

Assessment of Laparoscopic Burch Colposuspension for Treatment of Genuine Stress Urinary Incontinence

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ABSTRACT

Background: The laparoscopic technique is an effective substitute for open surgery in the age of minimally invasive operations. The conventional surgical approach for treating stress incontinence is still Burch colposuspension.

Objective: The purpose of this study was to evaluate Burch colposuspension surgery for stress incontinence.

Patients and methods: Thirty female individuals suffering from urodynamic stress incontinence had laparoscopic bladder surgery, conducted at the Faculty of Medicine, Tanta University Hospital.

Results: The average age was 44.7 ± 6.7 years and the average body mass index was 27.2 ± 2.8 kg/m². The average operating duration was 92.25 minutes. There was an average blood loss of 135.3 ± 29.9 . Hospital stay (hours) was 73.4 ± 10.2 hours. Pain score was (3.7 ± 1.5) . There was one case of bladder injury (3.3%), one case of wound infection (3.3%), one case of fever (3.3%), and 3 cases of UTI (10.0%). Regarding postoperative urinary problems there was one case complaining of retention (3.3%), 5 cases complaining of difficult voiding (16.7%), and 4 cases complaining of urgency (13.3%). Regarding patient satisfaction during follow-up, it was 70% at one month, 76.7% at six months, and 83.3% at twelve months.

Conclusion: Laparoscopic bypass surgery has a longer recovery period and a longer learning curve than traditional bypass surgery, but it delivers a shorter hospital stay, less discomfort after surgery, and a speedier recovery overall.

Keywords: Laparoscopic, Burch colposuspension surgery, Stress incontinence.

INTRODUCTION

According to the International Continence Society (ICS), genuine stress incontinence (GSI) is the involuntary leakage of urine that occurs in tandem with elevated intra-abdominal pressure without a detrusor contraction⁽¹⁾. Stress urinary incontinence (SUI) is not life-threatening, but it can have a significant negative impact on a patient's social, psychological, and physical health⁽²⁾.

Pharmacotherapy, biofeedback, pelvic floor muscle training, and surgical intervention are among the therapies available for stress urinary incontinence. As though options are effective for a significant number of women, many women will opt to undergo surgery⁽³⁾.

Acute colporrhaphy, periurethral injections, open or laparoscopic retropubic suspensions, and suburethral sling operations are the most often used surgical corrective techniques for stress incontinence^(4,5).

Focusing on the fundamentals of minimally invasive surgery, numerous operations that formerly required an abdominal or transvaginal approach have effectively adapted the laparoscopic technique. A number of benefits, such as better visibility, a shorter hospital stay, a quicker recovery, and less blood loss, have contributed to the laparoscopic retropubic colposuspension's ongoing rise in popularity⁽²⁾.

This research sought to evaluate the Burch colposuspension laparoscopic technique's effectiveness and potential side effects in treating actual stress urine incontinence.

PATIENTS AND METHODS

30 female patients complaining of stress urinary incontinence were enrolled in this study, conducted at the Faculty of Medicine, Tanta University Hospital.

Inclusion criteria:

- Genuine stress urinary incontinence with bladder neck hypermobility. Which was confirmed by urodynamic study.
- Failed pelvic floor muscle training.

Exclusion criteria:

- Previous operation for stress incontinence.
- Neurological bladder disorder.
- Detrusor overactivity or mixed incontinence.
- Urinary tract infection.
- History of extensive pelvic surgery (frozen pelvis).
- Morbid obesity.

Preoperative evaluation:

- (A) Standard history taking includes:
- (B) Physical examination.
- (C) Ultrasonographic scanning: mainly used to exclude associated pelvic pathology.
- (D) Laboratory studies renal and liver function, coagulation profile, complete blood picture and blood grouping.
- (E) Urodynamic studies.

Operative procedures:

Anesthesia: Anesthesia was administered generally.

Position: A modified lithotomy with adjustable stirrups was used to raise the patient's legs and provide access to the vagina. A Foley catheter was inserted into the bladder.

