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The Results of Grade IV Cystocele Repair Using Mesh

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ABSTRACT

Purpose: To evaluate the results of grade IV cystocele repair by 4-corner bladder and bladder neck suspension technique, using prolene mesh.

Material and Methods: Thirty-one women with a median age of 61 years and severe anterior vaginal wall prolapse (grade IV cystocele) were treated by 4-corner bladder and bladder neck suspension technique, using prolene mesh. Of these, 3 had associated uterine prolapse, rectocele, and enterocele, one had rectocele and enterocele, and 18 had rectocele only. In these cases, pelvic floor defects were also repaired simultaneously and in 3, vaginal hysterectomy was done. Twelve patients had a previous failed cystocele repair. In a 32-month follow-up, the patients were evaluated with vaginal examination and upright cystography. Urinary continence during increased intra-abdominal pressure was also assessed, based on subjective symptoms.

Results: None of the patients had cystocele recurrence. Urinary continence during increased intra-abdominal pressure was seen in all of the patients. Intraoperative rectal or bladder injury did not occur. Transfusion was not required in any of the cases.

Early complications (6 to 8 weeks postoperatively) included irritative urinary symptom in 17 patients, of whom, 8 had documented urinary tract infection that were treated successfully. Late complications were spotting in 3 cases (two were treated with topical estrogen and vaginal mucosal repair was done in one), dyspareunia in 4 sexually active patients, changes in urination pattern in 28 (improved significantly with behavioral therapy), long-term urge incontinence (>8 weeks) in 5 (medical treatment was successful in these patients), and prolonged intermittent catheterization in 1. Pelvic abscess and migration of mesh were not observed.

Conclusion: According to our findings, using mesh in patients with grade IV cystocele, who had a previous failed surgery or weakness in supportive pelvic tissue, is an appropriate treatment modality.

KEY WORDS: cystocele, surgical repair, mesh

Introduction

Grade IV cystocele is defined as the protrusion of bladder floor into the vaginal introits and indicates severe anterior vaginal wall prolapse. This grade of cystocele is usually associated with four anatomic defects in pelvic floor: urethral hypermobility due to the anterior weakness of urethropelvic ligament; vesicopelvic fascia defect in the site of its attachment to the lateral pelvic walls (lateral defect); dissociation of fibers of vesicopelvic fascia in the central portion (central defect); and cardinal and sacrouterine ligaments weakness in the posterior part.[1,2]

In 80% of cases, grade IV cystocele is associat-

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ed with other types of prolapse such as enterocele, rectocele, uterine prolapse, and vaginal vault prolapse. Clinical manifestations are feeling a vaginal mass and urinary symptoms such as problem with bladder emptying, irritative urinary symptoms, and occasionally urinary incontinence.[3] Repair of pelvic floor in one stage in this grade of cystocele necessitates thorough preoperative evaluation and the familiarity of surgeon with pelvic floor anatomy and different techniques. Abdominal approaches such as Marshall Marchetti Krants, Burch, and paravaginal repair, are reserved for urethral hypermobility and mild cystocele.[4] Vaginal approaches such as anterior colporrhaphy with Kelly type plication, which is the most common method of cystocele repair, can correct vesicopelvic fascia defect in the central portion, but the defect in bladders lateral walls, urethral hypermobility, and dissociated cardinal ligaments cannot be repaired.[5,6]

In this study, we evaluated the 4-corner bladder and bladder neck suspension technique for the repair of pelvic floor, using mesh.

Materials and Methods

From 1999 to September 2004, 31 patients with grade IV cystocele had undergone cystocele repair and in a retrospective study, hospital records of them were reviewed. Preoperative evaluations were history taking, physical examination, urine analysis and urine culture, lateral and upright cystography, urinary tract ultrasonography, cystoscopy, and Marshall Test.

