Outcome of total laparoscopic hysterectomy in women with previous caesarean section

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ABSTRACT

Aims: To assess the surgical outcome of total laparoscopic hysterectomy performed in women with previous caesarean section.

Methods: This is a cross sectional analytical study conducted at Birat Medical College, Teaching Hospital from 1 May 2019 to 28 February 2020. One hundred thirty patients undergoing total laparoscopic hysterectomy were categorized in two groups with and without previous caesarean section. The data were entered into Microsoft Excel and analyzed by using statistical package for social studies (SPSS 23.0).

Results: The overall complication rate was 3.87% (5/130) with 4.61% (3/65) in previous cesarean section and 3.07% (2/65) without it. Urinary tract injury was the common injury. Mean operating time was slightly higher in previous cesarean section but was not statistically significant.

Conclusions: Total laparoscopic hysterectomy can be performed in patients with previous caesarean section without any significant increase in intraoperative and immediate postoperative complications.

Keywords: adhesion, caesarean section, hysterectomy, laparoscopic

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INTRODUCTION

Caesarean section (CS) and hysterectomy are frequently performed major gynecologic surgeries.[1] Overall CS rate in Nepal was 9% in 2016 (7.1% in rural as compared to 19% in urban area).[2] With higher caesarean sections rates, number of hysterectomies with previous history of caesarean section is also high.[3] Pelvic adhesions develop in one to two thirds of women with previous caesarean section and contribute to urinary bladder, ureter and bowel injuries, and prolonged operation times.[4,5] Adhesions are usually formed between urinary bladder and uterus and causes difficulty in dissection and mobilizing the urinary bladder from the uterus.

Advantages of laparoscopic hysterectomy are decreased blood loss, reduced hospital stay and less postoperative pain.[6] Total laparoscopic hysterectomy (TLH) has been regarded as a safe surgical procedure. However, bowel, urinary tract or major blood vessel injuries may result during laparoscopic hysterectomy. Higher rates of complications were reported during laparoscopic hysterectomy in women with previous caesarean section.[7] Complication rate was 8.8% in women with no previous caesarean section and 14.2% in women with previous caesarean section.[8] Later, lesser complications were reported. Complications after TLH was only 3.2 % in women who had no laparotomy in the past and in 2.8% in women who had history of laparotomy in past.[9]

In Nepal, effects of previous caesarean section on outcomes of total laparoscopic hysterectomy have not been studied yet. As laparoscopy is the most common route of hysterectomy in Birat Medical College, this study has been conducted to assess the influence of previous caesarean section on the outcomes of total laparoscopic hysterectomy.

METHODS

This is a cross sectional analytical study conducted in 130 patients who underwent total laparoscopic

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hysterectomy (TLH) in Department of Obstetrics and Gynecology of Birat Medical College, Teaching Hospital from May 1, 2019 to February 28, 2020 following ethical approval. The patients were categorized in two groups with past cesarean section and without cesarean section and laparotomy. An informed written consent was taken and structured performa was used to collect data.

Women with history of laparotomy in the past for any reason except caesarean section and women with malignancy of genital organs were excluded from the study. All cases with past cesarean section were 65 and equal number of comparators was taken.

The outcome variables were time taken for the surgery (port opening to closure), conversion to laparotomy, intraoperative complications like excessive bleeding during surgery, urinary tract injury (urinary bladder and ureter), bowel injury, need for blood transfusion and total days of postoperative hospital stay. These parameters were compared between the two groups. In order to reduce the effect of surgeons skill related variability, only two surgeons with minimum of five years' experience on gynecological laparoscopy performed all the total laparoscopic hysterectomies during the study period. The sample size was calculated assuming the overall complication rate of 3.2% without previous laparotomy and 2.8% in previous laparotomy patients[9], and considering 80% of power of study with 5% of level of acceptance. Minimum number of subjects required for the study in each group was calculated to be 55.

The observation parameters were saved in Microsoft excel and statistical analysis was done with IBM SPSS version 23. The continuous data were presented as mean and standard deviation while categorical data were presented as frequency and percentage. T test and Chi Square test were applied for continuous and categorical data respectively. A p-value less than 0.05 was considered statistically significant

Four ports were made in anterior abdominal wall, small specimen was removed through vaginal route and large specimens were removed by morcellation. The vaginal cuff was closed with intracorporeal suturing.

RESULTS

One hundred and thirty women who underwent total laparoscopic hysterectomy, 65 in each, were included in the study. Among 65 cases of TLH with previous caesarean section (CS), 52 had previous 1 CS, 10 had previous 2 CS and 3 had previous 3 CS.

The maximum number of patients was in 40-60 years age group [Table-1].

