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Surgical management of posterior vaginal wall prolapse: an evidence-based literature review

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Abstract The aim of this review is to summarize the available literature on gynecological management of posterior vaginal wall prolapse. A MEDLINE search and a hand search of conference proceedings of the International Continence Society and International Urogynecological Association was performed. Two randomized trials demonstrated that the transvaginal approach to rectocele is superior to the transanal repair in terms of recurrent prolapse. The traditional posterior colporrhaphy with levator ani plication was largely superseded by fascial repairs with similar anatomic success rates but favorable functional outcome. The midline fascial plication may offer a superior anatomic and functional outcome compared to the discrete site-specific fascial repair. Controlled studies are necessary to evaluate whether a sacrocolpopexy combined with posterior mesh interposition is an effective alternative to the transvaginal repair. There is currently no evidence to recommend the routine use of any graft and complications such as mesh erosion, infection, and rejection have to be considered.

Keywords Pelvic organ prolapse · Posterior colporrhaphy · Rectocele · Surgery · Transanal repair · Vaginal prolapse

Introduction

With an aging population, reconstructive surgery for the management of pelvic organ prolapse will command increasing resources. Surgery will be required to correct

symptoms of prolapse, restore anatomy, retain or restore bladder, bowel and sexual function and to be durable. Reviewing prolapse literature remains difficult due to the heterogeneous nature of the problem, variability in inclusion and exclusion criteria, the plethora of surgical procedures performed, non-standardized definitions of surgical outcome, lack of independent and standardized reviews, and short-term follow-up.

The options available for reconstructive pelvic floor surgery include the vaginal, transanal, abdominal, or laparoscopic approaches. Many reviews focus on the vaginal, abdominal, or laparoscopic surgical approach to the management of various pelvic floor compartment pathologies when in practice many clinicians are employing a combination of each to attain the best anatomic and functional outcomes for their patients. With this in mind, we completed a literature review to provide contemporary evidence-based guidelines as to the best surgical approach to posterior vaginal compartment defects.

Materials and methods

We conducted a literature review by searching the MEDLINE database from 1966 to August 2004, the Cochrane Central Register of Controlled Trials and hand searching of conference proceedings of the International Continence Society and International Urogynecology Association 2001–2004.

After reviewing the literature, levels of evidence were attributed to all articles and finally grading guideline recommendations were developed on the efficacy of surgery for posterior vaginal wall prolapse. Levels of evidence and grading recommendations are summarized in Appendix 1 as reported by the International Consultation on Incontinence [1] and Harbour and Miller [2]. Possible limitations to the process include a lack of available data and the inclusion of data from abstracts of the conference proceedings of the International Continence Society and International Urogynecological

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Association, which may not proceed to full publication in peer-reviewed journals.

The definitions of success and failure vary widely between authors. More recently, with the advances made in the standardization and quantification of pelvic organ prolapse (ICS POPQ, standardization of pelvic organ prolapse of the International Continence Society [3]), stage 1 pelvic organ prolapse is usually considered a successful outcome whereas prolapse stage 2 or more is a failure. In this review, we refer to prolapse “grades” as used by the authors (usually Baden-Walker or Beecham classification) and to “stages” when the ICS POPQ was employed.

Review

The posterior vaginal compartment includes perineum, rectum, and the peritoneum of the cul-de-sac. The vaginal, transanal and laparoscopy approaches have been described to correct defects in this compartment. Two randomized control trials comparing the vaginal and transanal approaches to rectocele were completed [4, 5]. Kahn et al. [5] randomly allocated 57 women with symptomatic rectoceles to transanal ($n=33$) or transvaginal ($n=24$) repair and provided a mean review at

