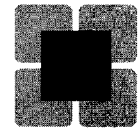

Factors influencing local recurrence of cancer after partial mastectomy

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■ From 1957 to 1975, 291 patients underwent partial mastectomy for carcinoma of the breast. In a follow-up period of 6 to 25 years, 32 patients had local recurrences. These 32 were matched with 32 patients without local recurrence but who had had the same treatment during the same periods of time for the same clinical stage of disease. Comparisons were made for age of the patient, family history, size of tumor, proximity of tumor to line of resection, involvement of lymph nodes, and prophylactic radiation. The average age of the patients with recurrence was 7 years less than those without, and the incidence of nodal involvement was three times as high in those with local recurrence as in those without. These were the only factors that showed any significant difference between the two groups. When axillary dissection is done in patients treated by partial mastectomy, valuable information is obtained about the likelihood of local recurrence.

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RANDOMIZED STUDIES have shown no significant difference in survival of patients treated by modified radical mastectomy, local excision of the tumor followed by irradiation, or partial mastectomy alone, without irradiation. The incidence of local recurrence, however, has been higher in those treated by operations less extensive than radical mastectomy.

■ *See related editorial by Hermann (pp 176–177)*

The purpose of this study was to identify factors that increase the likelihood of local recurrence in patients who have had cancers of the breast treated by partial mastectomy. We compared the incidence of certain clinicopathologic features in the patients who had local recurrences with the incidence of the same factors in a group of patients in the same clinical stages who did not have local recurrences. Those in the latter group were matched for clinical stage but otherwise were selected at random from the much larger group that had no local recurrences. Factors such as size of the tumor, type of tumor, family history of breast cancer, and presence of cancer close to the line of resection were compared between the two groups.

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PATIENTS AND METHODS

In the years 1957 through 1975 at the Cleveland Clinic, 32 of the 291 patients who had undergone partial mastectomy for cancer of the breast had local recurrences,[1] defined as any recurrence in the breast or chest wall or, also, in the axilla after irradiation or dissection.

TABLE 1
COMPARATIVE DATA

	32 patients with local recurrence after partial mastectomy	32 patients with no local recurrence after partial mastectomy
Average age	51 (median 52)	58 (median, 60)
Patients who underwent radiation at time of operation	7 patients (all died of cancer)	5 patients (1 died of cancer)
Cancer at margin of resection	3	4
Size	1.8 cm	1.9 cm
Tumor near nipple	1	0
Nodes	14 patients (average number of nodes, 7)	5 patients (average number of nodes 3, $P < .05$)
Infiltration of lymphatics	0	0
Excisional biopsy before partial mastectomy	7	6
Axillary dissection	9 (8 later)	5 (0 later)
Family history of breast cancer	5	7
Cancer of other breast	1	1
Pathology	6 had intraductal component, 3 had lobular component	10 had intraductal component, 4 had lobular component
Living	13 (6–18 years; median, 10) (6 living with recurrence)	18 (7–11 years; median, 9) (1 living with recurrence)

To identify the factors that increased the likelihood of local recurrence after partial mastectomy, we matched the 32 patients who had recurrences after partial mastectomies with 32 others selected at random from patients in the same clinical stages at the same time who, after partial mastectomies, had no recurrences. In the course of this selection, the first patient in the appropriate stage of the disease was chosen. All patients were followed from 6 to 25 years.

RESULTS AND DISCUSSION

Factors influencing local recurrence of the cancer

The average time from initial treatment to discovery of the local recurrence was 32 months. The only factors that seemed to be associated with an increase in the incidence of local recurrence were the age of the patient and the incidence and extent of nodal involvement (*Table 1*).

The patients were matched by preoperatively palpable involvement of the axillary nodes, but at the time of the partial mastectomy, axillary involvement was suspected, and the axilla was dissected in 9 of the 32 patients who later had local recurrences, whereas it was dissected in only 5 of the 32 in whom there was no local recurrence. Counting both the nodes removed at the time of the operation and those in which metastases later appeared, the incidence of nodal involvement was nearly three times as high in those with local recurrence (14/32) as in those who had no local recurrences (5/32). The average number of nodes involved was seven in those with recurrences, compared to three in those with no recurrence.

The average age of the patients with local recurrence was 51, which was 7 years younger than patients without local recurrence. The significance, if any, of the latter observation is difficult to interpret. Perhaps some of the older patients died of causes other than cancer before their cancers could recur.

To our surprise, no other factors, such as size of tumor, type of tumor, infiltration of lymphatics, family history of breast cancer, presence of cancer close to the line of resection, or failure to give prophylactic radiation, were associated with recurrence.

The dominant histology of the tumors in both groups was infiltrating ductal carcinoma. Six patients who had local recurrences had an intraductal component as compared with 10 who had no recurrences. Three of the 6 had lobular cancers compared with 4 of the 10.

