

Feasibility of Prophylactic Bilateral Salpingectomy during Vaginal Hysterectomy- A Prospective Longitudinal Cohort Study

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ABSTRACT

Introduction: Fallopian tubes are not commonly removed during vaginal hysterectomy because of inadequate surgical training or fear of increased morbidity.

Aim: The primary objective of this study was to estimate the proportion of planned bilateral salpingectomies successfully completed vaginally.

Materials and Methods: This was a prospective, interventional longitudinal cohort study conducted in the Department of Obstetrics and Gynaecology at ESI, PGIMSR, Basaidarapur, New Delhi. From December 2018 to November 2019, all women undergoing vaginal hysterectomy for benign conditions were offered prophylactic salpingectomy. Operative time, blood loss and reason for non completion for salpingectomy were recorded. Patients were followed-up for six weeks. Statistical analysis was done using Statistical Package for the Social Sciences (SPSS) 17.0. Continuous variables were described

with mean and the categorical variables were described with frequencies and percentages.

Results: Thirty-five patients were enrolled in the study. The most common indications for vaginal hysterectomy for benign conditions included uterovaginal prolapse in 21 (60%) patients and adenomyosis and fibroids in 10 (30%) and 4 (10%) patients respectively. Of the 35 patients, vaginal salpingectomy was successful in 31 (88.5%) patients. Factors which led to non completion of salpingectomy were pelvic adhesions and atrophic ovaries in 2 (5.7%) patients each. Mean operating time for bilateral vaginal salpingectomy was 14.05±2.75 minutes. Mean Estimated Blood Loss (EBL) for bilateral salpingectomy was 19.86±6.88 mL.

Conclusion: Bilateral prophylactic salpingectomy with vaginal hysterectomy for benign conditions is feasible in most of the patients. Routine salpingectomy should be offered to women undergoing vaginal hysterectomy for benign conditions to prevent risk of ovarian carcinoma in future.

Keywords: Fallopian tubes, Ovarian carcinoma, Vaginal operation

INTRODUCTION

Hysterectomy is one of the most commonly performed operative procedures worldwide, second only to caesarean section [1]. Surgical menopause increases long-term risk of psychosexual, cognitive, and both fatal as well as non fatal cardiovascular disease [2]. Premenopausal women and women age less than 65 years may consider ovarian conservation, as it prevents bone resorption. Vaginal hysterectomy is the most preferred route of hysterectomy for benign conditions [3]. The most lethal ovarian malignancy including high-grade serous carcinoma, endometrioid and clear cell carcinoma have their origin from the distal fallopian tube [4]. The clinical practice statement of the Society of Gynaecologic Oncology that were issued in November 2013, suggests that in women at average risk of ovarian cancer and who choose to retain their ovaries, prophylactic bilateral salpingectomy should be considered at the time of hysterectomy or other pelvic surgery [5]. The American College of Obstetricians and Gynaecologists (ACOG) also recommends that surgeons should offer and discuss the benefits of salpingectomy to American Congress of Obstetricians and Gynaecologist patients undergoing hysterectomy in order to reduce their lifetime risk of developing ovarian cancer [6]. Earlier, in September, 2011 the Society of Gynaecologic Oncology of Canada released a position statement that physicians must discuss the risks and benefits of bilateral salpingectomy with patients undergoing hysterectomy for any indication due to its cancer potential [7]. Thus, there may be an opportunity to reduce the morbidity and mortality of epithelial ovarian cancers by performing bilateral salpingectomy at the time of hysterectomy.

Despite the recommendation the rate of bilateral salpingectomy at the time of vaginal hysterectomy is very low. This may be due to the technical challenge, increased operative time or increased blood loss. In a large retrospective cohort of more than 12,000 hysterectomies, it was found that only 17% of vaginal hysterectomies had salpingectomy performed [8]. In 2017, Cadish LA et al., also stressed the importance of considering prophylactic salpingectomy at the time of vaginal hysterectomy as the benefits of this strategy outweighs the risks [9]. Despite the recommendations, in countries like ours, salpingectomy in vaginal hysterectomy is not performed by many practitioners routinely. There is also paucity of studies looking into the reasons and consequences of this in Indian scenario. This study was undertaken to assess the feasibility of bilateral salpingectomy at the time of vaginal hysterectomy for benign conditions. Secondary objectives were additional length of time, EBL and factors associated with non completion of planned bilateral salpingectomy.

MATERIALS AND METHODS

This was a prospective, interventional longitudinal cohort study conducted in the Department of Obstetrics and Gynaecology at ESI, PGIMSR, Basaidarapur, New Delhi. From December 2018 to November 2019, all women undergoing vaginal hysterectomy for benign conditions (uterovaginal prolapse, adenomyosis, fibroids) were offered prophylactic salpingectomy. The preoperative diagnosis was made based on the findings on Ultrasonography as well as clinical examination. Permission was obtained from the Institutional Ethics Committee {DM(A)H-19/14/17IEC/2012-PGIMSR} before

the start of the study. The study was conducted according to the ethical principles stated in the latest version of Helsinki Declaration, and the applicable guidelines for Good Clinical Practice (GCP).

