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Risk of Recurrence after Treatment of Early Breast Cancer with Skin-Sparing Mastectomy

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Background: Skin-sparing mastectomy, combined with immediate breast reconstruction, has become increasingly popular. However, there are no published long-term data to support its oncologic safety. Our purpose was to evaluate the long-term oncologic risk of skin-sparing mastectomy.

Methods: The records of all patients who had undergone treatment of T1 or T2 breast cancer by mastectomy and immediate breast reconstruction, and who were followed for at least 5 years or developed recurrence of disease before that time were reviewed. Local and distant recurrence rates observed in patients treated by skin-sparing mastectomy were compared with those in patients treated by conventional, non–skin-sparing mastectomy.

Results: A total of 104 patients were treated with skin-sparing mastectomies. In that group, 6.7% developed local recurrences, 12.5% developed distant metastases, 88.5% remained free of disease, and 7.7% died of their disease. Among the 27 patients who did not have skin-sparing mastectomies, 7.4% had local recurrences, 25.9% had distant metastases, 74.1% remained free of disease, and 18.5% died of disease. These recurrence rates are similar to those reported elsewhere after treatment with conventional mastectomy and without reconstruction.

Conclusions: Our findings suggest that skin-sparing mastectomy does not significantly increase the risk of local or systemic disease recurrence in patients with early breast cancer.

Key Words: Breast cancer—Skin-sparing mastectomy.

For many reasons, skin-sparing mastectomy (SSM) with immediate breast reconstruction has become increasingly popular over the past decade as a treatment modality for early breast cancer. We believe that the judicious use of SSM has significantly improved the aesthetic results of immediate breast reconstruction (1), enhancing the quality of life for patients who must undergo mastectomy (Figs. 1 and 2). Early reports suggested that neither SSM nor immediate reconstruction adversely affects the risk of cancer recurrence (2–4). Nevertheless, the lack of data in the literature documenting the long-term safety of this treatment combination has prevented it from gaining universal acceptance.

At the University of Texas M.D. Anderson Cancer Center, immediate breast reconstruction has been combined with SSM since March 1986, beginning with selected patients but expanding to include most patients with T1 and T2 tumors who must undergo mastectomy and who desire reconstruction. Oncologic surveillance is maintained indefinitely on these patients whenever possible. Taking advantage of this surveillance, we reviewed our experience with immediate reconstruction in patients with early breast cancer followed for 5 years or more to compare the risk of local and systemic recurrence with and without SSM.

PATIENTS AND METHODS

The records of all patients with T1 or T2 breast cancer who had undergone mastectomy with immedi-

