

Rising Trend of Laparoscopic Hysterectomy Over Abdominal Hysterectomy: A Comparative Study

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ABSTRACT

Aim: Hysterectomy is one of the most common surgeries being performed in perimenopausal women. It can be done either vaginally, abdominally or laparoscopically. The laparoscopic surgery is now on rising trend since it is associated with less perioperative complications, less postoperative pain, has better wound healing and early recovery and returns to normal activities. Hence, this study is being conducted to compare abdominal and laparoscopic hysterectomy.

Materials and methods: A retrospective observational study is conducted at the tertiary hospital. Total 135 women underwent surgery, of which 100 had an abdominal hysterectomy (TAH) while 35 had a laparoscopic hysterectomy (TLH). In mobile uterus of size <12 weeks, TLH was done. The comparison was done between two groups as per and postoperative complications.

Results: The mean age, parity, and BMI was comparable in two groups. Duration of hospital stay was significantly less in women who underwent TLH. Perioperative complications as bowel and bladder injury were found in 4 cases and all of them occurred during TAH. Wound sepsis was also seen during TAH only. However, postoperative blood transfusion was given in more number of women who underwent TLH than in TAH, although the difference was statistically insignificant.

Conclusion: Laparoscopic hysterectomy is preferred over open procedure as it is associated with less perioperative complications, shorter hospital stay, and wound complications.

Laparoscopic surgery is more beneficial to the patient than abdominal hysterectomy. However, the decision regarding the mode of surgery shall be based on patient consent and surgical expertise.

Keywords: Abdominal, Hysterectomy, Laparoscopy.

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INTRODUCTION

Hysterectomy is one of the most common surgeries being performed in women of perimenopausal age group. In earlier days, it is done either vaginally or abdominally.

The vaginal route is the most preferred method as it is associated with lesser per and postoperative complications with early recovery and lower morbidities. However, in cases where uterus size is large, removal of adnexa is required, or vaginal access is narrow, the abdominal route is preferred.

Abdominal hysterectomy is performed either by open technique (TAH) or laparoscopically (TLH/LAVH). Although TAH is a fast procedure with more cost effectivity, it is associated with more abdominal trauma, requires prolonged hospital stay and has a slower recovery rate. So, now a day, laparoscopic surgeries are on the inclining trends as it leads to less postoperative pain, has faster recovery, better wound healing and early return to normal activities.

Hence, this study is being conducted to compare perioperative and postoperative complications of abdominal and laparoscopic hysterectomy.

MATERIALS AND METHODS

A retrospective observational study was conducted in the Department of Obstetrics and Gynaecology at a tertiary hospital for seven months (February 2018 to August 2018), after clearance from the Institutional Ethical Committee.

A total of 135 women who underwent a hysterectomy during this period were included in the study. Out of these 135 women, 100 women (74.1%) had a TAH while 35 (25.9%) underwent a laparoscopic hysterectomy. Of these 35 women, 31 (88.6%) women had a TLH and in rest 4 women (11.4%), LAVH was done.

Most of these patients presented to the outpatient department of our institute with a chief complaint of abnormal menstrual cycles. Few of them, presented with abdominal pain or lump in the abdomen. After complete history and examination, ultrasound pelvis was done. All perioperative investigations were done, and the patient was taken up for surgery with informed consent.

Mode of hysterectomy was decided on basis of clinical findings (uterus size and mobility of uterus), radiological findings, patient consent, and surgical expertise. In women with the uterine size of <12 weeks with the mobile uterus and after informed consent, laparoscopic hysterectomy

was done. In women with obesity and previous surgeries, laparoscopy was preferred. Few cases with uterine size >12 weeks and fibroid size of 8 to 10 cm have also been operated laparoscopically.

The data was collected in form of a demographic profile, an indication of surgery, complications observed during surgery and postoperative complications. The comparison was done between two groups, women undergoing TAH (group I) and women undergoing TLH (group II). A p value <0.05 was considered significant.

Surgical Technique

After informed consent, the patient was taken for surgery. Surgery was done under general anesthesia with end tracheal intubation. The patient was placed in the dorsal lithotomy position. After per vaginam examination, the uterine manipulator (Marva's) was placed and Foley urinary catheter was inserted.

