

DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20230816>

Original Research Article

Total laparoscopic hysterectomy in patients with previous caesarean section: experience at a tertiary care center in India

Archana Minz, Rinchen Zangmo, Preeti Deedwania*, Kallol Kumar Roy, Avir Sarkar, Deepika Kashyap

Department of Obstetrics and Gynecology, AIIMS, New Delhi, India

Received: 15 February 2023

Accepted: 07 March 2023

***Correspondence:**

Dr. Preeti Deedwania,

E-mail: drpreetideedwania@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: With a surge in the rate of caesarean deliveries, the number of patients undergoing hysterectomy with a previous caesarean section for gynecological complaints has also increased. The presence of intra-abdominal and bladder adhesions to the uterus is the main concern in such cases, resulting in higher complication rates. This study aimed to determine the challenges and complications encountered during TLH in patients with previous caesarean sections.

Methods: We conducted a retrospective study analysing data from the medical records of 243 patients who had undergone TLH for various gynecological conditions in a single tertiary care center from January 2018 to January 2021. Patients were categorized into two groups namely no previous CS (n=193) and previous CS (n=50). The surgical outcomes of those patients including major complications were measured.

Results: The clinical characteristics of the two groups were comparable except for the patient's age with younger patients in the previous CS group (p=0.001). There was no difference in terms of surgical indications, intraoperative and postoperative complications, and hospital stay between the groups. Operating time was significantly more in the previous CS group (p=0.001). One patient sustained a bladder injury in a previous CS group. The conversion rates to laparotomy in the previous CS and no CS groups were not statistically significant. Significant hemorrhage requiring blood transfusion was noted in two patients (4%) in the previous CS group and one (0.51%) patient in the no CS group (p=0.108).

Conclusions: TLH can be safely performed with lower complication rates by an experienced surgeon in patients with prior history of caesarean section.

Keywords: Adhesions, Caesarean section, Total laparoscopic hysterectomy

INTRODUCTION

Caesarean delivery is in rising trend and is the most commonly performed surgery all over the world. Caesarean section (CS) rate in India has increased from 8.5% in 2005-06 to 17.2% in 2015-16, with rates from 27.7 to 40.9% in private facilities.¹ Therefore, our total laparoscopic hysterectomy TLH in patients with previous CS is also becoming increasingly common. There are

studies that have reported 30-90% occurrence of intra-abdominal adhesion in patients with history of previous laparotomies and rates of development of intra-peritoneal adhesion at second caesarean delivery with 24% to 46% which increased with increasing number of CS with 43% to 75% at third and up to 83% at fourth caesarean delivery.^{2,3} Adhesions cause distortion of normal anatomy of organs that are in close proximity to operation fields. Challenges are encountered during TLH in such cases due

to presence of intra-abdominal and bladder adhesion to the uterus which make dissection and mobilization of bladder off the cervix much more difficult with higher complication rates. Wang et al suggested that major complications and conversion rate to laparotomy were associated with an increased number of caesarean sections.⁴ Previous history of caesarean section is the most common risk factor for lower urinary tract injuries.⁵ Rooney et al reported 1.8% cases of incidental cystotomy and 62.5% of patient who sustained bladder injuries from laparoscopically assisted vaginal hysterectomy had history of caesarean section.⁶ Thermal injuries to the bladder manifesting as vesico-vaginal fistula was reported by Chapron et al with an incidence of 0.3 to 3.1 in 1000 advanced laparoscopic procedure.⁷ Laparoscopy has advanced rapidly over the past years and has become the gold standard for many gynaecological diseases from benign conditions to endometrial cancer. Reich was the first to report total laparoscopic hysterectomy in 1989 since then laparoscopic hysterectomy has been accepted as a safe alternative for abdominal hysterectomy with numerous benefits including low morbidity and rapid postoperative recovery.⁸⁻¹⁰ However, TLH requires greater surgical expertise than any other methods of hysterectomy.¹¹

We aimed to study challenges and complications encountered during TLH and safety of the procedure in patients with history of previous caesarean section.

