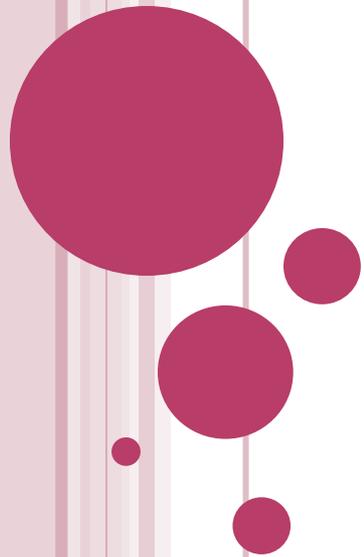
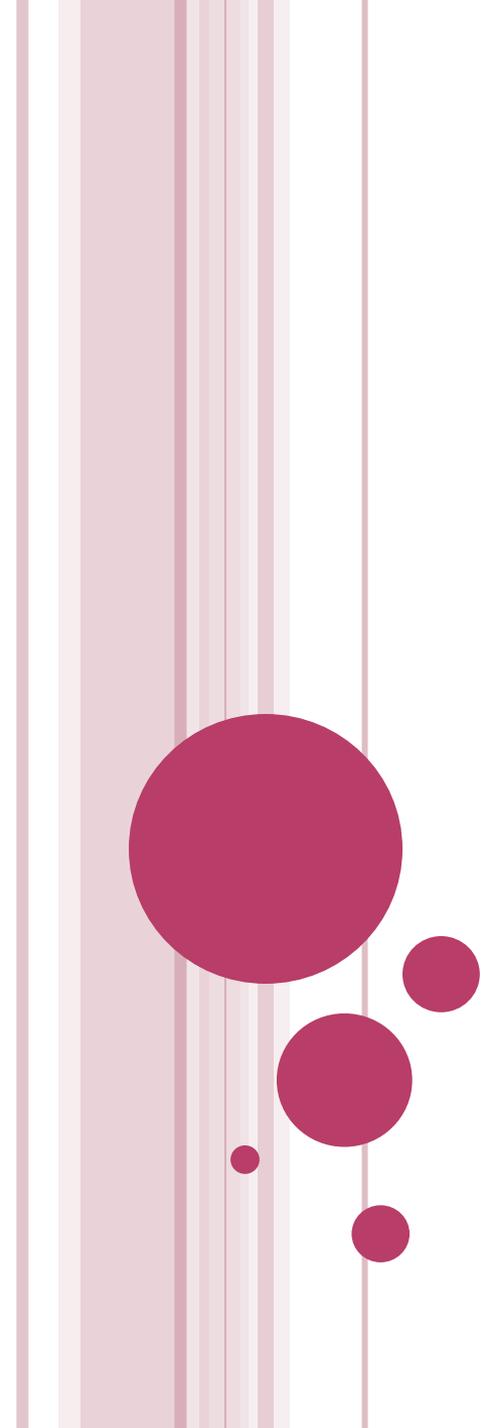


IN THE NAME OF GOD





**RISK-REDUCING SALPINGO-
OOPHORECTOMY IN PATIENTS AT
HIGH RISK OF EPITHELIAL OVARIAN
AND FALLOPIAN TUBE CANCER**

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RISK-REDUCING BILATERAL SALPINGO-OOPHORECTOMY

- (rrBSO) is an important option for reducing the risk of developing epithelial ovarian and fallopian tube cancer in patients with a hereditary ovarian cancer syndrome.
- Risk-reducing surgery includes **bilateral removal of the tubes as well as the ovaries** because some apparent ovarian cancers are initiated in the fallopian tubes, particularly in patients with pathogenic variants in the breast cancer susceptibility (*BRCA*) genes, *BRCA1* and *BRCA2*
- alternative preventive and surveillance measures are of **limited efficacy** in reducing the high rate of cancer mortality in such patients.