After creating CO₂ pneumoperitoneum with Veress needle, a 10 mm trocar was placed at the supra-umbilical

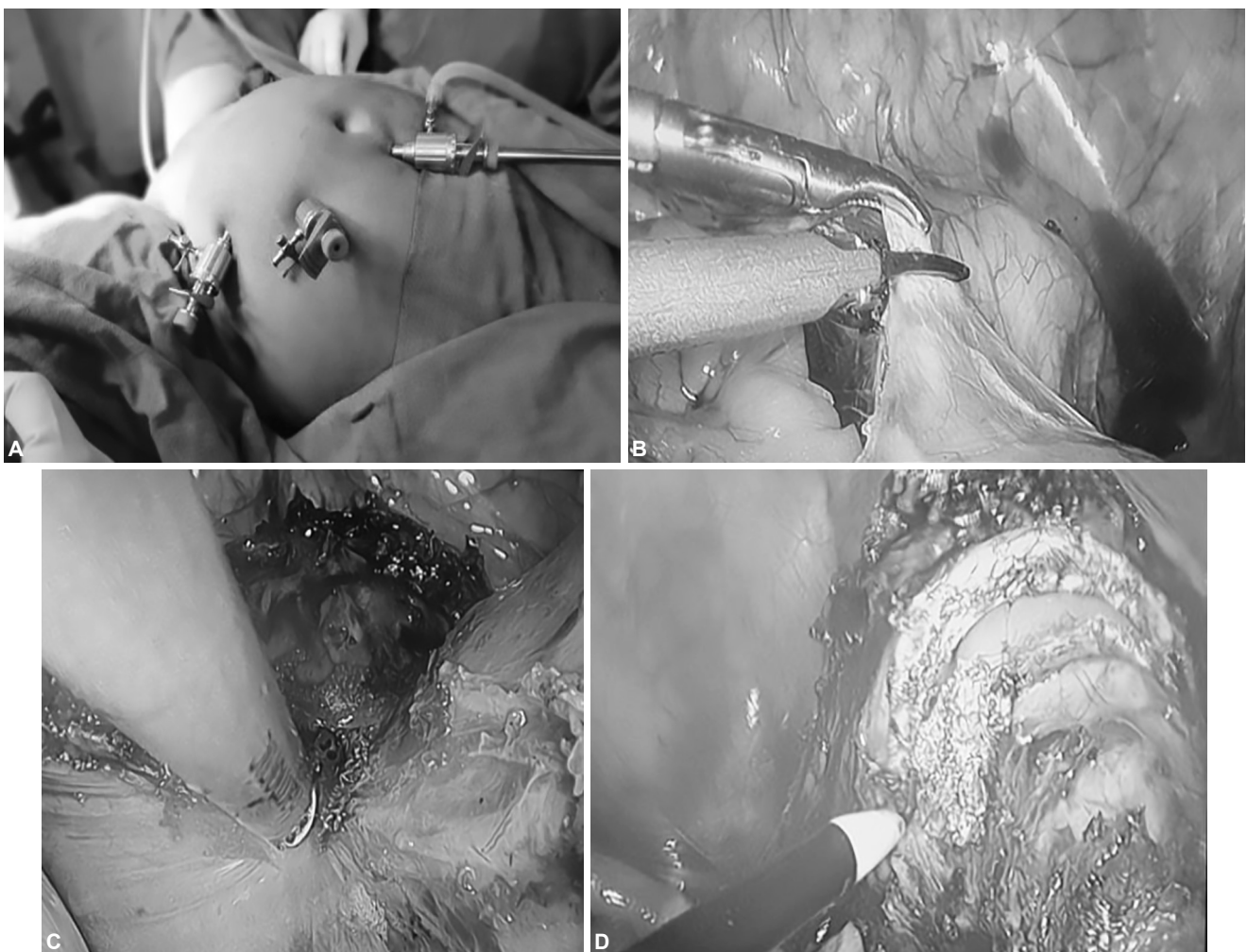
site. Two ancillary 5 mm trocars were placed as shown in Figure 1A. In cases with the large uterus or big fibroid, another 5mm trocar was placed on the lateral side for uterine manipulation by introducing myoma screw.

The round ligament was first cauterized with bipolar forceps and then cut with Enseal forceps. Similarly, fallopian tube and ovarian ligament were also cauterized and cut.

