



COMMITTEE OPINION

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Committee on Gynecologic Practice

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Salpingectomy for Ovarian Cancer Prevention

ABSTRACT: Ovarian cancer has the highest mortality rate out of all types of gynecologic cancer and is the fifth leading cause of cancer deaths among women. Current attempts at screening for ovarian cancer have been unsuccessful and are associated with false-positive test results that lead to unnecessary surgery and surgical complications. Prophylactic salpingectomy may offer clinicians the opportunity to prevent ovarian cancer in their patients. Randomized controlled trials are needed to support the validity of this approach to reduce the incidence of ovarian cancer. The approach to hysterectomy or sterilization should not be influenced by the theoretical benefit of salpingectomy. Surgeons should continue to observe and practice minimally invasive techniques.

Based on the current understanding of ovarian carcinogenesis and the safety of salpingectomy, the American College of Obstetricians and Gynecologists supports the following recommendations and conclusions:

- The surgeon and patient should discuss the potential benefits of the removal of the fallopian tubes during a hysterectomy in women at population risk of ovarian cancer who are not having an oophorectomy.
- When counseling women about laparoscopic sterilization methods, clinicians can communicate that bilateral salpingectomy can be considered a method that provides effective contraception.
- Prophylactic salpingectomy may offer clinicians the opportunity to prevent ovarian cancer in their patients.
- Randomized controlled trials are needed to support the validity of this approach to reduce the incidence of ovarian cancer.

Ovarian cancer has the highest mortality rate out of all types of gynecologic cancer and is the fifth leading cause of cancer deaths among women (1). The overall survival rate for women with epithelial ovarian cancer has improved marginally in the past 50 years. The more aggressive epithelial ovarian carcinomas represent 75% of all cases of ovarian cancer and are responsible for 90% of deaths due to ovarian cancer. Current attempts at screening for ovarian cancer have been unsuccessful

and are associated with false-positive test results that lead to unnecessary surgery and surgical complications (1–4). Prophylactic salpingectomy may offer clinicians the opportunity to prevent ovarian cancer in their patients.

The most compelling theory of epithelial ovarian carcinogenesis suggests that serous, endometrioid, and clear cell carcinomas are derived from the fallopian tube and the endometrium and not directly from the ovary (5–9). This is in contrast to the traditional view of ovarian carcinogenesis in which ovarian surface epithelium (mesothelium) undergoes metaplastic changes leading to the different histologic types of epithelial ovarian cancer. In women with a genetic predisposition for ovarian cancer, lesions have been found in the fallopian tubes that closely resemble ovarian high-grade serous carcinomas or serous tubal intraepithelial carcinomas. These lesions are thought to be the primary source of ovarian carcinoma that secondarily involves the ovary. Genetics studies show that these tubal lesions express a common *TP53* mutation, as do high-grade serous, high-grade endometrioid, and undifferentiated carcinomas. In addition, gene expression of high-grade serous carcinomas is more closely related to the fallopian tube morphology than the ovarian surface epithelium. High-grade serous carcinomas express a müllerian marker (*PAX8*) but not a mesothelial marker (calretinin). This research significantly affects two groups of women: 1) those at high risk for hereditary ovarian cancer and 2) those at population risk (no genetic predisposition for ovarian cancer)



undergoing routine pelvic surgery. This Committee Opinion addresses women at population risk undergoing routine pelvic surgery for benign disease.

Tubal ligation has a protective effect specifically against endometrioid and clear cell carcinomas of the ovary, which supports the theory that these tumors may be due to retrograde menses of endometrial cells (10). By performing salpingectomy when patients undergo an operation during which the fallopian tubes could be removed in addition to the primary surgical procedure (eg, hysterectomy), the risk of ovarian cancer may be further reduced. Randomized controlled trials are needed to support the validity of this approach to reduce the incidence of ovarian cancer.

Salpingectomy at the time of hysterectomy or as a means of tubal sterilization appears to be safe, without an increase in complications, such as the need for blood transfusions and readmissions, compared with hysterectomy alone or tubal ligation (1). Additionally, ovarian function does not appear to be affected by salpingectomy at the time of hysterectomy based on surrogate serum markers or response to *in vitro* fertilization (11–14).