Surgical operation was performed under general or spinal anesthesia while patient was secured in lithotomy position and a 16 F indwelling urethral catheter was inserted and fixed. Due to severe uterine prolapse, vaginal hysterectomy was done in two cases before attempting to repair cystocele. The stages of repair were as follows:

Stage 1: Normal saline was injected into the submucosa of the anterior vaginal wall and vaginal mucosa was separated from submucosal layer through a standard goal post incision (fig. 1). Urethropelvic ligaments in bladder neck region, vesicopelvic fascia in central region and cardinal ligament in the posterior portion were exposed (fig. 2). At the end of this stage, peritoneal hernia into pelvic floor (enterocele) was seen in the hindmost portion of separated vaginal mucosa in 4 patients that was repaired with modified McCul suture.

Stage 2: Endopelvic fascia in either side of bladder neck was perforated and separated from retropubic space with finger. A 3-cm skin incision was made above the symphysis pubis on abdominal wall and a specialized needle after piercing the rectus fascia was directed through retropubic space into vagina. With a 1.0 prolene suture material, urethropelvic ligaments in either side of urethra, vesicopelvic fascia in the lateral sides of the bladder, and cardinal ligaments that were

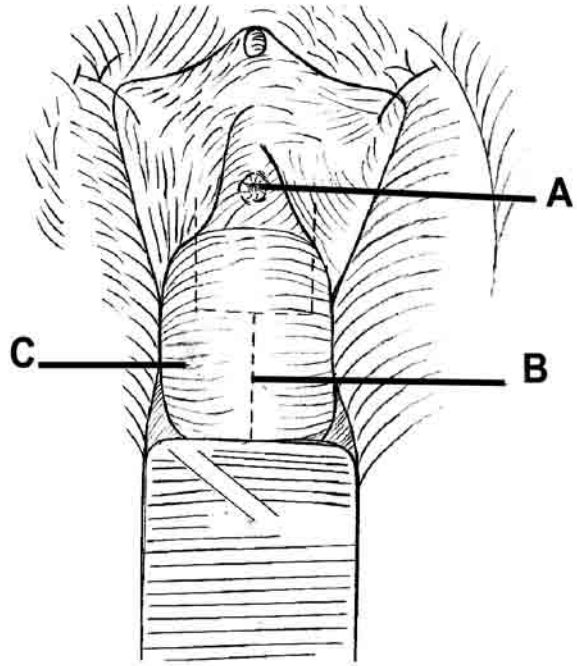

Fig. 1. Goal Post incision. A. urethra, B. incision, C. cystocele

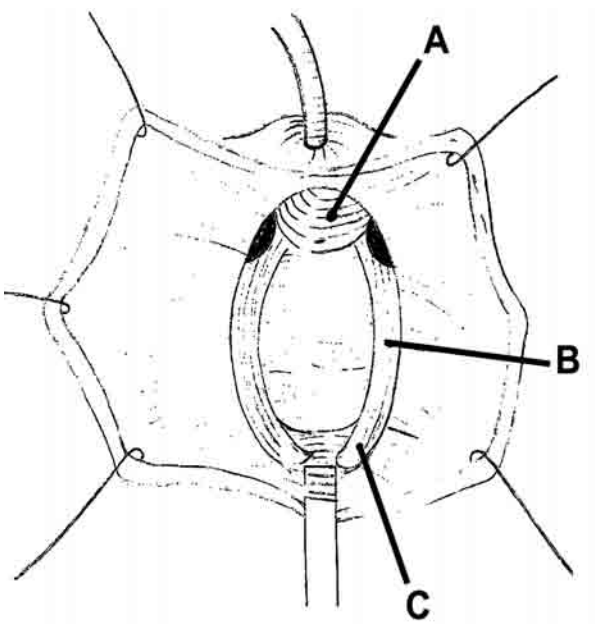

Fig. 2. A schematic view of the anterior wall of vagina after removing mucosa. The markers are recognizable: A. urethropelvic ligament, B. vesicopelvic ligament, C. cardinal ligament.

grasped helically and separately using Raz method,[5] all were brought out onto abdominal wall over the rectus fascia (suspension) (fig. 3).

Stage 3: Vesicopelvic fascia re-approximated with mattress suture in the midline (fig. 4) and a prolene mesh was designed and mounted as a supportive tissue on the repaired site, before tying the suture and inducing tension on prolene sutures (the second stage of suspension, fig. 5). For prevention from the movement of mesh, its edges were sutured to adjacent tissue. Figure 6 shows the designed mesh, composed of two main parts.

