Results of Cystocele Repair: A Comparison of Traditional Anterior Colporrhaphy, Polypropylene Mesh and Porcine Dermis

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Purpose: Because traditional anterior colporrhaphy can have a high recurrence rate, we assessed the recurrence rate of 3 methods of cystocele repair, including 1) traditional anterior colporrhaphy, 2) repair using porcine dermis interposition graft and 3) repair using polypropylene mesh. Additionally, we compared the rate of erosion of porcine dermal graft with that of polypropylene mesh.

Materials and Methods: The records of patients who underwent cystocele repair by the same urologist using porcine dermal graft, polypropylene mesh or traditional repair from January 1999 to August 2005 were reviewed. Data were collected on history, physical examination, outcomes and complications. Using the Baden-Walker system a cystocele of grade 2 or higher on followup examination was considered recurrence.

Results: A total of 119 patients underwent cystocele repair from January 1999 to August 2005. Followup was available on 99 patients and it averaged 13.5 months (range 2 to 46). Of the patients 56 (57%) underwent cystocele repair using porcine dermal graft, 25 (25%) received polypropylene mesh and 18 (18%) underwent traditional repair. Of the 99 patients 22 (22%) had cystocele recurrence. Based on the type of repair 36% of patients (20 of 56) with porcine dermal grafts had recurrence compared to 4% (1 of 25) and 6% (1 of 18) using polypropylene and traditional repair, respectively. Mean time to cystocele recurrence was 4.9 months (range 0.5 to 20). A total of 12 patients (21%) had extrusion of porcine grafts through the anterior vaginal wall incision compared to 1 (4%) with polypropylene mesh.

Conclusions: In our patient population the short-term failure rate for anterior vaginal wall prolapse using porcine dermis interposition graft was higher than that for traditional anterior colporrhaphy or polypropylene mesh. In addition, the incidence of vaginal extrusion of porcine graft was unacceptably high. Porcine dermis is a less suitable material for cystocele repair than polypropylene mesh or traditional anterior colporrhaphy. Prospective, randomized trials are necessary to determine the true efficacy and complication rates of these graft materials for anterior vaginal wall prolapse repair.

Key Words: prolapse, cystocele, prostheses and implants, urinary incontinence, dermis

Recurrent anterior vaginal wall prolapse can develop in more than 20% of patients undergoing traditional anterior colporrhaphy.[1] In light of this high recurrence rate many surgeons have been incorporating synthetic or allograft mesh to augment the repair.

Studies of porcine dermis for pubovaginal sling surgery as well as for the correction of high grade cystocele show encouraging results in terms of the recurrence and complication rates.[2] In terms of synthetics, polypropylene mesh has become popular because it promotes the ingrowth of natural tissue and there appears to be a low complication rate associated with its use.[3,4] We report our experience with 3 techniques of cystocele repair, including anterior colporrhaphy with porcine dermis, anterior colporrhaphy with polypropylene mesh and traditional anterior colporrhaphy.

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Study received institutional review board approval for a retrospective analysis.

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MATERIALS AND METHODS

A retrospective chart review of patients who underwent surgical correction of anterior vaginal wall prolapse from January 1999 to August 2005 was performed. In the early series traditional anterior colporrhaphy was performed but it was gradually abandoned in favor of a porcine dermal graft. The most recent cases involved the use of polypropylene only for cystocele repair. The degree of prolapse was defined according to the Baden-Walker system (see Appendix).[5] Cure was defined as grade 0 cystocele and success was defined as grade 1 or less cystocele. All patients provided a history and underwent physical examination by the same urologist (YHK). They were examined postoperatively by the same urologist. At each patient visit the interview included questions regarding any symptoms referable to the cystocele, any voiding abnormalities or complaints and the degree of bother related to the cystocele. Patients were asked preoperatively and postoperatively regarding quality of life and sexual function.

Urodynamics were performed before cystocele repair if there were any concurrent voiding abnormalities, such as difficult voiding, urinary urgency, or urge and/or stress incontinence. If stress incontinence was identified after prolapse reduction on preoperative evaluation, urodynamics were done to determine if adequate detrusor contractility

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existed to allow sling placement at cystocele repair. If there was a hypocontractile or acontractile detrusor on urodynamics, the patient was offered a suprapubic catheter at cystocele repair and sling placement or she was counseled against a concurrent sling due to the risk of urinary retention. Prolapse was not reduced during urodynamics.

Outcome measures, including post-void residual urine evaluation and the Valsalva stress test, were done at baseline. Patients with urge symptoms underwent cystoscopic examination before surgical intervention. Other cases of prolapse identified preoperatively were addressed surgically if needed at cystocele repair. Postoperatively each patient was evaluated supine and standing, after voiding, with a full bladder, and with and without bladder elevation.