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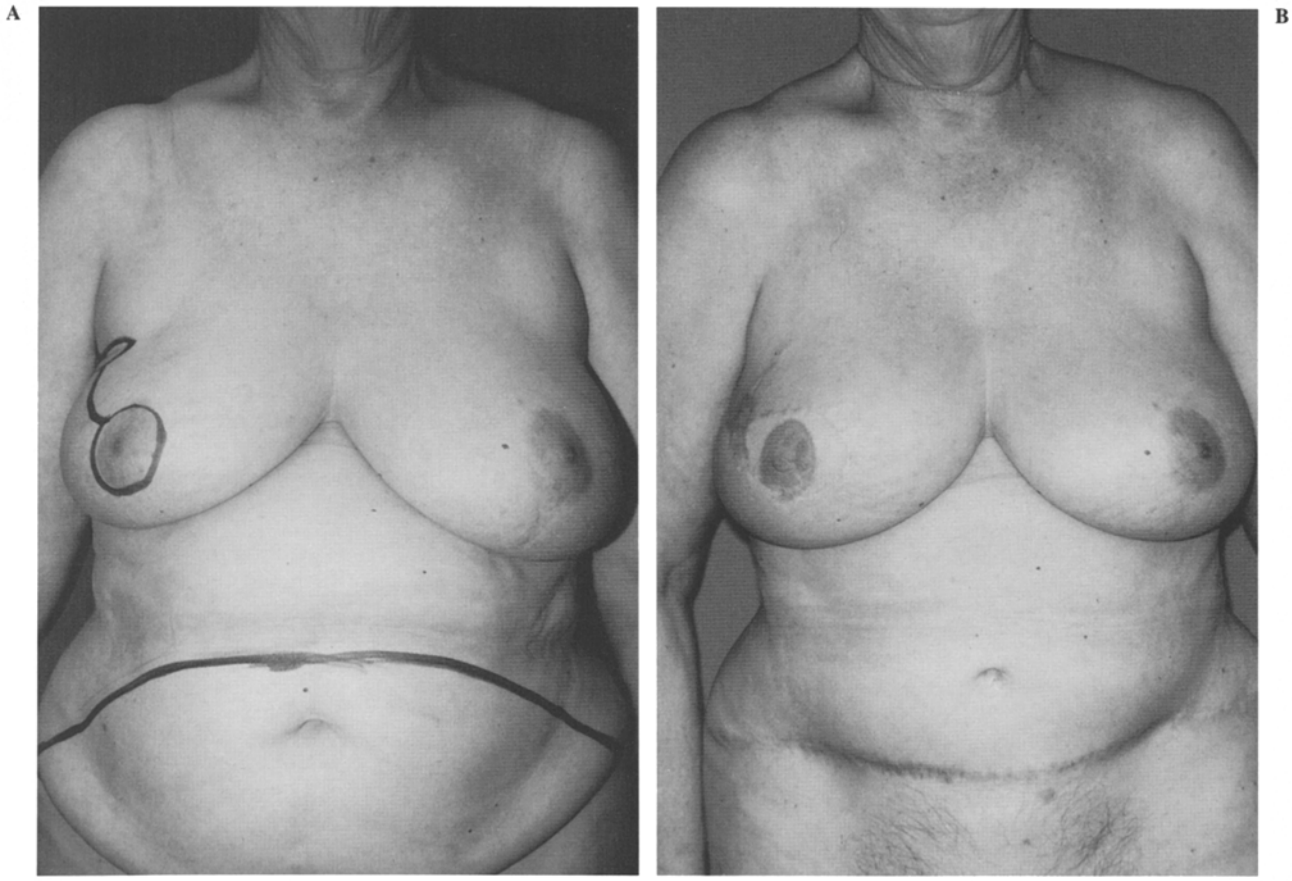

FIG. 1. **a:** Preoperative view of a 63-year-old woman with early breast cancer, showing the plan for a skin-sparing right mastectomy and immediate TRAM flap reconstruction. **b:** The result shown 1 year after surgery.

ate breast reconstruction at the University of Texas M.D. Anderson Cancer Center >5 years ago were reviewed. Follow-up was obtained by chart review and by telephone interview. Patients were included in the series if they had remained disease free for ≥5 years or if disease had recurred locally or systemically (even when followed for <5 years). Photographs of each reconstruction were then reviewed to determine if a SSM had been used. SSM was defined as a procedure in which all gross breast tissue, including the nipple and areola, was removed (along with axillary contents if an axillary dissection was performed). Breast skin that was located within 1 cm of the tumor was also excised, but uninvolved breast skin was preserved for use in the reconstruction. If uninvolved breast skin had not been preserved for use in the reconstruction, the mastectomy was considered not to be of the skin-sparing variety. A typical example of a SSM plan and the result of reconstruction is shown in Fig. 1. Patients with and without SSM were reviewed separately for risk of recurrence. Patients also were grouped by T stage and nuclear grade to determine whether these parameters were associated with different recurrence risks. Statistical analysis was performed where appropriate using the χ^2 method; p values of <0.05 were considered significant.

RESULTS

During the study period, 131 eligible patients with T1 or T2 breast cancer underwent mastectomy with immediate reconstruction. All patients except those who developed earlier recurrence had been followed for at least 5 years. The range of follow-up was 2.32 to 8.39 years (mean 5.6). Local recurrence was encountered in nine patients; the mean interval to recurrence was 32.5 months (range 4.4–82.0).