METHODS

The present retrospective study was conducted for TLH performed between January 2018 and January 2021 in the division of minimally invasive gynecological surgery in a tertiary care center.

A total of 243 patients underwent TLH during this time period. The patients were classified into two groups based on whether they had undergone CS previously or not. Data on age, parity, body mass index, surgical indications, duration of operation, major intra and post-operative complications, length of hospital stay were reviewed and compared. Major complications included presence of lower urinary tract injury (bladder or ureteric injury), bowel injury or significant hemorrhage. All the patients were evaluated by detailed clinical history and physical examination. Previous surgical and medical history were also noted. Patients underwent pelvic ultrasound, complete blood counts, liver and kidney function tests, pap smear and endometrial sampling. They were admitted 1 to 2 days prior to the date of proposed surgery for pre-operative investigations and pre-anaesthetic clearance. All patients received prophylactic antibiotic 30 minutes prior to the procedure.

All surgeries were performed by single experienced surgeon under general anesthesia. Mangeshkar uterine manipulator was used for uterine manipulation and delineating vaginal cuff. Harmonic, Ligasure and bipolar

cautery were used as energy sources. Adhesions to the anterior abdominal wall were dealt using harmonic. Lateral bladder dissection technique using Harmonic ace+ Shears was performed in all cases. Both Ligasure and bipolar cautery were used during sealing of uterine vessels. Specimens were either retrieved via vaginal route or by an in-bag morcellation depending on the size of the uterus. Vault closure was done with barbed V-Loc sutures. Total duration of surgery was calculated from skin incision to closure. Estimated blood loss was collected. Catheter was removed depending on routine urine microscopy. Post-operative complications and duration of hospital stay was noted before discharge.

Major intra-operative complications included bladder injury in one patient (0.51%) in previous CS group, significant hemorrhage requiring transfusion in 3 patients, 1 (0.5%) patient in no CS and 2 (4%) patients in prior CS group and conversion to laparotomy in 3 (1.2%) patients, 2 patients with no CS and 1 patient with previous CS. Post-operative complications included low grade fever in 13 patients, 9 (4.6%) patients without prior CS and 4 (8%) patients in previous CS. 2 patients (1%) required re-admission in no CS group.

Statistical analysis

Statistical analysis was carried out using SPSS (IBM version 25.0) package. Normally distributed data were presented with descriptive statistics such as mean, standard deviation (SD) and range values. We compared mean values using Student's t-independent test between no CS and with previous CS group. Median values were computed for skewed data and compared using non-parametric Mann-Whitney U-test. Categorical data were presented as frequency and percent values. For statistical test a two-sided probability of $p < 0.05$ was considered as statistical significance.

RESULTS

Among 243 patients who underwent total laparoscopic hysterectomy for benign and malignant conditions 50 patients had history of previous one or more caesarean deliveries. There were 35 (14.4%) patients who had prior one caesarean section, 11 (4.5%) had prior 2 caesarean sections and 4 (1.6%) had prior 3 caesarean sections. The baseline characteristics were comparable between the groups except for age. Mean age was significantly lower in previous CS group (39.54 ± 4.25) than those with no CS group (44.37 ± 7.13) ($p = 0.001$). Parity and BMI were similar between the groups ($p = 0.116$), ($p = 0.271$) respectively. TLH was performed for benign conditions in 231 cases (96%) and for malignancy in remaining 12 (4%) cases. The most common indication for TLH in both the groups was leiomyoma (no CS group $n = 109, 56.4\%$; previous CS group $n = 24, 48\%$). Other indications and their frequencies are shown in Table 1.

Table 1: Indications for TLH.

Indications	No.CS	Previous CS	P value
	N (%)	N (%)	
Leiomyoma	109 (56.4)	24 (48)	.283
Leiomyoma with endometriotic cyst	5 (2.59)	4 (8)	.089
Adenomyoma	21 (10.88)	5 (10)	.999
Endometrial hyperplasia	11 (5.69)	2 (4)	.999
Endometriosis	3 (1.55)	1 (2)	.999
Failed medical treatment for AUB	13 (6.73)	7 (14)	.143
Endometrial polyp	7 (3.62)	4 (8)	.244
CIN/CIS	8 (4.14)	2 (4)	.999
Endometrial Ca	11 (5.69)	1 (2)	.468
Adnexal cyst	5 (2.59)	1 (2)	.999

Table 2: Analysis of major complications.

