Original Study

Five-Year Oncologic Outcomes of Volume Displacement Procedures After Partial Mastectomy for Breast Cancer

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Abstract

Although volume displacement procedures after partial mastectomy for breast cancer are increasingly being performed, few studies have comprehensively reported the oncologic outcomes of these procedures and the associations of those outcomes with clinicopathological variables. This study addresses that deficit in part and presents data concerning the efficacy of these procedures.

Background: Volume displacement techniques that use remnant breast tissue are useful in reconstructive procedures after partial mastectomy. The authors analyzed the oncologic results of volume displacement surgery after partial mastectomy and their associations with various clinicopathologic factors. **Patients and Methods:** One hundred fifty-eight eligible patients with breast cancer who underwent volume displacement procedures after partial mastectomy were included in this prospective study, in which associations between clinicopathologic factors and locoregional recurrence, distant metastasis, and death were analyzed. **Results:** During a mean follow-up of 60.8 months, locoregional recurrence occurred in 3 cases (1.9%) and distant metastasis in 4 (2.5%). According to multivariate analysis, bilaterality of breast cancer ($P = .035$) and adjuvant chemotherapy ($P = .042$) were associated with distant metastasis. **Conclusion:** Volume displacement procedures after partial mastectomy have good oncologic results and are acceptable procedures for patients with breast cancer.

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Introduction

Two types of technique are used in oncoplastic surgery after partial mastectomy: volume displacement (VD) and volume replacement (VR),[1] both classified as level II oncoplastic breast surgery.[2] In VD techniques, remnant breast tissues are reshaped or reduced to reconstruct the breast after partial mastectomy, whereas VR techniques use autologous tissue flaps obtained from adjacent organs.[3]

Thus, VD after partial mastectomy is a reconstructive procedure that is intermediate between conventional breast-conserving surgery and reconstruction after total mastectomy using an autologous tissue flap. The benefits of VD techniques include less invasiveness and no donor site morbidities.[4] These benefits enable a quick postoperative recovery, thus facilitating earlier administration of adjuvant treatments. Because of such advantages, numerous VD techniques have been developed and reported[5-10]; however, only a few studies have reported overall oncologic outcomes after partial mastectomy with VD procedures.[11-15]

We herein report our analysis of the oncologic results of VD procedures after partial mastectomy and the associations of those outcomes with various clinicopathologic variables.

Patients and Methods

This prospective analysis of clinicopathologic factors and oncologic outcomes included 158 consecutive patients with breast cancer who underwent oncoplastic VD procedures after partial mastectomy in Kyungpook National University Hospital between 2008 and

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2013. The treatment strategy for each patient was determined by a multidisciplinary team composed of breast and plastic surgeons, a radiologist, pathologist, oncologist, and radiation oncologist.

In all cases, the breast cancer was removed with a clear resection margin and the circumferential surgical margins evaluated using intraoperative frozen section. No inked tumor cell was defined as a negative resection margin; when tumor cells were detected on circumferential frozen section margins, more extensive resection was performed. However, when the superficial (anterior) or deep (posterior) margin was reported as positive, adjuvant radiation only was administered. Either sentinel node biopsy or axillary lymph node dissection was performed according to the axillary lymph node status.

After the breast tumor had been removed, the breast was reconstructed using 1 of the following VD techniques: glandular flap, V-Y advanced flap, purse-string suture, adipofacial turnover flap, round block technique, batwing mastopexy, tennis racket technique, rotating flap, or reduction mammoplasty.[1,4,9] Postoperatively, adjuvant radiotherapy, chemotherapy, or hormone treatment was administered on the basis of tumor stage and characteristics.

The procedure most commonly performed in our study was the tennis racket technique. This technique uses a circular incision around the areola and an additional straight incision toward the tumor. An advantage of this technique is that it can be used for tumors in any quadrant of the breast. The second commonly used

Figure 1 Cosmetic Results of Volume Displacement Techniques After Partial Mastectomy for Breast Cancer. (A and B) Pre- and Postoperative Views of Tennis Racket Technique. (C and D) Pre- and Postoperative Views of Rotating Flap. (E and F) Pre- and Postoperative Views of Reduction Mammoplasty