POST-MASTECTOMY RECONSTRUCTION

EDITED BY

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Preface

The following volume on reconstructive breast surgery does not deal with a comprehensive overview of all the techniques or methods available to the reconstructive surgeon in the planning and execution of the reconstructed breast. The editors have selected specific techniques and topics to be put together in a concise single volume to provide for the practicing plastic surgeon, the surgical resident, and the referring surgeon a basic approach to the reconstructive breast problem. With a basic understanding of the following chapters, a rational and intelligent approach to a reconstructive breast problem can be executed.

The subject of reconstructive breast surgery, particularly following mastectomy for cancer, and the subject of subcutaneous mastectomy require a full understanding of the pathophysiology of breast cancer and a varied armamentarium of surgical procedures and their appropriate application. We have tried to provide a philosophical and up to date viewpoint by including chapters by recognized authorities in the surgical world. This is not to say that many readers may not disagree or modify what is herein presented. We hope, however, that these passages will provide them with stimulus for more awareness, with a closer look at, and hopefully, thereby, an improvement in the approach and technique of reconstructive surgery of the breast in years to come.

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Contents

I

Reconstruction of the Breast Post-Mastectomy: A Practical Philosophy

THOMAS K. HUNT, M.D.

In writing the introduction to this book, I must confess to several things which some readers will find objectionable. First, I am a man. Second, I am a surgeon, a general one at that. Third, I believe that health care is a right only inasmuch as society makes a social contract that it is right. And fourth, I believe that the decision to remove a breast, for whatever reason, and the decision to replace it, for whatever reason, are individual decisions which are to be guided by the surgeon, not made by him or her alone. The surgeon has the right to decide whether or not he is willing to perform surgery; but he doesn't have the right to decide for the patient whether or not she will have it done.

With these facts in mind, I might confess to one more thing for any magazine editors who might look to this book as source material. I cringe when I hear the worn phrase that "breasts are overrated, sometimes overinflated," etc. A breast can be an important functional organ and an important decorative one, but it is basically important simply because it is and has been for some time a part of the person to whom it belongs. It can be a source of pleasure and a source of pain. It can be a source of solace and comfort and a source of anxiety and concern. Just as a man can often see a woman as an appendage to a breast, so

can a woman see herself, though usually for different reasons. Some women make their living with their bodies—I suppose most models would agree to this. Other women—and the magazine editors tell us that this category seems to be growing—seem to make their living despite their femininity. The level at which discussions on "the value of breasts" have been held, in both lay and professional press, have been uniformly superficial and oversimplified, with an eye to circulation figures rather than to information transfer. Even those whose source is sincere testimonial by patients seem often to be motivated by circumstances peculiarly personal to the patients who wrote them. Some discussions come from patients who want revenge upon the surgeon who "mutilated" them or from women whose message is that they were pioneers and insisted on reconstruction and are happy with it. Most seem to be more for the glorification of the writer than for the information of those who will read.

There are women who wish to be relieved of the anxiety of breast cancer and who need not have the solace of a reconstructed breast. There are women who have incurable cancer who need in their dying years to relate to their husbands and children in the physical manner to which they have been so long accustomed. As a surgeon, I sympathize with women who can't pass beyond the importance of an external skin appendage during the awesome transition between life and death. But then again, I haven't faced death in that manner and haven't had to make those compromises with my life and those of others. Very few of the readers of this book will have been in that situation. I do feel, however, that one can listen to patients and can assess, just as we assess pain that we can't feel, a basic understanding of just how serious is the need for reconstruction. Furthermore, I feel we can act upon that need even for patients who have an incurable disease.

As a surgeon, I take some pleasure in performing new surgical procedures. There is some inner pleasure in the fact that my profession has made this possible. Nevertheless, the fact that an operation is possible does not make it desirable. We have witnessed several decades of abuse of the tonsillectomy and the hysterectomy because they are possible. I hope passionately that breast reconstruction will not degenerate into that category. Already one sees signs of the "brainwash"—the article in the slick woman's magazine saying, "You can be whole again. Don't face your husband scarred from a mastectomy." I hear surgeons on radio and see them on television explaining the joys of reconstruction of the removed or scarred breast. Patients have told me that they feel guilty that they haven't wanted to have reconstruction because they think their husbands or boyfriends would appreciate it, if they did. I hope there will be few of them.