Stage 4: Cystoscopy for detection of any bladder injury was done.

Stage 5: Vaginal mucosa was repaired with 2.0 vicryl suture material.

Stage 6: The tension on the second stage sutures was adjusted, so that the urethra and bladder floor settled in the horizontal level and then they were tied over rectus fascia. Finally, abdominal skin was repaired.

After repairing the anterior vaginal wall, rectocele was also corrected in 22 cases. At the end of surgery, povidione iodine-saturated gauze was inserted into vagina and removed 24 hours later.

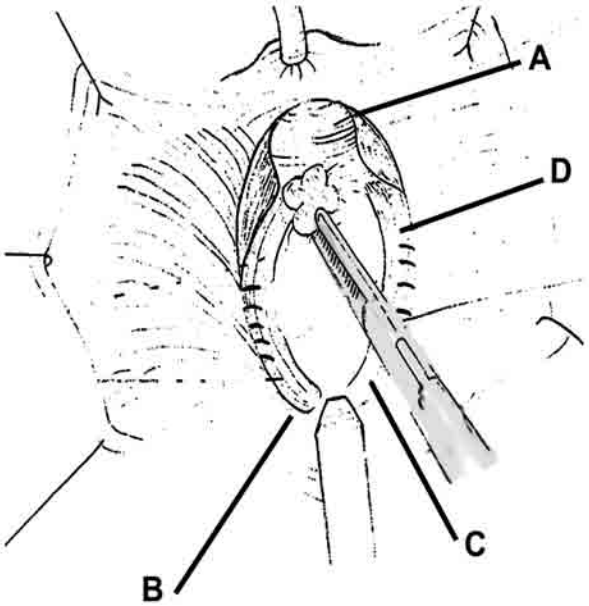

FIG. 3. A schematic view of the anterior wall of vagina after removing mucosa and appearance of ligaments: A. periureteral fascia, B. vesicopelvic ligament, C. cardinal ligament, D. prolene suture.

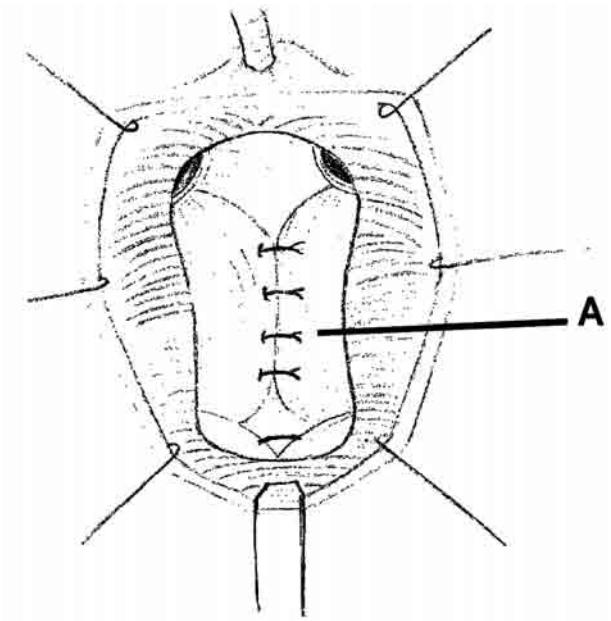

FIG. 4. Anterior wall of vagina after vesicopelvic fascia repair in order to correct central cystocele. A. vesicopelvic fascia

