



Detection of vault hematoma by ultrasound scan following hysterectomy and its correlation with morbidity

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OBJECTIVE(S) : To detect and evaluate vault hematoma following abdominal and vaginal hysterectomies and correlate it with postoperative morbidity.

METHOD(S) : A prospective observational study was performed during a 1 year period from January 2004 to December 2004. During the year 820 women underwent hysterectomy and 380 of them who were willing to undergo postoperative sonography were included in the study. All the patients were scanned on the 3rd or 4th postoperative day. A transvaginal sonographic scan was done for patients who had undergone abdominal hysterectomy and a transabdominal scan was done for those who had undergone a vaginal hysterectomy. The findings were correlated with postoperative morbidity.

RESULTS : Of the 380 women scanned, 40 or 10.53% had vault hematoma, 4.47% (17/38) developed febrile morbidity, 1.3% (5/380) required colpotomy, 0.26% (1/380) developed subacute intestinal obstruction, and 0.53% (2/380) had fever due to urinary tract infection. Patients who needed intervention had prolonged hospital stay (10-13 days). The incidence of vault hematoma was significantly higher after vaginal hysterectomy than after abdominal hysterectomy (small hematoma - P=0.009; medium hematoma - P=0.003).

CONCLUSION(S) : Ultrasound detection of significant vault hematoma on 3rd or 4th day following hysterectomy identifies a high risk population of patients who need further management or follow up before discharge.

Key words : vault hematoma, postoperative morbidity

Introduction

The most common operation performed in gynecology is hysterectomy. The incidence of vaginal hysterectomy is rising as it is increasingly done for nonprolapsed uterus also. Currently vaginal hysterectomy is becoming more popular as it has its own advantages like shorter duration of surgery, shorter hospital stay, and early ambulation. After hysterectomy, there may be some collection of blood forming a hematoma at the vault. This subtle hematoma cannot be detected by clinical examination in early postoperative days. It leads to morbidity especially when infected.

In the present study, an attempt is made to detect and evaluate the hematoma at the vault by ultrasound scan on 3rd or 4th postoperative day and correlate it with morbidity.

Methods

A total of 820 patients underwent hysterectomy during a 1 year period of January 2004 to December 2004. Of these, 380 were willing to undergo postoperative sonography, and were included in this study. Patients who had undergone associated procedures like abdominal wall repair, those with malignancy, and those who had ascites were excluded from the study. Patients with heart disease, hypertension, diabetes mellitus, and previous surgeries for prolapse were not excluded.

The following precautions and procedures were undertaken during hysterectomy:

- ✦ Ten mL of 1:300000 adrenaline was used for vaginal hysterectomy in all cases of prolapse except in those with hypertension.

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- ⚡ Ethamsylate (250 mg in 2 mL) and botropase intramuscular injections were used 8 hourly for 3 doses for excessive capillary oozing during surgery in seven cases of abdominal hysterectomy and three of vaginal hysterectomy.
- ⚡ Routine vaginal packing was done for all Mayowards' hysterectomies.
- ⚡ Oxidized cellulose was used in seven cases of abdominal hysterectomy since there was excessive capillary oozing.
- ⚡ Pelvic peritoneum was closed in vaginal hysterectomies but not closed in abdominal hysterectomies.
- ⚡ No drain was kept in cases of abdominal hysterectomies.
- ⚡ All patients received ciprofloxacin 200 mg intravenously 12 hourly and gentamycin 80 mg intramuscularly 12 hourly for 3 days and thereafter ciprofloxacin 500 mg orally twice a day for 4 days.

Ultrasonography was performed on postoperative day 3 or 4 on all patients. Transvaginal scan was done for patients of abdominal hysterectomy and transabdominal scan for patients of vaginal hysterectomy. Nonechogenic complex mass measuring 2 cm or more in two largest diameters was diagnosed as a hematoma and classified as small if < 4 cm, medium if 4 to 5.9 cm and large if > 6 cm.

Postoperative febrile morbidity was defined as mild when temperature was $\geq 37.2^{\circ}\text{C}$ and severe when it was $> 37.8^{\circ}\text{C}$. If there was persistent fever, discomfort, mild abdominal distention or diarrhea, the patients were rescanned after 3 days. If the collection had increased, it was drained by cutting the vaginal vault sutures aseptically without anesthesia and employing a artery forceps. Patients were discharged when they were fit. All other patients were allowed to go home from the 5th day to 7th day when deemed medically fit.

Statistical analysis

A statistical analysis was done to test equality of proportions of patients with hematoma under vaginal and abdominal hysterectomies, separately for the two classes, depending on the size of the hematoma.

Table 3. Occurrence of vault hematoma and type of hysterectomy.

Size of hematoma (cm)	Vaginal hysterectomy n=190			Abdominal hysterectomy n=190		
	Mayoward's	Heaney's	Total	TAH	TAH with BSO	Total
2 – 3.9	17	NIL	17 ^a	2	4	6 ^a
4 – 5.9	14	NIL	14 ^b	NIL	3	3 ^b

^aP=0.009 and ^bP = 0.003. Statistical analysis done by using normal distribution to test the equality of proportions.