Complications	No CS (n=193)	Previous CS (n=50)	P value
	N (%)	N (%)	
Bladder injury	0	1 (0.51)	.995
Ureteric injury	0	0	0
Bowel injury	0	0	0
Significant blood loss	1 (0.5)	2 (4)	.108
Conversion to laparotomy	2 (1)	1 (2)	.499

Table 3: Surgical outcomes.

Variables	No CS		Previous CS		P value
	Mean (range)	SD	Mean (range)	SD	
Uterine size (weeks)	10.11 (6-24)	4.611	9.72 (6-18)	3.56	.575
Operating time(mins)	85.47 (40-195)	27.32	100 (45-160)	25.5	.001
Indwelling Foleys (days)	2.43 (1-7)	1.059	2.50 (1-14)	1.854	.727
Post-operative stay(days)	3.50 (2-10)	1.19	3.78 (2-7)	1.16	.142

Mean uterine size was 10.11 weeks in no CS versus 9.72 weeks in previous CS ($p=0.575$). Mean operating time was 85.47 ± 27.32 minutes in no CS and 100 ± 25.5 minutes in previous CS ($p=0.001$). Mean Foleys indwelling days was 2.43 and 2.50 days ($p=0.727$) and post-operative hospital stay was 3.50 and 3.78 days ($p=0.142$) between the group (Table 3).

Post-operative complications occurred in 13 patients, 9 (4.6%) patients in no CS and 4 (8%) patients in previous

Adhesions were formed in 24 (17.2%) patients without prior CS and in 34 (68%) patients with previous CS. Endometriosis and infection were the cause of adhesions in no CS group. In previous CS group intra-abdominal adhesions was found in 15 patients and bladder adhesions in 9 patients and in 10 patients both intra-abdominal and bladder adhesions were present. Bladder was densely adhered up to the uterine fundus in 2 of these cases. Adhesiolysis was meticulously done. Lateral bladder dissection approach was performed in all cases with previous caesarean sections to minimize bladder and ureteric injury.

Major complication rate was 2.8% ($n=7$) with 4 cases in no CS and 3 cases in previous CS and was not statistically significant between the groups (Table 2). There was bladder injury in 1 case (.51%) in previous CS and none in no CS ($p=0.995$), which was diagnosed and repaired laparoscopically during the surgery. Significant hemorrhage requiring transfusion occurred in 1 (.5%) case in no CS and 2 (4%) cases in previous CS group ($p=0.108$).

Conversion to laparotomy was required in 3 (1.2%) patients, two cases with no CS and one case with previous CS ($p=0.499$). Reasons for conversion in no CS was inaccessibility to the uterine pedicles and hindrance to direct vision in one patient due to two large laterally located fibroids FIGO type 5 (15x10 cm and 8x10 cm) and in another patient due to dense adhesion of the sigmoid colon to the posterior surface of uterus with complete obliteration of pouch of Douglas. In previous CS group, one patient with history of previous 1 CS and laparoscopic myomectomy was converted to open laparotomy due to dense adhesion to the anterior abdominal wall, sigmoid colon being adherent to the posterior wall of the uterus and pouch of Douglas completely obliterated.

CS ($p=0.313$). All the patients had post-operative low-grade fever which was managed with antibiotics and antipyretics. There were 2 (1%) re-admissions in no CS group, one patient with vaginal bleeding and one with abdominal pain. Both were conservatively managed.

