PRACTICE RESOURCE

Salpingectomy for Ovarian Cancer Prevention

May 2013

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Recommendations at a Glance

1. OBG clinicians counsel women at hereditary risk and women undergoing routine gynecological surgery, regarding the potential benefits and risks of salpingectomy.
2. OBG surgeons remove the entire fallopian tube using the outlined technique.
3. OBG surgeons alert the pathologist in women at risk for hereditary ovarian cancer to process the entire specimen using a microsectioning protocol.

Introduction

The purpose of this resource is to promote salpingectomy when appropriate and feasible as a strategy for ovarian cancer risk reduction.

This document has been endorsed by the NCAL Gynecologic Oncology Peer group (May 2, 2013) and the NCAL Chiefs of Obstetrics and Gynecology (May 9, 2013).

These guidelines are systematically developed recommendations to support clinician and patient decisions about appropriate evaluation and treatment. They are not intended or designed as a substitute for the reasonable exercise of independent clinical judgment by practitioners, considering each patient's needs on an individual basis. Guideline recommendations apply to populations of patients. Clinical judgment and shared decision-making are necessary to design treatment plans for individual patients.

Background

Since the identification of the BRCA1 gene in 1993, there has been a paradigm switch in our understanding that the etiology of pelvic serous carcinomas is actually often in fallopian tube precursors. This research significantly impacts two groups of women, those at high risk for hereditary ovarian cancer and those undergoing routine pelvic surgery. Based on the potential risk reduction of removal of the fallopian tubes, the following considerations should be discussed with patients.

Clinical Recommendations

Clinicians should discuss with their patients the following:

- Removal of the fallopian tubes at the time of hysterectomy or other pelvic surgery in

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for women at population risk of ovarian cancer

women who have completed childbearing. (Level III)

- Removal of the fallopian tubes entirely instead of tubal ligation. (Level II-2)
- Removal of the fimbrial end of the tubes if removal of the entire tube is not possible. (Level III)

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Pros

- Potential risk reduction of ovarian cancer
- Decreased incidence of tubal pathology, hydrosalpinx and reoperation for tubal conditions
- Effective sterilization
- No impact on ovarian hormonal production or blood supply

Cons

- The tubes may not be easily accessible in some surgeries (single port laparoscopy, vaginal hysterectomy, PPTL or due to pelvic adhesion).
- May increase the risk of bleeding particularly at time of caesarian section or PPTL.
- Potential intraoperative risk of ovarian injury
- Additional cost and availability of instrumentation

Women who carry a hereditary risk

American College of Obstetricians and Gynecologists (ACOG), U.S. Preventive Services Task Force (USPTF) and National Comprehensive Cancer Network (NCCN) guidelines recommend removal of the tubes and ovaries in women carriers of BRCA 1 and 2 mutations between the ages of 35 and 40, or after completion of childbearing. Approximately 40% of these women decline BSO and most who undergo BSO, do so at a later age than age 40.

Clinicians should discuss with women carriers of BRCA mutations who do not wish to have BSO

1. Bilateral Salpingo-oophrectomy is the standard of care (Level II-1)
2. Removal of fallopian tubes only, followed by later removal of the ovaries is an alternative for women who do not agree to oophorectomy. (Level III)

Pros

- Risk reduction of pelvic serous cancers
- No impact on premature menopause health risks, including osteoporosis, heart disease, stroke and dementia
- No impact on menopausal symptoms and sexuality
- Screening for ovarian cancer with ultrasounds and CA 125 is not effective mode of risk reduction
- Ovarian cancers are uncommon in mutation carriers in their 30s-40s.

Cons

- Two stage surgery
- Premenopausal oophorectomy in BRCA mutation carriers reduces the risk of breast

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cancer by approximately 50%. Salpingectomy would not provide this benefit.

- More expensive to do two surgeries
- Removal of the tube may injure the ovary
- Amount of ovarian, tubal and peritoneal risk reduction by performing salpingectomy has not been quantified. It is estimated at 60-80%, and is not as high as if the women undergo complete BSO. (Level III)

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Technique for Salpingectomy

For BRCA positive patients who choose to postpone removal or decline to remove ovaries:

1. Remove the entire fallopian tube, with all fimbriae.
2. Remove a wedge of adjacent ovarian capsule.
3. Preserve uteroovarian ligament.
4. Perform peritoneal cytology.

Salpingectomy during benign gynecologic cases:

1. Remove the entire tube and fimbriae.
2. If preserving uterus, preserve uteroovarian ligament.
3. Cauterize or remove any fimbrial attachments on the ovary.
4. If removal of entire tube is not possible, removal of the distal end may still have efficacy.

Pathological processing of surgical specimens:

Women at high risk for hereditary cancer:

1. Submit entire fallopian tube for processing
2. Microsection the tube in 2-3 mm cuts with specific attention to the fimbria.

Women at population risk:

1. Submit and examine entire fimbriae, with representative sectioning of the remainder of the fallopian tubes.

Follow-up of high-risk women after salpingectomy

Until further studies become available, it is recommended that the NCCN guidelines be used for screening of women with hereditary risk of ovarian cancer and that no screening is routinely recommended in population risk women.

The NCCN guideline states: The combination of a pelvic exam, TVU, and a CA 125 blood test should be considered every 6 months starting at age 35, or 5 to 10 years earlier than the earliest age that ovarian cancer was first diagnosed in the family. Women being screened should be aware that it has not been demonstrated to reduce mortality, and that RRSO after the conclusion of childbearing should be considered.[11] (Level III)

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Cost effectiveness

Salpingectomy in women at average risk:
There have been no studies comparing cost effectiveness of salpingectomy at the time of hysterectomy, but no additional costs are likely incurred. Use of the operating room and general anesthesia adds cost and risk compared to the well tolerated and lower cost of office sterilization procedures. Thus office procedures would be more favorable for most women considering a sterilization procedure who are at population risk of ovarian cancer.

