

RADICAL MASTECTOMY FOR MAMMARY CARCINOMA

A Preliminary Report*

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Various factors which influence the prognosis of mammary carcinoma have been mentioned by several authors.¹⁻¹² These factors may be classified in three groups, as follows:

A. The condition of the patient

1. Age
2. Menstrual status
3. The presence of such associated conditions as pregnancy or lactation
4. The presence of constitutional diseases such as diabetes
5. Duration of symptoms

B. The status of the disease

1. Size of tumor
2. Location of tumor
3. Stage of the disease
4. Condition of the axillary lymph nodes
5. Histologic pattern of the tumor

C. The responsibility of the doctor

1. Criteria for selection of the operable cases
2. Mode of therapy

Among these factors the degree of metastatic involvement of the axillary lymph nodes is generally accepted to be the most reliable index of the rate of survival. However, the aim of this paper is not to discuss the value of each of these factors in the prognosis of mammary carcinoma, but rather to attempt to analyze the author's personal series of cases in the light of these factors.

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Material and Methods

Within the last five years (1959-1964) 55 radical mastectomies were performed by the author himself or by residents under his supervision using the technique described by Haagensen.¹² Three cases have been excluded for the following reasons: one patient was male, one patient died following cardiac arrest during the operation, and one patient was lost track of. Therefore this study is based on the records of a personal series of 52 cases. At present 38 patients are free of disease, 7 patients have developed local recurrences and/or distant metastases, and 7 other patients have died of breast cancer (Table 1).

The time which has elapsed after radical mastectomy is indicated in Table 2. Because not enough time has elapsed after these operations this table can naturally not be an indication of the survival rate.

TABLE 1
RADICAL MASTECTOMY FOR MAMMARY CARCINOMA

Present Status	Number of cases
Alive, free of disease	38
Alive, with recurrences or metastases	7
Died of breast carcinoma	7
Total	52

TABLE 2
RADICAL MASTECTOMY FOR MAMMARY CARCINOMA
TIME WHICH HAS ELAPSED FOLLOWING OPERATION

Post-operative period, in months	Alive free of disease	Alive with disease	Died of breast carcinoma	Total
4 - 11	9	2	-	11
12 - 23	10	2	3	15
24 - 35	10	1	1	12
36 - 47	3	1	1	5
48 and more	6	1	2	9
Total	38	7	7	52

The age distribution of the patients is indicated in Table 3. The youngest patient is 30 and the oldest one is 68 years of age. As may be seen in the table, most of our patients are below the age of 50. The fifth decade appears to be the most susceptible age group for mammary carcinoma.

TABLE 3
RADICAL MASTECTOMY FOR MAMMARY CARCINOMA
AGE DISTRIBUTION

Age	Alive free of disease	Alive with disease	Died of breast carcinoma	Total
30 - 39	11	3 (20 %)	1 (6.6 %)	15
40 - 49	14	4 (18 %)	4 (18%)	22
50 - 59	7	-	1	8
60 - 69	6	-	1	7
Total	38	7	7	52

Table 4 shows the relationship of menstrual status to the results of radical mastectomy. If the patients who are alive with recurrences and/or metastases are considered together with those who died of mammary carcinoma, the prognosis in post-menopausal women is slightly more favorable. There are no pregnant or lactating women among those patients who underwent mastectomy for mammary carcinoma.

TABLE 4
RADICAL MASTECTOMY FOR MAMMARY CARCINOMA
MENSTRUAL STATUS OF PATIENTS

Menstrual Status	Alive free of disease	Alive with disease	Died of breast carcinoma	Total
Premenopausal	21	6 (20 %)	3 (10 %)	30
Postmenopausal	17	1 (4.5 %)	4 (18 %)	22
Total	38	7	7	52

Women with carcinoma of the breast almost always discover their disease by coincidence. In our series there is only one patient whose first symptom was bloody nipple discharge and who was not aware that she had a mass in her breast. For each of the other

patients the first symptom was a lump which varied in size. For this reason the history of the duration of symptoms which is given by the patient should not be accepted as reliable information (Table 5).

TABLE 5
RADICAL MASTECTOMY FOR MAMMARY CARCINOMA
DURATION OF SYMPTOMS PRIOR TO OPERATION

Duration of symptoms	Alive free of disease	Alive with disease	Died of breast carcinoma	Total
Under 1 month	9	3	2	14
1-2 months	7	1	—	8
3-5 months	8	2	1	11
6-11 months	3	—	1	4
12-23 months	7	1	3	11
24-35 months	3	—	—	3
36 months and over	1	—	—	1
Total	38	7	7	52

Table 6 shows the greatest diameters of the tumors in each of three groups of cases. Here again, if the patients alive with disease

TABLE 6
RADICAL MASTECTOMY FOR MAMMARY CARCINOMA
SIZE OF TUMOR

Greatest diameter	Alive free of disease	Alive with disease	Died of breast carcinoma	Total
Under 11 mm.	—	1	—	1
11 - 19 mm.	7	—	1	8
20 - 29 mm.	8	—	2	10
30 - 39 mm.	6	—	1	7
40 - 49 mm.	5	2	1	8
50 mm. and over	4	1	1	6
Undetermined *	8	3	1	12
Total	38	7	7	52

* Excised elsewhere

tumors in each of three radical mastectomy groups. Zones F and B seem to be the least favorable zones for carcinoma of the breast. Because tumors which are located in the upper-inner quadrant can rapidly reach the internal mammary lymph node chain, it is not difficult to explain the fact that Zone F is so unfavorable a zone. However, the high rate of mortality seen in cases having a tumor in Zone B is more difficult to explain. It is probably due to other factors.