DISCUSSION

With increasing caesarean rates gynecologists are facing a greater number of patients of hysterectomy with history of

previous CS. Pelvic adhesion develop in one to two thirds women with previous caesarean section. Bladder adhesion poses technical difficulties at the time of bladder dissection during TLH and sometimes might lead to inadvertent lower urinary tract injury. Dense adhesion and anatomical variation in these cases cause difficulty in dissecting tissue planes, significant hemorrhage, prolonged surgery and unrecognized thermal injuries leading to late onset fistulae. Currently, TLH has emerged as an alternative to TAH with the benefits of magnifications, lesser morbidity, rapid recovery and shorter hospital stay. In our study, patients in the prior CS group were younger than no CS group and this result was consistent with previous studies by Koroglu et al and Jo et al.^{12,13} Mean operating time was statistically significantly longer in the prior CS than in the no CS group ($p=0.001$). Lim et al had reported similar findings in their study and attributed adhesions as the reason for prolonged duration of surgery.¹⁴ Previous history of caesarean section is a common risk factor for lower urinary tract injury.

We found that the lateral window technique using Harmonic ace+ Shears was effective for bladder dissection in all patients, irrespective of the number of previous caesarean sections.

In scarred uterus dense adhesion and fibrosis between bladder and lower part of uterus may be present in the midline at the site of previous Kerr incision on the uterus which is made to open the uterine cavity during lower segment caesarean section therefore any attempt to push the bladder down in the midline might lead to unintentional bladder injury. Lateral dissection of bladder in such cases is the safest approach as at this site adhesion is less dense and bladder is not in direct contact with the uterus.

Sinha et al described the feasibility and technique of lateral bladder dissection during TLH in 261 patients with previous CS and reported bladder injury in 2 patients which was repaired laparoscopically.¹⁵ In our study one (0.51%) patient with dense bladder adhesion experienced bladder injury which was detected intra-operatively and repaired laparoscopically during same surgical act. Donnez et al reported overall complication rate of 1.59% and 0.56% of urinary tract injuries.¹⁶ We noted overall complication rate of 2.8% with 0.51% urologic injuries. Pellet et al also reported 1% rate of bladder injury in their TLH series and found that previous CS as well as previous laparotomy were the main risk factors associated to bladder injury.¹⁷ Cho described a technique to deal with severe adhesions between the bladder and uterus and the rectum in laparoscopic-assisted vaginal hysterectomy.¹⁸ Cho used a combined vaginal and laparoscopic approach to deal with bladder adhesions in women with previous caesarean sections. Chen et al reported that transvaginal lateral intervention may be helpful to minimize bladder injuries during laparoscopic-assisted vaginal hysterectomy in patients with previous caesarean section deliveries.¹⁹ The conversion rate to laparotomy in our study in the previous CS and no CS groups were 2% and 1% respectively which was comparable with Korolu et al who

reported conversion rate of 2% and 1.7% respectively in previous CS and no CS, the factor that led to conversion was large uterine size with laterally located fibroid complicating access to the uterine vessels.¹¹ Mean hospital stay and duration of indwelling foleys catheter was longer in this study as it is our routine practice to admit the patients 1 to 2 days prior to the surgery and post-surgery foleys removal is done on the basis of routine microscopic examination of urine for red blood cells.

The results of this study demonstrate that TLH can be safely performed in patients with history of previous CS since we did not find any significant difference in terms of major complications between no CS and previous CS group.

CONCLUSION

Total laparoscopic hysterectomy constitutes a good surgical option for cases with previous CS as it can be safely performed by experienced surgeon with lower complication rates.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. International Institute for Population Sciences. (2017). NFHS-4 (National Family Health Survey-4)-2015-16 India fact sheet. Available from: http://rchiips.org/nfhs/factsheet_nfhs-4.shtml. Accessed on 1 January 2021.
2. Brill AI, Nezhat F, Nezhat CH, Nezhat C. The incidence of adhesions after prior laparotomy: a laparoscopic appraisal. *Obstet Gynecol.* 1995;85:269-72.
3. Awonuga AO, Fletcher NM, Saed GM, Diamond MP. Postoperative adhesion development following caesarean and open intraabdominal gynaecological operations. *Reprod Sci.* 2011;18:1166-85.
4. Wang L, Merkur H, Hardas G, Soo S, Lujic S. Laparoscopic hysterectomy in the presence of previous caesarean section: a review of one hundred forty-one cases in the Sydney West Advanced Pelvic Surgery Unit. *J Minim Invas Gynecol.* 2010;17:186-91.
5. Soong YK, Yu HT, Wang CJ. Urinary tract injury in laparoscopic- assisted vaginal hysterectomy. *J Minim Invas Gynecol.* 2007;14:600-5.
6. Rooney CM, Crawford AT, Vassallo BJ, Kleeman SD, Karram MM. Is previous cesarean section a risk for incidental cystotomy at the time of hysterectomy? A case-controlled study. *Am J Obstet Gynecol.* 2005;193:2041-204.
7. Chapron C, Dubuisson JB, Ansquer Y, Fernandez B. Total hysterectomies for benign pathologies: laparoscopic surgery does not seem to increase the

