CARCINOMA OF THE BREAST*

II—CRITERIA OF OPERABILITY

C. D. HAAGENSEN, M.D., AND A. P. STOUT, M.D.

NEW YORK, N. Y.

FROM THE DEPARTMENT OF SURGERY OF THE PRESBYTERIAN HOSPITAL, AND THE LABORATORY OF SURGICAL PATHOLOGY, COLUMBIA UNIVERSITY, NEW YORK, N. Y.

WE HAVE RECENTLY PRESENTED[1] in detail the results of treatment in a series of 1040 cases of carcinoma of the female breast seen at the Presbyterian Hospital in New York during the period 1915 to 1934 (inclusive).

In the course of studying this series of cases we were impressed with the frequency with which radical mastectomy had been performed upon far advanced cases, cases which we ourselves today would classify as inoperable. Several of the surgeons who performed many of the operations in the series held to the theory that patients should be given their chance of cure by operation, even though it might be exceedingly small. The practical application of this theory led them to attempt to remove very extensive lesions. This fact makes the series of cases particularly instructive to study from the point of view of determining just which of the various clinical signs of locally advanced carcinoma of the breast are truly indicative of incurability, or to speak more correctly, of inoperability, for operation is the only method by which we can cure breast carcinoma.

In this, as well as in other clinics, there is strong evidence that the improvement in the results of radical mastectomy which has occurred during recent years is due to a large extent to the narrowing of the limits of operability. We are gradually learning that certain types of cases can not be cured even by the most radical operation. But this problem of estimating the true extent of breast carcinoma and of accurately classifying the cases from the clinical evidence alone is a difficult one. We need more detailed data based upon careful and complete clinical descriptions of the disease picture. In studying the Presbyterian Hospital series of cases we have made a special effort to provide these data. The comparatively complete case histories available in this hospital favored this effort, and the good follow-up provided the necessary information as to end-results of operation. The use of the punch-card method of analyzing our data has made it possible to determine the statistical significance as regards operability of the various clinical signs of the extent of the disease, not only individually but in various combinations. A large series of correlations between clinical signs and end-results was easily worked out by this method, and in the present communication we shall present such of these correlations as seem interesting and significant. Miss Dorothy Kurtz, Supervisor of the Presbyterian Hospital Record Room, and an authority on the use of the punch-board method in medical problems, has advised and assisted us in this study.

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Reference to our recent communication dealing with results of treatment in the Presbyterian Hospital series of cases will show that 640, or 61.5 per cent of the total of 1040 patients with breast carcinoma seen in the hospital over the period 1915 to 1934 (inclusive), were treated by radical mastectomy. Within the first five years following operation 146, or 22.8 per cent, of these patients developed local recurrence. At the end of this period 231, or 36.1 per cent, remained free of clinical evidence of carcinoma and were classed as five-year clinical cures.

In the following pages 21 different factors are examined *seriatim*, which have been presumed to be evidences of unfavorable prognostic significance and which were present in women treated by radical mastectomy. In each instance the five-year clinical cure rate is compared with that for the group as a whole. It will be shown that in the case of eight different factors radical operation invariably failed to cure a single case. These factors we consider mandatory contraindications to radical mastectomy. Five other factors, not by themselves categorical contraindications, will be shown to become so when more than one of them is present in the same patient. Finally, it will be shown that some factors popularly supposed to be of very grave import are not as black as they have been painted. Constitutional factors will be considered first, followed by those which may be classified as physical signs of the extent of the disease.

CONSTITUTIONAL FACTORS AFFECTING OPERABILITY

At some future date, when we know much more than we now do about the relationship of somatic type to disease, it may be possible to correlate a variety of constitutional factors with the outlook in breast cancer. Today, however, we are limited to reporting the effects of more prosaic factors such as age and pregnancy-state upon prognosis.

AGE OF THE PATIENT

The most obvious of these constitutional factors is the age of the patient. It has long been recognized by oncologists that neoplastic disease in general is apt to be more malignant when it occurs in young persons. This relationship has been confirmed in breast cancer by many observers, and Taylor[2] has emphasized it in a separate communication on the question. Some surgeons go so far as to decline to operate upon women under the age of 30. who develop breast carcinoma.

