

# A Hospital Based Cross-Sectional Study to Evaluate Ovarian Cancer Risk after Salpingectomy

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## ABSTRACT

**Objective:** The main objective of this hospital based cross-sectional study was to evaluate ovarian cancer risk after salpingectomy.

**Material and Methods:** This hospital based cross-sectional observational study was carried out over a period of 1 year (Oct 2019 – Oct 2020) conducted at SS Hospital, Bihar. By descriptive statistics & Pearson Chi square test using SPSS software the collected data were analysed.

**Results:** 257 patients were included in salpingectomy group, whereas 312 were under Hysterectomy and BSO group. Mean age at entry was  $35.7 \pm 8.9$  years at Salpingectomy group whereas the same was  $37.9 \pm 4.8$  years with Hysterectomy and BSO group. When compared with the Hysterectomy and BSO population for ovarian cancer and among women with previous salpingectomy there was a statistically significantly lower risk observed. A further 50% decrease in risk of ovarian cancer was associated with Bilateral salpingectomy compared with the unilateral procedure (unilateral: HR = 0.73, 95% CI = 0.57 to 0.92; bilateral salpingectomy: HR = 0.36, 95% CI = 0.17 to 0.75).

**Conclusion:** Reduced risk of ovarian cancer is associated with salpingectomy on benign indication. This data also in line with the concept that in the fallopian tube ovarian cancer arises at a substantial fraction. Our results suggest that in the general population to reduce ovarian cancer risk an effective measure is the removal of the fallopian tubes by itself.

**Keywords:** Ovarian Cancer, salpingectomy, risk reduction, unilateral, bilateral.

## INTRODUCTION

Among gynecologic cancers one of the most prevalent is ovarian cancer [1,2]. At

an advance stage of stage III and IV with 30% less than -year survival rate, 75% patients were diagnosed [3,4]. Satisfying results have not achieved with various early detection and preventive methods of ovarian cancer [5,6]. Previously, risk factor modification was concerned for primary ovarian cancer prevention and thus according to epidemiologic data, encouraging protective factors such as the use of oral contraception. Unfortunately, the incidence of ovarian cancer have not significantly reduced with these modifications [7,8].

In spite of recent advances in surgical treatment in developed countries the most lethal gynecological cancer is ovarian cancer and the prognosis remains poor [9-11]. Ovarian cancer is commonly diagnosed at a late stage because of lack of reliable screening methods and vague symptoms [12-14]. Out flow of invasive or preinvasive components into the peritoneal cavity prevented due to the obstruction of the fallopian tubes is speculated to be underline mechanism despite the fact that underlying mechanism remains unknown.

Patients who are already undergoing pelvic surgery for benign disease Opportunistic salpingectomy may offer opportunity to decrease the risk of ovarian cancer. In addition to the primary surgical procedure when fallopian tubes were removed by performing salpingectomy, the risk of ovarian cancer is reduced. Though surgical menopause caused by salpingectomy reduces the risk of ovarian cancer but may increases the risk of cognitive impairment, osteoporosis, risk of

cardiovascular disease and all-cause mortality.

The main objective of this hospital based cross-sectional study to evaluate ovarian cancer risk after salpingectomy.

## MATERIALS AND METHODS

This hospital based cross-sectional observational study was carried out over a period of 1.1 years (Oct 2019 – Oct 2020) conducted at SS Hospital, Bihar. Written consents were obtained from all the participant’s and each participant were informed about this research in details. Participants who were willing to participate in the study and undergone salpingectomy or any such procedure or still unexposed but having risk factors were initially selected for this study. Women with oophorectomy, history of cancers at baseline or with salpingectomy location undetermined were excluded from this study.

From the inpatient data of the SS hospital, we identified all women (n = 569) who had newly received any types of gynaecologic surgery from Jan 2010 to November 2020 and not received any types of gynaecologic surgery before, including hysterectomy and bilateral salpingo-oophorectomy (BSO) (n=312) and salpingectomy (unilateral and bilateral) (N=257). This patients were compared with on follow up we have captured the demographic data like age at entry, educational level, age at surgery. Ovarian cancer incidence was recorded. Hazard ratios (HRs) with 95% CI for the development of ovarian cancer were calculated with Cox regression analyses.

