

## ORIGINAL RESEARCH

# A comparison of clinical outcomes in post operative hysterectomy patients with pelvic drain versus without pelvic drain

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Received: 09 November, 2022

Accepted: 12 December, 2022

### ABSTRACT

**Introduction:** Hysterectomy is one of the most frequently performed gynecological procedure worldwide. One of the major concern after any hysterectomy is post operative bleeding. The overall incidence of hemorrhage after hysterectomy is 0.2-2<sup>1</sup>-<sup>2</sup>. Highest incidence with TLH(1.51%), followed by VH(0.68%) and TAH(0.62%)<sup>3</sup>. **Objective:** To compare the incidence of vault hematoma in post op patients with pelvic drain versus without pelvic drain. Secondary objective is to compare the post-op morbidity in terms of fever, decline in Hb level, rise in WBC and duration of hospital stay. **Material & Methods:** A prospective observational study done at department of obstetrics & gynecology, L N medical college Bhopal (M.P) for a period of 6 months. Total of 133 women undergoing hysterectomy for benign reasons were included and divided into two groups, "Drain" vs "No drain". Foley's catheter No. 16" was inserted as drain before vault closure in abdominal and vaginal hysterectomy. Drain was removed after 24 hrs and Usg pelvis was done on 4<sup>th</sup> post-op day.

**Result:** Vault hematoma developed in 9.6% in "Drain" group and in 29.8% in "No drain" group (p=0.009). The incidence of fever in the Drain group was 9.6% and in the No drain group was 28.1%(0.015). Urine culture was positive in 17.3% of the drain group and 28.1% in the No drain group(p=0.039). the difference in the duration of postoperative hospital stay and decline in Hb in both groups were insignificant.

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### INTRODUCTION

The prevalence of hysterectomy in India was 3.2% according to the NFHS-IV<sup>4</sup>. The overall incidence of hemorrhage after hysterectomy is 0.2-2<sup>1-2</sup>. Highest incidence with TLH(1.51%), followed by VH(0.68%) and TAH(0.62%)<sup>3</sup>. One of the major concerns after any hysterectomy is post operative bleeding. The conventional methods to check for any hemorrhage are patient's vital signs and abdominal girth charting. By the time there is fall in patients' vital signs or increase in abdominal girth it is usually too late. The use of CT is crucial to detect the presence, site, entity, age and features of iatrogenic haemorrhage, as CT reveals contrast medium extravasation corresponding to active bleeding in either arterial or venous phase<sup>5</sup>. So CT scan is an ideal method to diagnose post-op bleeding but it is cumbersome, time consuming and patient needs to be shifted to the radiology department. So some researchers have used vault drainage as a tool for assessing bleeding in the immediate post op period. Not only this, formation

of vault haematoma is quite common after any type of hysterectomy. Studies show a wide range of incidence varying from 19.4% to 98%<sup>6</sup> and incidence of vault haematoma after Vaginal hysterectomy is 25-59%<sup>7-8</sup>. A haematoma is significantly associated with febrile morbidity<sup>9</sup>, postoperative haemoglobin drop, need for blood transfusion, readmission to hospital and length of hospital stay<sup>6</sup>. Vault drainage again resulted in reduction in pelvic hematoma formation following hysterectomy and post-op morbidity<sup>10</sup>. Various methods to reduce the occurrence of vault hematoma include antibiotic prophylaxis, electrocautery of pedicles, closing visceral peritoneum around the vault and vaginal packing. A few studies have been done where Foley's catheter is placed as a drain in the vault after hysterectomy which was point of care, cost effective and not cumbersome for the patient and has shown reduced post operative morbidity. The aim of our study was to evaluate the role of vault drainage after hysterectomy in the prevention of vault hematoma and associated post operative morbidity.

## MATERIALS & METHODS

**Study Design:** This was a comparative, prospective observational study. **Study Settings:** conducted at the department of gynaecology, L N Medical college & J K Hospital, Bhopal (MP). **Duration of study-** 6 months. **Sample Size:** The sample size for the present study was calculated as a total of 106 participants. However, we enrolled all the participants fulfilling the selection criteria and coming to our institute during the period of participant's recruitment. Following this a total of 133 women were approached for enrollment out of which 24 women did not give consent and remaining 109 were divided in to two study groups, 52 were allotted the "drain" group and 57 were allotted "No drain" group. Detailed history, general and gynecological examination was conducted before the surgery.