In our series the results of radical mastectomy in the different age-groups were as shown in Tables I and II.

These data leave no doubt that radical mastectomy is worth while, even in the youngest patients with breast carcinoma, provided, of course, that the lesion itself is not too far advanced. If the three patients under the age of 30 in our series whose tumor developed during pregnancy or lactation are excluded, as indeed they should be for reasons which we shall shortly demonstrate, the five-year cure rate in the remaining 15 young

TABLE I

RESULTS OF RADICAL MASTECTOMY ACCORDING TO QUINQUENNIAL AGE-GROUPS

Age-Group	No. of Operations	Operative Deaths		5-Year Local Recurrence		5-Year Clinical Cures	
		No.	Per Cent	No.	Per Cent	No.	Per Cent
Under 30	18	0		4	22.2%	4	22.2%
30–34	32	0		8	25.0%	10	31.3%
35–39	68	1	1.5%	23	33.8%	20	29.4%
40–44	121	3	2.5%	28	23.1%	46	38.0%
45–49	121	3	2.5%	28	23.1%	46	38.0%
50–54	100	3	3.0%	21	21.0%	43	43.0%
55–59	68	5	7.4%	17	25.0%	19	27.9%
60–64	58	1	1.7%	12	20.7%	17	29.3%
65–69	35	2	5.7%	3	8.6%	17	48.6%
70+	19	2	10.5%	2	10.5%	9	47.4%
Total	640	20	3.1%	146	22.8%	231	36.1%

TABLE II

RESULTS OF RADICAL MASTECTOMY IN 18 WOMEN UNDER 30 YEARS OF AGE

Record No.	Age	Origin During Preg. or Lact.	Metastases	5-Year Local Recurrence	Outcome
433589	22	No	0	0	Well five years
67803	23	Pregnancy	+	0	Died 4 months
56898	24	No	0	+	Died 25 months
409907	25	No	+	0	Died 39 months
224439	26	Lactation	+	+	Died 9 months
42141	27	No	Not proved	Not known	Living, with metastasis, 9 years
361504	28	No	0	0	Died 27 months
15883	28	No	+	0	Died 59 months
34743	28	No	+	0	Died 29 months
384644	29	No	+	0	Died 9 months
408290	29	No	0	+	Recurrence 59 months. Died 83 months
378962	29	No	+	0	Well 6 years
347901	29	No	+	0	Died 52 months
288630	29	No	+	0	Died 22 months
257685	29	Lactation	+	0	Metastasis sacrum 59 months. Died 111 months.
230452	29	No	+	0	Well until local recur. and met 8 yrs. Died 10 yrs.
67958	29	No	0	0	Well 10 years
50052	29	No	+	+	Died 18 months

patients rises to 37.5 per cent, a figure quite comparable with the cure rate for our series of cases as a whole.

Indeed, when the patients in our series are grouped according to age into broader categories there is surprisingly little difference in the results of operation in the different groups. Table III brings this fact out:

TABLE III

RESULTS OF RADICAL MASTECTOMY IN THREE AGE-GROUPS

Age-Group	No. of Operations	Operative Deaths		5-Year Local Recurrence		5-Year Clinical Cures	
		No.	Per Cent	No.	Per Cent	No.	Per Cent
Under 45	239	4	1.7%	63	26.4%	80	33.5%
45–59	289	11	3.8%	66	22.8%	108	37.4%
50 or over	112	5	4.5%	17	15.2%	43	38.4%
Total	640	20	3.1%	146	22.8%	231	36.1%

The surgeon dealing with breast carcinoma is also interested in the problem presented by patients of advanced age. Armed, as we are today, with methods of preventing and combating shock, we can perform, successfully, extensive surgical procedures upon aged patients upon whom we would not have dared operate previously.

In the present series there were a total of 45 women, age 70, or over, among the 876 primary cases. In 15 of these the carcinoma had progressed beyond the operable stage when they were first seen, while 12 were classed as constitutionally inoperable because of cardiovascular or other associated lesions (seven of these patients not only had inoperable cancer but were also judged constitutionally inoperable). Only four patients, ages 71, 74, 75, and 83, respectively, were denied radical mastectomy on the basis of advanced age alone. Twenty-one were judged suitable for the operation, but two of these refused it. Among the 19 who underwent it the results were surprisingly good. Nine, or almost one-half, were alive and well at the end of five years, and the average length of survival of those who have had no recurrence of their carcinoma has, to date, averaged 87 months. The most noteworthy case is that of a woman who had her radical operation at the age of 78, and today, at the age of 89, is still hale and hearty.