How good is reconstruction? The result is never normal, never perfect. One wonders how much one should advertise an imperfect product. To be sure, reconstruction is now far better than we have been able to offer previously, but it is still an imperfect product. I wonder how many surgeons offering breast reconstruction allow a prospective patient the opportunity to talk to a patient who has had an average or inferior result. I wonder how many show their extensive photographic files to their patients who need the information rather than to their colleagues who probably don't. What a shame if reconstructive surgery of the breast after mastectomy were to become a "seller's market!" There already are extensive pressures on the government and insurance companies to pay for an operation which is less than perfect and which can't cure

marital problems, and which is often performed against the basic desires of the patient because of "social pressures," all at immense cost.

Considering the cost, one hardly need add the day price of the hospital, the surgeon's fee, the operating fee, and the fact that reconstructions are finished relatively rarely in a single stage to realize how expensive they are. One must multiply this by the number of women having mastectomies to realize the extraordinary strain that would be put on the health care system if we were to create an ethic by which it became "mandatory" to reconstruct a removed breast in women under the age of 55. Even if an age limit were to be set, it would someday arrive in court as discriminatory!

This sounds as if I oppose breast reconstruction. The fact is, I was one of the first in my own area to perform and recommend it. It cost me fairly dearly among my colleagues to be quoted as having said to a patient 1 year after mastectomy that she should consider having a breast reconstruction if the absence of the breast interfered materially with the quality of her life. Subsequently, I have on occasion reconstructed breasts even earlier, and sometimes even in patients with incurable cancer. I have only rarely recommended immediate reconstruction. I am not sure it would be useful to argue that issue here. Nevertheless, I think some hard questions have to be asked concerning the operation before it is generally adopted. Unfortunately, I see none of the enthusiasts engaged in answering those hard questions.

For years I have offered reconstructions to all my patients. Only about one-fourth are interested, and a few less than that begin the process. Only a small portion of those who begin finish a multistaged process. Those who do not finish usually are satisfied with what they have, realizing that the final additions would not be perfect. Some feel that I disapprove of reconstructions and so have not given them adequate information. Others feel that I was too eager to do reconstructions and so have forced information at them. Some wonder why I have this funny male fetish that women should have two breasts. Some wonder why I want to cause them all that extra pain, expense, and trouble. Some are upset that I can't promise them something more perfect, go elsewhere, and later are ashamed to admit that they got something less than perfect. After a major attempt at communication with *all* my patients, I wonder if I have been able to communicate at all. I seem to have somewhat less trouble with the system I have adopted recently. I tell all patients who agree to have a mastectomy that I will agree to discuss reconstruction with them at any time they wish to bring up the subject. To be sure that they are not too shy, I reiterate that offer several times in the first few months after mastectomy. If they are interested, I ask them to talk to several patients who have had reconstructions. I have them see patients who have had good results and patients who have had not such good results. I have them talk to one of our plastic surgeons who performs reconstructions. They are invited to get second or third opinions. I discuss frankly the issue of whether reconstruction may hasten the return of a tumor, jeopardize the "cure," or hide a recurrence. (My answer in all cases is that we don't know, but it is unlikely.)

We have nurse practitioners in our office who deal with breast disease and who presumably can communicate with these patients as women. The practitioners have seen many patients with reconstructions. In their conferences with women about to have a mastectomy, they emphasize the possibility of reconstruction. In the postoperative period, the nurse's ardor seems to wane some-

what, though it remains strong. I often bring husbands in on the discussion, though I will not do so unless the patient agrees. I ask if they would like to have their husband or a friend present to discuss the issue. It is rare for a husband to urge reconstruction. It is even rare for a "significant other" to urge reconstruction. Though I cannot attest to the stability of unmarried relationships in my mastectomy practice, I can attest to the stability of married relationships after a mastectomy. I have seen only one that was significantly worse than before mastectomy, and that one was significantly bad to begin with.

I was asked by a television reporter one time when I was replying too calmly for her taste to a question about Mrs. Rockefeller and Mrs. Ford, "Is not having a breast removed the worst thing that could happen to a woman." My answer was quick and obvious. "No, it is not." It is usually worse to lose a life than to lose a breast. A young woman with children and only one breast soon realizes that she is far more valuable to her "family" alive with one breast than she is dead. A woman with a mature relationship with her husband soon realizes that their relationship will survive the asymmetry. No, losing a breast is not the most important thing in the world. Most of the patients I have asked say that losing an eye, especially two eyes, or hearing, or having severe facial disfiguration would be even worse. Obviously, I think we should approach the problem of breast reconstruction within the framework of assessing how serious the problem is, and the most important word I wish to have in this introduction is that only one person knows how important the reconstruction of a breast is, and that is the patient. She should neither be summarily denied nor forced for *any* reason. Her needs for reconstruction should be examined by the surgeon and other physicians involved to see if they are realistic. If they are not realistic, further discussion is needed, for frustrated expectations make angry patients.