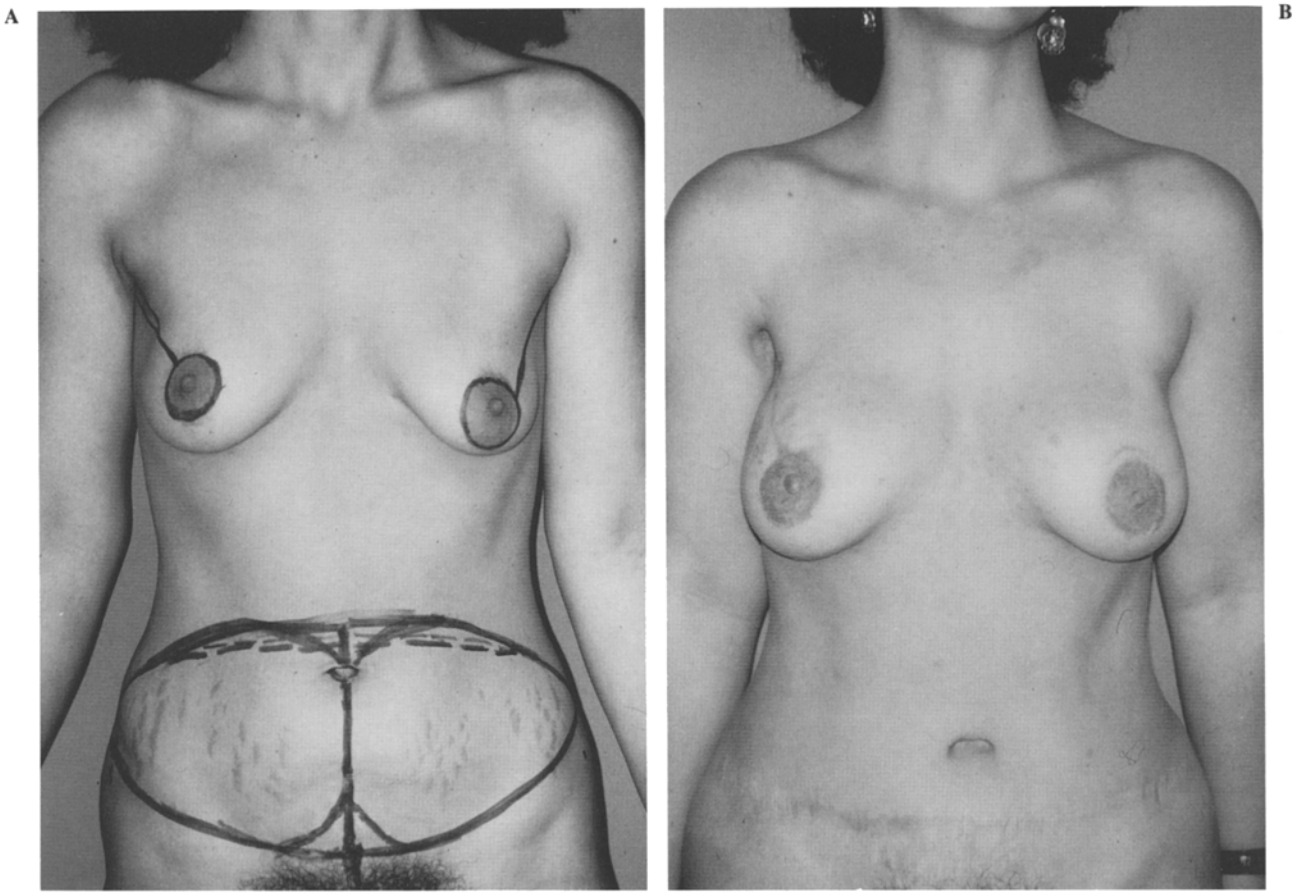

FIG. 2. **a:** Preoperative view of a 29-year-old woman with early breast cancer, showing the plan for bilateral SSM and immediate TRAM flap reconstruction. **b:** The result shown 1 year later.