Establishment of the pneumoperitoneum:

Placement of trocar: Through the umbilical aponeurosis, an infraumbilical trocar was inserted into the belly. Subsequently, a trocar was inserted under direct sight, measuring 10 mm on the left side and 5 mm on the right (suprapubic).

To allow the needles to penetrate through and into the abdomen, a bigger trocar was required. To enable laparoscopic suturing, it was critical to place the trocars far enough apart.

The process of developing the retropubic space involved inserting around 150 mL of sterile saline through the Foley to begin with, about 2 cm above the bladder reflection, a transverse incision was made. The peritoneum was transversally sliced using acute dissection and electro cautery, and the umbilical ligaments were located laterally.

The positioning of sutures:

Using No. 0 (polypropylene, Ethicon) sutures, the first one was positioned 2 cm lateral to the mid-urethra. He bit off a huge piece of tissue. Next, the needle was inserted through Cooper's ligament and an intracorporeal knot was used to secure the suture while the vaginal tissue was raised (Figure 1).

The same method was used to tie the second suture, which was positioned 2 cm lateral to the bladder neck. Next, a similar technique was used to insert the sutures on the other side. In the end, the pubocervical fascia was elevated by the four sutures to form "dog ears," producing a hammock of vaginal wall under the mid-urethra and bladder neck.

Parietal peritoneum was closed with continuous delayed absorbable sutures (Figure 2). We eliminate every trocar under the eye. After allowing CO₂ to gradually escape, the final trocar was removed while being seen. Finally, non-absorbable silk sutures were used to seal the skin; these were removed after seven days.



Fig. (1): Vaginal suspension to Cooper's ligament.

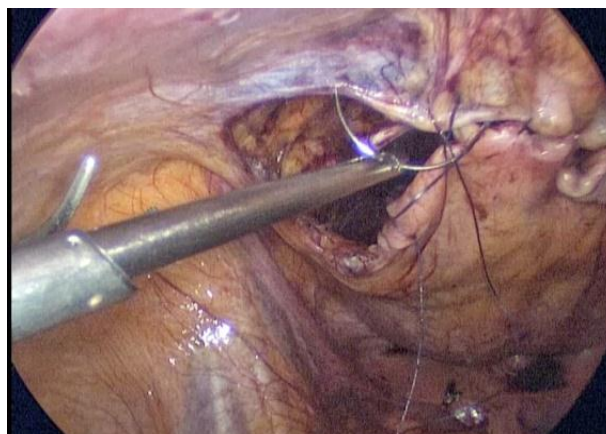


Fig. (2): Peritoneal closure after the procedure.

After-operation treatment

Meperidine hydrochloride 50 mg and diclofenac potassium 100 mg were administered intramuscularly to all instances with anesthesia recovery. A second dose of diclofenac potassium was administered 12 hours later. A day after surgery, the Foley catheter was taken out. The catheter was reinserted if the patient experienced difficulty voiding or urine retention, and we scheduled a follow-up visit for one week later to try voiding again.

Ethical approval:

The Ethics Committee of the Tanta Faculty of Medicine has given its approval to this investigation. Each participant completed a permission form to participate in the study when all information was received. Throughout its implementation, the study complied with the Helsinki Declaration.

Statistical analysis

The SPSS version 22 for Windows® was used to code, process, and analyze the gathered data. Frequencies and relative percentages were used to depict the qualitative data. The mean ± SD was used to express the quantitative data.

RESULTS

Table (1) shows that the mean age was 44.7±6.7 years and the mean of BMI was 27.2±2.8 kg/m².

Table (1): The demographics of the patients.

	Mean ± SD
Age	44.7±6.7
Parity	2±1.7
BMI	27.2±2.8

Table (2) mean operative time was 92±5.2 minutes. The mean amount of blood loss was 135.3±29.9.

Table (2): Operative time, estimated blood loss, hospital stay, and pain score.

Parameter	Mean ± SD
Intraoperative blood loss (mL)	135.3±29.9
Operative time (min)	92±5.2
Hospital stay (hours)	73.4 ± 10.2
Pain score	3.7 ± 1.5

The most common complication was UTI (10.0%) (Table 3). Regarding postoperative urinary problems, 5 cases complained of Difficult voiding (16.7%) and 4 cases complained of urgency (13.3%) (Table 4).