2 years. Nieminen et al. [4] randomly allocated 30 women with symptomatic rectoceles, 15 to each arm, with review at 1 year. Women with prolapse other than rectoceles were excluded. Both reviews demonstrated the transvaginal approach to be superior to the transanal. Kahn et al. [5] reported that 9 of 33 women (30%) required further surgery for rectoceles or enteroceles in the transanal group compared to 2 of 24 (13%) in the transvaginal arm ($p=0.10$). Nieminen et al. [4] reported persisting posterior vaginal wall prolapse in 67% on review in the transanal group compared to 7% in the transvaginal group ($p=0.01$). Improvement in symptoms was seen in 93% in the vaginal group compared to 73% in the transanal group ($p=0.08$). Both authors demonstrated the vaginal approach to significantly improve the point Ap on the posterior vaginal wall (ICS POPQ) compared to the transanal approach. Postoperative defecography also demonstrated a significant decrease in depth of rectocele in the vaginal group compared to the transanal group, which failed to reduce the rectocele depth significantly [4]. Postoperatively, symptoms of impaired evacuation improved significantly in both groups. Previously, a retrospective review had demonstrated more dyspareunia after vaginal rectocele repair compared to the transanal approach [6]. De novo dyspareunia was reported in one woman in the

Table 1 Functional outcome for various surgical techniques for transvaginal correction of rectocele

Author	Patients (<i>n</i>)	Follow-up time (months)	Type of repair	Symptom	Preoperative	
Mellgren [9]	25	12	Levator ani Plication	Subjective prolapse	–	–
				Obstructed defecation	48%	0%
				Constipation	96%	48%
				Dyspareunia	6%	19%
Kahn [5]	171	42	Levator ani Plication	Subjective prolapse	64%	31%
				Obstructed defecation	–	33%
				Constipation	22%	33%
				Dyspareunia	18%	27%
Cundiff [14]	69	12	Discrete fascial Repair	Subjective prolapse	62%	12%
				Obstructed defecation	39%	25%
				Constipation	46%	13%
				Dyspareunia	29%	19%
Kenton [13]	55	12	Discrete fascial Repair	Subjective prolapse	86%	5%
				Obstructed defecation	30%	15%
				Constipation	41%	20%
				Dyspareunia	28%	24%
Porter [12]	125	18	Discrete fascial Repair	Subjective prolapse	100%	18%
				Obstructed defecation	30%	14%
				Constipation	60%	50%
				Dyspareunia	67%	46%
Singh [18]	26	18	Midline fascial Plication	Subjective prolapse	78%	8%
				Obstructed defecation	57%	36%
				Constipation	–	–
				Sexual dysfunction	31%	37%
Maher [19]	38	12	Midline fascial Plication	Subjective prolapse	100%	11%
				Obstructed defecation	100%	13%
				Constipation	76%	24%
				Dyspareunia	14%	2%
Abramov [16]	183	12+	Midline fascial Plication	Subjective prolapse	100%	4%
				Constipation	30%	29%
				Dyspareunia	7%	14%
				Sexual dysfunction	–	–
	124	12+	Discrete fascial Repair	Subjective prolapse	100%	40%
				Constipation	33%	40%
				Dyspareunia	7%	19%
				Sexual dysfunction	–	–

transvaginal arm of Kahn's study and Nieminen et al. [4] actually reported improved sexual function after the correction of the rectocele in both groups.

While the transvaginal approach to posterior wall appears superior to the transanal approach in these randomized controlled trials, significant variations exist in the literature on the methods of the vaginal repair. The traditional levator ani plication where the puborectalis muscle is plicated transversely was described by Francis and Jeffcoate [7]. The levator ani plication resulted in acceptable anatomic outcomes between 76 and 96%, but up to 50% described significant dyspareunia [7–9]. In a retrospective survey, Kahn and Stanton [8] reported less successful functional outcomes including dyspareunia increasing from 18% preoperatively to 27% postoperatively and constipation from 22 to 33%. Table 1 summarizes the available literature on the functional outcome of transvaginal rectocele repairs.

