Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.47750/jptcp.2022.926

Laparoscopic and open burch colposuspension for stress urinary incontinence: advantages and disadvantages

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Submitted: 17 February 2022; Accepted: 24 April 2022; Published: 16 June 2022

ABSTRACT

Objective: Stress urinary incontinence (SUI) causes a significant physical and psychological burden on women. The laparoscopic vaginal suspension (LC), used in the treatment of women with SUI, is known for its advantages such as smaller incisions, short hospital stays, and better aesthetic results. This article throws light upon the advantages and disadvantages of LC and open Burch vaginal (OC) incontinence along with its associated complications.

Patients and methods: Between December 1, 2017 and February 10, 2019, 26 women with SUI with physical, social, and psychological consequences from two hospitals were enrolled in this study. The sample was divided into two equal groups of 13 women each. Data were collected and statistically analyzed. $P \leq 0.05$ is statistically significant.

Results: The study showed that the operational time was significantly shorter in the OC method compared to the LC approach (59.2 ± 5.3 min and 91 ± 4.5 min, respectively). Mean blood loss was higher in the OC approach than in the LC approach (152.2 ± 30.3 and 143.3 ± 38.6, respectively). The LC approach has minimal pain and a shorter hospital stay compared to the OC approach. Patients with the LC approach required less analgesia (8.9 ± 1.3 mg vs 2.5 ± 1.8 mg) and less hospital stay (110.3 ± 11.4 h vs 70.2 ± 8.9 h) after surgery. Resumption of normal activity was faster in the LC approach [25.1 ± (12.6) days, 18.9 ± (12.5) days] than in the OC approach. There was no significant difference between the OC and LC approaches in terms of complications.

J Popul Ther Clin Pharmacol Vol 29(2):e20–e26; 16 June 2022.
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Conclusions: Although LC is a superior and less invasive approach than the OC approach in terms of hospital stay, blood loss, pain, and recovery time, the operation time is longer.

Keywords: *laparoscopy; stress; SUI; urinary*

INTRODUCTION

Stress urinary incontinence (SUI) is the involuntary leakage of urine on stress like cough, strain, or sneezing despite the absence of detrusor overactivity.[1] It is present in 15%–80% of women.[2] Urinary incontinence is a prevalent problem for many females. About a third of child-bearing women are incontinent during physical stress. If stress incontinence goes on in spite of medical treatment, surgery is usually recommended. A large number of women and their families spend their income on the treatment of SUI.

The prevalence of SUI is underrated as some women with SUI suffer silently.[3,4] SUI presents both physical and mental load on women and surgery is the most efficient treatment. Burch's retropubic colposuspension is one of the commonly used methods. The existing tendency for implementing less invasive surgery with a short stay in hospital, least complications, and quick return of women to normal activity had led to the emergence of laparoscopic surgery. Vancaillie and Schuessler studied laparoscopic Burch colposuspension in 1991.[5]

For the time being, most procedures in gynecology can be done by laparoscopy, so trials were done to reproduce the best tested Burch method using a laparoscopic technique.[6] The aim of this paper is to study the advantages and disadvantages of OC and LC methods for SUI with their related complications.

PATIENTS AND METHODS

Twenty-six females with SUI were enrolled for this research from December 1, 2017 to February 10, 2019. All participating women were asked to give their informed consent after a comprehensive explanation of the surgical procedures and their risks [open surgical colposuspension (OC) or laparoscopic colposuspension (LC)]. The study was done at Al-Diwaniyah Maternity and Children Hospital and Al-Furat Al Awsat Hospital. Data were analyzed statistically. The P-value of ≤0.05 has statistical significance.

Inclusion criteria: women with no previous stress incontinence surgery and with actual stress incontinence.

Exclusion criteria: women with urge incontinence, previous surgery for SUI, those willing to have children in future, those who are liable for hazards during general anesthesia (e.g., cardiac diseases, diabetes insipidus), abdominal obesity, and those with suspicion of intraperitoneal adhesions.

RESULTS

The characteristics of participants were compared in both LC and OC approaches preoperatively. Time of operation was significantly longer in the LC approach than in the OC approach. Less pain and the hospital stay was significantly shorter in the LC approach. Also, the intraoperative blood loss was lower in the LC approach. There was no significant difference in complications (intraoperatively or postoperatively) in both LC and OC approaches. Results are summarized in Tables 1.

DISCUSSION

The Burch colposuspension procedure seems to be efficient for the treatment of stress incontinence. The laparoscopic Burch colposuspension is becoming a more chosen option because of its benefits such as small incisions, good esthetic results,

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TABLE 1 Preoperatively considered variables.

Variables	Open approach	Laparoscopic approach	P-value
Age, Mean ± SD	51.9 ± 9.8	52.3 ± 10.6	NS
BMI, Mean ± (SD)	27.1 ± 4.7	27.8 ± 5.6	
Parity, Mean ± (SD)	2.7 ± 1.2	2.9 ± 1.4	
Weight (in kg), Mean ± (SD)	73.1 ± 12.5	75.3 ± 14.9	

BMI = Body Mass Index; NS = Not Significant.