### INCLUSION CRITERIA

All women who are undergoing abdominal or vaginal hysterectomy for benign indication.

### EXCLUSION CRITERIA

(i) Women not giving consent, (ii) Hysterectomy for malignant diseases, (iii) Women who are on anticoagulant therapy or having bleeding disorders, (iv) Women with chronic liver disease.

### STUDY GROUPS

One group was "drain group" and other was "no drain group". In the drain group, at the time of vault closure a Foley's catheter 16 Fr is placed and inflated through the vault in both vaginal as well as abdominal hysterectomy. Rest of the procedure completed as usual. This Foley's catheter was connected to a urobag and acted as a drain. In patients undergoing vaginal hysterectomy additional vaginal packing was done. Drain was removed on 2<sup>nd</sup> post-op day. On 4<sup>th</sup> post-op day CBC and ultrasound pelvis was done. Data was collected in the study proforma and entered into MS Excel and was analysed using Stata version 17.1 Appropriate statistical tests were applied to study the association between outcome and independent variables. A P-value < 0.05 was considered significant.

### NULL HYPOTHESIS

There is no significant difference in the incidence of vault haematoma among the participants in the drain and no-drain group.

### RESULTS

To recruit the participants for the present study, a total of 133 women undergoing hysterectomy for benign diseases were approached for enrolment: 24 women did not give consent and remaining 109 were divided into the two study groups: a total of 52 women were allotted the "drain" group and remaining 57 women were allotted the "No-drain" group.

**Table 1: Descriptive characteristic of participants**

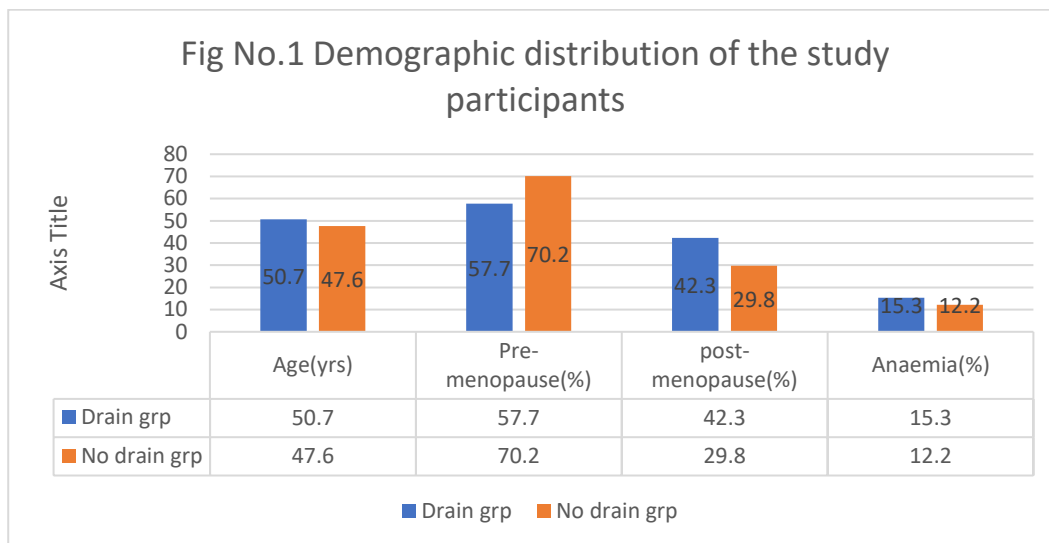
Variable	Drain (n=52)	No-Drain (n=57)	P -value
<b>Age Group (yrs)</b>			
<=40	9 (17.3%)	22 (38.6%)	-
41-50	22 (42.3%)	28 (49.1%)	
51-60	11 (21.2%)	5 (8.8%)	
>60	10 (19.2%)	2 (3.5%)	
Mean	50.7	47.6	0.074
<b>Menopausal status</b>			
Premenop ause	30 (57.7%)	40 (70.2%)	0.174
Post Menopaus e	22 (42.3%)	17 (29.8%)	
<b>Comorbidity</b>			
No	30 (57.7%)	32 (56.1%)	0.879
Anemia	8 (15.3%)	7 (12.2%)	
Hypertens ion	6 (11.5%)	4 (7.1%)	
Diabetes	3 (5.7%)	4 (7.1%)	