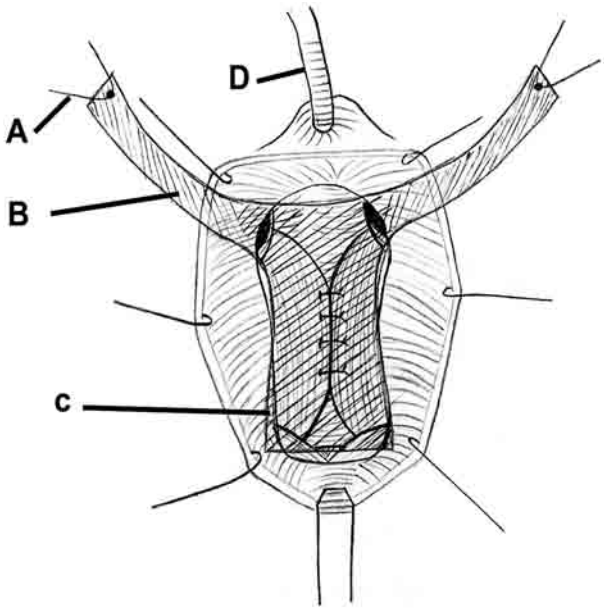

FIG. 5. Location of mesh in relation to urethra, urethropelvic ligament, and vesicopelvic fascia. A. prolene suture, B. strip shaped part of mesh that goes through retropubic line, C. second part of mesh, D. urethral catheter

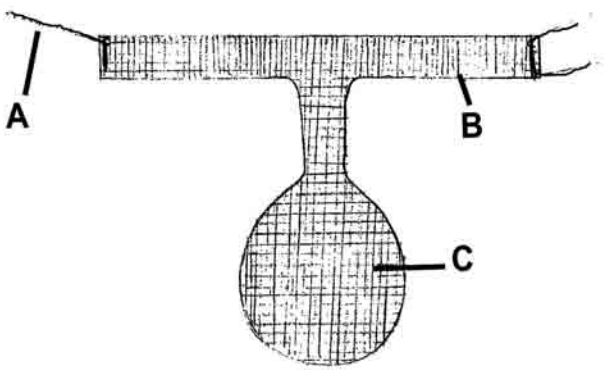

FIG. 6. A sample of apron shape designed mesh. A. prolene suture, B. the first part of mesh, rolling as a sling (2 × 9 cm), C. the second part of mesh that supports cystocele repair. The size of this part was adjusted for each patient perioperatively.

Hospital stay was between 5 and 7 days. Operative complications, such as rectal, bladder, or ureteral injuries were not seen. Antibiotic coverage with ampicillin and gentamicin was started 12 hours preoperatively and continued for 48 hours, postoperatively. Oral antibiotic (ciprofloxacin) was administered for one week after urethral catheter removal.

All of the patients were discharged with urethral catheter and followed for 32 months. First visit was done at the tenth postoperative day and urethral catheter was removed. The patients were followed in the 4th and 6th postoperative week and then every three months, assessing urinalysis and urine culture, physical examination of vagina, and post voiding residual urine.

Results

Median age of the patients was 61 (range 65 to 75) years and median weight was 72 (range 60 to 78) kg. Parity had a range of 5 to 8 among the patients. Twelve patients had a previous failed cystocele repair with Kelly plication and 3 had previous hysterectomy. Associated pelvic floor disorders were as follows: 3 (9.7%) patients had simultaneous grade III uterine prolapse, rectocele, enterocele, and cystocele, 1 (3.2%) had enterocele, rectocele, and cystocele, 18 (58.1%) had associated rectocele, and 9 (29%) suffered from cystocele only.

The chief complaints of the patients were feeling of vaginal mass in 12, stress urinary incontinence in 15, and urge incontinence in 18. Marshall Test was positive in 15 and 12 patients had a residual urine greater than 50 ml.

Thirty-one patients underwent repair of cystocele and associated pelvic defects. Hospitalization time was between 5 and 7 days. Eighteen had urinary retention, of which 17 improved after 3 weeks intermittent catheterization and post voiding residual urine declined to less than 50 ml. One patient was using intermittent catheterization during follow-up period.

Early complications (6 to 8 weeks postoperatively) included irritative urinary symptom in 17 patients, of whom, 8 had documented urinary tract infection that were treated successfully. Spotting was one of the late complications (32 months follow-up) observed in 3 cases. Two were treated with topical estrogen and in the other one, erosion of the vaginal mucosa was seen in the bends of mesh leading to vaginal mucosal repair and cutting the exposed bends of mesh. Dyspareunia in 4 out of 32 sexually active patients was another late complication. In addition, changes in urination pattern in 28 (improved significantly with behavioral therapy), long-term urge incontinence (>8 weeks) in 5 (medical treatment was successful in these patients), and prolonged intermittent catheterization in 1 were observed.