We are led by this evidence to conclude that radical mastectomy is often feasible and worth while in patients in their eighth decade who come with breast carcinoma. Patients in their eighties present a more difficult problem. Even when their general condition is good we have hesitated to perform radical mastectomy. Perhaps we are too cautious. As our experience with surgery on patients in their eighties increases we may learn that radical mastectomy is reasonably safe even in this group. During the past year, however, we have, instead, chosen to carry out simple mastectomy under regional block anesthesia on two patients age 89. In the series of 640 radical mastectomies, which are the subject of the present report, there were none undertaken upon patients in their ninth decade.

In operating upon these elderly patients it is much more important to *avoid* shock than to treat it well after it has developed. Shock has a much higher mortality in them than in younger patients. It becomes, so to speak, irreversible, and death follows from cerebral hemorrhage or cardiac failure.

The degree of decreptitude which the patient shows, and particularly the condition of her cardiovascular system, are, of course, more important than her age in itself in judging her ability to withstand radical mastectomy. While we have repeatedly performed the operation upon patients in their seventies, whose general condition was good, we have decided against attempting it upon some women in their sixties with severe hypertension, for instance. Among the total of 236 primary cases in which radical mastectomy was not performed in the present series there were 24 in which the basis for withholding the operation was the presence of some disease other than carcinoma. All of these had cardiovascular lesions of some type. One patient, in addition, had severe colitis, another, diabetes, and a third, hyperthyroidism.

Certainly these two latter diseases do not, today, in themselves, contraindicate radical mastectomy. We have performed it in a number of patients after these disturbances have been brought under control by appropriate treatment.

Cardiovascular lesions present a more difficult problem. We have placed a good deal of reliance upon the simple functional test of stair-climbing. If a patient has been able to carry on a certain amount of daily physical activity which includes climbing even a single flight of stairs without acute distress we have judged her able to withstand radical mastectomy. In patients with hypertension we attempt to choose an anesthetic that neither depresses nor elevates the blood pressure unduly. Dr. Apgar, Director of the Department of Anesthesia in the Presbyterian Hospital, prefers nitrous oxide anesthesia for such patients, and warns against the use of avertin as a basic anesthesia for them because of its well known tendency to depress the blood pressure. In passing, it might be noted that avertin-nitrous oxide anesthesia is our favorite for these long breast dissections, provided there is no special contra-indication to it.

PREGNANCY AND LACTATION

In view of the great stimulus to growth that the breast receives with the onset of pregnancy, and its active metabolism during lactation, it is but natural that a carcinoma developing during this period should be exceptionally malignant. This has, indeed, been the experience of all surgeons who have faced the problem. Yet there is a diversity of opinion as to the degree to which the malignancy of breast carcinoma is increased by pregnancy and lactation, and a corresponding lack of agreement as to whether or not pregnancy should be interrupted, and whether radical mastectomy should or should not be performed. In recent years data regarding this question have been presented by Bromeis,[3] from the University Surgical Clinic, at Tübingen, and by Harrington,[4] from the Mayo Clinic. Neither of these authors, however, tell us how many lasting cures were achieved in their clinics—they write only of survivals.

In the Presbyterian Hospital series of 876 primary cases there were 29 in which the breast carcinoma developed during pregnancy or lactation. In 20 of these women radical mastectomy was carried out (Table IV). There were no permanent cures. One patient remained well until six years after operation, when she developed local recurrence and pulmonary metastases, and died after another 18 months.

The results look better when expressed in terms of five-year survival, as Harrington presented them. Three, or 15 per cent of our 20 patients, were alive five years after operation, although all three succumbed later. Harrington reported the results of operation in a total of 99 women in whom breast carcinoma occurred during pregnancy or lactation. Thirteen of them, or 13.2 per cent, survived for at least five years. Thirty-two of his patients were traced 20 years after operation, and only one was found to have survived.

