

Jaisa Olasky, MS4, Class of 2006
Department of Surgery, Division of Surgical Oncology

National Patterns of Immediate Breast Reconstruction for Neoplastic Disease

Jaisa Olasky, MS4, James McPhee, MD, MD, Anne Larkin, MD

Background: In the United States, one in eight women will suffer from breast cancer in her lifetime and 40,000 will die from the disease each year. The overall US mortality from breast cancer is approximately 20%. The current modified radical mastectomy approach, with various adjuvant options provides 35-40% twenty-year survival. Following mastectomy, women have the option of no reconstruction, immediate reconstruction or delayed reconstruction. There is no significant difference in mortality with reconstruction.

Objective: This study was performed to evaluate patterns of immediate breast reconstruction at the national level, to determine what factors influence immediate breast reconstruction in women.

Methods: In order to evaluate trends in immediate breast reconstruction for neoplastic disease at the national level we used the Nationwide Inpatient Sample (NIS) for the years 1998-2003, a national all-payer database. The primary measured outcome for this study was immediate breast reconstruction vs. no immediate breast reconstruction for patients undergoing resection of breast neoplasm. In reference to the primary measured outcome of immediate breast reconstruction, we performed *chi square* analyses of our variables of interest. To identify which factors independently conferred statistical significance in predicting likelihood of immediate breast reconstruction a multivariate logistic regression was performed. Adjustments were made for certain patient characteristics including, age (<50, 50-70, >70), race (white vs. non-white), socioeconomic status (median income for patient zip code), co-morbid conditions, diagnosis type, payer status, and year of resection. In addition, adjustments were made for certain hospital level variables, which included, teaching status, geographic region, and hospital surgical volume.

The patient cohort was limited to female patients between 18 and 100 years of age.

Results: In the United States from 1998-2003 an estimated 682,511 patient-discharges occurred with the principal diagnosis of neoplastic disease of the breast. Of the initial cohort, 598,698 (88%) underwent either breast conservative therapy or some degree of mastectomy. Of these women, 116,420 (20%) underwent one of the reconstructive breast procedures. Median age for the reconstructed group was 50, compared to 66 for the non-reconstructed group. On univariate analysis, younger women, white women, and women with a higher annual income were significantly more likely to undergo immediate reconstruction. Overall, 40.5% of women less than 50 years old underwent reconstruction compared to women ages 50-70 (20.7%) and women greater than 70 years of age (2.6%) ($p < 0.05$). In terms of income level, 10% of women in the lowest income bracket (<\$24,999/year) underwent reconstruction compared to 11.3%, 16.2%, and 26.1% for women with respectively increasing annual income

levels of \$25,000-\$34,999, \$35,000-\$44,999, and >\$45,000 ($p<0.05$). Twenty percent of whites underwent reconstruction, while only 15.9% of non-whites underwent reconstruction ($p<0.05$). Based on hospital teaching status, 25.6% of patients treated at a teaching hospital underwent reconstruction, compared to 13.8% at non-teaching hospitals ($p<0.05$). In terms of annual hospital surgical volume, the percentage of patients that underwent reconstruction increased in a linear fashion with increasing volume. Of patients treated at an extremely low volume hospital, 7.8% underwent immediate reconstruction compared to 14.3% (very low), 19.1% (low), 21.3% (medium), 21 % (high) and 32.3% (very high). ($p<0.05$). On the adjusted multivariate logistic regression, factors that were significant independent predictors of immediate breast reconstruction included younger patient age (O.R 9.2; 95% C.I. 8.2-10.4), higher annual income level (O.R. 1.6; 95% C.I. 1.4-1.7), and white race (O.R. 1.6; 95% C.I. 1.5-1.9).

Conclusions:

Well- proven disparities in health care extend into the practice of breast reconstruction after mastectomy. Even when evaluated as independent variables, age, race, income bracket, hospital volume, and teaching status were all significant predictors of higher rates of immediate reconstruction nationally. As specialty centers, such as academic interdisciplinary breast cancer centers, become even more prevalent, the disparity will only worsen for those that do not have access to such resources. Efforts need to be made to bring these practices into smaller hospitals and into non-teaching institutions. In addition, at all centers, physicians must be creative in their communication strategies and encouraging toward patients of lower income and racial minorities.