

# Comparative Evaluation of Open versus Closed Vaginal Vault after Laparoscopic Hysterectomy: does it make a difference in operation time and postoperative morbidity - Our experience at FMH

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## ABSTRACT

**Background:** Laparoscopic hysterectomy is now the procedure of choice. Some suggest vaginal cuff closure an important part of this procedure while other suggest no additional benefit of its closure.

**Aim:** To evaluate effects of two surgical techniques, closure of vaginal vault with intracorporeal vicryl 1 suture in single layer versus leaving it open after laparoscopic hysterectomy.

**Methods:** Sample size calculated was 100 with 95% confidence interval. Patients were divided into two groups; the one in which vault was left open and the other in which vault was closed.

**Results:** 50 women were included in open vault group and 50 were recruited in closed group. There were no differences between the demographic characters of two groups. Regarding surgical outcomes, there was significant difference between the two groups except pain at port site which was found to be more in patients with vaginal vault left open.

**Conclusion:** There is no difference in the two techniques whether to close the vaginal vault or leave it open after laparoscopic hysterectomy.

**Keywords:** Laparoscopic, hysterectomy, vault, open, closed.

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## INTRODUCTION

Hysterectomy is a common surgical procedure performed routinely by gynaecologists and surgeons for a myriad of conditions like dysfunctional uterine bleeding (DUB) and uterine fibroids, endometriosis and many ovarian and uterine cancers<sup>1-2</sup>. First laparoscopic hysterectomy was performed by Reich in 1989<sup>3</sup>. Since the advent of advanced ligasure equipment, it has become the surgical procedure of choice<sup>4</sup>. Better outcomes have been reported by laparoscopic hysterectomy in terms of early mobilisation, decreased post-operative complications thereby reducing morbidity, shortened hospital stay and early return to daily activities<sup>5</sup>. Vaginal cuff closure is considered to be an important component of laparoscopic hysterectomies achieved by intracorporeal stitching<sup>6</sup>. However, multiple studies suggest that there is no additional benefit in favour of closure of vaginal vault or leaving it open<sup>7</sup>. The data in Pakistani context is scanty in this regards.

The objective of the study was to evaluate effects of two surgical techniques, closure of vaginal vault with intracorporeal vicryl 1 suture in single layer versus leaving it open after laparoscopic hysterectomy.

## MATERIAL & METHOD

It is a retrospective study conducted in Surgical Unit 1, Fatima Memorial Hospital from January 2018 to December

2019. Sample size calculated was 100 with 95% confidence interval. All female patients aged 25 or above coming to hospital with an indication of hysterectomy for benign and malignant conditions were included in the study. Patients less than 25 years of age, moribund patients, patients with uncontrolled comorbid conditions or patients who had abdominal procedure earlier were excluded from the study. Patients were divided into two groups; the one in which vault was left open and the other in which vault was closed. After taking informed consent, laparoscopic hysterectomy was performed by a single expert laparoscopic surgeon in all patients. Operation time was calculated from making incision to pass port till closure of port site incision with sutures. All removed uterine samples were sent for histopathology. Patients were examined on 1<sup>st</sup> postoperative day, at day of discharge and after two weeks on follow up visit. At each visit, patients were evaluated for pain according to visual analogue scale (VAS), PV bleeding, pelvic hematoma (by ultrasound on day 3), urinary tract infection, wound infection and vault dehiscence. We used SPSS version 21 for data analysis in our study. Regarding continuous variables, descriptive statistics were computed and described as mean±SD. Categorical variables were stated using frequency distributions. Paired samples were subjected to report differences in the means of numerical variables and Chi-square test was applied for qualitative variables. *P* value of <0.05 was taken as significant.

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**RESULTS**

During the study period, a total of 100 patients underwent laparoscopic hysterectomy. These patients were divided into two groups. In group 1, 50 patients underwent laparoscopic hysterectomy with closure of vaginal vault while in group 2, 50 patient had hysterectomy with vaginal vault left open. The demographic details of the patients in each group is displayed in table 1.