After cutting the fundal structures, the vesicouterine fold of peritoneum was opened by the harmonic blade in the central part of the lower uterine segment. After that, bladder dissection is continued in either direction and bladder is pushed downwards. During this step, a cup of the uterine manipulator is pushed inside to locate the right cleavage plane (Fig. 1B).

After careful skeletonization, the uterine artery was coagulated with bipolar forceps and cut with scissors or harmonic blade (Fig. 1C). The uterosacral ligaments were then coagulated and sectioned, by harmonic.

Lastly, circular colpotomy was then done by using the unipolar hook (Fig. 1D) and the uterus was removed



Figs 1A and D: (A) Laparoscopic image showing placement of supra-umbilical 10mm port and two ancillary 5 mm ports; (B) Laparoscopic image showing bladder dissection via opening of vesico-uterine fold of peritoneum by harmonic blade; (C) Laparoscopic image showing coagulation of uterine artery followed by cutting by harmonic forceps; (D) Laparoscopic image showing circular colpotomy by unipolar hook

through the vagina. The vault was closed vaginally in all the cases. Hemostasis was checked and port sites were closed.

Abdominal hysterectomy was performed according to the technique described by Mattingly and Thompson¹ for benign disease.

RESULTS

The demographic profile of patients has been shown in Table 1. The mean age of women undergoing TAH and TLH was 46.8 ± 6.3 years and 46.4 ± 7.6 years, respectively. In 41% of cases with previous surgery, TAH was done while TLH was done with 50% of women with a history of prior surgery. No significant difference was found in demographic profile among two groups. Average BMI was higher in women undergoing TAH than TLH. However, no significant difference was found. Although no significant difference was found in BMI among the two groups, but after developing good expertise in surgery, the authors here started to prefer TLH in women with morbid obesity.

Indication of surgery is shown in Table 2. It was found that most common indication of hysterectomy was fibroid uterus in both the groups. However, it was found that in women with ovarian cyst, more commonly TAH was performed. This can be explained on basis of size of ovarian cyst, making laparoscopic surgery difficult and secondly could be due to suspicion of malignancy in such cases.

Peroperative and postoperative complications are shown in Table 3. Mean duration of hospital stay was lesser in group II with mean values of 6.93 ± 2.1 days and 4.68 ± 1.3 days in group I and group II respectively, with difference being statistically significant. Postoperative was also found less in women who underwent TLH. Most of the patients did not require intravenous analgesics after 2 days of laparoscopic surgery and were comfortably discharged on day 4/5.

It was found that bladder injury occurred in two cases; both of them were operated by open technique (TAH). In both of these cases, there was history of previous two caesarean sections and bladder was completely adherent over the uterus. Bowel injury occurred in two women who underwent TAH. No visceral injury was reported in group II (TLH).

Among postoperative complications, it has been observed that postoperative fever and abdominal distension was found in more number of women who underwent TAH. This might be explained on basis of more tissue handling and prolonged environmental exposure during open surgery as compare to minimal invasive surgery.

Stitch line sepsis occurred in seven cases (5.1%), all of which occur after TAH. No wound sepsis occurred after TLH showing better wound healing after laparoscopic surgery.

Table 1: Demographic profile of women who underwent TAH (group I) and TLH (group II)

