

A Prospective Study of Minimally Invasive Burch Colposuspension: Our Experience

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Abstract

Background: Stress urinary incontinence (SUI) is a common condition among women and can significantly affect quality of life. Although midurethral sling procedures are widely used, Burch colposuspension remains an important non-mesh surgical option, particularly in women undergoing concomitant abdominal or laparoscopic procedures. This study evaluated the perioperative safety and clinical outcomes of minimally invasive laparoscopic Burch colposuspension in women with genuine SUI. **Material and Methods:** A prospective longitudinal study was conducted at GEM Hospital and Research Centre, Coimbatore, between January 2017 and April 2018. Twenty-four women aged 22–80 years with urodynamically confirmed genuine SUI were included. Laparoscopic Burch colposuspension was performed through either a transperitoneal or extraperitoneal approach. Patients were assessed postoperatively for resolution of symptoms and complications, with scheduled follow-up at one week, three months, and twelve months. Long-term follow-up was continued for up to three years. Data were entered in Microsoft Excel and analysed using Jamovi version 2.7.32. **Results:** All 24 women successfully underwent laparoscopic Burch colposuspension. The mean age was 45.21 ± 10.57 years and the mean body mass index was 29.29 ± 5.81 kg/m². The extraperitoneal approach was used in 13 patients (54.2%) and the transperitoneal approach in 11 (45.8%). Seventeen patients (70.8%) underwent concomitant laparoscopic procedures. The mean operative time was 43 minutes and the mean estimated blood loss was 38.13 ± 15.23 mL. No major intraoperative complications and no patient required conversion to laparotomy. The mean hospital stay was 2 days. Two patients (8.3%) developed postoperative urinary tract infection, which was managed conservatively. At three-year follow-up, no recurrence or persistence of SUI symptoms was reported. **Conclusion:** Minimally invasive laparoscopic Burch colposuspension demonstrated favourable perioperative safety and satisfactory long-term continence outcomes in women with SUI. It may remain a useful mesh-free surgical option.

Keywords: Stress urinary incontinence; Burch colposuspension; laparoscopy; minimally invasive surgery.

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INTRODUCTION

Stress urinary incontinence (SUI) is a common condition that affects 4–35% of adult women.^[1] The emergence of laparoscopic techniques in the early 1990s provided a minimally invasive alternative to mitigate the significant morbidity associated with open retropubic surgery.^[2] Midurethral sling procedures have mostly replaced Burch colposuspension as the first-line surgical treatment for SUI.^[3] Despite significant evidence endorsing minimally invasive Burch colposuspension, ongoing assessment of long-term outcomes and technical enhancements is imperative. This study assesses the efficacy, safety, and outcomes of minimally invasive laparoscopic Burch colposuspension within our patient cohort, focussing on postoperative complications, and long-term quality of life outcomes.^[4]

MATERIALS AND METHODS

A prospective longitudinal study was conducted between January 2017 and April 2018 at GEM Hospital and Research Centre, Coimbatore. Twenty-four women aged 22–80 years with urodynamically confirmed genuine SUI were included. Ethical approval was obtained from the

institutional review board, and informed consent was taken from all participants.

Inclusion Criteria: Women with pure SUI suitable for laparoscopic surgery.

Exclusion Criteria: Mixed incontinence, detrusor instability, prior anti-incontinence surgery, neurological disorders, or pelvic malignancy.

The preoperative assessment comprised urine culture, urodynamic evaluation, and clinical examination. Two experienced endogynecologic surgeons did the surgery while the patient was under general anaesthesia. They used either transperitoneal or extraperitoneal laparoscopic techniques. Three bilateral non-absorbable sutures were inserted between

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the vaginal wall and Cooper's ligament. The catheterisation after surgery lasted for 72 hours. Patients were monitored at one week, three months and 12 months for the resolution of symptoms and the occurrence of complications. Long-term follow-up was subsequently continued for up to three years to assess recurrence or persistence of stress urinary incontinence and late postoperative outcomes. Data was entered into MS -Excel and analysed using Jamovi v-2.7.32

