

Vaginal Cuff Dehiscence after Hysterectomy and One Minute Technique of Laparoscopic Vault Closure

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Aims: This study was done to observe the rate of vaginal cuff dehiscence of one minute technique of laparoscopic vault closure in laparoscopic hysterectomy.

Methods: It was a descriptive study performed in Birat Hospital among 1012 patients undergoing total laparoscopic hysterectomy for both benign and malignant gynaecological conditions between 2012 to 2013. Monopolar cautery was used for laparoscopic colpotomy and vault was closed by laparoscopic single running suture, that is, one-minute laparoscopic vault closure technique. Patients were followed up for vaginal cuff dehiscence and the dehiscence rate was compared with other techniques of laparoscopic vault closure in laparoscopic hysterectomy.

Results: This study showed that the rate of vaginal cuff dehiscence after one minute technique of laparoscopic vault closure in laparoscopic hysterectomy was 1/1012 patients (0.09%) which was significantly less as compared to other techniques of laparoscopic vault closure in laparoscopic hysterectomy quoted in the literature.

Conclusions: One minute technique of laparoscopic vault closure after colpotomy with monopolar cautery using single running suture has encouraging results. It is a noble technique of laparoscopic vault closure with excellent support. It can be practiced in low resource setting also.

Keywords: colpotomy, cuff dehiscence, hysterectomy, monopolar cautery, vault closure.

INTRODUCTION

Vaginal cuff dehiscence (VCD) has been defined as a full thickness separation, partial or total, of the anterior and posterior edges of the vaginal cuff with or without bowel evisceration.¹ After laparoscopic removal of the uterine specimen, the vaginal cuff is closed by different laparoscopic techniques. The term vaginal cuff dehiscence is frequently interchanged with terms cuff separation or cuff rupture.² VCD had complicated gynecologic surgery long before the advent of laparoscopic approach to hysterectomy.³ Several authors have reported different surgical approaches such as abdominal, vaginal and laparoscopic, without substantial differences on incidence of VCD.⁴⁻¹⁰

Vaginal evisceration after hysterectomy, although rare, is a severe post-operative complication for both

young and elderly patients and is associated with bowel evisceration.¹¹ In premenopausal patients, sexual intercourse before healing of the vaginal cuff or associated with cuff infections or hematomas, is the main trigger event.^{12,13} The scar tissue attains about 40% of its final strength in the first month and the strength continues to increase for as long as a year after injury.¹⁴ In postmenopausal patients, the evisceration is always considered a spontaneous event. It happened quite late, with a mean onset of 36.8 months after surgery. The atrophic vagina coincided with the triad of hypoestrogenism, chronic tissue devascularization, and pelvic floor weaknesses and association with a sudden increase in abdominal pressure (vomiting, coughing, sneezing, and straining at toilet, heavy weight lifting) has to be considered.^{12,13,15}

It is reported that the incidence of VCD (0.3-3.1%) after total laparoscopic hysterectomy (TLH) is higher compared with the abdominal (0.15-0.26%) and vaginal (0.08-0.25%) approach.³ Among laparoscopic hysterectomies, those with vaginal closure of the cuff have a lower incidence of dehiscence (0.18-0.30%) than laparoscopic closure (0.64%).^{16,17}

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This study was conducted in Birat hospital to see the rate of vault dehiscence after laparoscopic vault closure with one minute technique in laparoscopic hysterectomy.

METHODS

It was a descriptive study performed over two years from 2012-2013 in Birat Hospital, Biratnagar. The study protocol was approved by the Institutional Ethical Committee of the hospital. A total of 1012 patients of age group of 40-49 years and body mass index of 20-25 kg/m² who had benign or malignant gynaecological conditions like symptomatic uterine fibroids, endometriosis, adenomyosis, premalignant lesions of cervix, endometrial carcinoma and abnormal uterine bleeding unresponsive to medical management. and completed the family were included in the study. Written informed consent was taken from the patients before the enrollment. Those who had medical and surgical illness like uncontrolled hypertension, diabetes, bleeding disorders etc. were excluded from the study. All baseline preoperative investigations like complete blood count, blood group, urea, creatinine, prothrombin time, random blood sugar, chest x-ray, urine routine microscopy and electrocardiogram were done and blood was arranged before planning for TLH. In this study, all patients underwent monopolar colpotomy during hysterectomy and laparoscopic vault closure with single running suture, that is, one minute technique of laparoscopic vault closure. This noble technique was started with suturing from one angle of the vault preferably from left uterosacral ligament along with posterior vaginal wall then anterior vaginal wall then middle of the posterior vaginal wall then anterior wall then again left uterosacral ligament along with posterior vaginal wall with anterior vaginal wall in continued fashion. The sutures were tied in middle.

