Analysis of Prophylactic Salpingo-oophorectomy at the Time of Hysterectomy for Benign Lesions

Sheela Hemant Jain, Savita Ashutosh Somalwar

INTRODUCTION

Prophylactic salpingo-oophorectomy is the removal of healthy tubes and ovaries in high-risk women to reduce future risk of ovarian and/or breast carcinoma. It also eliminates the potential for further surgery for benign disease as well. The lifetime risk of ovarian cancer in women is 1 in 70 to 1 in 100. Nulliparous women or those with low parity, late menopause, genetic predisposition, breast or gastrointestinal cancer, or those on prolonged hormone therapy have a higher risk of developing ovarian cancer. Women with a strong family history of ovarian and/or breast cancer and those who carry germline mutations (BRCA-1 and BRCA-2) have a significantly increased lifetime risk for developing ovarian cancer. Not only that, those with genetic mutations tend to develop ovarian cancer at an earlier age. It is therefore recommended that these women undergo prophylactic oophorectomy. The procedure has however fallen into disrepute as it is frequently being done in women with average risk. The removal of healthy ovaries in an average risk woman
deprives her of benefits of endogenous estrogens in premenopausal women and benefits of endogenous androgens in postmenopausal women. A number of studies have shown that average-risk premenopausal women who underwent prophylactic oophorectomy showed a significant increase in mortality from cardiovascular disease compared to those who had ovarian conservation.\[^{5,6}\] In addition, the risks, costs, and benefits of prophylactic oophorectomy in the absence of genetic markers and at the time of hysterectomy for benign lesions has not been fully evaluated.\[^{7}\] The number needed to treat for prophylactic bilateral oophorectomy in women at low risk for developing ovarian cancer is 300.\[^{7}\] Prophylactic oophorectomy is associated with a decreased risk of breast and ovarian cancer but an increased risk of all-cause mortality, fatal and nonfatal heart disease and lung cancer. In no analysis of age group was prophylactic oophorectomy associated with increased survival.\[^{5}\] Furthermore, prophylactic oophorectomy does not completely eliminate the risk of breast cancer and primary peritoneal cancer. Studies on breast cancer in the Indian population also recommend prophylactic oophorectomy only in women who are positive for BRCA 1 and BRCA 2 mutations. The facility for genetic screening in our country is limited and expensive and out of reach of most of the women and hence cannot be routinely done for all women.

**Aims and objectives**

1. To study the reasons behind the patients’ choice for prophylactic oophorectomy at the time of hysterectomy for benign diseases
2. To study the histology of the tubes and ovaries in cases of prophylactic oophorectomy.

**Materials and Methods**

This prospective study was carried out over a period of 2 years from January 2016 to December 2017 at a tertiary care center providing services to both urban and rural population. The study group included women undergoing prophylactic salpingo-oophorectomy at the time of hysterectomy for benign gynecological conditions. Women over the age of 60 years and women with diagnosed or suspected malignancy were excluded. In all, 252 women between 35 and 60 years undergoing hysterectomy for benign conditions were evaluated. Of these, 86 (34.12%) women opted for prophylactic oophorectomy. Relevant investigations (ultrasonography [USG], Paps smear, and CA 125 levels) were noted. The patient and her relative were individually counseled about the procedure of prophylactic oophorectomy, and ovarian conservation and the pros and cons of both procedures were explained, and they were allowed to choose. Their reasons for choosing prophylactic oophorectomy were evaluated. The histopathology reports of the tubes and ovaries were also noted.

The outcome measures assessed were age, education, socio-economic status, parity, contraceptive method used, past and family history of malignancy, awareness about postmenopausal hormone therapy, CA 125 levels, USG and Paps smear report, indication for hysterectomy, reasons for prophylactic oophorectomy and histopathology report.

**Results**

Of the 252 patients, 86 (34.12%) opted for prophylactic oophorectomy.

Most of the patients were between 41 and 50 years of age [Table 1].

The patients mostly belonged to low socio-economic status or lower middle class. Barring a few, patients in our study were not educated beyond 8th standard. About 51.16% of patients were Para 3 and 25.58% were Para 2 [Table 2].

Very high acceptance for tubal ligation as a method of contraception was observed (74.41%). Barrier method (11.62%) was the next commonly used method [Table 3].

None of these patients who underwent prophylactic salpingo-oophorectomy during hysterectomy for benign lesions had any past or family history of breast, ovarian or gastrointestinal malignancy. Only one patient had

| Table 1: Age distribution (total n=86) |
|-----------------|-----------------|
| Age (years)     | Number of patients (%) |
| 35-40           | 14 (16.27)       |
| >40-45          | 30 (34.88)       |
| >45-50          | 34 (39.53)       |
| >50-55          | 6 (6.97)         |
| >55-60          | 2 (2.32)         |

| Table 2: Parity of the patients (total n=86) |
|-----------------|-----------------|
| Parity          | Number of patients (%) |
| Para 1          | 4 (4.65)         |
| Para 2          | 22 (25.58)       |
| Para 3          | 44 (51.16)       |
| Para 4          | 12 (13.95)       |
| Para 5          | 4 (4.65)         |
fibroadenoma of the breast which was excised, and the benign nature proved on histology. The reports of Paps smear and CA 125 were within normal limits. Ultrasound reports were normal as far as ovaries were concerned. There was a lack of awareness about postmenopausal hormone therapy. Dysfunctional uterine bleeding and leiomyoma were the most common indications for hysterectomy, others being endometriosis, adenomyosis, postmenopausal bleeding and [Table 4]. More than one condition was observed in some patients.