Inclusion criteria: All women undergoing vaginal hysterectomy for benign conditions.

Exclusion criteria: History of removal of a fallopian tube or ovary, had known tubo-ovarian pathology, opted for oophorectomy at the time of hysterectomy and were not willing to participate in the study. Patients with severe endometriosis with cul-de-sac obliteration were also excluded.

A study conducted by Lin YS et al., had reported that 76% of patients had successfully undergone bilateral salpingectomy [10]. Considering a margin of 15%, a sample size of 35 patients was arrived for this study. The primary outcome of the study was to estimate the proportion of patients in whom bilateral prophylactic salpingectomy could be successfully completed vaginally whereas the secondary outcomes were additional length of time, EBL and factors associated with non completion of planned bilateral salpingectomy.

Baseline patient characteristics such as age, parity, Body Mass Index (BMI), relevant medical and surgical history along with the reason for vaginal hysterectomy were noted from the medical records of the patient prior to the surgery. Details pertaining to surgical procedure (vaginal hysterectomy with bilateral prophylactic salpingectomy), intraoperative findings, complications, salpingectomy start and end time, and EBL for salpingectomy were noted during the procedure. After assuring the haemostasis of hysterectomy pedicles, salpingectomy operative time started when the adnexal pedicle was first grasped to search for the fallopian tube on the first side. Salpingectomy operative time ended after achieving haemostasis of the bilateral fallopian tube pedicles. A standardised technique was employed involving a single or double clamp to clamp across the mesosalpinx and a single or double suture-ligation to secure the pedicle following excision of the fallopian tube. The salpingectomy surgery included the removal of the fallopian tube along with fimbria. Patients were followed-up for six weeks for any complications.

STATISTICAL ANALYSIS

All the relevant data was entered in MS-Excel and statistical analysis was performed using SPSS version 17.0. Continuous variables were described with mean whereas categorical variables were described with frequencies and percentages. ANOVA was used for comparison of normally distributed continuous variables between the groups. A p-value of <0.05 was taken as significant.

RESULTS

Thirty-five patients agreed and were enrolled to be a part of present study. Mean age of study participants was 56.95±5.62 years. Mean age at marriage of participants was 18.14±1.55 years. Mean BMI of the patients was 22.77±4.05 kg/m². Mean parity was 4.9±1.44. The demographic characteristics of the study population are depicted in [Table/Fig-1]. Significant medical or surgical history was noted in 21 (60%) patient [Table/Fig-2]. The indications for vaginal hysterectomy included uterovaginal prolapse in 21 (60%) patients and adenomyosis and fibroids in 10 (30%) and 4 (10%) patients respectively. Vaginal salpingectomy was successful in 31 (88.5%) patients. Of the four patient in whom vaginal salpingectomy could not be done, 2 (5.7%) had pelvic adhesions whereas in the remaining two cases tubes were pulled up due to atrophic ovaries.

Parameters		N	%
Age groups (Years)	41-60	27	77.3%
	>60	8	22.7%
Wife's occupation	Housewife	35	100%
Husband's occupation	Labour	7	20.0%
	Private	12	34.3%
	Widow	3	8.6%
	Unknown	13	37.1%
Level of education	Illiterate	16	15.5%
	Class 8 th	6	17.1%
	Class 10 th	2	5.7%
	Class 12 th	11	31.8%
Age at marriage (years)	Mean±SD	18.14±1.55	
Parity	Mean±SD	4.91±1.44	
Number of vaginal deliveries	Mean±SD	4.91±1.44	
BMI (kg/m ²)	Mean±SD	22.77±4.05	

[Table/Fig-1]: Demographic characteristics of the patients enrolled in the study (n=35). SD: Standard deviation; BMI: Body mass index

Parameters		N	%
Associated medical history	No	3	8.6%
	Diabetes mellitus	13	37.1%
	Hypertension	22	62.9%
	Hypothyroid	9	25.7%
	Hypothyroid diabetes mellitus	2	5.7%
Past surgical history	No	14	40.0%
	Appendectomy	8	22.9%
	Cholecystectomy	3	8.6%
	Previous lower segment caesarean section (LSCS)	10	28.5%
Pelvic pain	No	27	77.1%
	Yes	8	22.9%

[Table/Fig-2]: Significant medical or surgical history (n=35).

Mean operating time for bilateral vaginal salpingectomy was 14.05±2.75 minutes. Mean EBL for bilateral salpingectomy was 19.86±6.88 mL [Table/Fig-3]. Intraoperative bradycardia and haematoma formation was observed in two patients each that was managed whereas bleeding was observed in one patient but none of these were related to bilateral salpingectomy. Blood transfusion was required in two patients whereas none of the patients had bladder or bowel injuries [Table/Fig-4,5]. At a follow-up of six weeks, four patients had some vaginal infection and rest all were normal [Table/Fig-6].