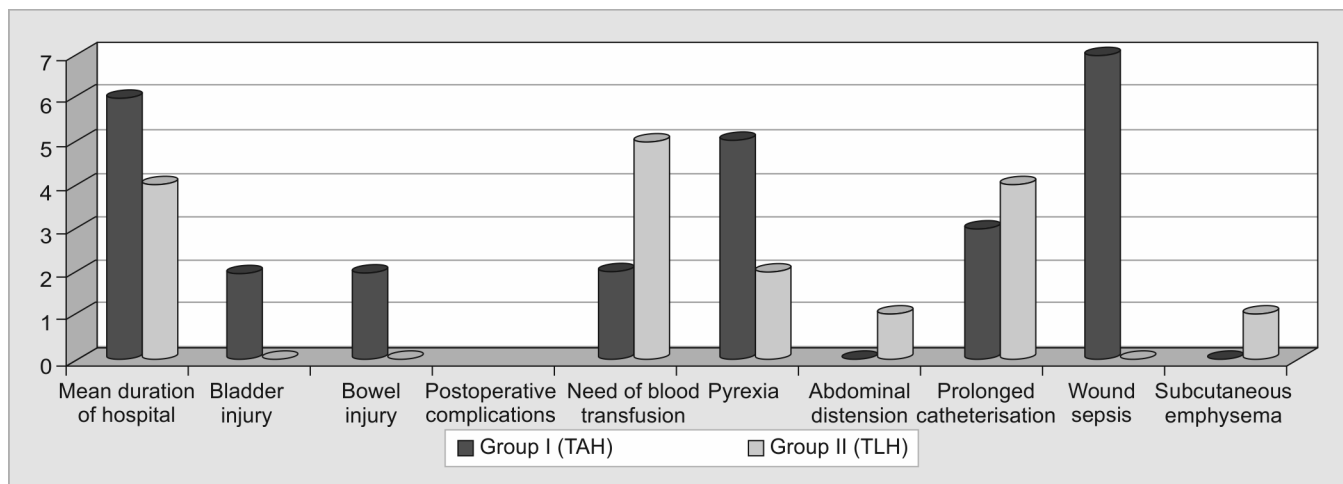
	Group I (TAH) (n = 100)	Group II (TLH) (n = 35)	p value
Age (years)	46.8 ± 6.3	46.4 ± 7.6	0.784 NS
Parity	1.43 ± 1.6	1.49 ± 1.1	0.85 NS
BMI (kg/m ²)	27.2 ± 5.1	26.1 ± 4.5	0.11 NS
Previous surgery			
Tubal ligation	21 (22.1%)	7 (26.9%)	0.608 NS
Caesarean section	12 (12.6%)	4 (15.4%)	0.709 NS
Myomectomy	2 (2.1%)	0	NS
Cystectomy	4 (4.2%)	2 (7.7%)	0.46 NS
Total	39 (41.1%)	13 (50%)	0.41 NS

Table 2: Indications of surgery in women who underwent TAH (group I) and TLH (group II)

Indication of surgery	Group I (TAH) (n = 100)	Group II (TLH) (n = 35)
Fibroid uterus	80 (80%)	20 (57.2%)
DUB	3 (3%)	12 (34.3%)
Ovarian cyst	12 (12%)	1 (2.8%)
Chronic PID	2 (2%)	0
Adenomyosis	0	2 (5.7%)
Postmenopausal bleeding	2 (2%)	0
Endometrial hyperplasia	1 (1%)	0

Table 3: Per- and postoperative complications observed in women who underwent TAH (group I) and TLH (group II)

	Group I (TAH) (n = 100)	Group II (TLH) (n = 35)	p value
Duration of hospital stay (days)	6.93 ± 2.1 days	4.68 ± 1.3 days	0.0001
Bladder injury	2 (2%)	0	NS
Bowel injury	2 (2%)	0	NS
Postoperative complications:			
Need of blood transfusion			0.001
Pyrexia	2 (2%)	5 (14.2%)	NS
Abdominal distension	5 (5%)	2 (5.7%)	NS
Prolonged catheterisation	5 (5%)	1 (2.8%)	0.01
Wound sepsis	3 (3%)	4 (11.4%)	0.001
Subcutaneous emphysema	7 (7%)	0	NS
	0	1 (2.8%)	0.001



Graph 1: Bar diagram showing comparison of per- and post-operative complications between group I (TAH) and group II (TLH)

Hence, it was observed that laparoscopic surgery is associated with lesser risk of visceral injuries, lesser duration of hospital stay, minimal risk of postoperative wound complications, better wound healing and early return to normal activities (Graph 1).

However, it was also observed that more number of patients need blood transfusion and prolonged catheterisation was done in patients undergoing TLH as compare to TAH. Although, no bladder injury was observed during TLH but catheter was removed on day 4/5 in majority of cases for prophylactic purpose only.

During this study period, authors observe that complications rate decreased as we did more number cases showing that laparoscopy has a slower learning curve as compare to the open procedure.

DISCUSSION

Laparoscopic gynaecological surgery was first started by Palmer et al. in 1950s. While Reich et al.² in 1989 did surgical procedure such as adhesiolysis, cyst aspiration and ovarian biopsy. Minimal invasive surgery in gynaecology is being done since ages. Even then, it is not being practised commonly by the gynaecologist and surgeons due to requirement of comprehensive surgical education as well as equipment.