Another way of estimating the comparative malignancy of carcinoma of

the breast developing during pregnancy or lactation is in terms of the frequency of axillary metastasis. In our series of 20 cases that were operated upon 19, or 95 per cent, were found to have axillary involvement. The incidence of axillary involvement in our total series of 640 breast carcinoma was, on the other hand, 61.7 per cent. In Harrington's series of 99 cases of breast carcinoma developing during pregnancy or lactation the axillary nodes were found to be involved in 84.8 per cent, as compared with an incidence of 61.6 per cent in his series as a whole.

TABLE IV

CARCINOMA OF THE BREAST DEVELOPING DURING PREGNANCY OR LACTATION AND TREATED BY RADICAL MASTECTOMY

Case No.	Age	Time of Appearance	Axillary Metastases	5-Year Local Recurrence	Sites of Metastases	Follow-up
20616	37	6 mos. preg.	+	+	Other breast	Died 13 mos. postop.
49799	43	16 mos. before preg.	+	+	Bones	Died 25 mos. postop.
59522	31	3 mos. lact.	0	+	Lungs	Died 41 mos. postop.
67256	33	15 mos. lact.	+	0	None	Died, lead therapy. 5 mos. postop.
67379	32	9 mos. lact.	+	0	Lungs and bones	Died 15 mos. postop.
67803	23	Beginning of preg.	+	0	Other breast and bones	Died 4 mos. postop.
71423	33	1 mo. preg.	+	0	Lungs	Died 8 mos. postop.
80985	32	4 mos. preg.	+	0	Bones	Died 26 mos. postop.
81542	38	16 mos. lact.	+	0	Liver	Died 5 mos. postop.
224439	26	5 mos. lact.	+	+	Lungs and bones	Died 9 mos. postop.
258421	34	30 mos. lact.	+	0	Bones	Died 11 mos. postop.
350471	36	2 mos. before preg.	+	+	Bones	Died 17 mos. postop.
375570	37	10 mos. before preg.	+	0	Lungs	Died 19 mos. postop.
407734	38	48 mos. lact.	+	+	Other breast and lungs	Died 8 mos. postop.
415597	42	6 mos. lact.	+	0	Bones	Died 43 mos. postop.
64106	38	1 mo. before preg.	+	0	Lungs	Local recur. and met. 6 yrs. postop. Died 7½ yrs. postop.
257685	29	16 mos. lact.	+	0	Bones and ovaries	Recur. 59 mos. postop. Died 111 months postop.
57379	31	7 mos. lact.	+	0	Supraclav. node	Died 12 mos. postop.
73673	44	7 mos. preg.	+	0	Lungs	Recurrence 50 mos. postop. Died 66 mos. postop.
232863	40	7 mos. lact.	+	0	Lungs, bones and liver	Died 33 mos. postop.

These several types of evidence suggest to us that carcinoma of the breast developing during pregnancy or lactation is so malignant that surgery can not cure it often enough to justify this method of treatment. We prefer to classify these patients as *categorically inoperable,* and to treat them palliatively with radiation.

When pregnancy occurs following the successful removal of carcinoma of the breast it has no special unfavorable prognostic significance. If the carcinoma has been entirely removed the growth stimulus of pregnancy has no effect. If, on the other hand, a focus of carcinoma cells persists somewhere in the patient's body their resurgence may, of course, be hastened by a subsequent pregnancy, but the patient would have been doomed eventually anyway.

so that the ultimate cure rate remains unaltered by the incident of pregnancy. Seven of our 640 patients treated by radical mastectomy subsequently went through one or more pregnancies. In this small group of seven the five-year cure rate was 42.9 per cent, approximately the same as in our patients who did not subsequently become pregnant. Harrington's experience was similar. Subsequent pregnancy occurred in 59 of his patients, and five-year survival rate was 78.2 per cent in the group.

Influenced by these facts it has been our custom not to deny pregnancy to patients who have satisfactorily gone through radical mastectomy and appear to have a favorable prognosis, *i.e.*, no axillary metastases or other unfavorable features.