Surgical Technique

In patients undergoing interposition graft cystocele repair using porcine dermis or polypropylene the graft materials were soaked in room temperature antibiotic solution. After hydrodissection with 0.25% bupivacaine with epinephrine the vaginal epithelium was incised from vaginal apex to bladder neck and dissected off the pubocervical fascia to the endopelvic fascia bilaterally. If a sling was planned, the epithelium was also dissected off the periurethral fascia bilaterally. When performing traditional colporrhaphy, the uterosacral-cardinal ligament complex and pubocervical fascia were plicated in the midline.

In patients receiving porcine dermis or polypropylene mesh the lateral edges of a 3 × 7 cm graft segment were anchored to the pelvic sidewalls at the level of the levator fascia bilaterally using 3 sutures on each side. Initially permanent sutures were used but we later changed to delayed absorbable monofilament sutures. The uterosacral-cardinal ligament complex was plicated in the midline if present and the apical edge of the graft was then fixed in the midline to this area of plication. Additional plication of the pubocervical fascia was not performed. The distal edge of the graft was affixed in the midline to the bladder at least 1 cm proximal to the bladder neck. The graft was trimmed as needed.

When indicated, the pubovaginal sling was performed using a certain technique. Two less than 1 cm skin stab incisions 2 cm lateral of the midline were made bilaterally at the level of the symphysis pubis. Single Stamey needles were introduced, and passed through the retropubic space and out the vesicovaginal space on either side of the urethra. In most patients a 2 × 18 cm segment of Mersilene™ mesh was placed. The remaining patients received polypropylene or cadaveric fascia lata slings. The sling was positioned loosely beneath the bladder neck.

For all procedures vaginal packing and a 14Fr urethral catheter were placed and subsequently removed on postoperative day 2. Postoperatively intravenous or oral antibiotics were administered for a total of 5 days.

Postoperative followup at each office visit included focused history and physical examination, post-void residual urine evaluation, the provocative Valsalva stress test and subjective report of cure or improvement. Recurrent vaginal wall prolapse was defined as grade II or higher using the Baden-Walker system. Cured stress urinary incontinence was defined as no pads postoperatively and improvement was defined as fewer than half the pads used preoperatively. The study received institutional review board approval for a retrospective analysis.

RESULTS

Of 119 patients who underwent cystocele repair complete followup data were available on 99. Average followup was 13.5 months (range 2 to 46). The table shows cases performed, average followup, the number of concomitant procedures, the recurrence rate and time to recurrence. The mean grade of anterior wall prolapse in all groups was grade III. There were no significant demographic differences among the 3 groups. The time of data collection was at the last patient followup visit.

Concomitant vaginal hysterectomy and rectocele repair were performed in 90% (89 of 99) and 69% of patients (68 of 99), respectively. A total of 77 patients (78%) underwent concomitant sling procedures, including 50 (65%) with Mersilene mesh, 22 (29%) with polypropylene and 5 (6%) with cadaveric fascia lata slings. At followup 82% of the women (63 of 77) were continent by the provocative Valsalva stress test as well as by subjective report of cure or improvement. Two patients (3%) experienced transient urinary retention, which resolved within 2 weeks postoperatively.

Anterior wall prolapse recurred in 22 patients (22%). Average time to recurrence was 4.9 months. Of the 22 patients 16 (73%) had grade II anterior wall prolapse and 6 (27%) had grade III. Of the patients 91% (20 of 22) with recurrence underwent repair using porcine dermal graft. Overall 36% of the patients (20 of 56) who received porcine dermal grafts had cystocele recurrence compared to 1 each in the polypropylene and traditional repair groups. In addition, 12 patients (21%) had extrusion of porcine graft through a dehiscence in the anterior vaginal wall. One patient with polypropylene mesh had extrusion through the anterior vaginal wall incision.

Six patients in the porcine dermis group experienced vaginal incision dehiscence. All of these patients underwent concomitant sling procedures. One patient had extensive intraoperative bleeding, resulting in a vaginal hematoma and transfusion of 2 U blood. Subsequently vaginal drainage developed with extrusion of the porcine dermal graft and mesh sling. At followup this patient had a recurrent grade II cystocele and mild SUI, which did not require further treatment. Another patient presented several weeks after surgery with persistent vaginal discharge. Examination revealed infection with sloughing of the anterior vaginal wall epithelium and porcine graft. The vaginal epithelium was débrided and any remaining porcine graft was excised. The sling mesh was exposed but did not appear infected. The vaginal epithelium healed by secondary intent, ultimately resulting in severe vaginal shortening and stenosis.

There was no obvious cause for the vaginal wall dehiscence in the remaining 4 patients. One patient was returned to the operating room for removal of the sling mesh and the remaining porcine graft. At followup she had recurrent

Patients based on cystocele repair technique

	Prolene	Porcine	Traditional	Totals
No. pts (%)	25 (25)	56 (57)	18 (18)	99
Av followup (mos)	13	17	9	
No. concomitant sling (%)	20 (26)	48 (62)	9 (12)	77
No. vaginal hysterectomy (%)	25 (28)	46 (52)	18 (20)	89
No. rectocele repair (%)	18 (26)	38 (56)	12 (18)	68
No. anterior wall recurrence (%)	1 (1)	20 (20)	1 (1)	99