In number of studies,³ it has been reported that laparoscopic hysterectomy is more beneficial than abdominal hysterectomy in terms of lesser perioperative and postoperative complication, shorter hospital stay and early return to normal activities.

Hence this study is being conducted to further reinforce the need of laparoscopic surgery in this era.

Duration of hospital stay is a major concern to the patient and the family. Longer hospital stay leads to more financial burden to the family as well as psychological stress to the patient. Therefore, surgery with lesser hospital stay is always preferred. So, when duration

of hospital stay was compared between two groups it was found that post operative hospital stay was significant lesser in women undergoing TLH than TAH. Our results were similar to the study by Osama et al.⁴ done in 2014, in which comparison was done between 40 patients who underwent TLH (Group 1) and 40 patients who underwent TAH (Group 2). In this study, it was found that mean duration of hospital stay was statistically shorter in group 1 (2.48 ± 0.6 days) as compare to group 2 (4.88 ± 1.2 , p value < 0.001), showing early recovery in women undergoing TLH. Similar results were found in number of other studies.^{5,6} This could be related to the fact that laparoscopic surgery is associated with lesser abdominal trauma and inflammatory response than open surgery.

Peroperative complications in term of visceral injury occur in 4 cases, of which bladder injury occurred in 2 cases and in other 2 cases, bowel injury occurred. All these injuries occurred during abdominal hysterectomy and no such complication happened during TLH. The results were in concordance with study by Sridhar et al.⁷, in which complications rate during laparoscopic hysterectomy was 21.1% as compare to 34.9% found during abdominal hysterectomy. However, in another study by Garry et al.,⁸ Lumsden et al.,⁹ and Mäkinen et al.,¹⁰ complications rate were found to be higher during laparoscopic hysterectomy than abdominal hysterectomy.

Wound dehiscence was found in 7 cases, all of them were seen after TAH. No stitch line complication was found after TLH, hence confirming the fact that laparoscopic surgeries has better wound healing than open surgeries. Similar results were found in study by Kanmamni M et al.,¹¹ in which wound infections was seen in 9 cases out of 32 cases of TAH while none of the patients had it after TLH. Postoperative pyrexia was also seen more commonly after TAH than TLA however, the difference was statistically insignificant.

In five women who underwent TLH, postoperative blood transfusion and prolonged catheterisation was done. But in all of these cases, size of uterus was >12 weeks and fibroid of size 5 to 10 cm was present, because of which peroperative blood loss was little more and hence, postoperative transfusion was given and catheter was kept for longer period for prophylactic purpose. In these cases of large fibroid uterus, first Myomectomy was done and then we proceeded with hysterectomy. Both uterus and fibroid were removed by Ribbon Coring technique¹² vaginally. However, none of the patient had bladder or ureteric injury, and catheter was kept for little longer time for prophylactic purpose, especially in women with adherent bladder or previous surgery.

In a Cochrane database systemic review Johnson et al.,¹³ surgical approach to hysterectomy was given for benign diseases. When TLH was compared to TAH, it was found that TLH is associated with more benefits in term of lower intraoperative blood loss, shorter duration of hospital stay, speedier return to normal activities, fewer wound or abdominal wall infections, fewer unspecified infections or febrile episodes, but more urinary tract (bladder or ureter) injuries. Hence, it was concluded that vaginal hysterectomy (VH) should be performed in preference to abdominal hysterectomy where possible and in cases where VH is not possible, laparoscopic hysterectomy may avoid the need for abdominal surgery.

In another meta analysis by Garry et al.,⁸ it was reported that although laparoscopic surgery has been associated with major complications, but still it leads to less post operative pain and quick recovery. Hence, surgeon should decide the mode of surgery after weighing risk and benefits associated with surgery.

Hence, it can be observed that laparoscopic surgeries are beneficial but the pros and cons should be equally balanced before deciding the mode of surgery.

CONCLUSION

Laparoscopic hysterectomy is the upcoming procedure which is associated with less post operative complications, shorter hospital stay and wound complications as compared to abdominal hysterectomy. Hence, it can be the preferred over open procedure especially in cases with previous surgery and obesity. However, decision shall be taken with patient consent and better surgical expertise.

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