PHYSICAL SIGNS OF EXTENT OF DISEASE WHICH EFFECT OPERABILITY

Not all of the many physical signs which breast carcinoma produces have a bearing upon operability. Thus, dimpling of the skin, deviation and retraction of the nipple, and distortion of the outline of the areola, which are among the most common signs of the disease, are important in diagnosis but, in themselves, they have no bearing upon the question of operability, which we are here discussing, for the patients with them are always operable unless some other physical sign makes it necessary to class them as inoperable.

But the significance of certain other physical findings in breast carcinoma, such as ulceration and edema, is not generally agreed upon. There has been a dearth of satisfactory and detailed data regarding them. It is to these physical signs of problematic prognostic significance that we will devote our attention.

THE SITE OF CARCINOMA IN THE BREAST

The site of the tumor in the breast is one of these factors which comes first to mind. The relationship of the site of the tumor to the results of radical mastectomy in our series of cases is shown in Table V.

TABLE V

RESULTS OF RADICAL MASTECTOMY
ACCORDING TO THE SITE OF THE CARCINOMA IN THE BREAST

Site in Breast	No. of Operations	5-Year Local Recurrence		5-Year Clinical Cures	
		No.	Per Cent	No.	Per Cent
Upper outer quadrant	277	51	18.4%	118	42.6%
Upper inner quadrant	78	17	21.8%	27	34.6%
Center	74	22	29.7%	24	32.4%
Lower outer quadrant	51	8	15.7%	17	33.3%
Lower inner quadrant	28	11	39.3%	6	21.4%
Upper half	47	10	21.3%	14	29.8%
Lower half	15	3	20.0%	5	33.3%
Outer half	35	15	42.9%	7	20.0%
Inner half	5	3	60.0%	2	40.0%
Entire breast	15	5	33.3%	2	13.3%
Not stated	15	1	6.7%	9	60.0%
Total	640	146	22.8%	231	36.1%

These data confirm the general experience that the upper outer sector of the breast is the one most frequently affected by the disease. Moreover, the best results of operation are obtained with tumors in this same sector. Perhaps this is because surgeons who perform the standard radical operation, and close their wounds, are able to remove the tumor with a wider margin of uninvolved surrounding tissues when it is situated in the upper outer sector than when it is in any other part of the breast.

There is one situation in which breast carcinoma occasionally develops which is not listed in our table, namely, the inframammary region. We are today familiar with this form of breast carcinoma, but it was not identified as a special type of the disease by most of the surgeons who, in years gone by, wrote the descriptions of the cases here reported. We are unable, therefore, to present data regarding it.

It is our impression, however, from the patients with carcinoma in the inframammary fold which we have personally observed, that this form of the disease is a particularly favorable one. Patients are apt to detect a tumor in this situation early, because it is not hidden in the depths of surrounding fatty breast tissue but stands out in sharp relief along the fold where the fascia covering the breast fuses with the fascia covering the abdominal wall.

From the standpoint of operability, there is no site in the breast in which carcinoma can be deemed beyond the scope of surgical attack. When the entire breast is involved the results are poor, but this question of the significance of the extent of the local disease is better discussed on the basis of actual measurements of the tumor. It is the next factor which we shall discuss.

THE SIZE OF THE BREAST TUMOR

The importance of making careful measurements, preferably in centimeters, of all breast tumors can not be too strongly emphasized. Fortunately, such measurements were available in the great majority of our cases. The correlation between results of radical mastectomy and the size of the tumor in our series is shown in Table VI.

TABLE VI

RESULTS OF RADICAL MASTECTOMY ACCORDING TO THE SIZE OF THE BREAST TUMOR
(*Clinical Measurements*)

Size of Tumor	No. of Operations	5-Year Local Recurrence		5-Year Clinical Cures	
		No.	Per Cent	No.	Per Cent
Under 30 mm.	82	11	13.4%	51	62.2%
30 to 59 mm.	256	50	19.5%	110	43.0%
60 mm., or over	222	74	33.3%	43	19.4%
Size not stated	80	11	13.8%	27	33.8%
Total	640	146	22.8%	231	36.1%

These data indicate, as might be expected, that the prognosis becomes worse as the size of the tumor increases. Local recurrence is more frequent and the five-year clinical cure rate is lower.

