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Large variation between hospitals in immediate breast reconstruction rates after mastectomy for breast cancer in the Netherlands[☆]

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KEYWORDS

Immediate breast reconstruction;
Mastectomy;

Summary *Background:* The present study aimed to describe the use of immediate breast reconstruction (IBR) after mastectomy for invasive breast cancer and ductal carcinoma in situ (DCIS) in hospitals in the Netherlands and determine whether patient and tumor factors account for the variation.

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Case-mix;
Hospital variation;
Breast cancer

Methods: Patients undergoing mastectomy for primary invasive breast cancer or DCIS diagnosed between January 1, 2011 and December 31, 2013 were selected from the NABON Breast Cancer Audit. All the 92 hospitals in the Netherlands were included. The use of IBR in all hospitals was compared using unadjusted and adjusted analyses. Patient and tumor factors were evaluated by univariate and multivariate analyses.

Results: In total, 16,953 patients underwent mastectomy: 15,072 for invasive breast cancer and 1881 for DCIS. Unadjusted analyses revealed considerable variation between hospitals in postmastectomy IBR rates for invasive breast cancer (mean 17%; range 0–64%) and DCIS (mean 42%; range 0–83%). For DCIS, younger age and multifocal disease were factors that significantly increased IBR rates. For patients diagnosed with invasive breast cancer, IBR was more often used in younger patients, multifocal tumors, smaller tumors, tumors with a lower grade, absence of lymph node involvement, ductal carcinomas, or hormone-receptor positive/HER2-positive tumors. After case-mix adjustments for these factors, the variation in the use of IBR between hospitals remained large (0–43% for invasive breast cancer and 0–74% for DCIS).

Conclusions: A large variation between hospitals was found in postmastectomy IBR rates in the Netherlands for both invasive breast cancer and DCIS even after adjustment for patient and tumor factors.

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Introduction

Breast cancer is the most frequently diagnosed cancer in women in the Netherlands. Curative surgical treatment for breast cancer consists of breast conserving therapy or mastectomy. Mastectomy is performed in approximately 40% of patients with invasive breast cancer^{1,2} and in 33% of patients with ductal carcinoma in situ (DCIS).³

To restore breast contour following mastectomy, a breast reconstruction can be performed. Breast reconstruction during initial breast cancer surgery is known as immediate breast reconstruction (IBR); delayed breast reconstruction is reconstruction at a later time.⁴ Reasons to offer patients IBR are of both aesthetic and psychosocial nature. IBR generally leads to higher patient satisfaction, improved body image, and increased self-esteem compared to delayed reconstruction.⁵ Therefore, guidelines suggest considering IBR in all patients who undergo mastectomy.^{6,7}

However, the percentage of patients actually undergoing IBR or delayed reconstruction after mastectomy is generally low and varies significantly from 5% to 30% in population-based studies.⁸ Several factors such as patient factors, tumor-related factors, hospital factors, and demographic factors may contribute to the final decision to perform IBR.⁸

Current practice patterns of postmastectomy IBR in the Netherlands are unknown. Evaluating hospital performances using case-mix-adjusted data can identify true variation between hospitals and ultimately help to reduce undesirable variation in clinical practice and improve the quality of care for breast cancer patients. Therefore, the present study aimed to investigate the variation in the use of IBR after mastectomy for invasive breast cancer and DCIS between all hospitals in the Netherlands and identify whether the variation could be attributed to patient and tumor factors influencing the use of IBR.

Materials and methods

Data source

Data were derived from the NABON (National Breast Cancer Consultation Netherlands) Breast Cancer Audit (NBCA),⁹ a continuous national multidisciplinary quality improvement project in which a wide range of variables concerning patient, diagnostics, and treatments are prospectively collected by the hospitals themselves or the Netherlands Cancer Registry. The NBCA contains data registered in all 92 hospitals performing breast cancer surgery in the Netherlands.¹⁰ The information concerning individual patients and hospitals is de-identified for this study, allowing comparisons without identification.

Study population

Data from all female patients who underwent a mastectomy for either primary DCIS or nonmetastatic invasive breast cancer diagnosed between January 1, 2011 and December 31, 2013 were selected. Information available in the NBCA on patient characteristics (age) and tumor characteristics (TNM classification, histological subtype, grade, and receptor status) were extracted.

Four types of IBR were defined: implant breast reconstruction (including tissue expander), autologous breast reconstruction, a combination of both, and reconstruction not otherwise specified.

Statistical analyses

Invasive breast cancer and DCIS patients were analyzed separately. Differences in the use of IBR between hospitals were compared using a funnel plot. Patient and tumor-

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