

Pelvic posterior compartment defects: comparative study of two vaginal surgical procedures

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Abstract

This study was undertaken to compare two surgical techniques for rectocele repair. Between January 2005 and December 2010, 180 patients with III grade symptomatic rectocele were enrolled in this alternative prospective randomized study. 90 patients (group A) were treated with perineal body anchorage of posterior septum, and 90 (group B) with the traditional Denonvilliers' transversal suture. Pre- and post-operative data, including Ap and Bp values, recurrence rates and quality of life was assessed. The mean follow-up was 22 months (range 9-72 months). For statistical purpose, Student's *t* test, chi-square test and logistic regression analysis were evaluated. Post-operatively, in group A Ap and Bp value were respectively -2.0 ± 1.0 and -2.5 ± 0.5 ($P < 0.001$ for both values). In group B, Ap and Bp value were respectively -1.9 ± 2.1 and -2.1 ± 0.9 ($P < 0.001$ for both values). A total of 81 (93.1%) patients in group A and 76 (86.3%) in group B reported improvement in symptoms ($P = 0.222$) after surgery. Recurrence rates were 5 (5.7%) and 6 (6.8%) respectively ($P = 0.984$). Quality of life improved significantly in both groups. In conclusion, both techniques are effective for the posterior compartment repair.

Introduction

Rectocele is defined as a herniation of the rectal wall inside the vagina due to a defect of the recto-vaginal septum. It is traditionally considered posterior compartment damage with weakness of posterior vaginal wall support resulting in a bulging of the rectum into the vaginal cavity. It is sometimes associated with central or anterior defect.¹ One of the main causes of rectal prolapse is the operative vaginal birth, but the evidence of the defect occurs after many years¹ Other possible causes are chronic increase in abdominal pressure (constipation, straining), prolonged bipedal posture, and congenital or inherited weakness

in the pelvic support system. Symptoms of a rectocele include bearing down sensation and vaginal fullness or heaviness. Among functional troubles, constipation or sensation of incomplete emptying of the rectum with bowel movement ought to be considered. When the prolapse is severe, the patient must place one or two fingers inside the vagina in order to give ease the defecation.

The treatment of rectocele is surgical, and the approach can be transperineal,^{2,3} transanal,^{2,4,6} transvaginal^{2,7} and, in selected cases, trans-abdominal.

The transanal procedures are the Sullivan-Khubchandani technique, the stapled transanal rectal resection (STARR), and the trans-STARR technique. The main transvaginal techniques are the perineal body anchorage (PBA) to the posterior septum and the traditional Denonvilliers' transversal suture after removing of the vaginal skin. The trans-abdominal and transperineal techniques are mainly performed for true rectal prolapse. The transperineal techniques are the Alteimer's rectosigmoidectomy and the Delorme's surgical procedure. The abdominal approaches consist of *open* or laparoscopic techniques, the latter offering significant advantages compared to traditional surgery.⁸⁻¹⁰

In this study we compare the results of the two above mentioned transvaginal surgical techniques. Rectal symptoms, dyspareunia, quality of life, recurrence rate and post-operative complications have been considered.

Materials and Methods

A total of 180 patients with III grade symptomatic rectocele, were enrolled in an alternative prospective randomized study from January 2005 to December 2010. After clinical evaluation, patients were allocated to 2 treatment groups, formed by 90 patients each. A total of 90 patients (group A) were treated with perineal body anchorage of posterior septum, and 90 (group B) with the traditional Denonvilliers' transversal suture. The pre-operative symptoms and findings were similar between both groups (Table 1). Randomization was done assigning alternatively patients to each group after clinical evaluation. This modality of patients' selection was retained more suitable for clinical practice. Once a patient with these complaints was admitted to hospital, a very detailed diagnostic work-up was necessary. On physical examination, a rectocele was revealed by the descent of posterior vaginal wall while the patient performed the Valsalva's maneuver. Confirmation of the defect was afforded by placing one finger into the rectum and one into the vagina to verify the alteration of the recto-vaginal septum.