The patients were followed up for vaginal cuff dehiscence after discharge from the hospital with the telephonic enquiry at three months. Furthermore, the route of vaginal vault closure, type of electrocautery used during surgery, method of suturing and different risk factors like age, BMI, length of surgery, intraoperative blood loss, onset of VCD after surgery and post coital evisceration were also discussed in the study. The data were recorded in SPSS version 13 and analyzed.

RESULTS

There were 1012 patients who had undergone TLH in the study out of which only one (0.09%) had vault dehiscence.

Table 1. Baseline characteristics (n=1012).

Characters	Value
Mean age (years)	44.9±6.3 (40-49)
Mean BMI (kilogram/metre ²)	22±2.1 (20-25)
Mean parity	2.3±2.5
Mean operative time (minutes)	65±14.5
Mean blood loss (millilitres)	90±21
Mean hospital stay (days)	5±3.1
Indication: benign	1003
Indication: malignant	9

The mean age of the patients who had surgery was 44.9 years, the mean operative time was 65 minutes, mean blood loss was 90 millilitres and mean hospital stay was five days. One thousand and three (99.1%) patients were operated for benign gynecological conditions and the most common indication was symptomatic uterine leiomyoma (n=772, 76.96%). Nine (0.9%) patients were operated for malignancy and carcinoma endometrium was most common malignant condition (n=6, 66.66%) [Table-1].

Table 2. Post operative complications (n=79).

Complications	Number(%)
Pain and spotting	45(4.44%)
Primary haemorrhage	21(2.07%)
Vault infection	12(1.01%)
Vault dehiscence	1(0.09%)

Seventy nine (7.8%) patients had post operative complications and the most common complication was pain and spotting in postoperative period (n=45, 4.44%) which was managed conservatively. Vault dehiscence was seen in only one (0.09%) patient operated for a benign gynaecological condition and dehiscence was seen on 20th postoperative day. There was history of early onset of sexual intercourse in the same patient which was seen as a risk factor for vault dehiscence [Table-2].

DISCUSSION

The incidence of VCD in this study was one out of 1012, which reflects 0.09% and it is significantly lower compared to the studies done by Blikkendaal et al¹⁹ (1.2%), Uccella et al¹⁶ (0.64%), Ceccaroni et al¹⁸ (0.8%) and Laco PD et al⁹ (0.79%) but consistent with the study done by Singh K et al¹⁰ (0%) [Table-3].

Table 3. Comparison of baseline characteristics, risk factors, colpotomy technique and route of vault closure

	Birat Hospital	Blikkendaal et al¹⁹	Uccella et al¹⁶	Ceccaroni et al¹⁸	Singh K et al¹⁰
TLH	1012	331	3573	2745	35
VCD(%)	1(0.09%)	4(1.2%)	23(0.64%)	22(0.8%)	0(0%)
Mean age (years)	44.9	49	50.5	46.4	41.9
BMI	22	27.5		23	
Length of surgery (minutes)	55	129		101.3	77
Intraoperative blood loss (millilitres)	50	120		109.3	
Indication: benign	1/1003		17/3125		
Indication: malignant	0/9		6/448		
Onset of dehiscence (days)	20		30	90	
Early Intercourse	1		1	7	
Electrocautery source for colpotomy	monopolar	bipolar & ultrasonic	monopolar	monopolar	monopolar
Route of vault closure	all laparoscopic running closure	Transvaginal =75; laparoscopic interrupted =90; laparoscopic running=166	transvaginal =1241; laparoscopic interrupted =2332	laparoscopic interrupted = 2745	all laparoscopic running closure
VCD	1 VCD-laparoscopic running	1 VCD-transvaginal interrupted; 3 VCD-laparoscopic interrupted	3 VCD-transvaginal interrupted; 20 VCD-laparoscopic interrupted	22 VCD-laparoscopic interrupted	0 VCD