We also attempted to evaluate the association between recurrence and the written reports of the tumor's histology. There was no correlation between histology and local recurrence. This observation was consistent with the results of a previous study of 130 patients treated at the Cleveland Clinic by partial mastectomy in which Lash and associates[2] found that "review of the clinical and pathologic features of these patients revealed no obvious correlation of any feature with local recurrence." The review included study of differentiation, histologic type, nuclear atypia, and mitotic rate.

Schnitt et al[3] recently reported that at 5 years, extensive intraductal involvement by carcinoma and high nu-

clear grade or high mitotic index increased the risk of local recurrence.[3] The patients in their report underwent biopsy (sometimes excisional and sometimes not, but always followed by radiation therapy). On the other hand, in all of our patients, an attempt was made to remove all of the tumors and in no case was obvious noninvasive cancer not removed. Also, the short follow-up (median, 44 months) made it likely that rapidly growing tumors would be more apt to recur than the slowly growing highly differentiated ones.

Seven of the 32 patients who had recurrences had been irradiated as part of their initial treatment compared to five of the patients who had no recurrences. Four of the seven irradiated patients had involvement of nodes as compared to none of those who did not have recurrences. As might be expected, the mortality rate of the two groups reflected the incidence of nodal involvement. All seven of the irradiated patients with local recurrences died of cancer, compared with only one of the five irradiated patients without local recurrence. Since the patients were not randomized according to irradiation but were selected, nothing can be deduced from this part of the study, except that in long-range follow-up, radiation did not seem to protect against local recurrences, and it certainly did not protect against distant metastasis.

Location of local recurrences

All reappearances of cancer in the affected breast, chest wall, or in a previously dissected or irradiated axilla were classified as local recurrences. Five of these 32 local recurrences were in a part of the breast remote from the original excision, and may have been new cancers.

Treatment of local recurrences

The local recurrences usually were treated by mastectomy (16 of 32), but when only the axilla was involved (3 cases), only an axillary dissection was done. When the recurrence was small and localized (7 cases), the recurrences were re-excised. In the rest, combinations of radiation and chemotherapy were used.

Survival after local recurrences

Local recurrence after partial mastectomy is not as serious a complication as when it occurs after modified radical or radical mastectomy. After mastectomy, the recurrence almost always accompanies or heralds the appearance of systemic metastasis.[3,4] After partial mastectomy, however, 7 of the 32 patients with local recurrences were alive and well (median, 10 years), and 6 more were living with distant metastases.

TABLE 2
SIX- TO 18-YEAR SURVIVAL RELATED TO INVOLVEMENT OF NODES AND LOCAL RECURRENCE

Patients with negative nodes and no recurrence	Patients with negative nodes and local recurrence
14/27 (52%) living and well	6/18 (33%) living and well
5/27 (19%) dead of cancer	7/18 (39%) dead of cancer
7/27 (26%) dead of other causes	0/18 (0%) dead of other causes
1/27 (4%) living with recurrence	5/18 (28%) living with recurrence

Eighteen of the 32 patients who had local recurrences died of cancer and one died of other causes. Of the 32 patients who had no recurrences, 7 died of cancer and one was living with recurrence. This difference in survival and in rate of recurrence might be expected from the almost three-to-one difference in the incidence and extent of lymph node involvement in the two groups (*Table 1*).

There was a significant difference in the incidence of death from cancer in the patients who had no nodes involved and no local recurrences (19%) and those who had no nodes involved yet did have local recurrences (39%). There also was a significant difference in the incidence of disease-free survival (*Table 2*). The unanswerable question is whether the increased systemic metastasis in the group that had recurrences is due to the spread of the cancer from the recurrence or whether the same factors that caused the recurrence also caused distant metastasis. The latter may be the answer because studies have shown that in spite of an increased incidence of local recurrence in patients treated by partial mastectomy, the survival rate is similar to that following modified radical operations.[4,5]

CONCLUSION

One of the reasons some surgeons have been reluctant to treat small and apparently localized breast cancers by partial mastectomy has been the high incidence of local recurrence after breast-sparing operations. When patients with less likelihood of local recurrence can be identified, it will do much to encourage the increased use of breast-conserving operations.

This study suggests that if the pathologist reports that the primary tumor appears to have been completely removed, if there are no foci of intraductal carcinoma at the margins of the specimen, and if there is no involvement or minimal involvement of the axillary nodes, a partial mastectomy should provide adequate therapy.

On the other hand, if there is microscopic evidence to suggest that the tumor has not been completely removed or if there is extensive involvement of the axillary nodes, the incidence of local recurrence is so high that a mastectomy or the addition of radiation therapy should be considered. A second consideration that supports the routine dissection of the axilla is that when this is done, the axilla does not require irradiation and much of the morbidity of postoperative radiation is avoided.

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