Table-1: Age distribution of cases underwent total laparoscopic hysterectomy (N=130)

Age (years)	Past CS	Comparator
30 - 40	6	4
40-50	31	35
50- 60	25	16
> 60	3	10
Total	65	65

Mean age, parity, height and weight were comparable in both groups (Table-2).

Table-2: Characteristics of patients undergoing TLH

Variables	Past CS (n=65)		Comparator (65)		p-value
	Mean± SD	Range	Mean± SD	Range	
Age (years)	48.36± 10.78	32 - 64	50.23± 11.84	32- 81	0.35
Parity	2.64± 0.71	1-4	2.67± 1.13	1-7	0.85
Height (cm)	156.40± 4.82	145 - 172	156.90± 4.94	147 - 170	0.72
Weight (Kg)	66.93± 6.1	49- 83	64.64± 7.2	45 -85	0.06

The common indications for hysterectomies were abnormal uterine bleeding, chronic pelvic pain, ovarian cyst and fibroid uterus [Table-2].

Table-3: Indications of TLH in past cesarean section

Indications for TLH	Past CS (n=65)	Comparator (n=65)
Abnormal Uterine Bleeding	16 (24.61%)	20 (30.76%)
Chronic Pelvic Pain	16 (24.61%)	6 (9.23%)
Ovarian cysts	14 (21.53%)	11 (16.92)
Fibroid	12 (18.46%)	13 (20%)
Endometriosis	5 (7.69%)	7 (10.76%)
Postmenopausal bleeding	2 (3.07%)	3 (4.61%)

Indications for TLH	Past CS (n=65)	Comparator (n=65)
Cervical precancer 2/3	0 (0%)	2 (3.07%)
Endometrial hyperplasia	0 (0%)	2 (3.07%)
Pyometra	0 (0%)	1 (1.53%)

Urological complication rate was 3.87% (5/130) and the difference was not statistically significant. Bladder injury in past CS was due to dense adhesion and pelvic endometriosis in comparator group. All bladder injuries occurred during dissection of bladder from uterine wall. All the urinary bladder injuries were identified during surgery and repaired immediately by laparoscopy. Ureteric injuries were thermal injuries and Double-J stenting was done after Cystoscopy and ureterorenoscopy with assistance from urologist. One case in comparator group had excessive intraoperative bleeding and rest had pre-existing anemia [Table-4].

Table-4: Complications of TLH (n=5)

Complications	Past CS	Comparator	p-value
Urinary bladder injury	2	1	p=0.64
Ureteral injury	1	1	
Blood transfusion	5	4	p=0.73

There was no conversion to laparotomy, major vessels injury or mortality. Mean Operating time was 71.86±18.58 minutes (range: 45-125) in past CS and 67.38±12.68 minutes (range: 40-95) in comparator. The difference was not statistically significant (p=0.09). Mean total post operative hospital stay was 3.13±0.39 days (range: 3-5) in past CS and 3.1±0.65 days (range: 2-5 days) in comparator. The difference was not statistically significant (p=0.74).

DISCUSSION

Pattern of adhesion were similar and urinary tract injuries were also comparable to other studies; and these were not statistically significant. Adhesions are found in 45% of women with history of caesarean section.[10] In cases with previous caesarean section, adhesions are found primarily between the uterus and abdominal wall or between the uterus and bladder.[5] Previous caesarean section predisposes to bladder injury; previous bowel/pelvic surgery predisposes to bowel injury and endometriosis to ureter injury. Organ injury was found in 4.3% of the women with adhesions and previous caesarean section compared with 3.2% of women with adhesion and no caesarean section.[10] Seo ES et al (2018) reviewed 331 cases of total laparoscopic hysterectomy in which 186 had no any abdominal surgery and 145 had abdominal surgery in past. Complications occurred in 6 patients (3.2%) in 'no previous abdominal surgery' group and in 4 patients (2.8%) in 'previous abdominal surgery' group.[9] Koroglu N et al (2018) reported major complications rate of 5.1% (3/59) in previous CS group and 1.3 %(6/446) in no CS group during laparoscopic hysterectomy, which was statistically not significant.[13] This study revealed overall complication rate of 3.87% (5/130); 4.61% in group 1 (3/65) and 3.07% (2/65) in group 2. The difference is statistically not significant (p 0.64). There were 3 urinary bladder injuries and 2 ureteric injuries out of 130 operations. This study revealed that previous caesarean section does not increase the incidence of complications during total laparoscopic hysterectomy as compared with women without previous caesarean section.