	Successful vaginal salpingectomy (n=31)		Failed vaginal salpingectomy (n=4)	
	Mean±SD	Min-Max	Mean±SD	Min-Max
Total patients (n=35)				
Salpingectomy operative time (minutes)	14.05±2.75	10-20	NA	
Total blood loss (mL)	291.1±72.3	200-450	360±88.8	250-450
Salpingectomy estimated blood loss (mL)	19.86±6.88	12-40	NA	
Uterine weight (gm)	362.1±134.7	200-650	500±435	200-1000
Total operating time (hours)	2.44±0.74	1.5-4.5	2.16±0.25	2-2.5
Total hospital stay (days)	5.29±1.71	4-10	6±1.5	5-8
Haemoglobin change (gm/dL)	1.22±0.68	0.5-4	1.83±1.04	1-3

[Table/Fig-3]: Observations made during the study. SD: Standard deviation; NA: Not applicable

DISCUSSION

With the limitation of minimal increases in operative time and blood loss, vaginal salpingectomy is feasible in majority of the

Complication	N	%
No complication	30	85.7%
Bradycardia	2	5.7%
Haematoma	2	5.7%
Bleeding >500 mL	1	2.9%

[Table/Fig-4]: Intraoperative complications during vaginal hysterectomy (n=35).

Complication	N	%
Blood transfusion	2	5.7%
Postoperative urinary tract Infection	4	11.4%
Pulmonary embolism/deep vein thrombosis	0	0
Return to surgery for intrapelvic bleeding	0	0
Urinary retention	0	0
Emergency room visit	0	0
Re-operation	0	0
No complication	29	82.9%

[Table/Fig-5]: Immediate postoperative complication of procedure (n=35).

Complication	N	%
Vaginal cuff cellulitis	0	0
Urinary tract infection	0	0
Granulation tissue	0	0
Vaginal infection	4	11.4%
Others	0	0
No complication	31	88.6%

[Table/Fig-6]: Complication at 6 weeks follow-up (n=35).

women undergoing vaginal hysterectomy. As compared to the hysterectomy alone or tubal ligation, the procedure does not increase the risk of other postoperative complications such as blood transfusions, readmissions, infections or fever [3]. This provides an opportunity to reduce the rate of ovarian cancer in the future. The vaginal approach is preferred, because it has the lowest complication rates. The ACOG recommend vaginal hysterectomy over laparoscopic and abdominal approaches for benign disease because of lower complication rates and shorter operative times [11]. Although the rates of prophylactic salpingectomy are increasing as per ACOG recommendations, the rates of salpingectomy at the time of vaginal hysterectomy still remain low [12,8]. In one study, only 16.5% of women undergoing vaginal hysterectomy had prophylactic salpingectomy, as compared to 55.8% of hysterectomies performed by other routes [8]. To the best of the knowledge, no previous studies on this topic have been reported for Indian population.

The successful salpingectomy rate of 88.5% achieved in present study is consistent with the findings of a study published in Canada [13]. The study showed ageing and pelvic adhesions as the risk factors for unsuccessful removal although the major limitation of this study was its retrospective design [13]. The findings of present study are in compliance with these observations. Antosh DD et al., reported that prior adnexal surgery and fibroids as an indication for surgery were associated with unsuccessful completion of planned vaginal salpingectomy [2]. Prior adnexal surgery may predispose to tubal adhesions [2].

The present study had longer mean operating time and higher mean blood loss for bilateral vaginal salpingectomy in comparison to study done by Antosh DD et al., [2]. In present study, mean operating time for bilateral vaginal salpingectomy was 14.05±2.75 minutes and mean EBL for bilateral salpingectomy was 19.86±6.88 mL. Similarly, the study by Antosh DD et al.,

showed a minimal increase of 11 minute in the operative time along with a 6 mL increase in the EBL with salpingectomy [2]. In present study, there were no complication related to bilateral salpingectomy. The over rate of 14% complication during vaginal hysterectomy was comparable to Canadian study which reported 15% of complication during vaginal hysterectomy [13]. A recent study by Hanley GE et al., reported no increase in complications with the addition of salpingectomy at the time of hysterectomy [4]. While a study by Cadish LA et al., had shown more major complications (7.95% vs. 7.68%) with planned opportunistic salpingectomy as compared to the hysterectomy alone [9].

Strengths of this study include its prospective design, although small sample size appears to be limiting factor. However, planned bilateral salpingectomy at the time of vaginal hysterectomy is feasible and likely to be successful with minimal additional time, blood loss, and risk. Vaginal surgeons should feel confident and practice it routinely.

Limitation(s)

The major limitation of this study was its small sample size. Further studies with a larger sample size to identify the risk factors for successful removal seems warranted.

CONCLUSION(S)

Routine salpingectomy should be offered to women undergoing vaginal hysterectomy for benign conditions to prevent risk of ovarian carcinoma in future.

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