The reasons for opting for prophylactic oophorectomy were evaluated. In about 60%, the women were unable to decide themselves and wanted their treating gynecologist to make the appropriate decision. The other common reasons were fear of developing malignancy in future, need for repeat surgery even for the benign lesion, inability to follow-up and previous one or more abdominal surgeries such as cesarean section [Table 5]. Reasons, why their gynecologists had advised for prophylactic oophorectomy, were age >45 years, women with endometriosis and severe adhesions, women with postmenopausal bleeding and women with moderate or severe cervical dysplasia.

All the tissues (the uterus, tubes, and ovaries) were subjected to histopathology examination. The report of tubes and ovaries in all the patients was unremarkable, and none of the tubes or ovaries removed showed any evidence of malignancy or premalignant lesion. None of the patients were aware about postmenopausal hormone therapy.

**Discussion**

Age of the patient is one of the important factors when considering conservation or removal of healthy ovaries. About 40% of patients who underwent prophylactic oophorectomy, in our study, were below 45 years. We at our institute consider prophylactic oophorectomy at or beyond 45 years of age to minimize any chances of repeat surgery for benign or malignant lesion in future. Evans et al. concluded that prophylactic bilateral oophorectomy offers the advantage of effectively eliminating the risk of ovarian cancer and reoperation but can be detrimental to other aspects of health especially in women below 45 years. Rocca et al. opined that in the absence of documented high-risk genetic variant predisposing to ovarian cancer, bilateral prophylactic oophorectomy before the age of 50 years should never be considered. Hickey et al. advise ovarian conservation till 65 years in low-risk women. Nulliparity, genetic predisposition, past or family history of ovarian/breast/gastrointestinal malignancy or prolonged hormone therapy are considered high-risk factors for ovarian malignancy. None of the patients in our study had any of these high-risk factors. Only four of the patients had low parity. They were Para 1.

Genetic screening for BRCA 1 and BRCA 2 mutation is expensive and not easily available in our country. Hence, we need to rely on meticulous history, clinical examination, and investigations such as sonography and tumor markers. By these parameters, all our patients were in low-risk group. In our study, no abnormality either in the form of premalignant changes or early malignancy was detected in the histopathology examination of tubes and ovaries removed even at 58 and 59 years Hickey et al. suggested that for women at low risk of ovarian cancer, ovarian conservation until at least till age 65 years seems to benefit long-term survival.

Although most of our patients were educated till middle school, they failed to appreciate that uterus and ovaries were different organs even after explaining and almost 60% depended on their treating gynecologist to make an appropriate decision. Education thus plays an important role in decision making. Fear of developing malignancy in future was another important factor in about 16% of women. Inability to follow-up in future was also a reason for opting for prophylactic oophorectomy in 11.6% of patients. This was not so in other studies by Novetsky et al. and Jacoby et al. 

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**Table 3: Contraceptive practices (total n=86)**

| Contraceptive method      | Number of patients (%) |
|--------------------------|------------------------|
| Tubal ligation           | 64 (74.41)             |
| Barrier method           | 10 (11.62)             |
| Oral contraceptive pills | 3 (3.48)               |
| Cu-T                     | 1 (1.16)               |
| Vasectomy                | 4 (4.65)               |
| None                     | 4 (4.65)               |

**Table 4: Indications for hysterectomy (total n=86)**

| Indication for hysterectomy | Number of patients |
|-----------------------------|--------------------|
| DUB                         | 42                 |
| Leiomyoma                   | 26                 |
| Endometriosis               | 4                  |
| Adenomyosis                 | 8                  |
| Postmenopausal bleeding     | 9                  |

**Table 5: Reason for prophylactic oophorectomy (total n=86)**

| Reason for prophylactic oophorectomy | Number of patients (%) |
|--------------------------------------|------------------------|
| Decision by doctor                   | 52 (60.46)             |
| Fear of malignancy and repeat surgery| 14 (16.2)              |
| Inability to follow-up               | 10 (11.6)              |
| Previous one or more abdominal surgeries | 10 (11.6)          |
The previous history of abdominal surgeries mainly in the form of cesarean sections was yet another reason, why women opted for prophylactic oophorectomy. Their decision in such cases was also supported by the treating gynecologists especially in cases with previous two or more cesarean deliveries. Although this was an important consideration in our study, this factor is not reported in other studies.\textsuperscript{19,10} There have been very few studies that have analyzed the reasons why prophylactic oophorectomy is favored in women with low risk for ovarian/breast malignancy.

**CONCLUSION**

Age, poor education status, lack of knowledge and understanding, socio-economic status, fear of malignancy, need for repeat surgery, and previous one or more abdominal surgeries are important factors that affect decision-making when choosing between ovarian conservation and prophylactic oophorectomy at the time of hysterectomy for benign lesions. Moreover, women in our country still depend on their gynecologist for appropriate decision. Hence, we need to reconsider the age at which we recommend prophylactic oophorectomy. We need to emphasize on the benefits of ovarian conservation and ill effects of prophylactic oophorectomy in low-risk women. Too much negative counseling should be deferred.

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**Conflicts of interest**

There are no conflicts of interest.

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