

GYNECOLOGY

Extending the safety evidence for opportunistic salpingectomy in prevention of ovarian cancer: a cohort study from British Columbia, Canada



Gillian E. Hanley, PhD; Janice S. Kwon, MD; Sarah J. Finlayson, MD; David G. Huntsman, MD; Dianne Miller, MD; Jessica N McAlpine, MD

BACKGROUND: Recent evidence has suggested that the fallopian tube may often be the site of origin for the most common and lethal form of ovarian cancer. As a result, many Colleges of Obstetrics and Gynecology, including the American College of Obstetricians and Gynecology, are recommending surgical removal of the fallopian tube (bilateral salpingectomy) at the time of other gynecologic surgeries (particularly hysterectomy and tubal sterilization) in women at general population risk for ovarian cancer, collectively referred to as opportunistic salpingectomy.

OBJECTIVE: Previous research with the use of hospital data has indicated good perioperative safety of opportunistic salpingectomy, but no data on minor complications have been presented. Herein, we examine whether women who undergo opportunistic salpingectomy are at increased risk of minor complications after surgery.

STUDY DESIGN: We identified all women in British Columbia who underwent opportunistic salpingectomy between 2008 and 2014 and examined all physician visits in the 2 weeks after discharge from the hospital. We compared women who underwent opportunistic salpingectomy at hysterectomy with women who underwent hysterectomy alone and women who underwent opportunistic salpingectomy for sterilization with women who underwent tubal ligation. We examined visits for surgical infection, surgical complication, orders for laboratory tests, and orders for imaging (x-ray, ultrasound scan, or computed tomography scan) and whether women who underwent opportunistic salpingectomy were more likely to fill a prescription for an antibiotic or analgesic in the 2 weeks after discharge from the hospital. We calculated adjusted odds ratios for these

outcomes, adjusting for other gynecologic conditions, surgical approach, and patient age.

RESULTS: We included 49,275 women who had undergone a hysterectomy alone, a hysterectomy with opportunistic salpingectomy, a hysterectomy with bilateral salpingo-oophorectomy, a tubal ligation, or an opportunistic salpingectomy for sterilization. In women who had undergone opportunistic salpingectomy, there was no increased risk for physician visits for surgical infection, surgical complication, ordering a laboratory test, or ordering imaging in the 2 weeks after discharge. There was no increased risk of filling a prescription for an antibiotic. However, women who underwent opportunistic salpingectomy were at approximately 20% increased odds of filling a prescription for an analgesic in the 2 weeks after discharge from the hospital (adjusted odds ratio, 1.23; 95% confidence interval, 1.15–1.32 for hysterectomy with opportunistic salpingectomy; adjusted odds ratio, 1.21; 95% confidence interval, 1.14–1.29 for opportunistic salpingectomy for sterilization).

CONCLUSION: We report no differences in minor complications between women who undergo opportunistic salpingectomy and women who undergo hysterectomy alone or tubal ligation, except for a slightly increased likelihood of filling a prescription for analgesic medication in the immediate 2 weeks after discharge.

Key words: bilateral salpingectomy, hysterectomy, ovarian cancer prevention, sterilization

Ovarian cancer is a significant cause of cancer-related death, with approximately 25,000 new diagnoses and approximately 16,000 deaths from the disease annually in the United States and Canada combined. It is diagnosed commonly in advanced stages, when survival rates are low. This is partly a result of the lack of effective screening

methods, because no death benefit has been demonstrated even with strict adherence to screening protocols.^{1–5} In the last decade, we have improved our understanding of epithelial ovarian cancer dramatically; along with this recognition came a growing body of evidence that the most common and lethal form of ovarian cancer (high-grade serous cancer) often originates in the fallopian tube.^{6–9}

As a possible ovarian cancer prevention strategy, recommendations were made to discuss the removal of the fallopian tubes with women who had completed childbearing and were undergoing common gynecologic surgeries. In September 2010 the Ovarian Cancer Research team recommended to

all gynecologic surgeons in the province of British Columbia (BC) Canada that, when operating in women at general population risk for ovarian cancer, they should consider (1) performing bilateral salpingectomy at the time of hysterectomy (even when the ovaries are being preserved) and (2) performing bilateral salpingectomy in place of tubal ligation for permanent sterilization. These procedures have come to be referred to as opportunistic salpingectomy (OS). The Ovarian Cancer Research recommendations were followed by a similar recommendation from the Society of Gynecologic Oncology of Canada¹⁰ and later by the Society of Gynecologic Oncology.¹¹ More recently the American College of Obstetricians and

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AJOG at a Glance

Why was this study conducted?