No serious complication such as pelvic abscess or migration of mesh was seen. In long-term, vaginal examination and Cough test did not demonstrated any case of recurrence or urinary incontinence. Up-right cystogram demonstrated that bladder was adjacent to symphysis pubis in all the patients, indicating a favorable anatomic correction.

Discussion

Multiple causes have proposed for severe anterior vaginal wall prolapse, consisting of multiparity, qualitative and quantitative collagen tissue change in menopause, neural injuries following difficult vaginal delivery, and direct damage to pelvic floor musculature.[3,7-9]

Furthermore, another iatrogenic cause is hysterectomy. If sacrouterine and cardinal ligaments re-approximation and colpoplasy during hysterectomy are not done, severe vaginal vault prolapse and cystocele develops.[1,7,10] Abdominal approaches, such as paravaginal repair, Burch, and Marshall Marketti Kranz, are suitable for correction of urethral hypermobility and mild cystocele. These procedures will correct lateral defects, but correction of central defects is not possible; therefore, they are not amenable for grade IV cystocele.[4,9,11] Vaginal surgeries, including anterior colporrhaphy with Kelly plication can correct central defects, but they do not pertain to the correction of urethral hypermobility and bladder lateral defects.[1,2,9] The standard technique used in this study can rectify all these four defects in grade IV cystocele and also other associated pelvic floor defects can be repaired simultaneously with this technique.[9] However, it has come into question that whether using only suspension technique can bring about ideal results in long-term, when pelvic floor hernia is present and the tissue (fascia and levator ani muscles) is dissociated and not strong enough? It seems that using synthetic tissues in these procedures are an appropriate choice, as successful results have been reported.

Conclusion

In grade IV cystocele, damages to ligaments and pelvic floor fascia are severe. Supportive tissues are dissociated and are not capable of suspending lateral walls and pelvic floor. Since using mesh in 4-corner bladder and bladder neck suspension technique does not prolong the operation and complications such as pelvic abscess, wound infection, or mesh migration, it can be an ideal treatment for grade IV cystocele and may have favorable long-term results.

References

1. RAZ S, Stothers L, Chopra A. Vaginal reconstructive surgery for incontinence and prolapse. In: Walsh PC, Retik AB, Vaughan ED Jr, et al, editors. Campbell's urology. 7th ed. Philadelphia, Pa: WB Saunders; 1998 p.1059-79.
2. Stothers L, Chopra A, Raz S. Vaginal reconstructive surgery for female incontinence and anterior vaginal-wall prolapse. Urol Clin North Am. 1995;22:641-55.
3. Migliari R, Usai E. Treatment results using a mixed fiber mesh in patient with grade IV cystocele. J Urol. 1999;161:1255-8.
4. Hurt WG. Urogynecologic Surgery. 2nd ed. Lippincott Williams & Wilkins; 2000. p. 80-90.
5. Raz S, Stothers L, Chopra A. Raz techniques for anterior vaginal wall repair. In: Raz S, ediror. Female urology. 2nd ed. Philadelphia, Pa: WB Saunders; 1996. p.344-66.
6. Raz S, Little NA, Juma S, Sussman EM. Repair of sever anterior vaginal wall prolapse (grade IV cystourethrocele). J Urol. 1991;146:988-92.
7. Nguyen A, Mahoney S, Minor L, Ghoniem G. A Simple objective method of adjusting sling tension. J Urol. 1999;162:1674-6.
8. Hsu TH, Rackley RR, Appell RA. The supine stress test: a simple method to detect intrinsic urethral sphincter dysfunction. J Urol. 1999;162:460-3.
9. Nitahara KS, Aboseif S, Tanagho EA. Long-term results of colpocystourethropexy for persistent or recurrent stress urinary incontinence. J Urol. 1999;162:138-41.
10. Safir MH, Gousse AE, Rovner ES, Ginsberg DA, Raz S. 4-Defect repair of grade 4 cystocele. J Urol. 1999;161:587-94.
11. Wahle GR, Young GPH, Raz S. Enterocele and vault prolapse. In: Raz S, editor. Female urology. 2nd ed. Philadelphia, Pa: WB Saunders; 1996. p.465-8.