Every patient in this series was personally examined pre-operatively and the clinical stage of the disease was determined personally according to the Columbia Clinical Classification.^{12,13} In this classification the patients are grouped according to four stages as follows:

Stage A: There are neither any clinically involved axillary lymph nodes nor any of the five grave signs.

Stage B: There are clinically involved axillary lymph nodes, but none are larger than 2.5 cm in transverse diameter. Again there is no grave sign.

Stage C: Any one of the following five grave signs may be present:

1. Limited edema of the skin of the breast (less than 1/3 of the breast)
2. Ulceration of the skin
3. Solid fixation of the primary tumor to the chest wall
4. Axillary lymph nodes which are 2.5 cm or more in transverse diameter
5. Fixation of axillary lymph nodes to the overlying skin or surrounding structures

Stage D All more advanced cases

Table 8 shows the stages of the 52 cases according to Columbia Clinical Classification. As may be seen, most of the cases in which radical mastectomy was performed were in the early stages. In the earliest stage, the mortality rate seems higher than in the advanced stages, but this does not reflect the truth, of course. Because the number of cases are too few in the advanced stages, they may not have any statistical significance.

TABLE 8
RADICAL MASTECTOMY FOR MAMMARY CARCINOMA
COLUMBIA CLINICAL CLASSIFICATION

Stage	Alive free of disease	Alive with disease	Died of breast carcinoma	Total
A	20	3 (10.6 %)	5 (18 %)	28
B	11	1 (7.7%)	1 (7.7 %)	13
C	6	1 (12.5%)	1 (12.5%)	8
D	1	2	0	3
Total	38	7	7	52

Table 9 shows the histologic condition of the axillary lymph nodes. Eight cases are noted as undetermined due to insufficient information at the time of publication. In the rest of the 30 cases there is no significant difference between the positive and negative axillary lymph node groups.

TABLE 9
RADICAL MASTECTOMY FOR MAMMARY CARCINOMA
CONDITION OF AXILLARY LYMPH NODES

Lymph node metastasis	Alive free of disease	Alive with disease	Died of breast carcinoma	Total
Negative	12	3	2	17
Positive	18	4	4	26
Undetermined	8	—	1	9
Total	38	7	7	52

All the slides of lymph node specimens were reviewed personally and classified, aside from their other histologic characteristics, into two groups according to whether the outline was irregular or well-delimited. The prognostic value of this classification has been discussed previously.¹⁶

Table 10 shows the histologic pattern of the tumor. The well-delimited tumors seem to be more excisable than the irregular ones. One patient had non-infiltrating lobular carcinoma, that is, carcinoma *in situ*. Four patients had had an excisional biopsy in other hospitals before they came to us. The slides of these patients, which were

TABLE 10
RADICAL MASTECTOMY FOR MAMMARY CARCINOMA
HISTOLOGIC PATTERN OF THE TUMOR

Outline of tumor	Alive free of disease	Alive with disease	Died of breast carcinoma	Total
Irregular	16	5	3	24
Well-delimited	17	2	4	23
Undetermined *	5	—	—	5
Total	38	7	7	52

* Excised elsewhere

submitted by those hospitals, did not show the tumor margin. For this reason, these tumors could not be classified and are shown as undetermined in Table 10.

The patients in this series were personally selected for radical mastectomy according to the Haagensen–Stout criteria of operability and regional lymph node biopsy.^{12, 22, 23} However, two patients, for whom regional lymph node biopsy was indicated, refused to undergo this biopsy; therefore radical mastectomy was performed. At present these patients are 28 and 35 months post-operative, respectively, without any residual disease. In this series there are three patients in Stage D. This stage is considered to be clinically inoperable according to the Haagensen–Stout criteria. These three cases had axillary lymph nodes measuring 2.5 cm in transverse diameter and skin edema of limited extent. But the skin edema was so slight and confined to such a small area that we decided to verify the operability by regional lymph node biopsies. One of the patients refused to have regional lymph node biopsy. The other two patients underwent regional lymph node biopsies, and no metastatic involvement was noted in any of the internal mammary or apical axillary lymph nodes. These three patients were also subjected to radical mastectomy in spite of the fact that they were clinically inoperable. However, two of them developed skeletal metastases 9 and 25 months, respectively, after the operation (Table 11). The patient who refused to have a regional lymph node biopsy is now 34 months post-operative without any evidence of local recurrences or distant metastases.

