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Cost Analysis of Bilateral Salpingectomy Pathology for Women of Average Risk of Ovarian Cancer

Research Article

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Abstract

Bilateral salpingectomy has gained traction as a preferred form of surgical sterilization over tubal ligation due to the potential reduction in the risk of ovarian cancer. This paper argues it is safe and economical for the physician performing the salpingectomy in patients with an average risk of ovarian cancer to use clinical judgement in deciding whether the specimen should undergo gross and histologic examination. Implementing this new strategy could help decrease medical expenditures concerning surgical pathology by an estimated $10,075,980. Reducing costs and unnecessary strain on healthcare resources will improve the efficiency of medical systems and the quality of care they provide.

Keywords: Cost-effectiveness; Health economics; Gynecologic pathology; Surgical pathology; Bilateral salpingectomy; Sterilization; Ovarian cancer; Serous tubal intraepithelial carcinoma

Abriviations: STIC: Serous Tubal Intraepithelial Carcinoma; HGSC: High-Grade Serous Carcinoma; SEER: Surveillance, Epidemiology and End Results Program; CLIA: Clinical Laboratory Improvement Amendments

Background

Introduction: Bilateral salpingectomy has gained traction as a preferred form of surgical sterilization over tubal ligation due to the potential reduction in risk of ovarian cancer [1]. Following the surgery, specimens of both fallopian tubes are routinely collected and sent to pathology for histologic analysis. The notion of cost-effectiveness has been suggested as a consideration in the pathologic examination of these specimens as they infrequently change the clinical management of the patient [2]. For this reason, both gross and microscopic pathologic examinations are a burden of cost to the hospital, insurance companies, and the patient. This paper aims to question whether it is necessary to send specimens of grossly normal fallopian tubes from salpingectomy as surgical sterilization in patients with an average risk of ovarian cancer. This paper argues it is safe and economical for the physician performing the salpingectomy to use clinical judgement in deciding whether the specimen should undergo gross and histologic examination.

Methods and Materials

PubMed and university library resources were used to identify relevant English-language publications about salpingectomy as sterilization techniques as well as pathology costs. Combinations of keywords were used including "bilateral salpingectomy," "ovarian cancer," and "surgical pathology specimens." Each publication was read in detail and references were incorporated where relevant.

Discussion

Bilateral salpingectomy has gained traction as the preferred form of surgical sterilization increasing by 70.73% from 2011 to 2013, while

other sterilization procedures decreased during the same period [1]. This increase from 16,124 cases in 2011 to 27,530 in 2013 is due to new data regarding the decreased risk of ovarian cancer and the long-term effects of other surgical options for sterilization. The American College of Obstetricians and Gynecologists concluded that obstetrician-gynecologists should counsel women interested in laparoscopic sterilization methods that salpingectomy is effective contraception that offers the opportunity to significantly reduce the risk of ovarian cancer [3]. Furthermore, the Society of Gynecologic Oncology has recommended salpingectomy at the time of hysterectomy or pelvic surgery in place of tubal ligation in women at population risk of ovarian cancer [4].

Recent evidence points to the fimbriated portion of the fallopian tubes as a source of cancer. A precursor lesion in the mucosal surface of the fimbriated portion of the fallopian tube, serous tubal intraepithelial carcinoma (STIC), has been increasingly recognized and linked to the development of high-grade serous carcinoma (HGSC) [5]. A recent increase in the incidence of early-stage tubal carcinoma is likely due to changing pathology protocols and the increase in the performance of salpingectomies in the United States. Currently, STIC is not a term in the Surveillance, Epidemiology and End Results Program (SEER) so true rates are difficult to interpret [6]. Still, the lack of effective screening for ovarian cancer points to the possibility of salpingectomy serving a prophylactic role and decreasing the incidence of ovarian cancer. This cannot be overlooked seeing as ovarian cancer is the most lethal gynecologic malignancy, with 295,000 new cases and more than 184,000 deaths annually worldwide [7]. With a general population lifetime risk of 1.3-1.9%, epithelial cancers account for 90% of cases [8]. One retrospective study interested in the prevalence of HGSC and STIC in BRCA1/2 carriers found that 0.8% of participants were found to have isolated STIC [9]. We can assume the risk in the general population for isolated STIC is very low. Therefore, the procedure should be marketed to patients as a sterilization technique that has the added benefit of reducing cancer risk. It is not an opportunity to pursue further testing for cancer in a patient with average risk and no suspicion of ovarian cancer. This distinction should be clear.