In this series, 104 patients underwent a SSM, whereas 27 patients did not. The two groups were similar in that the average T stage in the SSM group was 1.41, whereas in the conventional mastectomy group it was 1.37. In the SSM group the average nuclear grade was 1.71, whereas in the conventional mastectomy group it was 1.72. In the 104 patients who underwent SSM, the local recurrence rate was 6.7% (Table 1), whereas in the patients without SSM the local recurrence rate was 7.4% (Table 2). This difference was not statistically significant. Analysis of groups of patients segregated by T stage showed trends associating higher T stage with greater risks of local recurrence ($p = 0.19$) and systemic metastasis ($p = 0.43$), but these trends were not statistically significant. Similarly, segregation of patients by Black's nuclear grade (5) showed trends associating lower nuclear grade (i.e., more anaplastic tumors) with greater risks of recurrence ($p = 0.38$) and metastasis ($p = 0.12$), but these trends were not statistically significant either, probably because of the small sample size.

DISCUSSION

Despite the obvious advantages of SSM and immediate breast reconstruction, neither concept is universally accepted by oncologists. One reason for this may be the lack of availability, in some centers, of high-quality breast reconstruction. Another reason, however, is probably a concern about oncologic safety, particularly when SSM is used. Previously reported studies have suggested that immediate reconstruction and SSM do not increase the risk of disease recurrence, but none of these studies have been of sufficient size or duration to lay the question to rest.

TABLE 1. *Local recurrence, distant metastases, and disease status of patients with early breast cancer after SSM and immediate reconstruction*

Group	n	Percentage of patients			
		Local recurrences	Distant metastases	Free of disease	Died of disease
All undergoing SSM patients	104	6.7	12.5	88.5	7.7
T1 tumors	61	3.3	14.8	88.5	8.2
T2 tumors	43	11.6	9.3	88.4	7.0
Black's grade I[a]	31	12.9	19.4	80.6	19.4
Black's grade II	48	6.3	10.4	91.7	0.0
Black's grade III	6	0.0	0.0	100.0	0.0

SSM, skin-sparing mastectomy.
[a]Black's nuclear grade, which was not known for all patients. The lower the grade, the more anaplastic the tumor.

In this report, we present a series of patients who have been followed for at least 5 years. Our results indicate that neither immediate reconstruction nor SSM confers any increased risk of tumor recurrence, either local or systemic, and that the use of SSM in patients with early breast cancer is oncologically safe.

In this study, the tumor recurrence rates were found to be higher in the group of patients treated without SSM. This may be because some patients with larger T1 and T2 tumors were selected out of the SSM group. In general, however, the use of SSM was based more on which surgical oncologist performed the mastectomy than on the stage of disease because during the early years of our experience only a small group of surgeons believed in the utility of SSM, and not all of our surgical oncologists practiced it. Thus, SSM was not selected for use only in patients with favorable tumors, although patients with T3 and T4 disease were excluded. For this reason, we believe that comparison of our patients with and without SSM is valid and confirms the oncologic safety of SSM. Moreover, the local recurrence rate observed in our SSM group is similar to (or below) those reported in published series of similar patients treated with conventional mastectomy (6–9).

We have previously reported an aesthetic advantage for breast reconstruction performed immediately after mastectomy (1); others have reported that the use of immediate reconstruction reduces costs (10). Immediate reconstruction is also more convenient for patients, and spares them from having to live with the deformity of a missing breast. For these reasons, it is generally preferred by women who wish to undergo breast reconstruction. We hope that this report will reassure those who have concerns about the oncologic propriety of immediate reconstruction and that its availability, with SSM when appropriate, will continue to improve the quality of life of patients who must undergo mastectomy.

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TABLE 2. *Local recurrence, distant metastases, and disease status of patients with early breast cancer after Non-SSM and immediate reconstruction*

Group	n	Percentage of patients			
		Local recurrences	Distant metastases	Free of disease	Died of disease
All non-SSM patients	27	7.4	25.9	74.1	15.5
T1 tumors	17	5.9	29.4	70.6	17.6
T2 tumors	10	10.0	20.0	80.0	20.0

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