Milley and Nichols [10] recommended the transverse plication of the rectovaginal fascia as a means of correcting rectoceles and recognized the non-anatomic result from levator plication. Richardson [11] attributed rectoceles to be due to breaks in the rectovaginal fascia and advocated the isolated repair of the focal defects. Following his work, several reports have demonstrated favorable anatomic outcomes from the discrete defect repairs while sexual activity frequently improved as demonstrated in Table 1 [12–16]. Obstructed defecation, defined as impaired defecation with a need to use digital pressure in the vagina, perineum, or rectum to aid in bowel evacuation, is a common symptom experienced by 30% of women with uterovaginal prolapse [17] and between 30 and 100% of women with symptomatic rectoceles in Table 1. While the discrete fascial repair offers an excellent anatomic outcome and does not adversely affect sexual function, the ability to correct obstructed defecation ranges from 35 to 50% [12–14]. More recently, Singh et al. [18] and Maher et al. [19] in a prospective audit advocated the midline fascial plication reporting excellent anatomic outcomes while successfully correcting obstructed defecation in over 80% and frequently improving sexual function.

Abramov et al. [15, 16] retrospectively compared the midline fascial plication ($n=124$) and the discrete site-specific ($n=183$) repair for rectoceles. They noted a significantly higher recurrence rate of rectoceles following the discrete site-specific repair (44%) compared to 18% following the midline fascial plication ($p=0.001$).

In recent years, mesh was proposed to augment native tissue repairs especially in those with recurrent prolapse or at high risk of failure. While this argument may be more applicable to the anterior vaginal compartment that is associated with higher rates of failure, mesh prostheses were incorporated in the posterior vaginal wall repair. Sand et al. [20] describe the use of absorbable polyglactin 910 mesh (Vicryl, Ethicon, Somerville, N.J., USA) in women with cystocele and rectocele. They randomly allocated 67 women to native tissue repair and 65 to posterior repair with mesh overlay and reported a 90%

success rate in both groups at 1 year with no adverse effects associated with the mesh. O'Reilly and Dwyer [21] reported on 67 women who had Atrium polypropylene mesh overlays for rectoceles. At 24 months, the success rate was 100% with no mesh complications. Two women complained of dyspareunia. Salvatore et al. [22] evaluated 31 women with a symptomatic rectocele where a Prolene mesh (Ethicon, Somerville, N.J., USA) augmented the posterior repair. While the anatomic results were satisfactory, they recommended the abandonment of the Prolene mesh vaginally due to mesh erosions in 13% and dyspareunia increasing from 6 to 69% postoperatively [22].

In an attempt to reduce possible complications associated with synthetic meshes biological grafts are being considered. Gandhi et al. [23] in a randomized control trial compared posterior colporrhaphy alone and augmented with a 2×4 cm patch of Tutoplast fascia lata. In a preliminary report at 1 year they demonstrated the success rate for posterior colporrhaphy alone to be 59 of 66 (89%) compared to 48 of 56 (76%) in the patch group ($p=0.54$). No complications related to the Tutoplast fascia lata graft were reported [23].

Lyons and Winer [24] reported on the laparoscopic approach to rectocele repair in 20 women who were prospectively evaluated. At 1 year 80% of the women had symptomatic resolution of prolapse and digital defecation.

The transabdominal repair of rectoceles in women with combined uterine or vault prolapse were advocated to avoid a separate vaginal procedure. Perez et al. [25] and later Villet et al. [26] advanced the extension of the mesh at the posterior vaginal wall down to the levator ani muscle. Villet et al. [26] reported "excellent or good" anatomic results in 86% of 56 women. Good "functional results" were noted in 70%. Cundiff et al. [27] and Fox and Stanton [28] described the extension of the mesh down to the perineal body to correct a concomitant rectocele. Cundiff et al.'s short-term follow-up between 3 and 7 months revealed that 63% (12/19) had no prolapse of any compartment, 21% had stage 1, and 16% had stage 2. In three patients, a postoperative defecography was performed demonstrating improvement of perineal descent [27]. Fox and Stanton [28] reported a 93% success rate for rectoceles after mesh interposition to the perineal body using Teflon mesh at 14 months in 29 women. Functional results were not as satisfactory with 50% of patients complaining of constipation and 36% of incomplete bowel emptying. Baessler and Schuessler [29] could not confirm the above excellent anatomic results. On objective examination at a mean follow-up time of 26 months after sacral colpopexy with posterior mesh extension using Goretex, 57% of 31 women were found to have recurrent rectoceles. Although defecating symptoms improved after the operation, obstructed defecation was still present in 38% postoperatively. The authors recommended a posterior vaginal repair be incorporated for low rectoceles at the time of sacral colpopexy [29].

