Laparoscopic oophorectomy combined with breast surgery for breast cancer patients

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Abstract

Background Prophylactic oophorectomy is effective for risk-reduction for both breast and ovarian cancer in patients with hereditary breast/ovarian cancer syndromes. Oophorectomy in a woman with breast cancer might also be done as a diagnostic or therapeutic procedure for ovarian pathology discovered during pre-operative work-up. We carried out a study of breast cancer patients who underwent the combined procedure of bilateral laparoscopic oophorectomy and breast surgery to determine the short-term outcome.

Methods From November 2000 until April 2004, 14 breast cancer patients had breast surgery and bilateral laparoscopic oophorectomy in the same operating room session. The files of these women were analyzed retrospectively.

Results The mean age of the 14 women was 50.7 years (range 39-61). Six women had known BRCA1 or BRCA2 mutations, 3 women had suspected ovarian pathology, 2 had a family history of ovarian cancer and 3 others had a family history suggestive of hereditary breast cancer syndrome but no known mutation. There were no ovarian malignancies on histological examination of the resected ovaries. The mean operating time was 160 minutes (SD ± 60, range 40-240), the mean hospital stay was 2.7 days (SD ± 1.9, range 1-7), and the time from date of surgery to date of 1st chemotherapy was 25.4 days (SD ± 6.7, range 22-37) or 3.6 weeks (SD ± 0.95). There were no post-operative complications.

Conclusions Combining laparoscopic oophorectomy with oncologic breast surgery is a reasonable treatment option that extends operating time and does not increase the complication rate. Time to discharge seems to be determined only by the breast component of the surgery. The time to start of chemotherapy did not extend beyond 6 weeks in our series. This approach should be considered for any breast cancer patient undergoing breast surgery who might require oophorectomy as well.

Key Words: Breast Cancer, Operations; Gene, BRCA1; Gene, BRCA2; Oophorectomy, Laparoscopic; Surgical Procedures, Operative, Prophylaxis.

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Introduction

Prophylactic oophorectomy (PO) has been shown to be effective in reducing both breast and ovarian cancer incidence for patients with hereditary breast/ovarian cancer syndrome due to BRCA1 and BRCA2 mutations1). For women with a diagnosis of breast cancer, PO may also be justified in other high-risk groups2,3). Another reason to perform oophorectomy in a woman with breast cancer would be to diagnose ovarian pathology discovered during pre-operative work-up. It is obvious that oophorectomy done at the time of a major breast resection will avoid the need for a second hospital admission, operating room session and anesthesia. The combination of these procedures in one operating session has not been evaluated.

However, combining the procedures would not be worthwhile if the operating time was unduly extended, or if problems arose that prolong hospitalization and delay chemotherapy. We therefore undertook a retrospective study of breast cancer patients who underwent the combined procedure of laparoscopic oophorectomy and breast surgery to determine the short-term outcome.

Patients and Methods (table)

From November 2000 up until June 2003, 504 patients had surgery for breast cancer, of whom 15 (3%) with stage I or stage IIA breast cancer had their breast surgery combined with oophorectomy in our institution. One of these women also had a total abdominal hysterectomy and was excluded from the study. A total of 14 women (9
stage I and 5 stage IIA) had breast surgery and laparoscopic oophorectomy sequentially in the same operating room session.

All the women received counseling regarding the advisability of undergoing prophylactic oophorectomy by surgeons, oncologists and geneticists, mostly in a team setting. Genetic testing was performed in 11 of these women pre-operatively, by analysis for the 3 BRCA1/2 mutations (BRCA1-185delAG and 5382insC, BRCA2-6174delAG) common in Ashkenazy Jews.

The files of these women were analyzed retrospectively.

**Results** (table)

The mean age of the 14 women was 50.7 years (range 39-61). There were 6 women with known BRCA1 or BRCA2 mutations. Three women had suspected ovarian pathology that was discovered during the pre-operative work-up: one with an ovarian cystic mass; one with a high Ca 125; and one with ascites that was not malignant on cytological examination. Two other patients had a family history of ovarian cancer and 3 others had a family history suggestive of hereditary breast cancer but no known mutation. Only 2 of the women without BRCA mutations were pre-menopausal, one of whom had known ovarian pathology pre-operatively.

The operations performed on the breast were: wide excision in 6 of the patents (1 bilateral wide excision); re-lumpectomy in 1; unilateral mastectomy in 5 (one of whom had immediate reconstruction); and bilateral mastectomy in 2 (one of whom had immediate reconstruction). No ovarian malignancies were found on histological examination. There was one serous cystadenoma in the woman with an ovarian mass, one simple cyst in a woman with unsuspected ovarian pathology, and normal ovaries in the other 2 women with suspected ovarian pathology.

None of the laparoscopic operations required conversion to open oophorectomy. Mean operating time for all 14 was 160 minutes (SD±60, range 40-240), and 146 minutes (SD±54, range 40-240) if the 2 with immediate reconstruction are excluded. The mean operating time for 27 patients matched for age and type of operation (ranging from wide local excision to bilateral mastectomy) was 84 minutes (SD±24, range 40-135, p<0.001). The mean hospital stay for all 14 was 2.7 days (SD±1.8, range 1-7), and 2.2 days (SD±1.0, range 1-7) if the 2 with reconstruction are excluded. No complications were noted for any of the patients undergoing laparoscopic PO except the patient with idiopathic ascites, who developed port-site hernias after 3 months. For the 8 patients who received chemotherapy, the time from date of surgery to date of 1st chemotherapy was 25.4 days (SD±6.7, range 22-37), or 3.6 weeks (SD±1.0).