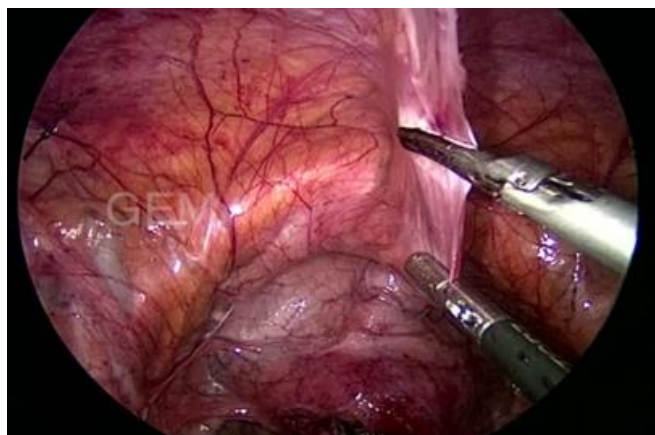


Figure 1: Incision given 2 cm above dome of the bladder

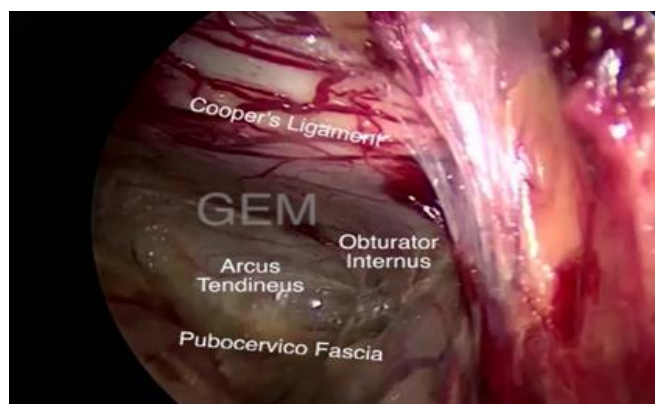


Figure 2: Space of Retzius and dissection continued laterally exposing the Cooper's ligament, obturator internus with its fascia until the Arcus tendineus fasciae pelvis.

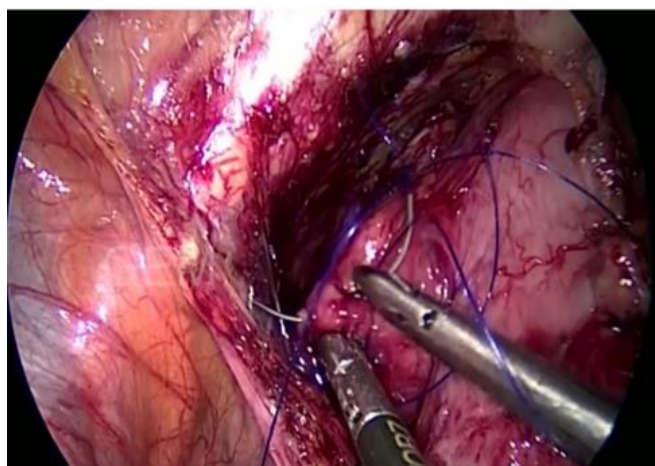


Figure 3: Suture taken in Cooper's ligament

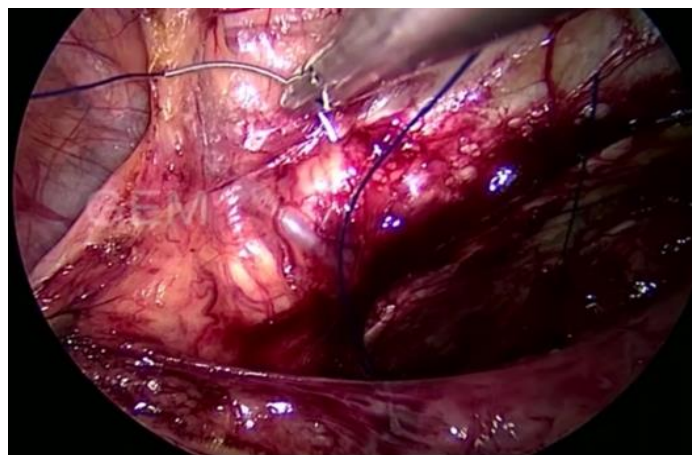


Figure 4: Three sutures are taken on either side

RESULTS

All 24 women underwent either a laparoscopic transperitoneal ($n = 11$) or extraperitoneal ($n = 13$) Burch colposuspension. The procedure was performed either alone or in combination with other laparoscopic surgeries. The mean age of women was 45.21 ± 10.57 years, mean height 153.08 ± 6.50 cm, mean weight 68.13 ± 11.39 kg, and mean BMI 29.29 ± 5.81 kg/m². The most common parity was 1 (41.7%) and 2 (41.7%).

Eight (33.3%) women had no previous surgeries, while 66.7% had undergone prior abdominal procedures. Seventeen (70.8%) underwent additional laparoscopic procedures such as IPOM, total laparoscopic hysterectomy (TLH), uterosacral colpopexy (USC), cholecystectomy, or paravaginal cystocele repair. The extraperitoneal route was used in 54.2% of cases.

The mean operative time was 43 minutes, and mean intraoperative blood loss was 38.13 ± 15.23 ml. There were no major intraoperative complications including bowel, bladder, ureteric, or neurovascular injury, and no conversions to laparotomy.

The average hospital stay was 2 days. Two patients (8.3%) developed postoperative urinary tract infections (UTI) on POD 14 and 16, both managed conservatively. All patients were followed up for three year, with no recurrence or persistence of SUI symptoms.