TAH – Total abdominal hysterectomy.

BSO – Bilateral salphingo-oophorectomy.

Results

The mean age of patients who had undergone hysterectomy was 42 years, the youngest being 20 years (mental retardation) and the oldest being 70 years (proctidemia). The operating time was 30 - 90 minutes. Prolapse was the most common indication for hysterectomy (Table 1). The number of patients who had undergone vaginal and abdominal hysterectomies are shown in Table 2.

Overall incidence of vault hematoma in the present series was 10.53% (40/380) while it was 16.3% (31/190) with vaginal hysterectomy and 4.77 (9/190) with abdominal hysterectomy. Table 3 gives the details. All cases of collection in vaginal hysterectomy belonged to Mayoward's group. No collection was noted in the Heaney's hysterectomy group. The incidence of patients undergoing drainage of hematoma after vaginal hysterectomy was 2.6% (5/190) of whom two had developed collection again which was detected on repeat sonography. In the vaginal hysterectomy group seven patients

Table 1. Indications for hysterectomy (n=380).

Indication	No. of cases	Percentage
Prolapse	190	50
Dysfunctional uterine bleeding	38	20
Fibroid uterus	128	67.37
Pelvic inflammatory disease	13	6.84
Ovarian tumors	9	4.73
Mental retardation	2	1.05

Table 2. Type of hysterectomy.

Method	Number	Percentage
Vaginal hysterectomy		
Mayoward's hysterectomy	150	78.9
Heaney's hysterectomy	40	21.1
Abdominal hysterectomy		
Total abdominal hysterectomy	77	40.5
Total abdominal hysterectomy with bilateral salphingo-oophorectomy	113	59.5

Table 4. Morbidity.

Morbidity	Vaginal hysterectomy	Abdominal hysterectomy
Subacute intestinal obstruction	Nil	1
Fever with urinary tract infection	2	Nil
Collection on rescans	2	Nil
Postoperative colpotomy	5	Nil
Unexplained fever	14	3

with hematoma of < 4 cm and seven with medium hematoma had unexplained mild fever for one day, but they did not require any special treatment or intervention. Of the 77 patients of total abdominal hysterectomy, two developed small hematoma while of the 113 patients of total abdominal hysterectomy with bilateral salpingo-oophorectomy four developed small hematoma and three medium hematoma.

All the three patients in the abdominal hysterectomy group who had unexplained fever had medium sized collection, which resolved by itself. The overall incidence of unexplained febrile morbidity was 4.47% (17/380) (Table 4). One patient (0.26%) who had undergone total abdominal hysterectomy with bilateral salpingo-oophorectomy has subacute intestinal obstruction with no collection in the prior scan. Two patients (0.53%) developed severe fever, which was diagnosed as being due to urinary tract infection. No patient in the nonhematoma group had any morbidity.

Patients in both the hysterectomy groups had an average hospital stay of 5-7 days. Only those who had significant collection in the vaginal hysterectomy group needing intervention stayed for 10-13 days.

Discussion

Fluid collection at the vault after hysterectomy could be blood, lymph, or serous fluid with necrotic debris. It is collected in the dependent areas. Hematomas are usually seen in the pouch of Douglas, subvesical space, ischioanal fossa, and broad ligament. Postoperative hematoma can cause serious morbidity if it is large and infected. In the present series, there was collection only at the vault.

Vault hematoma can cause pain, fever, discharge, diarrhea, and mild abdominal distension, and if large, even paralytic

ileus. It is difficult to diagnose hematoma by routine clinical examination in the early postoperative period. With the help of ultrasound scan, it is possible to diagnose the hematoma in the incipient stage without causing discomfort to the patient.

Our incidence of 4.3% unexplained febrile morbidity, is lower than 19% reported by Slavotinek et al ¹ and by Kansaria et al ². The incidence of 10.53% vault hematoma in our study is higher than 6% reported by Khosla et al ³ but is less than 34.2% reported by Togliola and Pearlman ⁴. The incidence of patients undergoing drainage was 2.6% (5/190) with vaginal hysterectomies; two of the five developed collection again. Kansaria et al ² reported 8% or 16 hematomas in 200 vaginal hysterectomies out of which 4 or 25% were larger than 4 cm and needed vaginal drainage. A study of ultrasonographic assessment of vaginal vault after hysterectomy is also done by Haines et al ⁵ and Thompson et al ⁶. Their incidence of vault hematoma is much higher (42.4% and 25% respectively) as compared to our incidence (10.5%). Similar study regarding the postoperative morbidity and complications following hysterectomy has also been done by Harris ⁷ who also observes an increased rate of fever and infection following hysterectomy. Tincello ⁸ does not advocate routine postoperative sonographic scanning.

Conclusion

Asymptomatic hematoma can be diagnosed in the early postoperative period. Medium and large sized hematomas with clinical symptoms like persistent high fever, mild abdominal distension, and diarrhea need rescans and intervention if necessary. Small hematomas resolve asymptotically, do not need any further management, and the patients can be discharged as per the routine at the institution.

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