In women desiring permanent contraception with cesarean delivery, salpingectomies add an average of 15 minutes to the total operative time when compared to bilateral tubal ligation [10]. Despite this, the safety outcomes for both groups are similar. In a theoretical cohort of 110,000 women desiring permanent sterilization, a cost analysis was shown to have only a slightly increased operative cost of $63.75 when compared to bilateral tubal ligation. However, patients who underwent a bilateral salpingectomy were also found to have decreased likelihood of ovarian cancer and ovarian cancer death. Similarly, this group had a reduced number of intrauterine and ectopic pregnancies leading to an incremental cost-effectiveness ratio of $23,189 per quality-adjusted life-year compared to tubal ligation [10]. Meaning, despite the slight increase in operative cost, the decrease in unwanted outcomes and complications over time are associated with a decreased burden of the medical cost.

Historically, the College of American Pathologists requires that tissue removed during surgery be sent for histologic examination. This recommendation originated in a 1926 report published by the American College of Surgeons that aimed to improve the diagnostic accuracy of surgeons [2]. Even though the criteria for exemption from pathologic examination or gross-only examination remains undefined, one study found that out of 413 institutions, 87.1% had written policies for types of specimens deemed exempt from submission and 76.6% had policies for those subject to gross examination only. The study goes on to argue that all specimens should be evaluated microscopically for fear of missing a diagnosis that may significantly affect a patient without considering the number needed to diagnose and the costs accrued. The paper states there is minimal evidence-based data that evaluate the health outcomes related to exempt status or gross only examination policies for specific specimens. Furthermore, institutions that performed more surgeries were found to have more exempt status tissues while teaching hospitals had less exempt status tissues in this study [2,6]. This may indicate that the medical benefit of pathologic examinations is overstated seeing as institutions with a higher caseload more often forgo the exam. Teaching hospitals choose to send specimens to pathology perhaps because of the educational benefit and not the medical benefit for the patient. Although there is a historical precedent for sending fallopian tubes to pathology following salpingectomy, there is not enough evidence to validate this practice.

A federal law called Clinical Laboratory Improvement Amendments (CLIA) guides the regulation and certification of clinical labs. To be CLIA accredited, labs must keep human specimens for the minimum amount of time. For instance, CLIA says that labs must keep: cytology slides for at least 5 years, histopathology slides for at least 10 years, and paraffin blocks for at least 2 years [11]. Some states have laws that require labs to keep pathology specimens longer than the time specified in the CLIA regulations [11]. In the context of surgical sterilization, most of the patients undergoing these procedures are ones with private insurance. According to the Current Procedural Terminology code 88302 at the time of this writing, this pathology costs $183 per specimen. This means if both specimens are sent together described as "fallopian tubes" then the specimen be billed for $183, however, if they are separated as left and right it would be charged twice for a total of $366. Using these values as well as the number of salpingectomies performed in 2013 [1] and assuming that these were performed in women of average risk for ovarian cancer with grossly normal fallopian tubes, this is a total cost of between $5,037,990 to $10,075,980. These costs do not include the expense of the handling and storage of such specimens for the time allotted by the institutions. Furthermore, with the recent discoveries over the last 10 years regarding ovarian cancer, the number of salpingectomies for surgical sterilization is likely higher than in 2013, which means the valuation of up to $10 million underestimates the true amount.