Table 1. Demographic details of patients included in the study

	Group 1 (n=50)	Group2 (n=50)
Age (years)	42.9±8.4	42.3±8.2
Parity	5±3	3±2
BMI (kg/m <sup>2</sup> )	34.5±12	33±11
Duration of surgery (hours)	3±1	5±3
No. of patients requiring blood transfusion	3	7
Repeat surgery required	0	0
Hospital stay (days)	3±1	2.5±1

Table 2: Comparison & statistical importance of variables in study

Variables	Group	Mean values	P value
Age	closed	42.9	0.71
	open	42.3	
BMI	closed	34.5	0.597
	open	33	
Parity	closed	5	0.002
	open	3	
Mean operating time	closed	3	0.389
	open	5	
Port site infection	closed	6	1.000
	open	5	
Urinary tract infection	closed	6	0.414
	open	10	
Pelvic hematoma	closed	4	0.117
	open	0	
PV bleeding	closed	5	1.000
	open	6	
Pain at port site (according to VAG score)	closed	5	0.000
	open	6.5	
Hospital stay	Closed	3	0.296
	Open	2.5	
Blood transfusion	Closed	3	0.318
	Open	7	
Vaginal dehiscence	Closed	0	1.000
	open	0	
Mortality	Closed	0	1.00
	Open	0	

The women in both groups were of similar age and there was no significance in mean age group (p=0.71). Mean BMI differed in both groups with group 2 having higher BMI than group 1 but it was statistically insignificant (p=0.597). Mean parity differed in both groups, hence found statistically significant (p=0.002) as it was slightly higher patients with closure of vaginal vault than those in which vaginal wall was left open. Of all the variables included in the study, pain at operative site differed in both groups with patient having vaginal vault open experiencing more pain according to VAG score than those in which vaginal vault was left open and found to be significant statistically (p=0.000). Port site infection rate was 5% and 6% in open and closed group respectively. UTI rates were 10% and 6%

in open and closed groups respectively. These findings are summarised in table 2.

**DISCUSSION**

Hysterectomy is now the second most common surgical procedure worldwide<sup>8</sup>. Local preferences and surgeon's experience greatly affect the outcome of the procedure<sup>9</sup>. W W E et al. reported that laparoscopic hysterectomy is not only safe but also feasible in all patients without any difference in age groups<sup>10</sup>. We also concluded same as mortality is nil in our study. This is achieved by improvement in post-operative care of patients and advanced equipment use in laparoscopic surgery. Some studies suggest that BMI is an important factor in governing outcome of laparoscopic hysterectomy. Laparoscopic hysterectomy is reported to have longer operation time and intraoperative complications in obese patients<sup>11</sup>. Our study negated these findings as these problems can be effectively eliminated by use of skilled surgeons, anaesthetists and trained medical staff. (p=0.389). Many studies strongly recommend closure of vaginal stump after laparoscopic hysterectomy. Smith and Cereus reported lower dehiscence rates with closure technique<sup>6</sup>. Other studies show that closure of vaginal vault leads to higher rate of dehiscence<sup>12-14</sup>. Moustafa and Elnasharty reported that dehiscence of the vaginal cuff is more common with laparoscopic hysterectomy<sup>15</sup>. Our findings are contrary to these studies as we found no difference in both groups with regards to vaginal dehiscence after laparoscopic hysterectomy and other post-operative complications like per vaginal bleeding, pelvic hematoma, UTI, port site infection and consequently hospital stay. These findings are also supported by other studies with same findings<sup>16</sup>. In some cases, vault closure can lead to serious complications like small bowel obstruction as reported by Donnellan and Mansuria<sup>17</sup>.

Postoperative pain was also a significant factor in recovery and we found that patients having vault open surgery experienced more pain than patients having vault closure surgery. Pain was greatest in 1<sup>st</sup> postoperative day and then gradually diminished. No difference was found in surgical techniques in this context and it was attributed to the individual patient threshold. This finding is in contrast to the available literature where no significant difference is reported with regards to pain in both groups<sup>18</sup>. Port site infection rate was 5% and 6% in open and closed group respectively which is not statistically significant (p=1.000). This finding is in comparison the reported literature<sup>18</sup>. UTI rates were 10% and 6% in open and closed groups respectively which was also non-significant statistically (p=0.414). This finding is also in accordance with reported incidence of UTI of 7.3% after hysterectomy<sup>19</sup>. The aetiology is attributed to the long use of urinary catheter in the urinary bladder after hysterectomy and can be minimised by its early removal after surgery and making patient ambulatory.

**CONCLUSION**

There is no difference in the two techniques whether to close the vaginal vault or leave it open after laparoscopic hysterectomy as there is no significant statistical difference

among either group. Further randomised controlled studies with larger number of patients in each group is required to verify these results.

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