**Table 1** illustrates the descriptive characteristics of the population. The mean age of the participants in the drain and no-drain group was 50.7 and 47.6 years, respectively (p value= 0.074). The mean BMI of the

women in the drain and the nodrain group was 21.9 and 23.1 kg per sq. metre (p-value = 0.094). 57.7% and 40% of women were pre-menopausal in the drain and no-drain group respectively. 42.3% and 29.8%

were post-menopausal in drain and no-drain group respectively (p-value=0.174). Lastly, 30 women (57.7%) in the drain group and 32 (56.1%) women in

the no-drain group had no comorbidities. Most common comorbidities in both the groups were anaemia followed by hypertension.



**Table 2: Details of Surgery**

Parameters	Drain (n=52)	No-Drain (n=57)	P -Value
Mean Duration (Hours)	2.1	1.99	0.343
Mean Drain Volume (ml)	41.7	-	
Type of Surgery			
Abdominal Hysterectomy	25 (48.1%)	29 (50.9%)	0.770
Vaginal Hysterectomy	27 (51.9%)	28 (49.1%)	

Table 2 illustrates the details of the surgery among the participants in the two study groups. There was no significant difference in the duration of surgery (p = 0.343). Lastly, about 51.9% and 49.1% women in the drain and no-drain group had vaginal hysterectomy

(p=0.770).The mean drain volume in the drain group was 41.7 ml. None of the patients in both the groups had primary or secondary hemorrhage requiring re-laparotomy.

**Table 3: Outcome of Surgery**

Outcome	Drain (n=52)	No-Drain (n=57)	Odds Ratio (P-value)
Vault Haematoma	5 (9.6%)	17 (29.8%)	3.99 (0.009)
Fever	5 (9.6%)	16 (28.1%)	3.66 (0.015)
Urine Culture	9 (17.3%)	17 (29.8%)	1.67 (0.039)
Postoperative Stay (days)	10.5 (±2.4)	9.7 (±2.1)	1.34* (0.087)
Delta TLC	669	1600	936* (0.015)
Delta Hb	-1.1	-0.82	0.284* (0.22)

\*- Beta Coefficient

Table 3 shows the outcome of the surgery among the participants. A total of 5 (9.6%) and 17 (29.8%) of the women in the drain and no-drain group developed vault haematoma on Usg done on the 4<sup>th</sup> post-op day. The Odds ratio for the above result is 3.99 which indicates 3.99 times higher risk of development of vault hematoma in the patients without vault drainage after hysterectomy (p-value=0.009). A total of 5

(9.6%) and 16 (28.1%) of the women in the drain and no-drain group developed fever during the postoperative period (p=0.015). A total of 9 (17.3%) and 16 (28.1%) of the women in the drain and no-drain group had positive urine culture during the postoperative period (p=0.039). The rise in TLC level was 669 and 1600 in the drain and no-drain group respectively (0.015).The difference in the duration of

postoperative hospital stays and the decline in the haemoglobin levels were not significant between the two groups.

## DISCUSSION

Our study shows that post-op patients without vault drainage had higher incidence of vault hematoma 29.8% as compared to patients with vault drainage, (OR 3.99). Similarly Krishnaswamy, et al did a meta-analysis of ten studies involving 1778 women, 811 with a vaginal drain and 967 without a drain. The study showed that use of a vaginal drain after hysterectomy may significantly reduce the incidence of vault haematoma (OR 0.22, 95% CI 0.08 - 0.57)<sup>11</sup>. Laila A, Chowdhury F et al did a similar study and found significantly higher vault hematoma in no drainage group (group II) than vault drainage group (group I) which was 23.3% versus 3.3% respectively<sup>10</sup>.

As far as post-op morbidity is concerned, in our study we found that 28.1% of patients in no-drain group developed febrile morbidity in post-op period where as only 9.6% developed fever in the drain group (OR 3.66). Similar results were found in the study done by Laila A1, Chowdhury F et al where they reported higher incidence of fever which was 26.7% in non drain and 6.7% in drain group<sup>10</sup>. In another study conducted by Cem Dane et al, they found that 40% of patients with vault hematoma developed fever as compared to 2.4% without any hematoma<sup>6</sup>. Similarly A.J.M Thomson et al found that 31% of the patients with vault hematoma developed fever in the post-op period<sup>9</sup>.

