Risk-Reducing Mastectomy and Breast Reconstruction

Indications and Evidence for Current Management Strategies

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KEYWORDS

• Prophylactic • Risk reduction • Risk reducing • Mastectomy • Reconstruction • Surgery

KEY POINTS

- With increased exposure to genetic counseling and further understanding of the molecular specifics of breast cancer, risk-reduction surgery has become a hot topic for both patients and physicians.
- Risk-reduction surgery has been shown to decrease the incidence of breast cancer in women at elevated risk for developing breast cancer.
- Risk-reduction surgery has been shown to decrease the incidence of contralateral breast cancer, but data are limited on disease survival.
- There are data to recommend sampling lymph nodes in breasts without known abnormality in certain patients at high risk for occult abnormality.
- The indications for nipple areola–sparing mastectomy are changing as patients and physicians seek to achieve improved aesthetics in breast reconstruction while maintaining oncologically safe surgery.

INTRODUCTION

Each year there are an estimated 1.3 million new cancer cases and an estimated 550,000 deaths from cancer in United States. The lifetime probability of developing cancer in men is 43.5% and 38.34% for women. Breast cancer is the most common malignancy in women in North America and Western Europe. More than 225,000 cases of invasive breast cancer are diagnosed and more than 40,000 women will die from breast cancer each year. Breast cancer is second only to lung cancer as the cancer with highest moralities among that same group of women. About 15 million women in the United States seek medical attention each year with concern for or direct treatment of breast cancer.[1,2] Breast cancer diagnosis can be either sporadic or genetically predisposed, and multiple risk factors have been associated with increased risk for developing breast cancer. In contrast to genetic

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predispositions, there are also modifiable risk factors that can alter individual risk.[2]

As with all cancers, there is a constant effort toward early detection, early treatment, and prevention. With continued research in quantifying both genetic and modifiable risk factors, women are able to get a sense of their likelihood of developing breast cancer. For women already with a breast cancer diagnosis, certain risk factors and individual molecular abnormality may indicate the chance of developing breast cancer in the contralateral breast.

Bilateral risk-reduction mastectomy aims to decrease the incidence of breast cancer in women without a previous diagnosis, and contralateral risk-reduction mastectomy aims to prevent the incidence of contralateral breast cancer in a woman already diagnosed. Multiple factors have led to the increased prevalence of risk-reduction mastectomy procedures. The reason for more women choosing to pursue these surgical procedures can be attributed to the improved ease of genetic testing, increased public awareness, and advancement in reconstructive options and outcomes.

INDICATIONS FOR RISK-REDUCTION MASTECTOMY

Risk-reduction mastectomy is divided into 2 groups of surgical procedures. Bilateral risk-reduction mastectomy is the surgical removal of both breasts before any pathologic diagnosis has been made. In certain women with high risk for developing breast cancer in their life, it may be appropriate to surgically remove both breasts in hopes of preventing the incidence of breast cancer and decreasing breast cancer–specific mortality. Contralateral risk-reduction mastectomy is the surgical removal of a breast without any abnormality in a women diagnosed with unilateral breast cancer. The goal of contralateral mastectomy is to decrease the incidence of contralateral breast cancer. Although a goal, data have not shown an improvement in overall breast cancer mortality.

CONTROVERSIES FOR RISK-REDUCTION MASTECTOMY

The advancement of genetic screening, understanding of tumor molecular abnormality, and technical specifics of both the oncologic breast resection and reconstruction have contributed greatly to an increase in women seeking information about risk-reduction surgery. To inform patients appropriately, specific criteria guide patients and clinicians regarding for which patients the benefits outweigh the risks. As developments are made regarding risk factors, prevention, treatment, and reconstruction, the relative benefits of risk-reduction surgery may change.

Concurrent with risk-reduction mastectomy, the lymph node basin of unaffected breast can be assessed for occult abnormality. Assessing the lymph node drainage pathway of a breast for which no abnormality is detected may provide information regarding subsequent treatment were occult abnormality to be found. Although there is morbidity in assessing the lymph node basin, there may be cases in which the benefits outweigh the risks.

Advances in surgical breast oncology have coincided with advances in breast reconstruction. Nipple-sparing mastectomy is an important advancement in achieving a natural-appearing reconstructed breast, particularly when the incision is inconspicuously located in the inframammary fold. Preserving native breast skin and the native nipple areola complex allows for improved cosmetic breast reconstruction. In cases of risk-reduction surgery without a cancer diagnosis, it is generally accepted that nipple-sparing mastectomy achieves essentially equivalent risk reduction compared with skin-sparing mastectomy and simple mastectomy techniques.

EVIDENCE BASE FOR RISK-REDUCTION MASTECTOMY

A review of the literature was performed to explore the current indications for both bilateral and contralateral risk-reduction mastectomy. A selective literature review was performed by both authors using the PubMed database (https://www.ncbi.nlm.nih.gov/pubmed). A PubMed search of English articles was completed with the search terms “breast cancer” AND “risk reduction mastectomy OR prophylactic mastectomy,” AND “indication,” and published between January 1st, 2007 and April 1st, 2017. An initial 26 papers resulted. One paper was excluded based on its status as an opinion piece.[3] No further paper was excluded. Each article was further analyzed to determine its significance for the current literature review. When cited references met the above criteria but were not in the initial PubMed search results, they were included as well.

WHO SHOULD BE OFFERED SURGICAL RISK REDUCTION?

All surgical procedures carry an inherent level of risk. In risk-reduction surgery, a woman decides to undergo an elective mastectomy on a breast without pathologic abnormalities. The patient must have an accurate understanding of the