The decision to reconstruct is a personal one made on a woman's personal needs. It is made with respect to people and things which the surgeon will never see or understand. He should be prepared to accept that he can understand only the need and the importance. He will never really understand the details.

Similarly, the need *not* to reconstruct may be just as compelling, and the social pressure to obtain a reconstruction can be as destructive a pressure in a woman's life as any other. Above all, when she begins to make the decision to go ahead, the patient must be given information about what she can realistically expect, and I know of no better way to obtain that information than to put her together with other women who have undergone the procedure. Perhaps this will be a new function for Reach for Recovery. This may be difficult and time consuming, but it is not expensive and is the best way to avoid unrealized expectation.

I will say nothing about those surgeons who still feel that a patient should be "cured" for 5 years before undergoing breast reconstruction. The rest of this book will test that argument. Similarly, it will attack the specter of recurrences "hidden" by reconstruction and what can be done about them.

I hope that all those who read this book will keep in mind the cost in pain, time, and money of reconstruction, balance it against the benefit for each patient, and realize that in the end, only the individual patient can know where the balance lies in her own life. There is no doubt in my mind that reconstruction is an important part of rehabilitation for some patients, excellent palliation for some, and a useless gesture for others.

II

Perspectives on Primary Treatment, Local Recurrence and Ultimate Outcomes: Statistics of Breast Carcinoma

C. BARBER MUELLER, M.D.

Reconstruction following removal of a breast has become acceptable adjuvant therapy during primary treatment of breast cancer. No longer is survival free of the disease the only standard whereby success of breast cancer treatment is measured; quality of life and body image integrity are now also important considerations in management.

This chapter provides a perspective on the breast cancer problem based on statistics derived from treatment of the primary lesion, incidence of local recurrence, and ultimate outcome in regard to length of survival and cause of death.

Approximately 100,000 women develop cancer of the breast each year, half of them under the age of 65. It is the cause of death of approximately 12% of all women. Increasing in incidence with each decade of life, the ninth decade has approximately 20 times the breast cancer rate per 100,000 women than does the third decade. Survival statistics generally come from small series. The reporting of 5- or 10-year survivals following diagnosis unfortunately may be biased because of case selection, staging, type of treatment, time of diagnosis, or

possible errors in diagnosis. However, the development of all-inclusive tumor registries, which enroll every woman in a geographic area, have made possible a comprehensive view of the breast cancer problem. This chapter reviews results derived from past experiences, to assist the surgeon in deciding on a reasonable policy toward treatment of the breast cancer patient by adjuvant reconstruction of the breast.

TREATMENT OF THE PRIMARY CANCER

Halsted's[28] introduction of radical mastectomy in 1894 opened an attack upon the breast cancer problem which was to be marked by inexorable anatomic extension of the operative procedure. It was assumed that a superficially placed and easily observed malignant lesion moved in orderly progression from a microscopic change in mammary tissue to a clinically palpable tumor to metastasis in an axillary lymph node, with subsequent invasion of the blood stream, eventual production of distant metastases, and ultimate death. It was also assumed that if caught sufficiently early and correctly treated, the disease could be eradicated and the patient cured. When coupled with increasing surgical expertise, these postulates led to wider local excision, removal of the pectoral muscles, exenteration of the axilla, and operations which included greater skin excision, thinner flaps, and larger skin grafts. Ultimately the resection extended beyond the chest wall to include internal mammary nodes and the supraclavicular fossa, all bringing increased disfigurement with minimal improvements in survivorship.[35] A re-evaluation of the basic assumption became necessary.

About 30 years ago regression from these extensive procedures began to occur. Disquiet with the poor survival rates and failure to cure some patients with disease apparently confined to the breast led the Edinburgh group of McWhirter,[37] Bruce,[7] and later Forrest[25] to produce figures which showed that simple mastectomy and postoperative radiation gave survival figures neither better nor worse than those achieved by radical or extended radical mastectomy. Collected data suggested that local treatment did not seem to be a significant determinant of 5-year survivorship (Table 2.1).