In our study we found that the difference between hospital stay in both groups was not significant. Cem Dane et al found that patients with vault hematoma spent on an average 2.6 days longer than patients without hematoma<sup>6</sup>. Krishnaswamy et al also reported that patients with drain insertion had reduced length of hospital stay<sup>11</sup>. In another study by Malinowski et al, it was found length of hospitalization was lower for women in vault drainage group.

In our study we found that the rise in Total leucocyte count in the pre and post-op period in the no-drain group was significantly higher ( $p < 0.05$ ) as compared to the drain group. Similarly, Swartz and Tanaree in an observational study showed significantly reduced infection rates with the use of drainage compared with a control group and advocated vault drainage instead of antibiotics<sup>13</sup>.

In our study we found that there was no significant decline in hemoglobin in pre and post-op period in both no-drain and drain group ( $p = 0.22$ ). Where as in the study done by Cem Dane, they found group with vault hematoma had greater drop in hemoglobin as compared to patients without vault hematoma<sup>6</sup>. AJ

Thomson in their study also reported a greater drop in hemoglobin concentration<sup>9</sup>.

## CONCLUSION

Thus in our study we concluded that the practice of vault drainage at the time of hysterectomy reduced the incidence of vault hematoma in the post-op period there by reducing post-op morbidity. Thus using a foleys catheter as a tool for vault drainage proved to be a cost effective, point of care method to assess immediate post op bleeding and reduction in post op vault haematoma.

## REFERENCES

- Holub Z, Jabor A. Laparoscopic management of bleeding after laparoscopic or vaginal hysterectomy. *JSLs*. 2004;8:235–238
- Wilke I, Merker A, Schneider A. Laparoscopic treatment of hemorrhage after vaginal hysterectomy or laparoscopically assisted vaginal hysterectomy (LAVH). *Surg Endosc*. 2001;15:1144–1146
- Victoria L Handa. Te Linde's Operative Gynecology. 12<sup>th</sup> ed. Philadelphia. Lippincott Williams & Wilkins. 2020
- Singh A, Govil D. Hysterectomy in India: Spatial and multilevel analysis. *Womens Health (Lond)*. 2021
- Tsai R, Raptis D, Raptis C et al (2017) Complications after gynecologic and obstetric procedures: a pictorial review. *Curr Probl Diagn Radiol*. 10.1067/j.cpradiol.2017.06.006
- Dane C, Dane B, Cetin A, Yayla M. Sonographically diagnosed vault hematomas following vaginal hysterectomy and its correlation with postoperative morbidity. *Infect Dis Obstet Gynecol* 2009; 2009:91708.
- Wood C, Maher P, Hill D. Bleeding associated with vaginal hysterectomy. *Aust NZ J Obstet Gynaecol* 1997;37:457–61.
- Slavotinek J, Berman L, Burch D, Keefe B. The incidence and significance of acute post-hysterectomy pelvic fluid collections. *Clin Radiol* 1995;50:322–6.
- Thomson AJ, Farquharson RG. Vault haematoma and febrile morbidity after vaginal hysterectomy. *Hosp Med*. 2000;61(8):535–8.
- Laila A, Chawdhary F et al. Use of vault drainage for reducing vault haematoma during vaginal hysterectomy. *Bangladesh Med J*. 2016 Sept; 45(3)
- Krishnaswamy PH, Jha MS. Efficiency of using a Foley catheter as a pelvic drain in vaginal hysterectomy. *Eur J Obstet Gynecol Reprod Biol*. 2018;226:21–4.
- Malinowski A, Mołas J, Maciołek-Blewniewska G, Cieślak J. e modification in surgical technique of incision and closure vault of the vagina during vaginal hysterectomy on the incidence of vault haematoma. *Ginekol Pol*. 2006;77(2):117-25.
- Swartz WH, Tanaree P. Suction drainage as an alternative to prophylactic antibiotics for hysterectomy. *Obstet Gynecol*. 2005;45:305–10.