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Key words: rectocele, posterior compartment, prolapse.

Received for publication: 13 June 2013.
Revision received: 16 September 2013.
Accepted for publication: 17 September 2013.

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Urogynaecologia 2013; 27:e5
doi:10.4081/uj.2013.e5

Preoperative defecography was done in 56 group A and in 53 group B patients who complained constipation, in order to exclude other pathologies. Occult intussusceptions, non-relaxing puborectalis syndrome and previous rectocele repair, were excluded.

Perineal body anchorage technique

The patient was placed in a dorsal lithotomy position. A transverse incision was made at the muco-cutaneous junction and thereafter the posterior vaginal wall was opened under the mucosa transversally in all the extent of bulge. The rectal wall and recto-vaginal connective tissue were separated from the vaginal wall by both sharp and blunt dissection, avoiding rectal injury. If an enterocele sac was shown, it was dissected, opened, and closed with a tobacco bag suture. Then the recto-vaginal fascia was sutured with the perineal body using separated delayed absorbable stitches. The perineorrhaphy was performed with one or two horizontal sutures. Excess vaginal mucosa was then excised, aiming at a two or three finger width vaginal caliber and the vaginal wall was closed with running delayed absorbable sutures (Figure 1A). Mean operative time was 20 min (range 10-40).

Traditional Denonvilliers' transversal suture technique

The patient was placed in a dorsal lithotomy position. A transverse incision was made at the muco-cutaneous junction and thereafter the posterior vaginal wall was incised at the midline. The rectal wall and recto-vaginal connective tissue were separated from the vaginal wall by both sharp and blunt dissection. If an enterocele sac was present, it was repaired as well. At this point, in spite of the previous technique, the Denonvilliers' recto-vaginal fascia was linked at the midline with interrupted

delayed absorbable sutures. Longitudinal suture of the posterior vaginal skin after removing the redundant tissue, was performed (Figure 1B). Mean operative time was 25 min (range 10-45).

Questions concerning sexual life covered also frequency of vaginal intercourses, dyspareunia, and the effect of rectocele operation on quality of sexuality.

Results

Comparison between the two groups' data was performed with Student's *t* test for independent samples. Proportions were compared with chi-square test (χ^2). A logistic regression analysis was performed to control for covariates that differed in our two groups despite randomization. The quality of life was assessed by specific (pelvic floor distress inventory, pelvic floor impact questionnaire, Wexner score, sexuality score) and aspecific tests [locus of control of behaviour, visual analog scale (VAS) score]. Pelvic organs prolapse quantification (POP-Q) was used for evaluation of prolapse, as recommended by the International Continence Society, which are employed by gynecologists to describe pelvic organ status in patients suffering from pelvic organ prolapse.^{11,12} Measurement of the location of Ap point, which is located at the posterior vaginal wall 3 cm proximally from the hymeneal ring, is the method used to estimate the presence of rectocele. All the patients suffered from pelvic heaviness (100%), bearing-down sensation (100%), vaginal bulge (100%), and difficulties in rectal emptying (100%). Need to digitally assist rectal emptying was reported by 56 patients in group A (62.2%) and in 53 patients in group B (59%). According to POP-Q score, Ap value was 2.2 ± 1.8 and Bp value was 4.9 ± 2.3 in group A. Ap value was 2.3 ± 1.7 and Bp value was 4.8 ± 2.1 in group B.

There were 5 drop-outs from follow-up, among them 3 in the former and 2 in the latter group. The follow-up mean time was 22 months (range 9-72 months). Follow-up was always performed by a team of at least two Authors (LV and LG) through clinical and instrumental examinations [defecography and transrectal ultrasonography (TRUS) when required]. Self-assessment questionnaires were administered to each patient.