In this study, all patients (n=1012) underwent monopolar colpotomy similar to the studies done by Uccella et al¹⁶ (n=3573), Ceccaroni et al¹⁸ (n=2745) and Singh K et al¹⁰ (n=35) but in contrast, Blikkendaal et al¹⁹ (n=331) in their study had used bipolar and ultrasonic electrocautery source for colpotomy. There were less VCD reported with monopolar electrocautery used for colpotomy as seen in this study and similar studies done by Uccella et al¹⁶, Ceccaroni et al¹⁸ and Singh k et al¹⁰ compared to bipolar electrocautery seen in the study by Blikkendaal et al¹⁹. Consistent to this result, Blikkendaal et al¹⁹ in their study hypothesised that the type and amount of coagulation used for colpotomy may play a role in the increased risk of VCD after TLH.

In this study, all patients had undergone laparoscopic vault closure with single running suture (one minute technique of vault closure) similar to Singh K et al¹⁰ but in contrast, studies done by Blikkendaal et al¹⁹ had used transvaginal (n=75), laparoscopic interrupted (n=90) and laparoscopic running (n=166) technique; Uccella et al¹⁶ had used transvaginal (n=1241) and laparoscopic interrupted (n=2332) technique and Ceccaroni et al¹⁸ had used laparoscopic interrupted (n=2745) techniques of vault closure. The rate of VCD in patients with vault closure by

laparoscopic single running suture was only one out of 1012 (0.09%) in this study and none in the studies done by Singh et al¹⁰ (n=35) and Blikkendaal et al¹⁹ (n=166) which was significantly less compared to vault closure by transvaginal route seen in the studies by Uccella et al¹⁶ (3/1241=0.24%) and Blikkendaal et al¹⁹ (1/75=1.33%). The rate of VCD was even more with vault closure by laparoscopic interrupted technique seen in the studies by Uccella et al¹⁶ (20/2332=0.85%), Blikkendaal et al¹⁹ (3/90=3.33%) and Ceccaroni et al¹⁸ (22/2745=0.8%). The pooled incidence of VCD was lower for vault closure by transvaginal (0.13%) than for laparoscopic cuff closure (0.73%) [OR=0.18;95% CI=0.07-0.43]. Uccella et al¹⁶ in their study strongly supported that transvaginal suturing appeared to reduce the risk of vaginal dehiscence over laparoscopic cuff closure after total laparoscopic hysterectomy. Similarly, Blikkendaal et al¹⁹ also observed that besides the type and amount of coagulation used for colpotomy, the route and type of vault closure also played the role in the rate of VCD.

Regarding the risk factors and basic demographic variables, the mean age (44.9 years) and body mass index (22 kg/m²) of the patients operated in this study were similar in characteristics to the studies

done by Blikkendaal et al¹⁹ (49 years, 27.5 kg/m²), Uccella et al¹⁶ (50.5 years), Ceccaroni et al¹⁸ (46.4 years, 23 kg/m²) and Singh K et al¹⁰ (41.9 years). But, the mean intraoperative blood loss (50 millilitres) and mean length of surgery (55 minutes) in this study were significantly less compared to the studies by Blikkendaal et al¹⁹ (120 millilitres, 129 minutes), Ceccaroni et al¹⁸ (109.3 millilitres, 101.3 minutes) and Singh k et al¹⁰ (77 minutes). Ceccaroni et al¹⁸ concluded that VCD is a spontaneous event in elderly while early sexual intercourse before the complete healing is the triggering risk factor for VCD (7/22) in young patients and occurred on an average of 70th postoperative day. In this study, the only

VCD was seen after the history of early resumption of intercourse and on 20th postoperative day which was significantly less and on the earlier day compared to the study by Ceccaroni et al¹⁸ but consistent with the study by Uccella et al¹⁶ in which early intercourse before complete healing was the accountable event for one VCD (1/23) and on 30th postoperative day.

CONCLUSIONS

One minute technique of laparoscopic vault closure using monopolar electrocautery for colpotomy and laparoscopic single running suture for vault closure has excellent result in supporting the vault with significantly less incidence of VCD. This can be practiced in low resourced setting as well.

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