We calculated the descriptive statistics of the sample population and Chi Square test was carried out to study the association. A Microsoft excel sheet were initially used to capture the data and

relevant data were tabulated and graphically represented. The mean and standard deviations were calculated and compared.

By descriptive statistics & Pearson Chi square test using SPSS software the collected data were analysed.

## RESULT

Characteristics of the study population were demonstrated in table 1. 257 patients were included in salpingectomy group, whereas 312 were under Hysterectomy and BSO group. Mean age at entry was 35.7± 8.9 years at salpingectomy group whereas the same was 11.3±8.3 years with Hysterectomy and BSO group. Levels of education and age at surgery were demonstrated in brief at table 1.

Table 1: Characteristics of the study population

Characteristic	Salpingectomy	Hysterectomy and BSO	P Value
N	257	312	0.672
Age at entry(y)	35.7± 8.9	37.9 ±4.8	0.752
Follow-up (y)	18.0±10.5	11.3±8.3	0.891
<b>Age at surgery (y)</b>			
Low	68	75	0.761
Middle	158	167	0.957
High	31	70	0.876
<b>Age at surgery (y)</b>			
>30	67	2	NS
30-39	124	34	
40-49	51	55	
50-59	10	135	
60-69	3	60	
> 70	2	26	

When compared with the Hysterectomy and BSO population for ovarian cancer and among women with previous salpingectomy there was a statistically significantly lower risk observed. A further 50% decrease in risk of ovarian cancer was associated with Bilateral salpingectomy compared with the unilateral procedure (unilateral: HR = 0.73, 95% CI = 0.57 to 0.92; bilateral salpingectomy: HR = 0.36, 95% CI = 0.17 to 0.75).

Table 2: Hazard ratios and incidence rates for ovarian cancer

Surgery	No. of OC	IR (95% CI)	HR (95% CI)	P value
Unilateral Salpingectomy	4	14.4 (1.4 to 18.3)	0.73 (0.57 to 0.92)	.0092
Bilateral salpingectomy	2	9.9 (4.7 to 20.8)	0.36 (0.17 to 0.75)	.0064
Hysterectomy and BSO	9	25.3 (25.0 to 25.6)	0.65 (0.52 to 0.81)	.0054

## DISCUSSION

In this hospital based cross-sectional study to evaluate ovarian cancer risk after salpingectomy it was observed that a history of salpingectomy was associated with a reduced risk of ovarian cancer. This data also confirms the hypothesis that gynaecological organs outside the ovaries generally caused ovarian cancer.

The ability to control for confounding factors and the population-based design is the strength of this study. A consistent effect over time would require to observed relationship between ovarian cancer and salpingectomy. Current study is suggestive of a true association with 10 years or more after salpingectomy and prominent risk reduction. Although operation-related complications minimally increase with this procedure, in terms of prevention of ovarian/fallopian/peritoneal cancer vaginal hysterectomy is favourable during prophylactic salpingectomy, as compared to the complications associated with vaginal hysterectomy alone. In terms of preserving ovarian reserve, a safe procedure considered as salpingectomy, here is a lack of long-term outcomes representing evidences. On an individual basis before surgery caesarean delivery could be counselled for prophylactic salpingectomy at the time sterilization in women who desire permanent sterilization.

It was observed in current study that when compared with the unexposed population for ovarian cancer among women with previous salpingectomy. In this clinical observational study, it was also observed that there was a statistically significantly lower risk observed. This clinical study further reveals a further 50% decrease in risk of ovarian cancer was associated with Bilateral salpingectomy compared with the unilateral procedure (unilateral: HR = 0.73, 95% CI = 0.57 to 0.92; bilateral salpingectomy: HR = 0.36, 95% CI = 0.17 to 0.75).

Uses of oral contraceptives (OCs) were unable to control in this current study. For ovarian cancer a well-established risk

reducing factor is the use of oral contraceptives (OCs) [12]. Even larger than reported in this study bilateral salpingectomy suggesting that the protective effect and been recognized as risk factors for ovarian cancer for both in patients having endometriosis and pelvic inflammatory disease (PID) [13, 14].

## CONCLUSION

Reduced risk of ovarian cancer is associated with salpingectomy on benign indication. This data is also in line with the concept that in the fallopian tube ovarian cancer arises at a substantial fraction. Our results suggest that in the general population to reduce ovarian cancer risk an effective measure is the removal of the fallopian tubes by itself.

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