Table 2.1
Percentage 5-Year Survivorship in Collected Series of Operable Cancer of the Breast[7]

Author	Treatment Method	Alive at 5 Years
		%
Williams and Curwen	Radical	66
Watson	Radical	63
Butcher	Radical	60
Dahl-Iversen	Extended radical	66
Handley and Thackery	Conservative radical	67
Kaae and Johansen	Simple plus radiotherapy	67
Bruce *et al.*	Simple plus radiotherapy	63
Kennedy and Millar	Simple plus radiotherapy	57
Philip	Various	55
Porritt	Tylectomy plus radiotherapy	65

Less extensive procedures such as modified radical mastectomy, extended simple mastectomy, simple mastectomy, and finally tylectomy or lumpectomy, all with or without associated radiotherapy, began to be adopted.

Initially, primary treatment was aimed at "cure" and measured by survival statistics—3-year, then 5-year, then 10-year survivorship. Long survival and death due to other causes without evident recurrent breast disease appeared as the desired end. Data now suggest that this is an unrealistic goal,[5,40,41] and survival free of systemic disease should not be the single standard for evaluating the effectiveness of local management.

Treatment of the primary lesion is always directed toward eradication of the local disease and a realistic criterion of its effectiveness may be simply the absence of recurrent disease at the treatment site at time of death. The presence of distant metastases, although the principle cause of treatment failure and death, need not detract from the value of a treatment that achieves success in the area where it is applied. Obliteration of cancer from the chest wall for the duration of life can be a realistic objective of primary disease management.[12]

THE OUTCOMES

Ultimate Survival, Cause of Death, and Time to Recurrence

Survival at a fixed time is the usual method whereby the effect of local treatment is measured. Usually the primary lesion is treated only in "potentially curable" cases (stages I and II) and not in patients with known distant metastases (stages III and/or IV), and techniques for measuring the effect of treatment require identification of both stages at diagnosis and time of death. The TNM[49] system was designed to standardize staging and to ensure that comparable groups of patients were used when various treatments were analyzed.

Standardization of post-treatment time is also required and 5-, 10-, or 15-year survival data provide uniform survival terms. This is called the direct method of measuring survivorship.[45] Having the disadvantage of always being 5–15 years out of date, it nevertheless continues to be the most popular method for reporting survival data; probably because its design is simple, it is a familiar technique and it may be applied to relatively small groups of patients. It is always subject to unmeasured bias introduced by the imprecise nature of clinical staging.

As larger groups were collected, more sophisticated techniques for measuring survival could be used. Life table analysis,[13,45] the indirect method long used by insurance companies to deal with survivorship, records the rate of dying in large groups and describes the time at which half the group is dead. By using all information up to the time of the study this method is always up-to-date. It permits several descriptions of the rate of dying, e.g., (1) the percentage of those at risk who die during a year, (2) the time at which half are dead, (3) the percentage surviving at 5, 10, 15, or 20 years, and (4) a complex numerical expression of the curve. This method provides a better description of survival outcomes because it is the description of a rate—a dynamic expression, unlike fixed time (3-, 5-, or 10-year) survivorship—which is a static expression.

The cause of death of those who develop cancer of the breast is more difficult to determine than length of survival, for registries with close connections to

physicians who care for cancer patients are required. Definitions and guidelines should be established and the cause of death reviewed by independent observers if possible. The statistical reliability of such information when many physicians without fixed guidelines determine the causes of death is obviously less than perfect, but there is no reasonable alternative other than to accept their decisions. It is anticipated that errors in over-reporting and under-reporting will cancel each other but will not significantly change the conclusion, that at least 85% of the women who develop cancer of the breast will die from it.[5,21,40]

The time of death for any individual woman is unpredictable, for in any large series the time and cause of death is handled statistically and no woman is individually identified. Statistics describe large groups, not single patients. Statistics properly developed form only a backdrop for policy attitudes. No statistical treatment has been devised which will predict the outcome in an individual patient.

The steady and progressive demise due to cancer of the breast for almost 20 years following diagnosis and primary treatment is an exponential function. Approximately 8% of the women at risk in any year can be expected to die during that year,[41] a figure subsequently shown to be related to both age and stage at diagnosis. The younger women die at a slower rate than the older with equivalent stages and the stage I group dies at a slower rate than the stage III group in all ages. For women under the age of 50 at diagnosis, 50% are dead by 11 years; for women over the age of 70 at diagnosis, 50% are dead at 4.5 years. Two-thirds of the women with stage I disease under the age of 50 at diagnosis will survive 20 years. Unfortunately this young subset constitutes only 10–12% of all who develop breast cancer but provides two-fifths of the 20% 20-year survivorship in the total group of women who develop the disease.[5,40]

