The Impact of Nipple Reconstruction on Patient Satisfaction in Breast Reconstruction

Adeyiza O. Momoh, MD, Salih Colakoglu, MD,† Catherine de Blacam, MBBCh,† Janet H. Yueh, MD,† Samuel J. Lin, MD,† Adam M. Tobias, MD,† and Bernard T. Lee, MD, MBA†*

Background: Nipple reconstruction is an integral part of the breast reconstruction process, as patients associate this stage with closure while providing a sense of completeness. This study evaluates the effect of nipple reconstruction on patient satisfaction with breast reconstruction.

Methods: All patients at Beth Israel Deaconess Medical Center undergoing breast reconstruction between 1999 and 2006 were identified. Patient demographics and complications were collected retrospectively while aesthetic and general satisfaction was evaluated by an administered survey. Patients with nipple reconstruction at the time of survey were compared to patients without nipple reconstruction.

Results: Nine hundred two breast reconstructions were performed in 696 patients; 490 patients underwent nipple reconstruction and 206 did not. Autologous reconstruction predominated in patients with and without nipple reconstruction (61.8% and 54.8%, respectively). There were no significant differences in individual and overall total complications between groups. Patients with nipple reconstruction had significantly higher general (72.2% vs 52.8%, $P < 0.0001$) and aesthetic (70.5% vs 46.5%, $P < 0.0001$) satisfaction scores compared to patients without nipple reconstruction. These results were seen in unilateral and bilateral breast reconstruction. Across reconstructive techniques, patients with nipple reconstruction had higher aesthetic satisfaction. Patient satisfaction scores in all individual survey questions were statistically higher in patients with nipple reconstruction.

Conclusions: Patients with breast reconstruction who undergo nipple reconstruction have higher general and aesthetic satisfaction compared to breast reconstruction alone. These differences were observed in both unilateral and bilateral reconstruction. Patients should be fully counseled about potential benefits nipple reconstruction can provide to all forms of breast reconstruction.

Key Words: breast reconstruction, patient satisfaction, nipple reconstruction

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The ultimate goal of breast reconstruction is the creation of a soft, ptotic, aesthetically pleasing reconstruction that closely approximates the natural breast. Nipple reconstruction is an integral part of this reconstructive process, as patients associated this stage with a sense of completeness.[1] A significant amount of effort has gone into improving nipple reconstruction, with multiple techniques described.[2–11] None, however, has been able to attain consistent preservation of nipple shape and projection over time, and color match of the areola to the contralateral breast continues to be problematic. Loss of 20% to 74% nipple projection over 6 months was reported by Shestak et al[12] in 3 commonly used techniques. In combination with local flaps, multiple materials including autologous cartilage,[13,14] bone,[15] and allograft materials such as AlloDerm[16,17] (Lifecell, Branchburg, NJ) have been used to preserve projection over time with varying advantages and disadvantages of availability, donor-site morbidity, and efficacy. Intradermal tattooing, one of the more common techniques for nipple areola complex pigmentation, can be difficult for color match in unilateral reconstruction, fades over time, and can decrease nipple projection.[18]

Despite these shortcomings, many patients opt for nipple reconstruction as a part of their breast reconstruction in an attempt to restore body image. There is a paucity of evidence on the effect of nipple reconstruction on satisfaction with breast reconstruction, with a few studies in the literature reporting conflicting results.[19–22] The purpose of this study is to analyze the impact of nipple reconstruction on patient satisfaction in postmastectomy breast reconstruction.

METHODS

Patient Selection

All patients undergoing breast reconstruction at the Beth Israel Deaconess Medical Center between January 1999 and December 2006 were identified using operating room case logs. Patients with total flap loss and nipple sparing mastectomy were excluded from this study. Patients were separated into those that underwent nipple reconstruction, including nipple creation and nipple areolar tattooing, and those that did not undergo any nipple reconstruction. Data on patient demographics and complications were gathered retrospectively from the online medical records, office charts, and inpatient medical records.

Questionnaire Design and Administration

Patient satisfaction was assessed through responses to a questionnaire adapted from the Michigan Breast Reconstruction Outcomes Survey. There was a minimum of 12 months of follow-up after reconstruction before survey. The Dillman total design method was followed to maximize response rates. This includes mailing an introductory letter describing our study and a survey with a return stamped envelope. A subsequent reminder letter and survey was mailed to nonresponders, and finally telephone calls were made to the remaining subjects within 1 month of the initial mailing.

The questionnaire consisted of 7 questions. Questions 1 through 5 assessed general satisfaction with the reconstruction, whereas questions 6 and 7 assessed aesthetic satisfaction. A 5-point Likert scale was used for each question and answers ranged from "very dissatisfied" (1) to "very satisfied" (5). Patients responding with an answer of 4 or 5 were coded as "satisfied" and all others were scored as "dissatisfied."

Satisfaction data were scored per patient and not per breast. Patients who had different type of reconstructions for each breast or underwent a secondary breast reconstruction after flap loss were

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From the *Section of Plastic Surgery, University of Michigan Health System, Ann Arbor, MI; and †Department of Surgery, Division of Plastic and Reconstructive Surgery, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA.

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Reprints: Bernard T. Lee, MD, MBA, Department of Surgery, Division of Plastic and Reconstructive Surgery, Beth Israel Deaconess Medical Center, 110 Francis St, Suite 5A, Boston, MA 02215. E-mail: blee3@bidmc.harvard.edu.

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