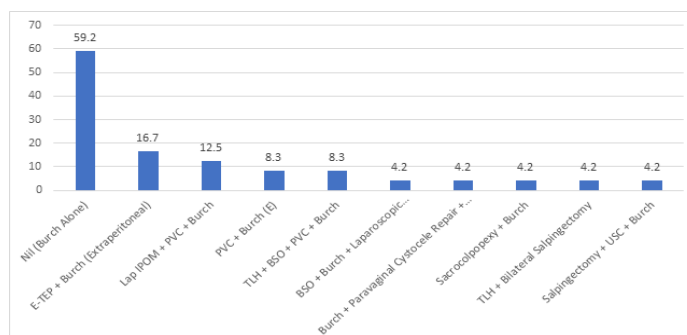


Chart 1: Concomitant Laparoscopic Procedures Performed with Burch Colposuspension

Abbreviations: PVC – Paravaginal cystocele repair; USC – Uterosacral colpopexy; BSO – Bilateral salpingo-oophorectomy.

Table 1: Baseline Demographic Characteristics of Study Participants (N = 24)

Parameter	Mean	Standard Deviation
Age (years)	45.21	10.57
Height (cm)	153.08	6.5
Weight (kg)	68.13	11.39
BMI (kg/m ²)	29.29	5.81

Table 2: Parity Distribution Among Participants

Parity	Frequency	Percentage (%)
1	10	41.7
2	10	41.7
3	3	12.5
4	1	4.2

Table 3: Previous Surgical History of Participants

Previous Surgery Type	Frequency	Percentage (%)
Diagnostic Laparoscopy	2	8.3
IPOM	1	4.2
Laparoscopic Sterilization	2	8.3
Nil (No Surgery)	8	33.3
Open Sterilization	3	12.5
Previous 1 LSCS	3	12.5
Previous 2 LSCS	2	8.3
Previous 3 LSCS	1	4.2
TAH with BSO	1	4.2
TAH + IPOM	1	4.2

Table 4: Route of Surgical Approach

Approach	Frequency	Percentage (%)
Extraperitoneal	13	54.2
Transperitoneal	11	45.8

Table 5: Postoperative Complications Observed

Postoperative Event	Frequency	Percentage (%)
Nil	22	91.7
POD 14 – Urinary Tract Infection	1	4.2
POD 16 – Urinary Tract Infection	1	4.2

DISCUSSION

The present prospective series suggests that laparoscopic Burch colposuspension is a safe and effective option for women with genuine stress urinary incontinence, with no major intraoperative complications, short hospitalization, and no symptom recurrence at three year follow up. This interpretation is broadly consistent with the contemporary literature, which continues to position Burch colposuspension as a durable non-mesh procedure, particularly relevant when synthetic mesh is contraindicated or when concomitant abdominal or laparoscopic surgery is planned.^[5-8]

The very favorable continence outcome in this cohort aligns with several studies showing that laparoscopic Burch colposuspension produces meaningful short- and medium-term symptom improvement and better quality of life.^[7,9,10] Long-term evidence also supports durability, although the apparent success rate tends to decline over time, with one series reporting 90.5% successful treatment at a mean follow-up of 50.6 months and another reporting 68.4% absence of SUI symptoms at a mean 14.2 years.^[7,11] This pattern suggests that the absence of recurrence in the present study is encouraging but should be interpreted cautiously, because small sample size can overestimate cure

when later recurrence and delayed pelvic floor symptoms are not yet captured.^[10,12-14]

When compared with mid-urethral slings, the current evidence suggests that Burch colposuspension remains competitive in efficacy, although the balance of perioperative convenience often favors sling procedures. A large matched long-term study found no significant difference between open Burch and retropubicmidurethral sling in ongoing SUI, patient-reported success, satisfaction, recommendation rates, or repeat incontinence surgery.^[5] Randomized short-term data also showed no significant difference between laparoscopic Burch and single-incision midurethral sling in objective or subjective success at six months, with both improving quality of life.^[15] Comparisons with transobturator tape are more mixed: some cohorts found similar cure rates between modified laparoscopic Burch and TOT, whereas others reported more favorable continence status, sexual outcomes, or lower cost with Burch, albeit usually at the expense of longer operative time and hospitalization.^[12,16] At the same time, sling procedures can introduce mesh-specific complications such as exposure or dyspareunia, which preserves a meaningful role for Burch in appropriately selected women.^[5,8,12]

Taken together, the present study supports the view that laparoscopic Burch colposuspension remains a relevant modern

option for genuine SUI, especially as a mesh-free procedure in women already undergoing abdominal laparoscopy.

Limitations: The main limitations that should be acknowledged in the discussion are the small sample size, heterogeneity introduced by combined procedures, lack of a comparator arm, and limited follow-up.

CONCLUSION

Minimally invasive laparoscopic Burch colposuspension demonstrated favourable perioperative outcomes and sustained symptomatic continence during the follow-up in the women with genuine stress urinary incontinence. The absence of major intraoperative complications, low postoperative morbidity, and feasibility of performing the procedure with other laparoscopic surgeries support its as a mesh-free surgical option in women with genuine stress urinary incontinence.

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Conflicts of interest

There are no conflicts of interest.

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