The surgeon and patient should discuss the potential benefits of the removal of the fallopian tubes during a hysterectomy in women at population risk of ovarian cancer who are not having an oophorectomy. Counseling women who are undergoing routine pelvic surgery about the risks and benefits of salpingectomy should include an informed consent discussion about the role of oophorectomy and bilateral salpingo-oophorectomy (BSO). Bilateral salpingo-oophorectomy that causes surgical menopause reduces the risk of ovarian cancer but may increase the risk of cardiovascular disease, osteoporosis, and cognitive impairment (15). In the Nurses' Health Study, all-cause mortality and cancer mortality increased in women who received a BSO (16). The risk of ovarian cancer after hysterectomy with ovarian conservation is 0.1–0.75% (17). Death from ovarian cancer after tubo-ovarian conservation in the Nurses' Health Study was 0.03% (16). The benefits of ovarian conservation decrease with age, and there is little benefit after age 65 years (18). Given current theories of ovarian carcinogenesis, ovarian conservation and salpingectomy may represent a better option than BSO for ovarian cancer risk reduction for most women undergoing other pelvic surgeries for benign disease. When counseling women about laparoscopic sterilization methods, clinicians can communicate that bilateral salpingectomy can be considered a method that provides effective contraception. Although there is no information about the effectiveness of complete salpingectomy as a method of sterilization, possible surrogates may include postpartum partial salpingectomy and interval partial salpingectomy, which were found to have 7.5 and 20.1 cumulative probability of pregnancy per 1,000 procedures, respectively, in the U.S. Collaborative Review of Sterilization study (19). In addition, health care providers should highlight that

salpingectomy eliminates tubal reversal as an option for those women who experience regret and seek fertility options later.

Complete salpingectomy is preferred over fimbriectomy (20); however, if complete salpingectomy cannot be performed, then removing as much of the fallopian tubes as possible, excluding the interstitial portion, still may have value (21). Studies of risk-reducing surgery for patients with *BRCA* mutations demonstrated that 1–5% of those women had early tubal malignancy; in most of these cases of malignancy, an early intraepithelial component was located in the fimbriated end of the fallopian tube (21, 22). Earlier benign lesions (serous tubal intraepithelial lesions and tubal intraepithelial lesions in transition) and a concept of surrogate precursor, called secretory cell outgrowths, have been implicated in the development of tubal dysplasia and tubal carcinomas (20). Serous tubal intraepithelial lesions and tubal intraepithelial lesions in transition are most frequently located in the fimbriated end of the uterine tube, whereas secretory cell outgrowths are distributed throughout the tube.

The pathologic specimen processing in low-risk women should include representative sections of the fallopian tube, any suspicious lesions, and an entire sectioning of the fimbriae (20). Salpingectomy should remove the tube completely from its fimbriated end and up to the uterotubal junction; the interstitial portions of the tubes do not need to be removed. Any fimbrial attachments on the ovary should be cauterized or removed. In addition, salpingectomy should be performed with meticulous attention. Care should be taken not to interrupt blood supply to the ovary through the infundibulopelvic ligament because the collateral vasculature from the tubal mesosalpinx is occluded during the tubal removal. Preservation of the utero-ovarian ligament is recommended.

Initiatives to increase salpingectomy have been shown to be successful (1). Based on one physician survey, most surgeons (54%) perform salpingectomy with hysterectomy, whereas a minority (7.2%) perform salpingectomy for sterilization (23). Other than a significant increase in operative time for salpingectomy with hysterectomy (16 minutes) and with sterilization (10 minutes), no significant differences in operative times or complication rates for salpingectomy have been identified (1).

The approach to hysterectomy or sterilization should not be influenced by the theoretical benefit of salpingectomy. Surgeons should continue to observe and practice minimally invasive techniques. A vaginal hysterectomy should not be changed to a laparoscopic hysterectomy simply to perform a salpingectomy. The choice of sterilization procedure should be based on the risks and benefits of the hysteroscopic and laparoscopic approaches. If a laparoscopic approach is elected, then the risks and benefits of salpingectomy should be discussed. The safety of vaginal hysterectomy and hysteroscopic sterilization has been well established (24, 25).



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