CANDIDATES

- rrBSO is reserved for patients **at the highest risk** of epithelial ovarian and fallopian tube cancer and is consistently recommended in guidelines for patients in the following categories:
 - ●Patients with pathogenic variants in ***BRCA1***, with a lifetime risk of ovarian cancer 35 to 46 percent.
 - ●Patients with pathogenic variants in ***BRCA2***, with a lifetime risk of ovarian cancer 13 to 23 percent.
 - ●**Lynch syndrome** a lifetime risk of ovarian and endometrial cancer up to 38 and 71% respectively
 - ●rrBSO has also been suggested for patients with pathogenic variants in ***BRIP1, RAD51C, RAD51D*** [



RISK-REDUCING BILATERAL SALPINGO-OOPHORECTOMY

- When **performed before age 50**, rrBSO is also **associated with a decreased risk for breast cancer** in *BRCA* carriers with no prior breast cancer.
- When performed with hysterectomy, rrBSO reduces the risk of endometrial and ovarian cancer in patients with Lynch syndrome



PREOPERATIVE EVALUATION AND PREPARATION

Counseling and consent

- Patient risk, expected reduction
- **Alternatives, less effective**
- Consequences ,infertility and premature menopause.
- menopause and its treatment
 - vaginal dryness,
 - changes in libido
 - sexual function,
 - sleep disturbances,
 - hot flashes,
 - osteoporosis,
 - mood changes,
 - risk of coronary heart disease



COUNSELING AND CONSENT

- oocyte and embryo cryopreservation(no partner,.)
- Chance of detecting occult malignancy,additional Surgery
- Peritoneal carcinoma



TIMING

- rrBSO should be performed **as soon as childbearing is complete** or by **age 35 to 40** years since the benefit diminishes with age
- ovarian and fallopian tube cancer, **is uncommon before age 40** and rare before age 30
- **BRCA1** mutations have a significant rise in ovarian cancer risk beginning at **35 years** of age, with 2 to 3 percent of these patients developing ovarian cancer by age 40 years; the average age at diagnosis is **50 years**
- **BRCA2** mutation carriers reach a 2 to 3 percent incidence of ovarian cancer **a decade later**, by age **50** years; the **average age at diagnosis is 60 years**,



TIMING

- **Gains in life expectancy** after rrBSO have been estimated using decision analysis
- Life expectancy gains **declined with age at the time of surgery** and were minimal for 60 year-old patients, although there was **little loss in life expectancy if was performed at age 40** rather than age 30.
- Patients with **Lynch syndrome** typically develop ovarian cancer between the ages of 43 and 48 years
- In general, we recommend **rrBSO in the mid-40s for patients with Lynch syndrome**



PREOPERATIVE EVALUATION

Prior to rrBSO, patients should undergo **screening** for an ovarian malignancy

- pelvic sonography
- cancer antigen 125 (CA 125)



PROCEDURE

Surgical approach

- The surgical route may be by **laparoscopy** or laparotomy. Laparoscopy is generally preferable since it is associated with less morbidity and allows for an outpatient procedure

- BSO versus salpingectomy alone

minimum is bilateral salpingo-oophorectomy since "ovarian" epithelial neoplasms have three potential sites of origin:

- ovary,
- fallopian tube
- other müllerian epithelial sites in the pelvis.



SALPINGECTOMY

- if oophorectomy is not performed, it is unclear whether the surgeon can remove the entire **fimbriated end of the fallopian tube**, which may be the most likely site of tubal malignancy .
- surface of the ovary and mesovarium may **contain tubal epithelium**, which is a potential site of origin of epithelial ovarian carcinoma.
- diminish or eliminate the **possible prophylactic effect on breast cancer**
- "Radical salpingectomy, may diminish ovarian function



ABDOMINOPELVIC EVALUATION

- When rrBSO is performed, a methodical survey should be conducted of the abdomen
 - diaphragm,
 - liver,
 - omentum,
 - bowel,
 - paracolic gutters,
 - appendix),
 - pelvis (ovaries, fallopian tubes, uterus, posterior cul-de-sac)
 - entire peritoneum.
- Some surgeons perform an **omental biopsy and cytologic smear of the diaphragm**
- Suspicious areas should be biopsied with **liberal use of frozen section**