- risk of complications. *J Gynecol Obstet Biol Reprod.* 1998;27:55-61.
8. Reich H. New techniques in advanced laparoscopic surgery. *Baillieres Clin Obstet Gynaecol.* 1989;3:655-81.
 9. Nezhat F, Nezhat C, Gordon S, Wilkins E. Laparoscopic versus abdominal hysterectomy. *J Reprod Med.* 1992;37:247-50.
 10. Walsh CA, Walsh SR, Tang TY, Slack M. Total abdominal hysterectomy versus total laparoscopic hysterectomy for benign disease: a meta-analysis. *Eur J Obstet Gynecol Reprod Biol.* 2009;144:3-7.
 11. Johnson N, Barlow D, Lethaby A, Tavender E, Curr E, Garry R. Surgical approach to hysterectomy for benign gynecological disease. *Cochrane Database Syst Rev.* 2006:CD003677.
 12. Koroglu N, Cetin BA, Turan G, Yıldırım GY, Akca A, Gedikbasi A. Characteristics of total laparoscopic hysterectomy among women with or without previous cesarean section: retrospective analysis. *Sao Paulo Med J.* 2018;136:385-9.
 13. Jo EJ, Kim TJ, Lee YY, Choi CH, Lee JW, Bae DS, et al. Laparoendoscopic single-site surgery with hysterectomy in patients with prior cesarean section: comparison of surgical outcomes with bladder dissection techniques. *J Minim Invas Gynecol.* 2013;20(2):160-5.
 14. Lim S, Lee S, Choi J, Chon S, Lee K, Shin J. Safety of total laparoscopic hysterectomy in patients with prior cesarean section. *J Obstet Gynecol Res.* 2017;43:196-201.
 15. Sinha R, Sundaram M, Lakhotia S, Hedge A, Kadam P. Total laparoscopic hysterectomy in women with previous cesarean sections. *J Minim Invas Gynecol.* 2010;17:513-7.
 16. Donnez O, Jadoul P, Squifflet J, Donnez J. A series of 3190 laparoscopic hysterectomies for benign disease from 1990 to 2006: evaluation of complications compared with vaginal and abdominal procedures. *BJOG.* 2009;116:492-500.
 17. Lafay Pillet MC, Leonard F, Chopin N, Malaret JM, Borghese B, Foulot H, et al. Incidence and risk factors of bladder injuries during laparoscopic hysterectomy indicated for benign uterine pathologies: a 14.5 years experience in a continuous series of 1501 procedures. *Hum Reprod.* 2009;24(4):842-9.
 18. Cho FN. A technique to deal with severe adhesions between the uterus and bladder or rectum in laparoscopic-assisted vaginal hysterectomy. *J Minim Invas Gynecol.* 2007;14:750-1.
 19. Chen SY, Namgung S, Choi J, Hwang S. 312: A method to prevent bladder injury in laparoscopically assisted vaginal hysterectomy (LAVH) for patients with vesicocervical adhesions. *J Minim Invas Gynecol.* 2007;14(6):S114.

Cite this article as: Minz A, Zangmo R, Deedwania P, Roy KK, Sarkar A, Kashyap D. Total laparoscopic hysterectomy in patients with previous caesarean section: experience at a tertiary care center in India. *Int J Reprod Contracept Obstet Gynecol* 2023;12:1078-82.