TABLE 2 Operative and postoperative characteristics of the participants.

Characteristics	Open approach	Laparoscopic approach	P-value
Mean operative time (min)	91 ± 4.5	59.2 ± 5.3	<0.05
Operative blood loss (mL)	152.2 ± 30.2	143.3 ± 38.6	
Pain score	8.9 ± 1.3	2.5 ± 1.8	
Hospital stay (h)	110.3 ± 11.4	70.2 ± 8.9	
Return to normal activity (days)	25.1 ± 12.6	18.9 ± 12.5	

easy accessibility of Retzius space, better vision of the surgical field, minimum blood loss, and lesser need for postoperative analgesia, besides low cost and short hospital stay.[7–9]

The main objective of this paper is to throw light on the advantages and disadvantages of LC and OC procedures for urinary incontinence and their related complications. It revealed a significant difference in the operative time between LC and OC approaches. The time was short in the OC approach (59.2 ± 5.3 min) than in the LC approach (91 ± 4.5 min). This can be explained by the difficult operative approach of retropubic space and the usage of different types of sutures. The mean time of operation for LC in our study was consistent with other studies.[10,11] And it was inconsistent with data from other literatures.[12–14]

Considering the mean blood loss, our results showed that it is higher in the open approach than in the laparoscopic approach (152.2 ± 30.3 and 143.3 ± 38.6, respectively) and this coincides with the results of other researchers.[15,16] However, Walter et al.[12] found that the mean blood loss was significantly less in LC than in the OC approach.

In our study, the results revealed that women who are subjected to the LC approach seemed to have minimal pain and need lesser analgesia in comparison to the OC approach (2.5 ± 1.8, 8.9 ± 1.3), which is a significant difference and this finding is in agreement with other researches.[10,11,15,17] The minimal pain in the LP approach is clarified by the reality that the post-operative pain is chiefly linked to the length of skin incision rather than the procedures of operation.

The length of hospital stay in the OC approach was significantly longer (110.3 ± 11.4 h) compared to the LC approach (70.2 ± 8.9 h) and this can be attributed to minimum post-operative pain and quick healing in LC approach. Our results coincide with the results of other studies.[10,11,13,17]

With regard to the resumption of usual activity, women who underwent the LC approach showed significantly shorter recovery duration than those with the OC approach, and they stated resuming normal activity by approximately 6 days less than the OC approach.

Considering participants' satisfaction, no significant difference was seen between LC and OC approaches when followed up for1,6, and 12 months. There was no significant change detected over time in both operations as satisfaction is influenced by

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TABLE 3. Satisfaction of patients.

Patient's satisfaction	Open approach	Laparoscopic approach	P-value
1 month			NS
Satisfied	(8) 61.5%	(10) 76.9%	
Not satisfied	(5) 38.5%	(3) 23.1%	
6 months			NS
Satisfied	(9) 69.2%	(11) 84.6%	
Not satisfied	(4) 30.8%	(2) 15.4%	
12 months			NS
Satisfied	(10) 76.9%	(12) 92.3%	
Not satisfied	(3) 23.1%	(1) 7.7%	

TABLE 4. Complications in both OC and LC methods.

Complications	Open approach	Laparoscopic approach	P-value
Bladder perforation	(0) 0.0%	(1) 7.7%	NS
Wound infection	(1) 7.7 %	(1) 7.7 %	
Urinary tract infection	(2) 15.3 %	(0) 0.0 %	
Fever	(3) 23.1 %	(1) 7.7 %	

some variables like services offered in the hospital and postoperative urinary problems.[11] All patients were checked out postoperatively and the contact was continued either by consultation or telephone.

Regarding the complications (both intraoperative and postoperative), no significant difference was observed in OC and LC approach. Bladder perforation was handled by laparoscopy. Wound infections and urinary tract infections are treated appropriately. These findings are in line with many other works of literatures.[10,13,14,16,18–28] Kitchener et al.[29–33] found that bladder injury is significantly lesser in the LC approach than in the open approach, and wound infection is significantly higher in the open approach than in the LC approach and this is consistent with our findings.

CONCLUSIONS

The laparoscopic procedure is a superior and less invasive approach in comparison with the open Burch approach for SUI considering the advantages such as a short hospital stay, less blood loss, lesser pain and post-operative period, and a short recovery period.

ETHICAL APPROVAL

The manuscript is written in original and all data and results pertaining to this manuscript are original according to the research performed. The authors followed academic integrity and have not copied any content/results from another source.

FUNDING

The authors of this manuscript did not receive any funding to perform the present research.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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INFORMED CONSENT

The authors agree to publish this research in the journal if considered by the editors of the journal. The authors provide full consent for reviewing and publishing this manuscript.

AUTHORS CONTRIBUTION

All the authors of this study contributed equally in terms of performing the research as well as preparing the manuscript. All of them followed the guidelines of the corresponding author. For any query/suggestion related to the manuscript reach out to the corresponding author.

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