With the evidence presented in this review, the incidence of STIC has been reported in less than 1% of specimens removed for benign indications [6] and HGSC rates are low according to population risk. In one series of 522 average-risk women undergoing salpingectomy, only four cases were detected [12]. Furthermore, other benign tubal pathologies that may be identified during histologic examination are likely to be known to the clinician from the history and gross inspection, leaving the pathology report inconsequential. The majority of pathology reports following bilateral salpingectomies do not change clinical management, although this may be an area for further study [2]. With the rise of bilateral salpingectomy as a method of surgical sterilization, it should be at the surgeon's discretion whether the sample requires pathologic review. If the patient has an average risk of ovarian cancer and during the surgery and the clinician finds a grossly normal fallopian tube, this tissue should be exempt from microscopic exam. This paper is not intending to end the sending of pathologic samples from all bilateral salpingectomies. Rather, its purpose is to outline the economic need for selectivity. As a result, and in the spirit of reducing the burden of medical costs within the U.S. healthcare system, pursuing microscopic examination of these tissues should be based on a holistic view of the patient.

Conclusion

In patients with average risk of ovarian cancer and grossly normal fallopian tubes from salpingectomy as surgical sterilization, the choice to send specimens for pathologic examination should be at the discretion of the physician seeing as they rarely affect clinical course. Implementing this new strategy over the course of many years could help decrease medical expenditures concerning surgical pathology.

By reducing costs and unnecessary strain on healthcare resources, the efficiency of medical systems and the quality of care they provide may be greatly improved. Through the provision of specific, justified, and high-yield care, we as physicians can work to improve the efficacy of our practices as well as our patient's wellbeing.

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Declaration of Conflicting Interest

The author(s) declared no potential conflicts of interest with respect to the authorship, research, and/or publication of this article.

References

1. Hicks Courant KD (2016) Growth in salpingectomy rates in the United States since 2000. American Journal of Obstetrics and Gynecology 215(5): 666-667.
2. Zarbo RJ, Nakhleh RE (1999) Surgical pathology specimens for gross examination only and exempt from submission: A College of American Pathologists Q-Probes study of current policies in 413 institutions. Archives of Pathology and Laboratory Medicine 123(2): 133-139.
3. (2019) ACOG Committee Opinion No. 774 Summary: Opportunistic Salpingectomy as a Strategy for Epithelial Ovarian Cancer Prevention. Obstetrics and gynecology 133(4): e279-e284.
4. https://www.sgo.org/resources/sgo-clinical-practice-statement-salpingectomy-for-ovarian-cancer-prevention/
5. Catanzarite T, Eskander RN (2020) Opportunistic Salpingectomy at the Time of Urogynecologic Surgery: Why, in Whom, and How? Female Pelvic Medicine and Reconstructive Surgery 26(6): 401-406.
6. Samimi G, Trabert B, Duggan MA, Robinson JL, Coa KI, et al. (2018) Processing of fallopian tube, ovary, and endometrial surgical pathology specimens: A survey of U.S. laboratory practices. Gynecol Oncol 148(3): 515-520.
7. (2020) GLOBOCAN. Incidence, Mortality and Prevalence by cancer site New. Int Agency Reseach Cancer 799(15).
8. Salvador S, Gilks B, Köbel M, Huntsman D, Rosen B, et al. (2009) The fallopian tube: primary site of most pelvic high-grade serous carcinomas. International Journal of Gynecological Cancer 19(1): 58-64.
9. Blok F, Dasgupta S, Dinjens WNM, Roes EM, van Beekhuizen HJ, et al. (2019) Retrospective study of a 16 year cohort of $BRCA_1$ and $BRCA_2$ carriers presenting for RRSO: Prevalence of invasive and in-situ carcinoma, with follow-up. Gynecol Oncol 153(2): 326-334.
10. Venkatesh KK, Clark LH, Stamilio DM (2019) Cost-effectiveness of Opportunistic Salpingectomy vs Tubal Ligation at the Time of Cesarean Delivery. Am J Obstet Gynecol 220(1): 106.e1-106.e10.
11. https://www.cancer.org/treatment/understanding-your-diagnosis/tests/testing-biopsy-and-cytology-specimens-for-cancer/what-happens-to-specimens.html
12. Rabban JT, Garg K, Crawford B, Chen LM, Zaloudek CJ (2014) Early detection of high-grade tubal serous carcinoma in women at low risk for hereditary breast and ovarian cancer syndrome by systematic examination of fallopian tubes incidentally removed during benign surgery. Am J Surg Pathol 38(6): 729-742.