

## Original Article

# A Comparative Study between Closure and Non-Closure of Peritoneum after Vaginal Hysterectomy

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### Abstract

**Objectives:** The practice of closing or non-closing the peritoneum is still debatable. The purpose of the study was to evaluate the clinical outcome of a patient who undergoes vaginal hysterectomy with or without peritoneal closure.

**Materials and Methods:** The prospective study was conducted in the department of obstetrics and gynaecology, Shaheed Ziaur Rahman Medical college & Hospital, Bogra during the period of January 2008 to December 2009. A total of 100 cases, 50 closure and 50 non closure of peritoneum.

**Result:** In this study, 50 closure & 50 non-closure of peritoneum in vaginal hysterectomy were taken. There was no significant difference between two groups patients undergone operation. Mean operation time in closure group was 78.76; and non closure groups was 72.10 min. Patient with non closure group resumed their bowel function earlier than closure group and it is due to reduced operation time, less handling during operation and shorter duration of exposure to anaesthesia. Hospital stay was significantly reduced in non closure group due to early return of bowel function.

**Conclusion:** The data of the study supports the conclusions regarding non closure of the peritoneum after vaginal hysterectomy.

**Key words:** Vaginal hysterectomy, closure and non closure of peritoneum.

### Introduction

There are various approaches to the surgical removal of the uterus; abdominal hysterectomy laparoscopically assisted vaginal hysterectomy and vaginal hysterectomy. Vaginal hysterectomy is the second most common gynaecological operation. In developing countries genitourinary prolapsed are more common than others.

Vaginal hysterectomy results in better quality of life outcomes compared with abdominal hysterectomy; i.e. lower morbidity and quicker recovery<sup>1</sup>. In our speciality, the practice of closing or not closing the peritoneum is still being debatable. Our purpose is to evaluate the clinical outcome of the patient who undergoes vaginal hysterectomy with or without peritoneal closure. Of the procedure and to provide clinical opinion, closure of peritoneum associated with a slightly longer operating time and most post operative pain and there are some

suggestions that's it might cause more adhesion formation. There are more advantages than disadvantages to not closing the peritoneum. We encourage clinicians not to close both parietal and visceral peritoneum<sup>2</sup>. Closure of peritoneum at vaginal hysterectomy is traditionally considered a necessary and important procedure<sup>3,6,9,10,11</sup>. The surgical step is further thought to prevent later enterocele and prolapsed of the vaginal vault<sup>3,6,9</sup>. Finally, the peritoneal closure and extra-peritoneal sitting of the pedicels is believed to be crucial to avoid infection and intra-peritoneal haemorrhage<sup>10</sup>. Clinical studies demonstrating these benefits, however, are still missing. Experimental data on peritoneal healing indicate that suturing the peritoneum does not promote wound strength- it may, in fact, induce short term effects of the non-closure of the peritoneum at vaginal hysterectomy. The commonest complication associated with vaginal hysterectomy is secondary haemorrhage<sup>12</sup>, which has been seen in 34-59% cases postoperatively<sup>12,13</sup>. This has been shown to increase febrile morbidity need for blood transfusions, longer hospital stay and higher readmission<sup>13</sup>.

We therefore designed a randomized controlled to determine whether non-closure of the vaginal vault

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reduced the risk of febrile morbidity. Like others it was found that non-closure of the peritoneum was related neither to a higher short-term morbidity nor to an increased rate of postoperative complications<sup>3,16</sup>. Hirsch et.al (1995) showed that non-closure of the peritoneum is safe. According to a literature, non-closure of peritoneum reduces operating time<sup>14</sup>. In their series, Cheong et. al. (2001) opined that, this was not the case. They mentioned that, it was probably because of their high proportion of teaching cases. As for long-term morbidity, data from experimental studies have shown rapid healing of un-sutured peritoneum with minimal adhesion formation<sup>6,15,17,18</sup>. The presence of sutures on the other hand, may favours adhesion formation and related problems. Better bowel function and the absence of ileus in our study suggest that is the case.

Cheong et.al (2001) concluded that non-closure of the peritoneum is safe in vaginal hysterectomy with an apparently beneficial effect on bowel function and further clinical trials are needed to investigate the long-term effects or benefits of non-closure of the peritoneum at vaginal hysterectomy<sup>14</sup>.

### Material and Method

This randomized control study was conducted in the Department of the Obstetrics & Gynaecology, Shaheed Ziaur Rahman Medical College & Hospital, Bogra during the period of January 2008 to December 2009. In this study 100 cases, 50 peritoneum closure and 50 peritoneum non-closure of patients was taken.

### Selection Criteria

All women with utero vaginal prolapsed with cystocele and rectocele or urinary incontinence. Were included women with genitourinary prolapse or any pelvic tumour were excluded.

### Data collection

Data was collected from the women who are undergoing vaginal hysterectomy admitted into the department of gynaecology by taking history, physical examination, routine investigation, follow up after operation and also complication if any. Collected data were analysed using computer based software SPSS-12 for windows.

