Original article

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

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Abstract

Objectives : The practice of closing and non closing of peritoneum after vaginal hysterectomy is still debatable. Objective of this study was to evaluate the clinical outcome of a patient who undergo 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 non closure of peritoneum were included.

Results : Mean operation time in closure group was 78.76 minutes and SD was 6.15; in non closure group was 72.10 minutes the SD was 6.09. Patient with non closure group resumed their bowel function earlier than that of the closure group(P=0.001), it is due to reduced operation time, less handling during operation and shorter duration of exposure to anesthesia. Hospital stay was significantly reduced in non closure group. postoperative complications were present in 12 patients of closure group and 8 patients of non closure group. Febrile illness was less in non closure group 2(4%) compared with closure group 4(8%). Urinary tract infection are equally common in both groups, micturation disorder and readmission were absent in both groups, postoperative haemorrhage and transfusions were same in both groups. In non-closure technique, the expenditure of operation was less than closure technique as less suture material was used in this technique (P=0.000).

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

Key wards : 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[1].

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 of nonclosing the peritoneum. Clinicians are encouraged not to close both parietal and visceral peritoneum[2].

Closure of peritoneum at vaginal hysterectomy is traditionally considered a necessary and important procedure[3, 6, 9-11]. The surgical step is further thought to prevent later enterocele and prolapsed of the vaginal vault[3,6,9]. Finally, the peritoneal closure and extra-peritoneal sitting of the pedicals is believed to be crucial to avoid infection and intra-peritoneal haemorrhage[10]. 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[11].

The commonest complication associated with vaginal hysterectomy is secondary hemorrhage which is seen in 34-59% of cases[12,13]. It increases febrile morbidity, need for blood transfusions, longer hospital stay and higher readmission[13].

According to some other researchers[3,16], it was found that non-closure of the peritoneum was related neither to a

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higher short-term morbidity nor to an increased rate of postoperative complications. Hirsch et.al (1995) showed that non-closure of the peritoneum is safe.

According to the study done by Cheong et. al(2001). Bajeka 1 N14, non-closure of peritoneum reduces operating time. In their series, They have shown rapid healing of unsutured peritoneum with minimal adhesion formation[6,15,17,18]. The presence of sutures on the other hand, may favours adhesion formation and related problems.

Cheong et.al (2001)14] conclude that non-closure of the peritoneum is safe in vaginal hysterectomy with an apparently beneficial effect on bowl function. Further clinical trials are needed to investigate the long-term effects or benefits of non-closure of the peritoneum at vaginal hysterectomy, Cheong et.al (2001) mentioned [14].

Material and Method

This cross-sectional comparative 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.

Selection Criteria

Inclusion criteria: All women undergoing vaginal hysterectomy including vaginal repair or urinary incontinence surgery.

Exclusion criteria : Genitourinary Prolapsed with any pelvic tumour.

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 at 2nd weeks and 6th weeks after operation and also complication if any.

Statistical analysis

Collected data were analysed using computer based software SPSS-12 for windows.

Methodology

The study itself involves recording information only and invasive investigation. However a written informed consent would be obtained from all patients or attendant. . Detailed history of the patients with particular attention to the operative details, post operative course, hospital stay and follow up after 2nd weeks and 6th weeks were recorded.

Women admitted for vaginal hysterectomy were randomly allocated. After proper history taking, a through 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. Parameters were recorded during operation-total time of operation, number of suture material used, any complication like excessive bleeding and parameters during post operative period - resumal 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) version 12. Analytic comparisons used the unpaired students t-test, X2 test and ANOVA test. $P<0.05$ considered significant.

Observation and Results

Statistically analysis compared the characteristics and variable of the patients in whom vaginal hysterectomy was performed non peritonization technique with those of 50 patients in whom operation done by peritonization technique.

Table-1 : 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	DM	7	8
medical disorder	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-1. Mean operation time in closure group was 78.76 minutes and SD was 6.15; on the other hand the

mean time of non closure group was 72.10 minutes the SD was 6.09.

Table-2 : 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	0.001
Estimated blood loss(Hb% difference in gm/ dl) **	1.20 / 0-2	1.15 / 0-2	

Suture materials	Closure group (n=50)	Non-closure group (n=50)	(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
Return to bowel movements (days) ***	2.48± 0.67	2.04 ± 0.66	0.001
Hospitalisation period (days)***	7.04± 1.18	6.48 ± 0.67	0.01

* Time corresponds to median value

** Median / range

*** Median value and standard deviation

Table-2 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 bowl function.

Table-3 : Post operative complication

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

Table-3 shows postoperative complications were present in 12 patients of closure group and 8 patients of non closure group. Febrile illness was less in non closure group 2(4%) compared with closure group 4(8%). Urinary tract infection are equally common in both groups, micturation disorder and readmission were absent in both groups, postoperative haemorrhage and transfusions were same in both groups.