But large size, alone, is no contraindication to operation. Even the largest breast carcinomata, if they do not exhibit any unfavorable feature other than their large size, can often be cured by surgery. Table VII illustrates this point. In it are shown the results of operation in 19 cases in which the primary tumor in the breast measured ten centimeters, or more, in diameter. Cases which we have classified as *categorically inoperable* for several reasons, and which we will discuss in detail later on in this report, have not been included in this table.

TABLE VII

RESULTS OF RADICAL MASTECTOMY

CASES IN WHICH THE TUMOR MEASURED TEN CENTIMETERS, OR MORE, IN DIAMETER

(*Clinical Measurements*)

(*Categorically Inoperable Cases Excluded*)

Physical Findings	No. of Cases	5-Year Local Recurrence		5-Year Clinical Cures	
		No.	Per Cent	No.	Per Cent
10 cm., or more, tumor *only*	12	2	16.7%	3	25.0%
10 cm., or more, tumor *with** signs of locally advanced disease	7	2	28.6%	1	14.3%
Total	19	4	21.1%	4	21.1%

The size of the breast tumor bears a general relationship to its duration, or rather to the duration which the patient alleges. This relationship is shown in Table VIII. In this table the measurements used are those made by the pathologist after the specimen has been cut. It is noteworthy that some tumors remain small even after they have been present for a long time.

TABLE VIII

RELATIONSHIP OF THE SIZE OF THE TUMOR (PATHOLOGIC MEASUREMENTS) TO ITS DURATION

Size of Tumor	No. of Operations	Duration				
		Under 1 Mo.	1 to 5 Mos.	6 to 11 Mos.	1 Yr. +	Not Stated
Under 20 mm.	64	18	26	9	9	2
20–49 mm.	272	46	98	43	60	25
50 mm. +	182	17	68	43	46	8
Not stated	122	19	44	24	25	10
Total	640	100	236	119	140	45

Although the probability of finding axillary metastases increases as the breast tumor enlarges, it is distressing to note that even in the group of

* In this, and in the following tables dealing with the prognostic significance of other individual features of breast carcinoma, *the signs of locally advanced disease* referred to are the ones which we have found from our data to have the gravest prognostic import. They include ulceration of the skin, edema of the skin, fixation of the breast tumor to the chest wall, axillary lymph nodes measuring 2.5 cm., or more, in transverse diameter, and fixation of the axillary nodes to the chest wall or overlying skin.

cases with the smallest tumors (under 20 mm. in diameter) the incidence of axillary metastasis is large, to be exact 43.8 per cent. These data are shown in Table IX. Again the measurements used are those made by the pathologist.

TABLE IX

RELATIONSHIP OF THE SIZE OF THE TUMOR (PATHOLOGIC MEASUREMENTS) TO AXILLARY METASTASIS

Size of Tumor	No. of Operations	Axillary Metastasis		Axillary Nodes Not Examined
		No.	Per Cent	
Under 20 mm.	64	28	43.8%	0
20–49 mm.	272	151	55.5%	7
50 mm. +	182	135	74.2%	3
Not stated	122	71	58.2%	8
Total	640	385	60.2%	18

MULTIPLE TUMORS IN ONE BREAST

Pathologic study not infrequently reveals that breast carcinoma exists in multiple foci in the affected breast, particularly in the relatively advanced cases, but these multiple tumors are not often detected clinically. We do not refer, of course, to satellite tumor nodules in the skin but to separate foci of carcinoma within the breast tissue itself. In our series there were only twelve such cases diagnosed clinically among the 640 in which radical operation was performed. It is probable that more careful palpation would reveal them more often.

Although our group of cases is small after the *categorically inoperable* ones have been excluded, Table X shows that the results of operation were relatively good in the 12 cases in which the multiple nature of the disease in the affected breast was the only prognostic factor that had to be considered. In the three cases in which there were multiple tumors and, in addition, other signs of locally advanced disease there were, however, no cures.

