symptomatic rectocele with Marlex mesh: A clinical, physiological and radiologic assessment of treatment. *J Am Coll Surg* 1996;183:257-61.
5. Mellgren A, Anzen B, Nilsson BY, Johansson C, Dolk A, Gillgren P, et al. Results of rectocele repair. A prospective study. *Dis Colon Rectum* 1995;38:7-13.
6. Pratt JH. Surgical repair of rectocele and perineal lacerations. *Clin Obstet Gynecol* 1972;15:1160-72.
7. Francis WJA, Jeffcoate TNA. Dyspareunia following vaginal operations. *J Obstet Gynaecol Br Commonw* 1961; LXVIII:1-10.
8. van Dam JH, Huisman WM, Hop WC, Schouten WR. Fecal continence after rectocele repair: A prospective study. *Int J Colorectal Dis* 2000;15:54-7.
9. Marek CB. Transverse repair for rectocele. *South Med J* 1969;62:749-52.
10. Richardson AC. The rectovaginal septum revisited: Its relationship to rectocele and its importance in rectocele repair. *Clin Obstet Gynecol* 1993;36:976-83.
11. Richardson AC. The anatomic defects in rectocele and enterocele. *J Pelvic Surg* 1997;1:214-21.
12. 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; 179:1451-7.
13. Kenton K, Shott S, Brubaker L. Outcome after rectovaginal fascia reattachment for rectocele repair. *Am J Obstet Gynecol* 1999;181:1360-4.
14. Porter WE, Steele A, Walsh P, Kohli N, Karram MM. The anatomic and functional outcomes of defect-specific rectocele repairs. *Am J Obstet Gynecol* 1999;181:1353-9.
15. Glavind K, Madsen H. A prospective study of the discrete fascial defect rectocele repair. *Acta Obstet Gynecol Scand* 2000;79:145-7.
16. Bump RC, Mattiasson A, Bo K, Brubaker LP, DeLancey JO, Klarskov P, et al. The standardization of terminology of female pelvic organ prolapse and pelvic floor dysfunction. *Am J Obstet Gynecol* 1996;175:10-7.
17. Pucciani F, Rottoli ML, Bologna A, Buri M, Cianchi F, Pagliai P, et al. Anterior rectocele and anorectal dysfunction. *Int J Colorectal Dis* 1996;11:1-9.
18. Shafik A. Study on the origin of the external anal, urethral, vaginal and prostatic sphincters. *Int Urogynecol J Pelvic Floor Dysfunct* 1997;8:126-9.

Address reprint requests to: Kavita Singh, MRCOG, Royal Free and University College Medical School, Department of Obstetrics and Gynaecology, Rowland Hill, London NW3 2PF, United Kingdom; E-mail: kavita@rfhsm.ac.uk.

Received February 27, 2002. Received in revised form May 23, 2002. Accepted July 18, 2002.