Table 4 : 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 5 : Requirement of suture materials

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

Table-6 : Cost of operation

Cost Involved	Closure group(n=50)	Non-closure group(n=50)	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 material 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 on the operated 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.

Like others 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. We believe that non-closure of peritoneum is safe.

A significantly faster resumption of bowl function occurred in sample vaginal hysterectomies when the peritoneum was left open. We made a similar finding in a

previous ceasarian section study.

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.

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 anesthesia suture costs, personal time and expense.

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 anesthesia.

In this series 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 to1.37±1.43 compared with peritonization technique group 4.46 ±1.29 doses ($P=0.000$).

In this series postoperative fever in non-peritonization group 2 (4%) & 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.

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, Miskry and Magos (39) presented a technique of mass closure of the vault at vaginal hysterectomy .With this technique, the peritoneum and the vault are closed simultaneously. The authors advocate this modification for the obliteration of the space between peritoneum and vagina. They expect advantages in terms of haemostasis, lower risk of vault haematoma and post operative cuff infections. They reported a fever rate of 6% and it was found 8% in this investigation.

Conclusion

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

1. It provides a simplified surgical technique requiring less operation time and less exposure to anesthesia recovery period.
2. It appears to have no detrimental effect in the immediate post operative recovery period.
3. It decreases the number of suture material during operation

and also post operative analgesic requirement there by reduces the cost of surgery.

4. It does not affect the post operative morbidity.
5. It is associated with early return of bowl 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.

References

1. Van Den Eden S, Glasser M, Mathias S, Colwell H. Pasta D, Kunz K, 1988. Quality of life ,health care utilization ,and costs among women undergoing hysterectomy in a managed-care setting. American journal of Obstetrics Gynaecology 178:91-100.
2. Tulandi.Togas MD ,AF Jaroudi, Daria MD, American Journal of Obstetrics & Gynaecology 189(2), 609-612, August 2003.
3. 3.Vaginale hysterektomie (1995) In: Hirsch H, Kaser O, IK1e' F (eds) Atlas der gynakeologischen operationen. 5. Auflage edn. Georg Thieme Verlag Stuttgart ,New York, pp235-296.
4. Duffy DM, diZerega GS(1994) Is peritoneal closure necessary? Obstet Gynecol Surv 49:814-822.
5. Ellis H, Heddle R(1977) Does the peritoneum need to be closed at laperotomy? Br J Surg 64:733-736.
6. Gitsch E, Palmrich AH, (1992) In: Gyniikologisch-operative Anatomie. 2.Auflage edn. Walter de Gruyter Verlag, Berlin, New York.
7. Holmdahl L, Risberg B, Beck DE, Bums JW, Chegini N, diZerega GS, Ellis H (1997) Adhesions: pathogenesis and prevention-panel discussion and summary .Eur J Surg Suppl577:56-62.
8. Hubbard TB. Jr. Khan MZ. Carag VR. Jr. Khan MZ, Carag VR, Jr. Albites VE, Hricko GM (1969).The pathology of peritoneal repair: its relation to the formation of adhesions. Ann Surg 165:908-916.
9. Reiffenstuhl G, Platzer W, Knapstein PG(1994) Vaginale Uterusextirpation.In: Die vaginalen operation.Chirurhi-sche Anatomie und Operationslegre.2.Augflagedn.Urban& Schwarzenberg Verlag, Miinchen Wien Baltimore, 87-131.
10. Warshaw JD, Thomas JD (1997) Hysterectomy. In: Rock JA, Thompson JD (eds) Te Linde,s Operative Gynecology, 8th edn. Lippincott-Raven, Philadelphia, pp771-854.
11. Webb MJ (2000) Surgery of the uterus. In: Webb MJ (ed) Mayo Clinic. Manual of pelvic surgery. Second edn. Williams & Wikins, Baltimore, pp55-72.
12. Kuhn RJ. De Crespigny LC. Vault haematoma after vaginal hysterectomy: an invariable sequel Aust N Z J Obstet Gynaecol 1985; 25:59-62.
13. Thomson AJ, Sproston AR, Farquharson RG. Ultrasound detection of vault haematoma following vaginal hysterectomy. Br J Obstet Gynaecol 1998; 105:211-5.
14. Cheog YC, Bajeka 1 N, Li TC (2001) Peritoneal closure to close or not to close. Hum Reprod 16:1548-1552.
15. Joura EA, Nather A, Hohlagschwandtner M, Husslein P (2002) Peritoneal closure and adhesion s. Hum Reprod 17:249.
16. Lipscomb GH, Ling FW, Stovall TG, Summitt RL Jr (1996) Peritoneal closure at vaginal hysterectomy: a reassessment. Obstet Gyneco 187:40-43.
17. raesarean section. Results from repeat caesarean sections] Wien.
18. Tulandi T, Hum HS, Gelfand MM (1988) Closure of laparoto-my incision with or without peritoneal suturing and second look laoaroscopy. Am J Obstet Gynecol 158:536-537.