At the follow-up, in group A Ap value was -2.0 ± 1.0 (Student's *t* test=19.11; $P < 0.001$) and Bp value was -2.5 ± 0.5 (student's *t* test=29.49; $P < 0.001$). In group B, Ap value was -1.9 ± 2.1 (Student's *t* test=14.53; $P < 0.001$) and Bp value was -2.1 ± 0.9 (Student's *t* test=28.31; $P < 0.001$). Table 2 summarizes the pre-operative and post-operative POP-Q scores.

A total of 81 (93.1%) patients in group A and

76 (86.3%) in group B reported improvement in rectal symptoms ($P=0.222$). Need to digitally assisted rectal emptying decreased significantly in both groups, up to 4 (4.6%) in group A and 3 (3.4%) in group B.

A total of 70 women in group A (80.46%) and 72 in B group (81.82%) were sexually active; 63/70 (90%) in group A and 64/72 (88.9%) in group B reported improvement in their sexual activity ($X^2=0.04$; $P=0.838$). 2/70 (2.85%) patients in group A and 1/72 (1.38%) patient in

group B had persistent dyspareunia. One patient in group B reported *de novo* dyspareunia. No patients reported incontinence of liquid or solid stool. The recurrence rate of rectocele was 5 (5.7%) in group A and 6 (6.8%) in group B ($P=0.984$) (Table 3). Post-operative statistical comparison of the results of the two groups showed a not-significant difference ($P > 0.001$). Defecography (made in 50 patients of group A and in 47 among of group B) showed a significant decrease in rectocele

Table 1. Pre-operative patients' data operated on for rectocele.

	PBA (n=90)	TDTS (n=90)
Mean age (years)	62	59
Postmenopausal years (mean)	9.5	8.6
Mean body mass index (kg/m ²)	27.6	27.8
Previous hysterectomy	6	5
Mean duration of symptoms (months)	20	22
Pre-operative digitally assist rectal emptying	56	53
Pre-operative dyspareunia	70	72

PBA, perineal body anchorage; TDTS, traditional Denonvilliers' transversal suture.

Table 2. Pre-operative and post-operative pelvic organs prolapse quantification value in perineal body anchorage versus traditional Denonvilliers' transversal suture.

POP-Q value	Pre-operative	Post-operative	Statistics
(PBA) Ap	2.2 ± 1.8	-2.0 ± 1.0	t Stud.=19.11 $P < 0.001$
(PBA) Bp	4.9 ± 2.3	-2.5 ± 0.5	t Stud.=29.49 $P < 0.001$
(TDTS) Ap	2.3 ± 1.7	-1.9 ± 2.1	t Stud.=14.53 $P < 0.001$
(TDTS) Bp	4.8 ± 2.1	-2.1 ± 0.9	t Stud.=28.31 $P < 0.001$

POP-Q, pelvic organs prolapse quantification; PBA, perineal body anchorage; t Stud., Student's *t* test; TDTS, traditional Denonvilliers' transversal suture.

Table 3. Post-operative patients' data operated on for rectocele.

	Group A (n=87)	Group B (n=88)
Drop-out	3	2
Improvement of rectal symptoms	81	76
Post-operative digitally assist rectal emptying	4	3
Post-operative dyspareunia	2/70	1/72
Recurrence rate of rectocele	5	6

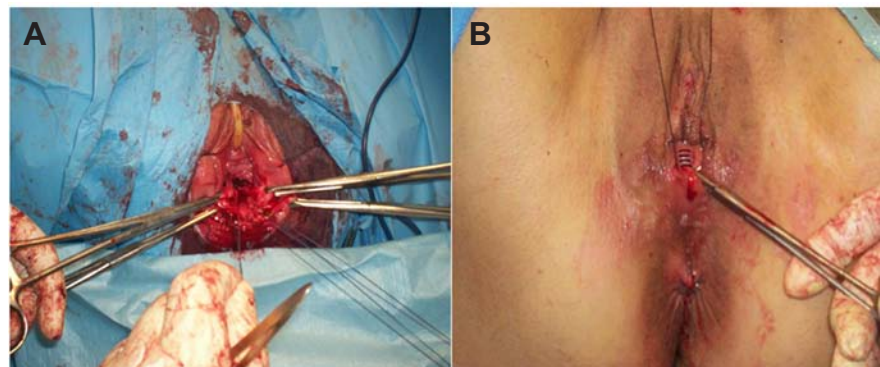


Figure 1. A) Perineal body anchorage; B) traditional Denonvilliers' transversal suture.

