Laparoscopic Burch Colposuspension for Recurrent Stress Urinary Incontinence

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Abstract

Study Objective. *To evaluate the effectiveness of laparoscopic Burch colposuspension in the treatment of recurrent stress urinary incontinence in women with previous vaginal or abdominal retropubic continence surgery.*
Design. *Retrospective analysis over 36 months (Canadian Task Force classification III).*
Setting. *Community hospital.*
Patients. *Thirty-three consecutive patients.*
Intervention. *Laparoscopic Burch colposuspension*
Measurements and Main Results. *Data were obtained by retrospective chart review, telephone interviews, and follow-up physical examinations. Of the 33 patients, 17 (52%) had undergone open retropubic procedures (Burch or Marshall-Marchetti-Krantz), 11 (33%) had had vaginal retropubic needle suspension, and 5 (15%) pubovaginal sling operation. Additional laparoscopic and/or vaginal reconstructive surgery was completed in 32 women (97%) at time of laparoscopic Burch. Average overall operating time was 165 minutes (range 60–287 min), mean estimated blood loss was 178 ml (range 50–600 ml), and hospital stay was 1.1 days. Three intraoperative complications occurred, two cystotomies and one serosal bowel injury. Postoperative objective evaluation over average follow-up of 18.6 months revealed a 90% stress urinary incontinence cure rate.*
Conclusion. *Laparoscopic Burch colposuspension is safe and effective treatment of recurrent stress urinary incontinence in women who have undergone previous procedures for retropubic continence.*

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Stress urinary incontinence recurring after surgical intervention may have many causes, including inadequate or improper suspension, loosening and breakdown of sutures, or inefficient intrinsic sphincteric mechanism.[1] Traditionally, suburethral sling procedures were reported in the literature as the best surgical approach;[2–6] however, there have been reports of successfully treating this condition using traditional Burch colposuspension by laparotomy.[1] An 89% success rate was reported after Burch colposuspension with de Cherney incision in 53 women who had failed retropubic continence procedures.[7]

The literature contains numerous laparoscopic Burch colposuspension series for treatment of primary stress urinary incontinence.[8] However, to date, no reports describe this surgery in women with secondary disorder who failed retropubic continence procedures. To our knowledge, this is the first study to report the technique, effectiveness, and complications of laparoscopic Burch colposuspension in managing women with this condition.

Materials and Methods

We reviewed the charts of 33 consecutive patients (mean age 53.1 yrs, range 29–76 yrs; mean weight 159 lbs, range 109–259 lbs; mean parity 2.6, range 1–6) who underwent laparoscopic Burch colposuspension

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from March 1997 to April 2000 for recurrent stress urinary incontinence after at least one failed vaginal or abdominal retropubic continence procedure (pubovaginal sling, vaginal needle urethropexy, abdominal retropubic colposuspension). Of the 33 women, 17 (52%) had previous open retropubic procedures (Burch, Marshall-Marchetti-Krantz), 11 (33%) a needle suspension, and 5 (15%) a pubovaginal sling.

Before surgery, all patients had a complete history and physical examination, and comprehensive urogynecologic evaluations including pelvic organ prolapse quantification, and multichannel urodynamic testing. Genuine stress urinary incontinence either with urethral hypermobility (Q-tip >30 degrees) and/or anterior vaginal wall relaxation due to a paravaginal defect was established in each case. Patients with intrinsic sphincteric deficiency (Valsalva leak point pressure <65 cm/H_2O or maximum urethral closure pressure <20 cm/H_2O) were excluded from the study.

Charts were reviewed for patient age, previous surgery, urodynamic results, operating time, estimated blood loss, hospital stay, complications, and follow-up. In addition, an attempt was made to contact all patients by telephone or mail, and those contacted were asked to complete a survey questionnaire-quality of life form and to come to the urogynecology clinic for a follow-up objective physical examination including uroflowmeter, postvoid residual, and cough provocation test in the standing position with bladder capacity of 300 ml. Objective success was described as no evidence of stress urinary incontinence on follow-up examination.

Operative Technique

The laparoscopic technique parallels our open technique as described elsewhere.[9] Open laparoscopy was used to enter the abdomen at the inferior margin of the umbilicus. A 10-mm access port was used at this site to accommodate the laparoscope. The abdomen was insufflated with 15 mm Hg CO_2. Three additional ports were placed under direct vision. The space of Retzius was entered intraperitoneally by retrograde filling the bladder with at least 300 ml of sterile water using a three-way Foley catheter. Bladder distention helped identify the superior margin of the bladder near the pubic bone. After the bladder margin was identified, the space of Retzius was entered at least 2 cm above this margin with a harmonic scalpel with a 0.5-mm dissecting hook. Once areolar tissue of the space of Retzius was seen, atraumatic graspers were used to complete the dissection until the pubic bone was identified. The bladder was allowed to drain and dissection was completed. Blunt dissection was continued until retroperitoneal anatomy was visualized.