SCOPE OF RESECTION

- **All ovarian tissue** should be removed
- ● **If adhesions** between the ovary and other peritoneal structures are present, **the entire adhesion should be resected** with the ovary to ensure that no residue
- ● The ovarian artery and vein should be **clamped and cut at least 2 cm** proximal to the ovary, and preferably at the pelvic brim, to avoid leaving any ovarian tissue behind
- The **pelvic peritoneum should be opened** to visualize the **ureter** and isolate the infundibulopelvic ligament before transection. Complications are infrequent in experienced hands
- ● As much of the fallopian tube as possible should be removed.
- **Complete fimbrial resection is important**, but complete cornual resection to remove the intramural (**interstitial**) **portion of the tube does not appear to be necessary**, particularly during laparoscopic procedures



SHOULD CONCURRENT HYSTERECTOMY BE PERFORMED?

- Lynch syndrome
- Take tamoxifen
- Unopposed estrogen
- Disadvantage: increasing morbidity



PATHOLOGY EVALUATION

- Multiple 2 to 3 millimeter longitudinal sections of the resected ovaries and fallopian tubes should be examined microscopically **for occult carcinoma** using a protocol specific for patients at high risk of an occult malignancy
- Sectioning and Extensively Examining the FIMbria (SEE-FIM) protocol



FOLLOW UP

Occult malignancy on pathology ○

Surveillance for peritoneal cancer ○

Management of premature menopause ○



LESS EFFECTIVE ALTERNATIVES TO RRBSO

- Intensive screening to detect early stage disease ○
- Chemoprevention ○
- Hysterectomy and tubal ligation ○



OPPORTUNISTIC SALPINGECTOMY

- Opportunistic salpingectomy has been proposed as a **primary prevention strategy** for patients at **average risk** of carcinoma of the ovary, fallopian tube, and peritoneum.
- Definition — Opportunistic salpingectomy as a strategy was first presented in September 2010 by the British Columbia Ovarian Cancer Research (OVCARE) team, which distributed an educational video



OPPORTUNISTIC SALPINGECTOMY

- **removal of the fallopian tubes in a patient undergoing pelvic surgery for another indication.** It is appropriate in patients who have completed childbearing or no longer plan to use their own tubes for fertility purposes.
- **Common procedures** that may potentially include opportunistic salpingectomy include:
 - **Hysterectomy for benign** indications
 - **In place of tubal ligation** for patients who desire sterilization
 - Opportunistic salpingectomy **should not take the place of risk-reducing bilateral salpingo-oophorectomy**



OPPORTUNISTIC SALPINGECTOMY

- A Danish case-control study of over 13,000 patients with ovarian cancer included 17 who underwent bilateral salpingectomy; among those patients, there was a **42 percent decrease** in the risk of epithelial ovarian carcinoma compared with controls

Acta Obstet Gynecol Scand. 2015 Jan;94(1):86-94. Epub 2014 Oct



TECHNIQUE AT HYSTERECTOMY:

- ● **Elevate the fallopian tube and dissect** along the mesosalpinx immediately below the tube to allow separation from the ovary. Any cautery/dissection tool may be used.
- Care should be taken **not to compromise the ovarian vessels** within the infundibulopelvic ligament.
- ● Proceed with hysterectomy as usual with the tubes removed en bloc (attached at the cornua of the uterus).



OPPORTUNISTIC SALPINGECTOMY

- Randomized trials of opportunistic salpingectomy at the time of hysterectomy have found **no additional impact on ovarian reserve**
- In the largest trial, 104 patients ages 30 to 55 years underwent hysterectomy, with or without opportunistic salpingectomy; the median change in **anti-müllerian hormone level was similar**
- *Van Lieshout LAM, ... Piek JMJ Maturitas 2018;107:1. Epub 2017*



FINAL MESSAGE

- **rrBSO is the standard of care,**
but risk-reducing salpingectomy is an
investigational alternative surgical approach
that has been proposed.



Thanks