Salpingectomy in women with hereditary risk:
A mathematical model of the cost effectiveness of salpingo-oophrectomy vs. salpingectomy and delayed oophrectomy, vs. salpingectomy alone showed that the salpingo-oophrectomy at age 40 had the highest life expectancy and the lowest cost; however, when adjusted for quality of life, salpingectomy at age 40 followed by oophorectomy at age 50 was the optimum procedure and remained under the $100,000 threshold for cost effectiveness.

CONTACT INFORMATION

Please refer any questions regarding these recommendations to

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Appendix 1: Detailed Description of Salpingectomy Technique

Technique for salpingectomy:

For BRCA positive patients who choose to postpone removal or decline to remove ovaries:

The precursor lesions for fallopian tube and ovarian cancer are primarily found in the fimbrial end of the fallopian tube. In women who are known *BRCA1*and BRCA2 mutation carriers undergoing risk reducing salpingectomy, LeBlanc et al have recommended removing the adjacent ovarian capsule and underlying tissue (less than ¼ of the ovary) in order to ensure that all fimbria attachments are completely removed. It is also speculated that the ovarian tissue adjacent to the tube should be at the highest risk for occult ovarian cancer. After assessment of the peritoneal surfaces, liver, diaphragm, bowels and pelvis including the tubes and ovaries, peritoneal cytology should be performed at the start of the case. Of the techniques the LeBlanc group evaluated including bipolar electrocautery, harmonic scalpel, monopolar scissors and stapler, the endoscopic monopolar scissors or stapler ensured the least cautery damage to the ovarian tissue, with the greatest preservation for accurate pathologic assessment, however with use of the stapler, a portion of tissue between staples was lost for evaluation. For this reason use of the monopolar scissors are recommended for resecting the adjacent ovarian capsule. Bipolar electrocautery can be used for hemostasis along the mesosalpinx and to resect the tube from the cornu of the uterus. It is essential to take care to avoid burning the utero-ovarian ligament in order to preserve ovarian blood supply. If the surgery is laparoscopic, the tube is placed in a bag for removal to prevent trauma to the epithelium. The tissue should be submitted for pathologic microsectioning of the entire fallopian tube and ovarian tissue (e.g. SEE-FIM protocol.)

Salpingectomy during benign gynecologic cases:

In patients without genetic susceptibility, removal of the adjacent ovary is not necessary. Bipolar electrocautery or alternative energy source can be used to detach the tube from the uterus and along the mesosalpinx taking care to remove all the fimbria. If there is a question of tubal tissue attached to the ovarian capsule, the capsule can be resected with the tube or the area can be cauterized on the ovarian surface. If an appropriate bipolar electrocautery devise is not available, the tube can be removed by suturing pedicles along the mesosalpinx with absorbable suture.

In postpartum tubal ligations and cases where visualization may be difficult, it may not possible to access the entire fallopian tube. In these cases, the surgeon should try to remove the fimbrial end of the tube if possible.

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Appendix 2: Detailed Description of Pathology Processing

Multiple reports have described the need to exam the fallopian tube as well as the ovaries. Indeed fallopian cancer was considered rare for two reasons: First, the fallopian tubes were not routinely examined and second, the definition of fallopian tube cancer required the observation of a mass in the tube, without corresponding findings in the ovaries. The standard recommendations for processing the fallopian tubes and ovaries in hereditary risk cases now involve examining microsections of 2-3mm cuts. The distal fimbria is cut vertically into four sections and each placed in entirety on the slide. Immunohistochemistry staining can be used to confirm subtle changes of precursor lesions or to correctly identify lesions in the progression to cancer, from normal epithelium with P53 staining (P53 signatures) to STIC lesion, which can be recognized on H and E staining as well as stain for P53 and Ki67.

Since the incidence of invasive and preinvasive neoplasia in the tubes and ovaries of women with hereditary risk is as high as 9%, it is recommended that microsectioning of the entire fallopian tubes and ovaries be performed on all RRSO specimens.

The appropriate processing of salpingectomy specimens in the average risk population is not defined, but experts suggest: gross inspection, submission of the entire fimbria in 2-3 cassettes with P53 and Ki67 staining of any concerning lesions.

Appendix 3: Levels of Evidence

Studies were reviewed and evaluated for quality according to the method outlined by the U.S. Preventive Services Task Force:

I - Evidence obtained from at least one properly designed randomized controlled trial.

II-1 - Evidence obtained from well-designed controlled trials without randomization.

II-2 - Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one center or research group.

II-3 - Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments also could be regarded as this type of evidence.

III - Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.

Based on the highest level of evidence found in the data, recommendations are provided and graded according to the following categories:

Level A – Recommendations are based on good and consistent scientific evidence.

Level B – Recommendations are based on limited or inconsistent scientific evidence.

Level C – Recommendations are based primarily on consensus and expert opinion.

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DEVELOPMENT	MORE INFORMATION
The *Salpingectomy for Ovarian Cancer Prevention* Practice Resource was developed on behalf of the Chiefs of Obstetrics and Gynecology within The Permanente Medical Group. ENDORSEMENT Chiefs of Obstetrics and Gynecology Gynecologic Oncology Peer Group	PUBLICATION CONTACT INFORMATION: Please refer any questions regarding these recommendations to: Bethan Powell, MD Bethan.Powell@kp.org Phone: (415) 833-5905

DISCLAIMER

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