The pubic symphysis and bladder neck were identified in midline, and the obturator neurovascular bundle, Cooper's ligament, and arcus tendineus were visualized bilaterally along the pelvic sidewall. Endoscopic kitners were used for more delicate identification of pubocervical fascia adjacent to the urethra and vagina before suture placement. This step in particular was more difficult in patients with previous retropubic surgery secondary to scar tissue, but we thought it was important to dissect down to and visualize pubocervical fascia directly to ensure proper suture placement through it.

Burch procedure and paraurethral dissection were performed as described elsewhere.[10] A pair of CV-2 Gore-Tex sutures were placed on each side of the middle urethra and bladder neck, taking a double bite through pubocervical fascia with each stitch. After Burch urethropexy and other laparoscopic procedures, video transurethral cystoscopy with a 70-degree cystoscope was performed systematically to inspect the bladder for cystotomy or intravesical suture placement. Each patient was also given 5 ml of indigo carmine dye intravenously to assess ureteral patency.

Results

Additional laparoscopic and/or vaginal reconstructive surgery was completed in 32 women (97%) at the time of laparoscopic Burch colposuspension (Table 1). All procedures were successfully completed laparoscopically with no conversions to laparotomy. Mean overall operating time was 165.4 minutes (range 60–287 min), mean estimated blood loss was 178 ml (range 50–600 ml), and mean hospital stay was 1.1 days (range 1–3 days). No patient required blood transfusion.

TABLE 1. Concomitant Procedures

Procedure	Number
Laparoscopic enterolysis	28
Laparoscopic paravaginal repair	19
Vaginal vault suspension	8
Posterior colporrhaphy	20
Anterior colporrhaphy	3

Three intraoperative complications occurred: two cystotomies during retropubic dissection in the scarred space of Retzius and one serosal bowel injury during enterolysis. Of the two patients with bladder injuries, one had had a previous Marshall-Marchetti-Krantz and one a previous laparoscopic staple and polypropylene mesh urethropexy. Both cystotomies were at the dome of the bladder. A single-layer closure with delayed absorbable suture was performed laparoscopically without complication. Both injuries were noted on cystoscopy. No ureteral ligation or injury was diagnosed and in no case was intravesical suture placement identified. The serosal bowel injury was recognized at the time of injury and repaired laparoscopically without complication.

Thirty women returned for follow-up evaluation and examination; three were lost to follow-up. Subjective evaluation revealed 10 patients with complaints of urinary incontinence, with stress urinary incontinence objectively seen in 3 (10%). The other seven patients were diagnosed with urge incontinence and treated successfully with anticholinergic agents. Six of these seven women had urge incontinence before surgery. None of the 30 patients showed evidence of voiding dysfunction on uroflow or elevated postvoid residual measurements (>80 ml).

Discussion

Treatment of women with recurrent stress urinary incontinence after retropubic incontinence surgery is a challenge. In 1975 the Marshall-Marchetti-Krantz procedure resulted in 83% subjective continence.[11] Since that time the literature has supported the pubovaginal sling as the primary method of treatment.[2–6] Reported success was 90% using a fascia lata sling in 72 patients, although 2 women developed a pelvic abscess postoperatively and the sling had to be removed.[2] Delayed voiding and urinary retention were seen in 30% of patients. After 3 months of self-catheterization, eight women had to have the slings surgically released. This resulted in a 13.4% release rate of the entire population. Other series also reported postoperative voiding dysfunction after suburethral slings.[3]

More recently surgeons reported treatment of recurrent stress urinary incontinence by Burch urethropexy. Subjective success was 69% at mean follow-up of 6.9 years in 60 patients undergoing repeat abdominal Burch colposuspensions.[1] Fifty-three women with recurrent stress incontinence after retropubic continence surgery underwent Burch colposuspension with de Chernez incision.[7] With median follow-up of 9 months, subjective cure rate was 89% (<1 episode of stress or urge incontinence/wk), with only one patient complaining of stress incontinence, and 81% objective cure rate on urodynamic evaluation. Two intraoperative complications were cystotomy and lacerated obturator vein. No blood loss was greater than 500 ml and no patient required transfusion. Postoperatively three patients (6%) developed detrusor instability and two (4%) had urinary retention requiring catheterization for at least 4 months. However, no patient required surgical release of the suspension.

Emphasizing principles of minimally invasive surgery, laparoscopy is an alternative to many operations that rely on an abdominal approach. Despite severe adhesive disease encountered in the space of Retzius from previous retropubic procedures, our lower urinary tract injuries were limited to two cystotomies. Our rate of injury to the lower urinary tract was comparable with a 10% rate reported during primary Burch colposuspension.[12,13] Although dissection is challenging, it can be completed safely by experienced laparoscopic surgeons who are familiar with the anatomy and dissection of the space of Retzius.

Conventional wisdom supports prolonged operating times in patients who are undergoing a repeat retropubic incontinence procedure. Undoubtedly, dissection through retropubic scarring accounts for the increase. Our prolonged operating time is also due in part to the fact that almost all patients (32) had several concomitant reconstructive surgical procedures, and operating times were obtained from anesthesia records, which included all procedures performed on each patient. Our success rate of 90% compares with earlier reports of either pubovaginal sling or open Burch colposuspension for recurrent stress incontinence after retropubic continence procedures. This study is limited by its retrospective design and lack of long-term follow-up, but the initial success and low complication rate are encouraging.

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