

Association Between Postoperative Complications After Immediate Alloplastic Breast Reconstruction and Oncologic Outcome

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Abstract

Mastectomy with immediate reconstruction is associated with increased complications that may negatively impact the oncologic outcome. This retrospective study examined the association between postoperative complications and oncologic outcome in women undergoing immediate alloplastic reconstruction. In a cohort of 186 women with breast cancer, there was a high rate of complications (45%). Postoperative complications were not associated with worse oncologic outcome.

Introduction: Mastectomy with immediate reconstruction is associated with increased complications when compared with mastectomy without reconstruction. Postoperative complications have been associated with worse oncologic outcome in other cancers. We examined the association between postoperative complications after immediate reconstruction and oncologic outcome. **Methods:** This retrospective study included all women undergoing mastectomy and immediate alloplastic reconstruction for breast cancer between the years 2009 and 2016. Data collected included demographics, cancer and treatment characteristics, type of surgery, postoperative complications, and outcome. Association between postoperative complications and oncologic outcome was examined using Cox regression analysis. **Results:** Between January 2009 and December 2016, 227 women underwent mastectomy with immediate alloplastic reconstruction. One hundred eighty-six (82%) were done for breast cancer. Most (148; 80%) had infiltrating carcinoma. The mean age was 48.8 years (range, 21-77 years). Forty-seven (25%) had a previous history of radiation. Fifty-four (29%) had neoadjuvant treatment. Complications occurred in 83 (45%) of the women. Fifty-five (30%) needed revisional surgery (closure of wound, debridement, exchange or removal of implant, and evacuation of hematoma). Complications were associated with older age and previous radiation history (57% vs. 40% in women with no previous radiation; $P = .04$). The mean follow-up was 1138 days. Twenty-five (12%) women developed recurrence during follow-up. There was no association between presence of postoperative complications and recurrence of cancer. **Conclusions:** Postoperative complications were not associated with worse oncologic outcome in this study. The study may be limited by the relatively short follow-up.

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Introduction

For women undergoing mastectomy, immediate breast reconstruction has become standard^{1,2} with the advantages of avoiding a second anesthetic morbidity, and obtaining superior psychological

and sexual outcomes.³⁻⁵ On the other hand, mastectomy with immediate breast reconstruction is associated with increased complications when compared with mastectomy without reconstruction,⁶ including surgical site infection and dehiscence of the surgical wound sometimes ending in exchange or removal of the implant.

In many cancers, postoperative complications, such as intra-abdominal infection, anastomotic leakage, and systemic complications have been found to be independent poor prognostic factors, associated with poor short- and long-term overall survival and relapse-free survival. This has been demonstrated after curative resection for esophageal squamous cell carcinoma, gastric cancer, and colon cancer.⁷⁻¹⁰

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Complications After Immediate Reconstruction and Outcome

Several reports show that immediate breast reconstruction after mastectomy is not associated with oncologic compromise,^{1-3,11-14} yet there is limited information on the association of complications on the oncologic outcome of breast cancer. Poor wound healing and fever were found to be related to increased recurrence of breast cancer in 2 retrospective studies.^{15,16} Postoperative complications may negatively affect outcome through a direct effect on the immune system or indirectly by delaying recovery and postponing adjuvant treatment.

We sought to examine the association between postoperative complications after immediate breast reconstruction and long-term oncologic outcome. Our secondary goal was to assess the effect of complications on timing of adjuvant therapy initiation.

Methods

This is a retrospective study evaluating the association between postoperative complications after immediate alloplastic breast reconstruction and long-term oncologic outcome. All women undergoing mastectomy and immediate implant-based reconstruction for the diagnosis of breast cancer between the years of 2009 and 2016 were included in the study.

Computer and paper charts were reviewed for demographics and patient and cancer characteristics. Data collected included comorbidities (smoking, diabetes mellitus, and hypertension) information on previous breast surgery and radiation, cancer characteristics (type, grade, and stage), timing and type of neoadjuvant and adjuvant treatment, type of surgery (unilateral or bilateral, skin sparing vs. nipple sparing), and postoperative complications within 90 days. Complications were defined as hematoma formation, surgical site infection, skin necrosis, wound dehiscence, readmission, and need for revisional surgery (debridement, replacement or removal of implants).

Time between surgery and initiation of adjuvant therapy was recorded, as well as type of adjuvant therapy given; chemotherapy, biological therapy, hormonal therapy, and radiation.

Length of follow-up and outcome (local, regional, distant recurrence, mortality, and cause of death) were determined for each participant.

Analyses

Participating women were divided into 2 groups, based on the postoperative course (with or without complications within 90 days of surgery). The demographics and cancer characteristics of the 2 groups were compared using the χ^2 or Fisher exact test for categorical data, and the Student *t* test or the Mann-Whitney *U* test were used to compare continuous variables. All tests were 2-sided, and significance was set as less than 0.05. Cox regression analysis was used in order to compare the oncologic outcome between the 2 groups using the significant variables from the univariate calculations. Analysis was performed using IBM SPSS Statistics for Windows (version 23.0; IBM Corp, Armonk, NY).

Results

Between January 2009 and December 2016, 227 women underwent mastectomy with immediate implant-based breast reconstruction. After the exclusion of women (41; 18%) undergoing risk-reducing mastectomy, the study group included 186 women.

The mean age was 48.9 years (range, 21-77 years). Characteristics of the study group are summarized in Table 1.

Most women (138; 74%) had unilateral mastectomy. In 69 (37%) patients, an expander was used. Eighty-three (45%) women had a complication during the same admission or within 90 days of the admission. During the same admission, these included dehiscence or infection in 30 (16%), skin necrosis in 19 (10%), and a hematoma in 8 (4%). Fifty-five (30%) were taken back at least once to the operating room for a complication within this period. Twenty-five (14%) needed debridement or suturing of the wound, 28 (15%) needed exchange or removal of the implant, and 2 (1%) needed evacuation of a hematoma.

Table 2 summarizes the association between different risk factors and postoperative complications. Older age and a history of radiation were associated with postoperative complications. Although women experiencing complications had longer median time to chemotherapy and biological therapy, the differences did not reach statistical significance. On multivariate analysis, age, history of radiation, and the use of permanent implant (vs. expander) remained significantly associated with complications.

The median total follow-up time was 1138 days (SD, 792). During follow-up, 7 (4%) women had local or regional recurrence, 13 (7%) had distant metastases, and 5 (3%) had both locoregional and distant metastases. There was no association between postoperative complications and local or distant recurrence.

Discussion

Postoperative complications are associated with worse long-term outcome in colon, gastric, and esophageal cancer.⁷⁻¹⁰ In these studies, complications were defined as systemic fever, anastomotic leakage, and intraabdominal infection.⁷⁻¹⁰ Breast cancer surgery, on the other hand, is considered to be a low-risk surgery, associated with lower postoperative morbidity. Surgical site infection is the

Table 1 Characteristics of the Study Population

Characteristics	N = 186 (%)
Mean age, y (SD)	49 (11)
Diabetes mellitus	11 (6)
Hypertension	21 (11)
Coronary artery disease	2 (1)
Previous lumpectomy	62 (33)
Previous radiation	47 (25)
Smoking	
Current	28 (15)
Past	16 (9)
Family history	85 (45)
Invasive cancer	148 (80)
Neoadjuvant treatment	
Hormonal	9 (5)
Chemotherapy	25 (13)
Chemotherapy and biological therapy	20 (11)
Adjuvant chemotherapy	25 (13)
Adjuvant radiation	61 (33)

Abbreviation: SD = standard deviation.

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