We conducted the study to examine whether opportunistic salpingectomy, the removal of fallopian tubes at the time of hysterectomy or in lieu of tubal ligation for the purpose of ovarian cancer prevention, is associated with a higher rate of minor complications after surgery than hysterectomy alone or tubal ligation.

Key Findings

There are no differences in rates of minor complications among women who undergo opportunistic salpingectomy. There is a slightly increased likelihood of filling a prescription analgesic in the 2 weeks after discharge from surgery that is completely absent by 1 month after surgery.

What does this add to what is known?

This study adds to the existing body of evidence that opportunistic salpingectomy is a safe alternative to hysterectomy alone or tubal ligation.

Gynecologists and the Society of Obstetricians and Gynecologists of Canada have supported the recommendation.^{12,13} This is a strategy aimed solely at women of general population risk for ovarian cancer. Risk-reducing bilateral salpingo-oophorectomy remains the recommended prevention strategy among women with *BRCA1* or *BRCA2* mutations.

Previous research has indicated a significant increase in uptake of bilateral salpingectomy in the United States^{14–16} and Canada.^{17–19} Research that has been examining the safety of OS has all been reassuring but has focused on major events that occur within the surgical hospital stay.^{16,18} To ensure the safety of OS, minor complications that could affect the quality of life of women who undergo this procedure and have an important impact on the healthcare system should also be examined. Herein, we examine whether women who underwent OS are at increased risk for physician visits, infections, minor surgical complications, increased antibiotic use, and increased analgesic use in the 2 weeks after their surgery, compared with women who underwent hysterectomy alone or tubal ligation.

Methods

We conducted a population-based retrospective cohort study of all women who underwent a relevant surgical procedure in the Canadian province of British Columbia (population, 4.6

million) between 2008 and 2014. With approval of all Data Stewards (BC Ministry of Health, PharmaNet, BC Cancer Agency, and BC Vital Statistics), we used Population Data BC to access the Discharge Abstract Database,²⁰ which is a database that contains all hospital stays and day surgeries in the province. These data were linked with data for all physician visits,²¹ and the BC PharmaNet, which is a database that contains all prescription drugs dispensed in an outpatient setting.²² All inferences, opinions, and conclusions are those of the authors and do not reflect the opinions or policies of the Data Stewards. Ethics approval was obtained from the University of British Columbia Behavioural Research Ethics Board.

We identified patients who underwent each of the relevant procedures using Canadian Classification of Health Intervention codes. Each procedure is coded separately, so a patient who undergoes a hysterectomy with a bilateral salpingectomy has a code for each procedure. These codes also indicate the surgical approach for each surgery (ie, open, laparoscopic, or vaginal). We excluded patients who were <15 years old or who had a diagnosis of gynecologic cancer. We grouped the data according to the procedures and stratified them into 5 groups: (1) women who had undergone a hysterectomy with no concomitant oophorectomy or salpingectomy (referred to as hysterectomy alone); (2) women who underwent a hysterectomy

and a bilateral salpingectomy (hysterectomy with OS); (3) women who underwent a hysterectomy with a bilateral salpingo-oophorectomy (BSO; hysterectomy with BSO); (4) women who underwent a tubal ligation; and (5) women who had a bilateral salpingectomy alone with a diagnosis code that indicated that the procedure was for sterilization (International Classification of Diseases, Tenth Revision [ICD-10]-CM Z.30.2). We did not include women who underwent hysteroscopic tubal occlusion.

We used diagnostic codes in the hospital stay to examine other gynecologic conditions that were present in the woman (some of which were likely indications for the surgery) that included endometriosis (ICD-10 CA N80.X), leiomyoma (ICD-10 CA D25.X), benign ovarian or uterine neoplasm (ICD-10 CA D26.X, D27.X, D28.7), abnormal bleeding (ICD-10 CA N92.X, N93.X), pelvic organ prolapse (ICD-10 CA N81.X), pelvic inflammatory disease (ICD-10 CA N73.X, N74.X), and hydrosalpinx (ICD-10 CA N70.X).

We defined minor complications as any complication that would result in a visit to the physician's office but would not have been present during the initial hospital stay and would likely not result in a readmission to the hospital. To this end, we included physician visits in the 2 weeks after discharge from the hospital for the relevant surgery that were for surgical infection or surgical complication, that resulted in a laboratory test ordered, or that resulted in an order for imaging (X-ray, ultrasound scan, or computed tomography scan). We also included a count of the number of physician visits in the 2 weeks after discharge because women who experienced more complications or adverse effects might see their physician more frequently. We then examined whether women who underwent OS were more likely to fill a prescription for an antibiotic or a prescription-strength analgesic (excluding analgesics that are available over the counter [eg, acetaminophen, ibuprofen, naproxen]) in the 2 weeks after discharge from the hospital for their surgery (identified

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