Sullivan et al. [30] described their experience with the total abdominal approach using a Marlex mesh (CR Bard, Murray Hill, N.J., USA) for recurrent prolapse or combined rectal and vaginal prolapse. At 5-year review, 28% women required further surgery for rectocele or rectal mucosal prolapse and 10% required surgery for complications specific to the repair.

Discussion

The transvaginal approach to rectocele is associated with a significant reduction in recurrent prolapse compared to the transanal approach. Both are equally effective in correcting impaired rectal evacuation without adversely impacting on sexual function. The correction of the herniation of the rectovaginal fascia that causes entrapment of feces on straining in significant rectoceles may be too large to be repaired with the discrete approach [13] and appeared to be corrected more efficiently by the more robust midline fascial plication. Randomized controlled trials and controlled studies are required to compare the discrete fascial repair and the midline fascial plication in the management of rectoceles and also to evaluate whether a sacrocolpopexy combined with posterior mesh interposition to the level of the levator ani or perineal body is an effective alternative to the transvaginal repair.

In conclusion, level 1 evidence demonstrates that the vaginal approach to rectocele appears to be superior to the transanal method. Within the vaginal approach, the levator ani plication was largely superceded by fascial repairs on the basis of multiple case series (level 3 evidence). Level 2 evidence suggests that the midline fascial plication may offer a superior anatomic and functional outcome compared to the discrete site-specific fascial repair. A prospective randomized trial comparing these procedures is required. The use of mesh overlays has not improved the outcome of the rectocele repair (level 1) and was associated with significant complications (level 3). The role of foreign body prosthesis in primary rectocele repair would seem hard to justify but may have a role in recurrent rectocele. The laparoscopic approach and the posterior extension of mesh at the time of sacral colpopexy in the treatment of posterior compartment prolapse require further evaluation.

Appendix 1

Hierarchy of study types, levels of evidence, and grading recommendations

Hierarchy of study types

- Systematic reviews and meta-analyses of randomized controlled trials

- Randomized controlled trials
- Non-randomized intervention studies
- Observational studies
- Non-experimental studies
- Expert opinion

Levels of evidence

Level 1

Meta-analysis of randomized controlled trials (RCTs) or good quality randomized controlled trial or “all or none” studies in which no treatment is an option

Level 2

“Low” quality RCT (e.g. < 80% follow-up) or meta-analysis (with homogeneity) of prospective “cohort studies” or well-conducted case-control studies with a low risk of confounding and bias

Level 3

Retrospective “case-control studies” or good quality “case series”

Level 4

Expert opinion—the Delphi process can be used to give “expert opinion” greater authority: a series of questions are posed to a panel; the answers are collected into a series of “options” which are serially ranked; if a 75% agreement is reached then a Delphi consensus statement can be made

Grades of recommendation

Grade A

Usually depends on consistent level 1 evidence, can follow from level 2 evidence if there is a large and consistent body of evidence

Grade B

Usually depends on consistent level 2 and or 3 studies or “majority evidence” or extrapolated evidence from randomized controlled trials

Grade C

Usually depends on level 4 studies or “majority evidence” or extrapolated evidence from level 2/3 studies or Delphi processed expert opinion

Grade D

“No recommendation possible”: if evidence is inadequate or conflicting

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