Table (3): Intraoperative and postoperative complications

	N	%
Bladder injury	1	3.3%
Wound infection	1	3.3%
UTI	3	10.0%
Fever	1	3.3%

Table (4): Postoperative urinary problems

	N	%
Retention	1	3.3%
Difficult voiding	5	16.7%
Urgency	4	13.3%

Regarding patient satisfaction during follow up at one month was 70%, at 6 months was 76.7%, at 12 months was 83.3% (table 5).

Table (5): Patient satisfaction

		N	%
1 Month	Satisfied	21	70.0%
	unsatisfied	9	30.0%
6 Months	Satisfied	23	76.7%
	unsatisfied	7	23.3%
12 months	Satisfied	25	83.3%
	unsatisfied	5	16.7%

DISCUSSION

The purpose of this study was to examine the advantages of laparoscopic colposuspension in the treatment of urodynamic stress incontinence. The procedure took 92±5.2 minutes. This can be explained by the approaching retropubic space and the technical challenge of laparoscopic suturing. Our study's mean laparoscopic colposuspension operating time (92 minutes) was comparable to that of prior studies (6). However, it took longer than other researchers' reports (60 minutes) (7); this might be because just one stitch was placed on each side (7). It also took longer than previous studies (46 minutes), which could be related to the use of an extraperitoneal technique (8).

The estimated blood loss was (135.3±29.9) on average. There was a lot of diversity in the literature about blood loss. Our findings are in line with those of other researchers who discovered that there was (126 mL) of blood loss (9). The average length of stay in the hospital was 73.4 ± 10.2 hours. That was anticipated given the laparoscopic approach's quicker recovery and reduced postoperative discomfort. Our findings are in line with those of another study, which discovered

that the average length of hospital stay was (88.8 hours) (6). Using the updated facial pain scale, the pain score was (3.7 ± 1.5). That coincides with **Carey et al.** (6).

In terms of the frequency of both intraoperative and postoperative complications, there were three instances of urinary tract infections (UTIs; 10.0%), one case each of wound infection (3.3%), fever (3.3%), and bladder damage (3.3%). One patient (3.3%) reported retention in relation to postoperative urinary issues. There were five cases (16.7%) of difficult voiding and four cases (13.3%) of urgency. This is consistent with the majority of literature, including those by **Bulent et al.** (8), **Ankardal et al.** (10), and **Walter et al.** (11). According to a different research, wound infection is considerably greater in the open group and bladder damage is insignificantly higher in the laparoscopic group (2.8%) compared to the open group (0.7%) (12).

There were no significant intraoperative or postoperative problems in our investigation. A single incidence (3.3%) of bladder damage occurred as the patient approached the retropubic area; it was surgically repaired with two interrupted sutures. One incidence of superficial wound infection was found, with one case requiring laparoscopy (3.3%) and two cases in the open group (6.7%). Suture removal and consistent dressing were used to treat all of them. In our study, four individuals had postoperative urgency.

The main cause of this was mixed incontinence, which was missed by the preoperative urodynamic and clinical examination following a month's period. To validate the diagnosis of detrusor overactivity, filling cystometry was performed. There was a 5 mg dose of solifenacin, an antimuscarinic. After three months, every single instance had improved. Postoperative urine retention was seen in 3.3% of the cases, and were overseen by a weekly visit to an outpatient clinic for the extraction of the catheter and a follow-up voiding trial. There was a noticeable, organic improvement over time, and no more treatments were required. Regarding patient satisfaction during follow-up, it was 70% at one month, 76.7% at six months, and 83.3% at twelve months. Additional researchers discovered that patient satisfaction during a 24-month follow-up (6). While other recorded that patient satisfaction was 66.2% at 12 months (11).

CONCLUSION

Although laparoscopic Burch is less painful after surgery, has less recovery time, and requires a shorter hospital stay than traditional Burch, it is not without its problems. It has a lengthy learning curve and takes a long time to operate.

Conflict of interest: None.

Financial disclosures: None.

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