Earlier studies noted higher rates of adjacent organ injury, postoperative infection, and blood transfusion among women undergoing hysterectomy who had a previous history of caesarean.[11] Overall complication rate was better in this study than the report (8.8% in non CS group and 14.2% in previous CS group) from Wang L et al (2010) who retrospectively evaluated 574 patients with 141 (24.6%) patients who had at least or more caesarean section in past.[8] Lindquist et al (2017) concluded that women with at least one previous caesarean section in past had an increased risk of complications when undergoing hysterectomy later. Perioperative and postoperative complications were more frequent in women with previous caesarean section.[12]

Mechanisms of urinary injuries are similar to this study though not in significant level. The incidence of lower urinary tract injury has been found in 0.30% for all gynecological surgeries, 0.33% for gynecological laparoscopy and 1.3% for laparoscopic hysterectomy.[14,15] Urinary bladder injury has been reported to 0.7% to 1.5% in total laparoscopic

hysterectomy. [16] Use of electrosurgical unit is associated with bladder injury. Bladder injury can occur during dissection of densely adhered bladder.[17] Inan AH et al (2018) evaluated the incidence of lower urinary tract injury on 547 patients who underwent TLH and found that only 11 of 547(2.01%) had lower urinary tract injury, 7 were urinary bladder injury and 4 were ureteric injury and they concluded that ureteric and urinary bladder injuries were significantly higher in women with history of previous caesarean section.[18]

In a metaanalysis, Rattanakanokchai S et al (2019) analyzed 54815 women with hysterectomy from 26 studies and found that complications like urinary tract injury were higher in women with previous CS.[3] In a study of 509 laparoscopic hysterectomy, incidence of bladder injury was 1% and previous caesarean section double the risk of bladder injury (OR 2.04).[19] But others reported fewer complications during total laparoscopic hysterectomy. Sinha R et al (2010) evaluated 261 women with at least previous one caesarean section who underwent total laparoscopic hysterectomy. Urinary bladder injury occurred only in 2 cases which were detected and repaired intraoperatively. There was no ureteric injury.[17] Koroglu N et al (2018) analyzed outcome of 505 TLH in which 446 (88.32%) had no previous CS and 59(11.68%) had previous CS. Urinary bladder injury occurred one in each group. One ureteric injury occurred in previous CS group only.[13] Similarly, Wang L et al (2010) reported the urinary bladder injury in 1.2% (5/433) in cases with no previous CS and 5% (7/141) in women with previous CS during laparoscopic hysterectomy. Ureteric injury occurred in only 2 patients (1.4%) in cases with previous CS. The cause of ureteric injury was thermal damage after bipolar diathermy in one case as in our case (p=0.84) and transaction of ureter during insertion of uterine manipulator in another case.[8]

Out of 505 laparoscopic hysterectomies, there were 3 bowel injury in no CS group and 2 bowel injury in previous CS group[13] and it was 1 in 256 (0.39%)[16] but in our study, there was no bowel injury in either group.

Mean operating time was comparable to the studies like 80 minutes in 261 cases (range: 30-240)[17] and 105.5 vs 94 minutes[9] but better than other studies like 183 vs 184 minutes[13] and 113±42.6 minutes.[18]

Intraabdominal adhesion due to previous surgery is one of the factors which determine conversion to lapatotomy during laparoscopic hysterectomy.[20] Conversion to laparotomy was significantly higher in CS group than in no CS group in a metaanalysis (RR= 2.03);[21] 2.0% (9/446) of women with no previous CS and 1.7% (1/59) of women with previous CS;[13] and 5.5% of 433) in no CS group and 15 patients (10.6% of 141).[8] The main reason for conversion to laparotomy in the previous CS group was dense bladder or bowel adhesion.[8] Fortunately, in our study, no women required conversion to laparotomy during total laparoscopic hysterectomy. Large fibroids and uterus were removed by morcellation when they cannot be removed through vagina.

Only 3 patients from 186 women with no laparotomy in past and 12 patients from 145 women with history of laparotomy in past needed blood transfusion.[9] Blood transfusion rates were higher in women with previous CS who were undergone TLH in a metaanalysis.[3] In our study, 5 (7.69%) women in group 1 and 4 (6.15%) in group 2 needed blood transfusions postoperatively as postoperative hemoglobin level was less than 8 gram%. The difference is statistically not significant (p 0.73). One case in no CS group required blood transfusion due to excessive bleeding during operation. All other 8 cases from both groups were anemic preoperatively due to heavy menstrual bleeding but they had average bleeding during surgery.

Duration of hospital stay was similar to other studies and no significant difference in two groups.[13,22,23]

This is a single centered clinical set up where selection bias could have occurred as its limitation.

CONCLUSIONS

Minimum invasive surgery like laparoscopy should be given priority to decide for the mode of treatment while it comes to either with or without history of previous caesarean section. Total laparoscopic hysterectomy is a safe operative procedure even in women with previous caesarean section and it does not increase any complications in an experienced surgical hands.

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