### Methodology

The study itself involves recording information by taking history, physical examination and relevant investigation. However, a written informed consent would be obtained from all patients or attendant. For data collection a protocol was made by a prepared questionnaire. Detailed history of the patients with particular attention to the operative details, post operative course, hospital stay and follow up after operation were included in protocol. Women admitted for vaginal hysterectomy were randomly

allocated. After proper history taking, clinical examination was performed. The technique of operation used for each patient was selected randomly. Among them 50% of the patients were peritoneum closed after vaginal hysterectomy. Remaining 50% of the patients were non-closure of the peritoneum after vaginal hysterectomy. A vaginal incision was employed in all cases which was inverted "T" shaped. After removal of uterus all clumps were sutured by vicryl 1. Peritoneum of the 50% patients were closed by 1/0 catgut, rest of the patients remained open. Cut margin of the vagina were sutured by vicryl 1/0. Parameter were recorded during operation-total time of operation, number of suture material used, any complication like excessive bleeding and parameters during post operative period- resumption of bowel sound, severity of pain in the wound, demand for post operative analgesics. Statistical analysis was done with the statistical package for social sciences (SPSS). Analytic comparisons used the unpaired students t-test and X2 test and ANOVA test.  $P < 0.05$  considered as significant.

### Observation and Results

Statistically analysis compared the characteristics and variable of the patients in whom vaginal hysterectomy with non peritonization technique and peritonization technique was performed.

**Table-I: Demography of women who underwent vaginal hysterectomy**

Demography of women		Closure	Non-closure
No. of patients		50	50
Age (years)*		56.14±7.83	57.76±5.83
Parity	(1-3)	18	15
	(>3)	32	35
Presence of medical Disorder		DM	7 8
	HTN	17	15

\* No. corresponds to median value± Standard Deviation. The characteristics of women undergoing two groups of operation, namely Closure and non closure group are shown in table-I. There were found no significant differences between two groups patients undergone operation. Mean operation time in closure group was 78.76 minutes and SD was 6.15; on the otherhand the mean time of non closure group was 72.10 minutes the SD was 6.09.

**Table-II:** Preoperative course of two groups of patients

	Closure	Non-closure	P Value
No. of patients	50	50	
Operation time (minutes)*	78.76 ± 6.15	72.10 ± 6.09	P<0.001s
Estimated blood loss			
(Hb% difference in gm/dl)**	1.20 / 0-2	1.15 / 0-2	
Return to bowel movements (day)***	2.48 ± 0.67	2.04 ± 0.66	P=0.0012s
Hospitalisation period (days)***	7.04 ± 1.18	6.48 ± 0.67	P<0.011s

\* Time corresponds to median value

\*\* Median / range

\*\*\* Median value and standard deviation

Table-II shows blood loss which measured by hb%. Patient with non closure group resumed their bowel function earlier than that of the closure group. In closure group M=2.48±0.67 and non closure groups M=2.04±0.66, P=0.0012, which is highly significant and it is due to reduced operation time, less handling during operation and shorter duration of exposure to anaesthesia. Hospital stay was significantly reduced in non closure group due to early return of bowel function. Table-III shows postoperative complications were present in 12 patients of closure group and 8 patients of non closure group. Fibrile illness was less in non closure group 2(4%) compared with closure group 4(8%). But it is not statistically significant. Urinary tract infection are equally common in both groups, micturition disorder and readmission were absent in both groups, postoperative haemorrhage and transfusions were same in both groups.

**Table-III :** Post operative complication

	Closure (n= 50)	Non-closure (n= 50)
Fever	4 (8%)	2 (4%)
Urinary tract infection	2 (4%)	2 (4%)
Micturition disorder	0 (0%)	0 (0%)
Haemorrhage	3 (6%)	2 (4%)
Transfusion	3 (6%)	2 (4%)
Readmission	0 (0%)	0 (0%)

**Table-IV:** Demand for post operative analgesics

Analgesic doses of Injection	Non-peritonization technique group (n=50)	Peritonization technique group (n=50)	Significance (P value)
Pethidine (mg)	77.78 ± 11.56	75.45 ± 14.69	NS
Range	50-100	50-100	0.358
Diclofenac Na (mg)	1.37 ± 145	4.46 ± 1.29	0.000***
Range	0-4	2-6	

Analytic comparison used the paired student "t" test. Values are shown as mean ±SD. P<0.05 considered significant. \*\*\* Highly significant, NS- Not significant

**Table V:** Requirement of suture materials

Suture materials	Closure group (n=50)	Non-closure group (n=50)	Significance (P value)
Vicryl 1	2.90 ± 0.51	2.90 ± 0.51	-
Vicryl 1/0	1.18 ± 0.39	1.18 ± 0.39	-
Catgut 1/0	1.00 ± 0.00	0.00	0.000

In non-closure technique, the less suture materials were required than closure technique.