TABLE 11
RADICAL MASTECTOMY FOR MAMMARY CARCINOMA
PATIENTS ALIVE WITH LOCAL RECURRENCES OR DIS-
TANT METASTASES

No.	Patient	Age	Approx- imate pre- operative duration of symptoms	Location (Zone)	Clinical stage	Size of primary tumor (cm.)	Number of involved axillary lymph nodes	Interval (months)	Site of secondary disease	Outline of tumor
1	H.K.	30	3 weeks	B	A	unknown *	4	4	Lat. Flap	W.D.
2	S.U.	40	10 days	G	A	0.4	0	11	Med.	I.
3	S.M.	38	4 months	C	A	unknown *	2	14	Skin graft	I.
4	B. U.	47	1 week	D	B	unknown *	0	15	Skin graft	W. D.
5	H.T.	34	1 month	A	C	4.3	13	15	Bone Lung	W.D.
6	A.A.	45	12 months	A	D	5.5	6	9	Bone	W.D.
7	G.A.	43	3 months	A	D	485	5	25	Bone Lung	I.

Results

Table 11 shows the patients who are alive with disease. We may study these in two groups. The first group developed distant metastases and includes three cases. Two of these cases are in Stage D and one is in Stage C. They are all advanced cases; therefore this is not an unexpected development. The second group, which includes four patients, developed local recurrences. Three of these are in Stage A and one is in Stage B. They all represent early cases. Of these, two who developed local recurrences on the skin graft had had an excisional biopsy done elsewhere. In the pathological examination no tumor was found in the breast; that is, the tumor had been removed completely. In these cases local recurrences can be explained as being caused by an implantation during an improperly performed biopsy. To prevent such a possibility an incisional, rather than an excisional biopsy, should be performed in the case of tumors larger than 1 cm in diameter, and, unless there is reason not to do so, radical mastectomy should be performed after the frozen section diagnosis.

The development of recurrences on the skin flap may be due, at least partly, to technical errors, and this shows the improper dissection of the skin flaps. The plane of dissection should be kept superficial to the superficial layer of the superficial fascia of the breast.

There is an obvious difference in lymph node involvement between those patients who developed distant metastases and those who developed local recurrences. The total number of involved lymph nodes in three patients with distant metastases is 24, whereas in four patients with local recurrences they number only six.

An interesting feature of the patients who died of breast carcinoma is illustrated in Table 12. Although in five out of seven patients the disease appeared clinically to be of limited extent, the axilla was found to be extensively involved in two of these five cases. Also, 11 involved lymph nodes were found in the axilla of the patient in Stage B, in spite of the small size of the primary tumor. On the other hand, the patient in Stage C had only one involved axillary lymph node.

In cases with extensive axillary lymph node involvement, the distant metastases which killed the patient can be explained by lymphatic spread. These were liver metastases in two patients, and lung, brain and ovary metastases in one patient. Spread of the disease in cases which showed only one or no axillary lymph node metastasis might be due to dissemination through the blood stream, rather than lymphatic embolus or permeation.

TABLE 12
RADICAL MASTECTOMY FOR MAMMARY CARCINOMA
PATIENTS DYING OF BREAST CARCINOMA

No.	Patient	Age	Approximate pre-operative duration of symptoms	Location (Zone)	Clinical stage	Size of primary tumor. (cm.)	Number of involved axillary lymph nodes	Interval months	Site of metastases	Outline of tumor
1	T.E.	51	20 days	B	A	2.5	0	26	Bone	I.
2	F.K.	44	7 days	F	A	4 x	unknown*	16	Skin Brain Lung	I.
3	F.T.	40	4 months	F	A	5	1	27	Liver	I.
4	Z.K.	40	12 months	A	A	2.5	9	17	Lung Skin Brain Ovary	I.
5	A.T.	62	15 days	F	A	3	12	15	Liver	W.D.
6	M.G.	48	8 months	B	B	1.7	11	15	Liver	W.D.
7	M.Y.	34	14 months	A	C	unknown *	1	15	Lung Bone Brain	W.D.

* Excised elsewhere

** Undetermined

Our data show that, even where the disease is clinically Stage A and the primary tumor small, extensive microscopic axillary metastases can be found, and even where the disease seems to be of clinically limited extent and no microscopic axillary metastases exist, it might already have reached a hopeless stage.

Our data also show that most of the local recurrences and distant metastases manifest themselves in the second post-operative year. Moreover, in our series there are no deaths in the first post-operative year. These facts indicate that at the time of operation the distant metastases were extremely small. At present there is no method to discover these small foci of metastatic carcinoma which are buried in the liver, the skeletal system, or anywhere else in the body. This is the great defect of all the methods of classifying mammary carcinoma as to clinical stage of advancement. Until the correction of this defect, it is inevitable that some futile operations for mammary carcinoma will continue to be performed.

Summary

This paper presents an analysis of 55 cases of radical mastectomy in the light of the factors which influence the prognosis of mammary carcinoma.

This analysis shows that even if the disease is clinically in the "early" stage, extensive microscopic axillary metastases may be found, and even if the disease seems to be of clinically limited extent and no microscopic axillary metastases exist, it might already have reached a hopeless stage.

Most of the local recurrences and distant metastases in this series were seen in the second post-operative year. There were no deaths in the first post-operative year.

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