TABLE X

RESULTS OF RADICAL MASTECTOMY

CASES IN WHICH THERE WERE MULTIPLE TUMORS IN ONE BREAST

(Clinical Diagnosis)

(Categorically Inoperable Cases Excluded)

Physical Findings	No. of Cases	5-Year Local Recurrence		5-Year Clinical Cures	
		No.	Per Cent	No.	Per Cent
Multiple tumors *only*	9	3	33.3%	4	44.4%
Multiple tumors, *with* signs of locally advanced disease	3	1	33.3%	0	
Total	12	4	33.3%	4	33.3%

LOCAL ELEVATION OF SKIN TEMPERATURE

Our personal study of breast tumors has convinced us that careful comparison of the skin temperature over the tumor with that of a corresponding

skin area on the opposite breast will often show that the skin over the tumor is warmer. Although this sign is most frequently found in carcinoma we have observed it in a variety of types of benign tumors and we do not attach any special diagnostic significance to it.

We are unable to present any data regarding the prognostic significance of elevation of skin temperature because most of the surgeons who, in years gone by, wrote the descriptions of the cases reported in this series did not make any note of this sign.

REDNESS OF THE SKIN

Redness of the skin is sometimes a striking feature of breast carcinoma. While in the far-advanced cases it is seen as the result of actual involvement of the skin by the disease, in earlier ones it may develop merely as part of an inflammatory-like reaction which some carcinomata induce in the tissues which surround them.

TABLE XI

RESULTS OF RADICAL MASTECTOMY
CASES IN WHICH THERE WAS REDNESS OF THE SKIN
(*Categorically Inoperable Cases Excluded*)

Clinical Group	No. of Cases	5-Year Local Recurrence		5-Year Clinical Cures	
		No.	Per Cent	No.	Per Cent
Redness *only*	23	6	26.1%	8	34.8%
Redness, *with* signs of locally advanced disease.	30	13	43.3%	6	20.7%
Total	53	19	35.8%	14	26.4%

Table XI shows the results of radical mastectomy in the cases in the present series in which redness was noted, excluding the ones classified by us as *categorically inoperable*. Among these latter is the group of so-called "inflammatory" carcinomata in which redness is a prominent feature of the clinical syndrome. It will be seen from this table that redness occurring alone does not imply a bad prognosis. When it occurs with other signs of locally advanced disease, however, the outlook is considerably poorer.

INVOLVEMENT OF THE SKIN

Involvement of the skin over the tumor, as we have used it in the present classification, refers to those cases in which the skin over the tumor has become fixed and immovable. This is a clinical and not a pathologic criterion. It does not include the cases in which this involvement has progressed to the point of ulceration; these form a separate group which we shall discuss subsequently.

Table XII shows the results of radical mastectomy in these cases with skin involvement, excluding the ones classified by us as *categorically inoperable*. From this table it would appear that skin involvement occurring alone

TABLE XII

RESULTS OF RADICAL MASTECTOMY

CASES IN WHICH THERE WAS INVOLVEMENT OF THE SKIN

(Categorically Inoperable Cases Excluded)

Clinical Group	No. of Cases	5-Year Local Recurrence		5-Year Clinical Cures	
		No.	Per Cent	No.	Per Cent
Skin involvement *only*	21	6	28.6%	6	28.6%
Skin involvement, *with* signs of locally advanced disease	44	11	25.0%	8	18.2%
Total	65	17	26.2%	14	21.5%

does not imply a bad prognosis, although when it occurs with other signs of locally advanced carcinoma the percentage of cures decreases.

ULCERATION OF THE SKIN

Ulceration of the skin over a breast tumor is a sign that surgeons know well, and most of them have learned that it does not necessarily mean that the case is hopeless.

TABLE XIII

RESULTS OF RADICAL MASTECTOMY

CASES IN WHICH THERE WAS ULCERATION OF THE SKIN

(Categorically Inoperable Cases Excluded)

Clinical Group	No. of Cases	5-Year Local Recurrence		5-Year Clinical Cures	
		No.	Per Cent	No.	Per Cent
Ulceration *only*	9	1	11.1%	2	22.2%
Ulceration, *with* other signs of locally advanced disease	14	4	28.6%	1	7.1%
Total	23	5	21.7%	3	13.0%

Our data, as shown in Table XIII, bear out the truth that ulceration of the skin *occurring alone* does not indicate an unusually bad prognosis. When it occurs together with other signs of locally advanced disease, however, the outlook is indeed poor; in our series the cure rate for such cases was only 7.1 per cent. It should be noted that the cases classified by us as *categorically inoperable* have been excluded from this table.

(To be continued)