depth in both groups. Mean hospital stay was 4 (range 3-6) and 4,2 (range 3-7) days in groups A and B respectively. We found significant difference in VAS scores, in the majority of the main domains of King's health Questionnaire and in the other questionnaires regarding pre-operative and post-operative data ($P < 0.001$), whereas the results of both procedures were comparable ($P > 0.001$). Subject satisfaction was not significantly different between group A and B ($P > 0.001$).

Discussion

One of the main causes of rectal prolapse is the operative vaginal birth, but the evidence of the defect occurs after many years.¹³ Other possible causes are chronic increase in abdominal pressure (constipation, straining), bipedal posture, or congenital or inherited weakness in the pelvic support system. The objective diagnosis of rectocele is most commonly made by the gynecologists and the general surgeons. Pelvic exam may reveal a tissue bulging into the posterior compartment of the vagina. Digital rectal exam is useful to evaluate the posterior vaginal wall weakness and the defect at the anterior wall of the rectum. Defecography is a useful imaging modality since it can detect the presence of a rectocele, quantify its size and the degree of rectal emptying as well as identify a non-relaxing pubo-rectalis muscle and assess the rectal emptying capacity. When constipation is the main symptom without prolapse, manometry, TRUS and pudendal nerve terminal motor latency should be considered.

Conservative management is almost always attempted before surgical repair.¹⁴ The surgical indication to rectocele repair is controversial, but most surgeons advocate it when a rectocele is symptomatic and of large dimension (> 3 cm), or if the rectum fails to empty sufficiently on defecography.¹⁵ Sometimes associated repair of anterior and central compartments is required.¹⁶⁻¹⁹

Although a lot of Authors have reported satisfactory anatomic results, conflicting results on bowel and sexual function have been observed after transvaginal approaches. The major concern regarding the adverse effects of the vaginal approaches is functional alteration.^{14,20-22} In the present study one patient in group A presented *de novo* dyspareunia, but 90% in group A and 88.9% in group B experienced improvement in sexual activity. These previous reports prompted us to pay attention to avoid dyspareunia after rectocele repair; modulation of the caliber of the vaginal opening is a right key to prevent this complication.

Kahn *et al.*¹⁴ reported that a pre-operative percentage of sexual dysfunction is raised from 18% to 27% in their follow-up of 171 patients treated

by vaginal approach, and Paraiso *et al.*²⁰ noted a 12% post-operative dyspareunia rate. An improvement in symptoms related to defecation was noted in both groups, and it is reported in the literature ranging from 70 to 95%.^{11,23,24} When compared with the pre-operative situation, the need to digitally assist rectal emptying was statistically significantly reduced in both groups after surgery. These improvements are comparable to those reported by other Authors, ranging from 3 to 7%.^{11,20-22} Objective measurement at defecography during the follow-up showed a significant decrease in rectocele depth in both groups. PBA is more valid for reducing the bulking and maintaining a better anatomic result with time.

The recurrence rate of rectocele ranges from 5.7 to 7% after the transvaginal techniques in the literature.¹¹ Complications as rectal stenosis with constipation, anal incontinence, risk of infection, recto-vaginal fistula, fecal urgency, incontinence to flatus or feces, infection and rectovaginal fistula have not been reported in the Literature after transvaginal surgery. Both transvaginal surgical techniques above described, are effective to solve anatomic posterior compartment defect and to improve the functional symptoms.

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