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# It is Time to Replace Postpartum Tubal Ligation with Bilateral Salpingectomy

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## Keyword:

Sterilization; Tubal ligation; Salpingectomy; Ovarian cancer; Postpartum sterilization

## Commentary

Postpartum sterilization is a popular and effective method of contraception in the United States. As of 2012, postpartum sterilization was performed after 10% of all hospital deliveries, which equated to approximately 400,000 procedures annually [1,2]. Sterilization can be conveniently performed at the time of cesarean delivery or in the immediate postpartum period after a vaginal delivery [1]. Advantages include the technical ease, the one-time use of anesthesia in the case of a patient receiving an epidural during labor, the utilization of a current hospitalization, and the increased compliance, especially in low-income patients [3].

The modified Pomeroy technique is the most common postpartum sterilization method performed in the United States, with a 10 year failure rate of <1% [4]. However, bilateral tubal ligation is not without risks. Hydrosalpinx, torsion, and tubal pregnancy are all potential complications of tubal ligation, which often require an additional procedure [5,6].

In 2015, the American Congress of Obstetricians and Gynecologists (ACOG) started to recommend bilateral salpingectomy as an alternative method for laparoscopic sterilization [1]. At that time, studies of women who were at high risk for ovarian cancer reported that approximately 80% of these malignancies classified as "ovarian" actually originated from the fallopian tube [7]. In fact, serous tubal epithelial carcinoma has been shown to coexist in more than 50% of cases of ovarian cancer, no matter if familial or sporadic in origin [8].

Based on these and other results, the Society of Gynecologic Oncology support the hypothesis that removing fallopian tubes before malignancy has the opportunity to develop may decrease the overall incidence and death rates of ovarian cancer [7].

Both inherited and sporadic cases of ovarian malignancy have shown p53 mutations similar to those of fallopian carcinoma. Gene profiling studies have found ovarian serous cancers to express Müllerian biomarkers that more closely resemble the fallopian tube versus expressing ovarian mesenchymal markers.

Additionally, models of serous cancer in mice have demonstrated the transformation of tubal epithelial cells into serous carcinoma, further supporting the belief that high-grade serous ovarian carcinoma originates from the fallopian tube [7].

With this knowledge, why are gynecologic surgeons not performing prophylactic salpingectomies? Physicians may have previously avoided salpingectomy due to the concern for increased blood loss, surgical time, and complication rate [1]. Our study sought to determine if postpartum bilateral salpingectomy was equivalent to postpartum BTL in regards to these variables. Average surgical time was the only measurement that demonstrated statistical significance, with an average operative time difference of approximately 12 minutes [9]. This was in contrast to the retrospective study by McAlpine et al. [10]. However, at the time of our study, the postpartum salpingectomy technique had not been widely adopted. Currently, it is our preferred method of postpartum sterilization. We suspect a follow up study would fail to show a significant difference in operative times.

Kwon et al. demonstrated in their cost-effective analysis that the magnitude of ovarian cancer risk reduction by performing a salpingectomy may seem negligible, due to the relatively low absolute risk of developing ovarian cancer in North America. In order to prevent one case of ovarian cancer, 366 salpingectomies would need to be performed in place of tubal ligation [11]. Assuming Kwon's analysis applies to postpartum sterilization, and then at 400,000 procedures performed annually, replacing tubal ligation with postpartum salpingectomy would prevent 1092 new cases of ovarian cancer each year.

In 2016, there is expected to be 22,280 new cases of ovarian cancer, with 14,240 deaths from this disease [12]. Preventing 1092 ovarian cancer cases annually would result in a 4.9% reduction in the incidence of ovarian cancer, just by replacing tubal ligation with salpingectomies in the postpartum period.

National cancer expenditures are expected to reach \$158 billion in 2020 [13]. Ovarian cancer represents 1.3% of all new cancer cases, equating to \$2.054 billion in healthcare costs [12]. The Gynaecologic Oncology Group (GOG) 218 study showed that adding bevacizumab to the standard paclitaxel-carboplatin regimen costs \$78.3 million for 3.8 progression-free months for 600 women [14]. Clearly, the cost of ovarian cancer is significant.

Moreover, the emotional toll on the patient, as well as on the patient's family, is astronomical.

This virulent malignancy undoubtedly demonstrates medical and emotional burdens to our society. Early diagnosis of ovarian cancer is a challenge. It may be more beneficial to focus on prevention strategies rather than early diagnostic tools.

Based on the current understanding of the etiology of ovarian cancer, performing a bilateral salpingectomy for postpartum sterilization provides an attractive and effective method for reducing the risk of developing this horrible disease. Therefore, we strongly feel it is time to replace postpartum tubal ligation with bilateral salpingectomy. We welcome additional studies in this area. Our hope is that by restructuring our approach to permanent sterilization, we can safely and successfully reduce the risk of developing ovarian cancer.

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