**Table-VI:** Cost of operation

Cost Involved	Closure group (n=50)	Non-closure group (n=50)	Significance (P value)
Expenditure in Taka	1720 ± 153.18	1550 ± 151.52	0.000

In non-closure technique, the expenditure of operation was less than closure technique as less suture materials was used in this technique and it is highly significant.

### Discussion

Major gynaecological surgeries are now widely performed in many referral hospitals in our country. This study was carried out the patients in gynae and obs. Department of Shaheed Ziaur Rahman Medical College and hospital, Bogra, during January 2008 to December 2009. It is a prospective type of study. Aim of this study was to critically analysis the advantages of vaginal hysterectomy with or without closure of peritoneum.

Non-peritonization technique during vaginal hysterectomy is the result of a very careful critical assessment of each surgical step, aiming at eliminating everything that superfluous senseless and even detrimental and at improving the safety simplicity efficiency of operation.

The most important aspects reviewed are operation time estimated blood loss, requirement of suture materials, resume of bowl function and demand for post operative analgesics, fibrile illness and other post operative complications.

We found that non-closure of the peritoneum was related neither to higher short term morbidity nor to an increased rate of post operative complications. Studies done by Hirsch et. al. showed that non closure of peritoneum is safe<sup>3,16</sup>.

Cheong et. al., Irion et al. found that significantly faster resumption of bowl function occurred in sample vaginal hysterectomies when the peritoneum was left open<sup>14</sup>. Whilst Hull and Varner found no difference between two groups<sup>15</sup>.

In this study, the mean operation time was significantly shorter in non peritonization technique group than in peritonization group (78.10 ± 6.15) (p<0.001). This comparison of operation time also correlates with studies of Cheong et. al<sup>14</sup>.

The decrease in operation time was associated with non closure of peritoneum than closure of the peritoneum. It was associated with less anaesthesia time and less time that the wound was exposed environmental contamination, its potential economic benefit include decreased anaesthesia

suture costs, personal time and expense. Nagele et al. found no difference between two groups<sup>17</sup>.

In present study, patients of vaginal hysterectomy by non peritonization technique (2.04 ± 0.66) resume their bowl function earlier than the peritonization technique group (2.48 ± 0.67) p=0.001 and it is statistically significant. Patient in non-peritonization group resume their bowl sound earlier probably due to shorter operation time, less handling during operation and shorter duration exposure to anaesthesia.

In this study, women in non-peritonization group (Mean-77.78 ± SD-11.56) had experienced significant less pain than in peritonization group, (Mean-75.45 ± SD-14.69). This is because no tension is place on the peritoneal wound edges as they were not sutured in non-peritonization group. There were also significant differences in the analgesic doses (Inj. Diclofenac Na) between two groups The number of injection used in non peritonization technique group was reduced to 1.37 ± 1.43 compared with peritonization technique group 4.46 ± 1.29 doses (P=0.000).

In this study, postoperative fever in non-peritonization group 2 (4%) and peritonization group 4(8%) did not differ significantly between the two groups. In peritonization technique group post operative fever was higher than in the non peritonization group but it is not significant. This result correspond with the studies of Nagele et al. and Grundsell et al<sup>17</sup>.

In this study, the mean length of hospital stay in peritoneum open group was 6.68 ± 0.67 days and in peritoneum close group it was 7.04 ± 1.18 days p<0.001. So there was no significant difference as regard to hospital stay. Some patients in peritoneum open group wanted to leave the hospital earlier as experienced less post operative pain and other morbidity but they are not discharged earlier as they were under study. During follow up after two and six weeks, there was no significant difference as regards their present complain.

Recently Misky and Magos A found that Closure of peritoneum at vaginal hysterectomy is traditionally considered a necessary and important procedure. With this technique the peritoneum and vault are closed simultaneously. This favours the obliteration of the space between vagina and peritoneum. The surgical step is further thought to prevent haemorrhage, lower risk of vault haematoma and post operative cuff infections<sup>18</sup>.

### Conclusion

The data of the study supports the following conclusion regarding non-closure of the peritoneum of the peritoneum after vaginal hysterectomy,

- It provides a simplified surgical technique requiring less operation time and less exposure to anesthesia recovery period.
- It appears to have no detrimental effect in the immediate post operative recovery period.
- It decreases the number of suture material during operation and also post operative analgesic requirement thereby reduces the cost of surgery.
- It does not affect the post operative morbidity.
- It is associated with early return of bowel function.

A continuous effort must be made to research and evaluate the procedure in order to make it simpler, more efficient and to minimize short and long-term complications. This study shows that high lights that non-peritonization technique is efficient, safe, simple, and less traumatic. It provides rapid recovery with early ambulation and resumption of oral feeding and return to home. Further clinical trials are needed to investigate the long term effects or benefit of non-closure of the peritoneum at vaginal hysterectomy. As it was a selective hospital based to it might not reflect the actual situation of the problem throughout the country. So study on a wider scale can give further inputs of the issue.

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