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Mean</th>
<th>Range</th>
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<tbody>
<tr>
<td></td>
<td>50.7</td>
<td>39-61</td>
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| Number under 50 years | 7 |

<table>
<thead>
<tr>
<th>Breast cancer stage</th>
<th>Stage I</th>
<th>Stage IIA</th>
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<td>5</td>
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<table>
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<tr>
<th>Reason for ovarian operation*</th>
<th>BRCA1/2 mutation</th>
<th>Suspected ovarian pathology</th>
<th>Family history</th>
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<td></td>
<td>6</td>
<td>3</td>
<td>6</td>
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<table>
<thead>
<tr>
<th>Type of breast surgery</th>
<th>WLE (including 1 bilateral WLE)</th>
<th>Re-lumpectomy</th>
<th>Unilateral MRM (1 with reconstruction)</th>
<th>Bilateral MRM (1 with reconstruction)</th>
</tr>
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<td></td>
<td>6</td>
<td>1</td>
<td>5</td>
<td>2</td>
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| Duration of surgery (minutes±SD (range)) | 160±60 (40-240) |

| Time to chemotherapy (8 patients) | Weeks (range) | 3.6 (3.1-5.3) |

*One woman had 2 reasons for oophorectomy: a family history and suspected ovarian pathology

WLE – wide local excision

MRM – modified radical mastectomy

**Discussion**

Hereditary breast/ovarian cancer syndromes are responsible for approximately 5% of all breast cancers and 10% of all ovarian cancers. In women with suspected hereditary disease, treatment of the primary tumor should take into account the risk for subsequent breast and/or ovarian cancer. For these women PO is more acceptable than prophylactic mastectomy. As many as half of the women with primary breast cancer will opt for PO, but the decision to have a PO may take more than 2 years after the breast cancer surgery. In a non-randomized study of women with hereditary breast/ovarian cancer syndrome that compared breast cancer rates with and without prophylactic mastectomy, only 2 of the 8 women who developed breast cancer (none had had a prophylactic mastectomy) had had a PO. There is also an increased risk for the development of ovarian cancer in breast cancer patients under 50 with a family history of breast or ovarian cancer but no BRCA1 or BRCA2 mutations. The breast cancer risk-reduction afforded by PO to women with a strong family history of non-hereditary breast cancer seems to apply to pre-menopausal women. The ovarian cancer risk-reduction for women with non-hereditary ovarian cancer is more definite.
Bilateral oophorectomy has been proposed for pre-menopausal women at high risk for breast cancer and who do not want to bear children in the future. However, it can be assumed that a decision regarding prophylactic surgery is distressing for any woman at high risk, and more so for a woman facing breast cancer surgery. On the other hand, laparoscopy has altered the face of surgery in many specialties in the past 15 years, and has made the decision to undertake major surgery much easier for the patient in terms of recovery. In our Center women with early (stage I or II) breast cancer are usually counseled by a team comprising surgeons, oncologists and geneticists and presented with all available treatment options, which include PO if appropriate. In a minority of cases the patient will bring up the issue herself, and sometimes there are other reasons for performing oophorectomy. All of the 14 women in our study had stage I or stage IIA breast cancer. Three women had only a strong family history of breast cancer without ovarian pathology or a family history of ovarian cancer, but the other 11 had BRCA1/BRCA2 mutations found pre-operatively, or a family history of ovarian cancer, or suspected ovarian pathology (table). It is of note that one of the women in this series, who had only a family history of ovarian cancer, was tested 6 months after the operation and found to have the BRCA2 mutation 6174delT (N.B. reported in the results and the table as having only a positive family history).

Today, laparotomy is not normally performed for PO unless there is an indication for hysterectomy as well, in which case combining this procedure with breast cancer surgery would not be contemplated. For women who opt for laparoscopic PO, it is obvious that laparoscopic oophorectomy done at the time of breast surgery will avoid the need for a second hospital admission, operating room session and anesthetic at the cost of extended operating time. The reported complication rate with laparoscopic gynecological procedures is 4% (15,16). Combining laparoscopic oophorectomy with oncologic breast surgery did not cause an increase in the overall complication rate. In this group of patients there were no conversions to open oophorectomy and there were no complications associated with the laparoscopic oophorectomy. The length of hospital stay for our patients was determined solely by the breast component of the surgery.

Another consideration in any breast cancer surgery is the timing of chemotherapy in relation to the date of the breast cancer surgery. Some of our patients had adjuvant chemotherapy before breast re-excision, completion mastectomy or prophylactic mastectomy, and others required no chemotherapy because of tumor characteristics. Currently accepted practice is that chemotherapy should be started within 6 weeks of the breast cancer surgery (17,18). Post-operative adjuvant chemotherapy was initiated well within this time for the 8 patients in this study who required it (table) and the time to chemotherapy was unaffected by the ovarian component of the surgery.

Prophylactic contra lateral or bilateral (for women who have had local resection) mastectomy is probably the best preventive measure against a second primary breast cancer in high-risk women with early breast cancer. However, in addition to protection from ovarian cancer, in pre-menopausal women PO may offer significant protection against a second primary breast cancer. PO is more acceptable than prophylactic mastectomy to many women because it is not externally disfiguring (19). Based on the results in our patients, we feel that laparoscopic oophorectomy can be offered to any breast cancer patient undergoing breast surgery who requires oophorectomy or fulfils the criteria for PO, and who is a suitable candidate for laparoscopy. This strategy could also be extended to women undergoing prophylactic mastectomy without breast cancer. Awareness of the possibility of combining these procedures at the same operating session should be increased amongst the community of practitioners dealing with breast cancer.

References