Treatment outcomes are also measured by using information acquired before death occurs, although such information is made more complex because phy-

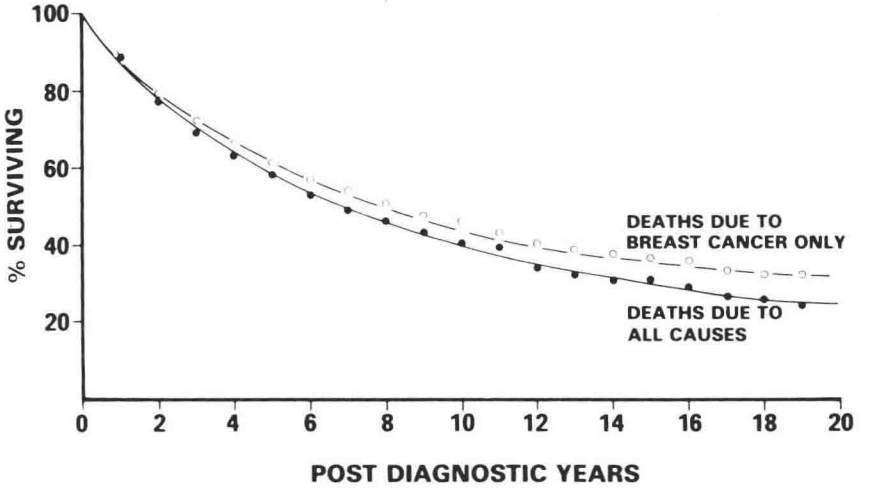

Figure 2.1. Survival curve of a total population of women who develop breast cancer showing depletion of the group by all causes compared to deaths due only to cancer of the breast. (Reprinted by permission from: Mueller, C.B., Ames, F., and Anderson, C.: *Surgery 83:* 123, 1978.)

sician observation and physician diagnosis are needed to define the end point. Assuming that most women will develop either local or distant recurrence, it is possible to measure one outcome by observing the time between primary treatment and first visible recurrence. This technique requires operable (stage I or II) and comparable (random allocation) groups. Initially used in studying the effects of oophorectomy as an adjunct to mastectomy in premenopausal women, it demonstrated a delay in appearance of first recurrence without an effect on ultimate survival. Oophorectomy was subsequently discarded as acceptable primary adjuvant therapy. This "time to first recurrence" technique is now utilized in the large United States and Italian studies of adjuvant chemotherapy. It requires only moderate numbers of patients with random allocation and standard surgical therapy. It may even be a double blind study. It achieves results in a fairly short time by determining the percentage of women with recurrence at any selected time following treatment.

At present there is the suggestion that time to first recurrence may be modified by adjuvant chemotherapy.[4,22,23] These studies are not aimed at an evaluation of treatment of the primary lesion but at a delay in time of appearance of recurrent disease following the local surgical resection with systemic treatment by chemotherapy. These studies have not made a point of separating local recurrences from systemic recurrences.

LOCAL RECURRENCE

Appearance of carcinoma in the wound scar, the skin flaps, or the axilla following treatment of the primary lesion is a problem of major importance when breast reconstruction is considered. This problem is generally thought to be somewhat different than the problem of distant metastases, although there is no clear opinion on this point. If obliteration of tumor from the chest wall is the objective of primary treatment, then this distinction is appropriate, despite the disagreement as to whether local recurrence is a manifestation of systemic spread or a local technical problem.[10]

Recurrence in the scar has been the subject of extensive studies,[6,34,50,54] and several theories about its possible mode of occurrence have been proposed, e.g., incomplete excision, operative implantation, retrograde dissemination, or systemic disease manifestation. In an early exploration of this problem, White[52] reported a 23% local recurrence. Auchincloss[2] used extensive dissection of the chest wall, increasingly thin skin flaps, ever wider skin excision, and extensive grafting to achieve a 15% scar and flap recurrence. Donegan et al.[19] and Spratt[47] conducted a comprehensive study of skin flap and scar recurrence to find a 5-year 17% and 10-year 20% local recurrence in the chest wall, skin, or scar following standard radical mastectomy. In the midst of their study, a policy of wider skin excision and increased frequency of skin grafting was instituted, but no difference in the recurrences in skin graft, scar, or flaps was noted.

Assessment of this complication is plagued by the problem of reporting recurrences in a group of women constantly diminishing in numbers because of death due to the breast cancer, giving decreasing numbers of women at risk with each successive year as cumulative recurrences increase.[17] Reports by different observers are rarely given either with a consistent time period or