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Surgical Management of Multicentricity, Nipple-Areola Involvement, and Bilaterality in Breast Carcinoma

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During a five-year period, 457 women who underwent partial, segmental, or total mastectomy were assessed for multicentricity (31%), nipple-areola involvement (17%), and bilateral breast carcinoma (9%). These factors determined the extent of surgery performed and the possibilities for later breast reconstruction. The frequency of nipple-areola involvement in breast cancer strongly indicates the need for alternatives to their preservation for breast reconstruction. The study concludes that total mastectomy for invasive carcinoma is the preferred method of treatment for early breast cancer until further clinical trials have assessed the value of segmentectomy.

While surgery is the most widely accepted treatment for early stages of breast cancer, adapting the extent of the operation to the extent of carcinoma remains a prime objective. The relationship of multicentricity to recurrence is a factor to consider in treating patients whose operation involved less than total mastectomy. The presence of occult carcinoma in the nipple and areolar tissue associated with carcinoma elsewhere in the breast also has implications in breast reconstruction. Our report describes the significant occurrence of multicentricity in breast carcinoma that involves both the breast and the nipple-areola tissue.

Materials and Methods

We undertook a retrospective analysis of mastectomies for carcinoma performed at Henry Ford Hospital from 1974 to 1978 to determine the incidence of multicentricity, bilaterality, and nipple and areola involvement. The 462 operations performed on 457 patients included 243 modified radical mastectomies, 129 radical mastectomies, and 90 total mastectomies. Patient age was divided into four categories: 31 patients 40 years or younger; 133 aged 41-55; 241 aged 56-79; and 30 who were 80 years or older. One patient each was found to have malignant cystosarcoma phylloides and metastatic malignancy, and they were eliminated from further study.

Results

Of the 455 patients for whom data concerning breast cancer were available, 146 (31%) were reported to show multicentricity on routine pathological examination. In 79 patients (17%), at least one additional focus of carcinoma was located in the nipple and areola. When patients with lobular carcinoma in situ were excluded from the series, multicentricity was evident in 135 of 435 patients (31%), and nipple and areola involvement in 76 (17.4%). The primary carcinoma was located in these 76 patients as follows: upper outer quadrant, 39 (50%); central, 22 (28.9%); outer lower quadrants, six (7.9%); and upper inner quadrant, four (5.1%). The remaining five had tumors involving most of the breast mass. Thus, in 64.4% of patients, the nipple and areola were involved, although the cancer was not located in the immediate area. The primary carcinoma was located in the nipple or areola of 18 patients, while 11 (61.1%) showed multicentricity.

Histological types were analyzed for multicentricity and nipple and areola involvement (Table I). Infiltrating ductal carcinomas of various types were found in 89.6% of the 455 patients, comprised 85.6% of the 146 multicentric lesions, and 91.9% of the 79 lesions which involved the nipple and areola. Infiltrating and non-infiltrating lobular carcinomas and those of low aggressiveness (papillary, comedo, adenoid cystic carcinoma) accounted for 10% of
the total lesions, for 14.9% of the multicentric ones, and for 8.8% of those involving nipple and areola. When viewed in detail, however, some histologic types were associated with a higher incidence of multicentricity than others; and some were more likely to involve the nipple and areola than others.

Bilateral breast cancers (Table II) developed in 39 patients (8.9%); 27, or 69.2%, were infiltrating ductal cancers. Of the 39 lesions, 18 were synchronous, and 21 were metachronous. Multicentricity was more prominent in these patients, occurring in 20 (50%) of the 39. Whereas bilateral lesions of an invasive type developed in 27 (6.75%) of 400 patients with infiltrating ductal cancers, bilateral lesions occurred in seven (17%) of 41 patients with lobular carcinoma (in situ or infiltrating), in three (21.4%) of 13 with medullary carcinoma, and in two (50%) of four with intraductal papillary carcinoma. It should be pointed out that contralateral breast biopsies are not routinely performed at our institution.

Discussion

Over 35 years ago, Foote and Stewart (1) and Muir (2) independently emphasized the multifocal origin of breast carcinoma. Rose (3) reported that among 100 women with primary lesions of less than 2 cm in diameter, 26% had carcinoma in the breast which remained after simulated partial mastectomy. When the primary lesions were greater than 2 cm in diameter, 38% had carcinoma after simulated partial mastectomy, of whom 29% also had axillary metastases. After simulated partial mastectomy carcinoma was found in 80% of breasts from patients with lesions in the subareolar area, in contrast with 25% to 35% of patients with a primary carcinoma in one of the four quadrants. In the National Surgical Adjuvant Breast Project (4), microscopic foci of multicentric cancer were detected in 121 of 904 breasts removed for a clinically overt, invasive cancer. This incidence of 13.4% is regarded as conservative. The multicentric cancers were designated as noninvasive in 9.3% of the cases and as invasive in 4.1%. In Morgenstern's study (6), 41.6% of specimens exhibited multicentric tumor foci, of which 31% were in sectors or quadrants remote from the primary tumor.

The critical question of the incidence of later clinical evidence of carcinoma in the breast after partial or segmental mastectomy has not been convincingly answered. Cooperman, et al (5) reported that only eight of 160 patients developed a recurrent or a new primary lesion after partial mastectomy.

Procedures such as breast reconstruction, subcutaneous mastectomy, and transplantation of the nipple-areola are receiving increased attention and use. The frequency with which the nipple and areola are involved in breast cancer argues against their retention for breast reconstruction. This frequency has been reported at 8% (12), 11% (5), 12.2% (7), 30% (9), and 50% (8). Carcinoma in a transplanted nipple has also been reported (10). As an alternative in breast reconstruction, it is now proposed to core out the duct and preserve the areolar and nipple skin. Frozen section examination of both the subareolar breast tissue and a core from the interior of the nipple itself can also be used. In general, an alternative to areola and nipple preservation should be adopted.

Summary

Of 455 mastectomies performed at Henry Ford Hospital in the last five years, 146 (31%) showed multicentricity by routine pathological examination. Seventy-nine patients (17%) showed involvement of the nipple and areola. Bilateral breast cancer was evident in 39 patients. This experience, which agrees with other reports (3,4,6), emphasizes the need for an individual approach to the operative treatment for breast cancer. Total mastectomy for invasive carcinoma should be preferred until appropriate clinical trials assess segmentectomy as definitive treatment for early breast cancer.

References