KEEN (W. W.)

Amputation of the Female Breast.

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Professor of the Principles of Surgery and of Clinical Surgery in Jefferson Medical College, Philadelphia.

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AMPUTATION OF THE FEMALE BREAST.*

AN ADDRESS BY W. W. KEEN, M. D., LL. D.

Professor of the Principles of Surgery and of Clinical Surgery in Jefferson Medical College, Philadelphia.

Mr. President, Ladies and Gentlemen:

It gives me very great pleasure, I assure you, to be present this evening as the guest of the Cleveland Medical Society.

I have never known in my acquaintance with medical societies one that has been more active and vigorous, and I am also glad to say, more successful than this society. I am sure that it would be difficult in Philadelphia, where we have over two thousand physicians, to gather together such an assemblage of physicians as this, and I feel very highly honored in having so large an audience.

I spoke also of your being active and vigorous as well as successful, and I was glad to note in the reading of the minutes an appropriation of one hundred dollars for a medical library. The College of Physicians of Philadelphia, the oldest medical body in this country, dating from 1787, moved into a new building in 1865. The entire library at that time, gathered during a period of nearly seventy-five years, was carried up in two furniture wagons. From 1865 until now, a period of less than thirty years, the library has grown so rapidly that, with the exception of the Surgeon General's

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library at Washington, it is the largest in this country. We have nearly fifty thousand volumes, besides twenty-five thousand unbound pamphlets and journals.

Let me commend to you most earnestly this subject of a medical library. The first thing I do when preparing to write a medical paper is to consult the "Index Medicus" and then go to our library. These books will repay you ten, yes, a hundredfold, over their cost. It would pay this city to give every year a certain sum towards such a library. Let the city council appropriate a certain amount, say one thousand dollars, every year, as Congress does for the Surgeon General's library at Washington. It would result in larger advantages and better education of all the physicians in this city, and therefore inure to the advantage of every sick person in the city. You have in sight the sum of five thousand dollars, and I understand it may be made a branch of the city library, and possibly hereafter may have much greater additional facilities. I take occasion to say this to you because I know the advantages of such a library as is found in Philadelphia.

I shall say a few words tonight about amputation of the female breast for cancer or allied disease. I have chosen this subject for the very reason that cancer of the breast is so common. Every doctor here has seen some cases, and some of you undoubtedly have seen scores. Another reason is because the last fifteen years, or even ten years, have seen great improvements both in our diagnosis and in our methods of treatment. A third reason is that through you I want the general public to appreciate the extraordinarily good results of modern surgical treatment—for the results we are getting today are enormously better, not only as to mortality but as to *definite cure*—so that women will seek your help the instant that they discover a tumor in the breast, and by an early operation be saved from horrible suffering and death.

The question of tumors of the male breast (for there is, you know, in the male a rudimentary breast) can practically be dismissed in a few words. There have been somewhat over a hundred cases published of cancer of the male breast; but the disease is so rare that in more than thirty years of active practice I have seen but one case.

But on the contrary, tumors of the female breast are extremely common. It has been estimated that in this country over 14,000 persons have cancer in one form or another. In 1880 there were 1,387 deaths from cancer of all forms in one year, and now it has probably increased to 1,500 deaths per annum.

As to the frequency of the locality of cancer, in 13,824 cases, in both sexes, in all parts of the body, collected by Williams, there were in the uterus 19.2 per cent., almost one-fifth. Next came the female breast with 17.5 per cent.; and if we consider only cancer in women, out of 9,227 cases there were 28.7 per cent. of cancer of the uterus, and over 26 per cent. of cancer of the breast. So that, of all cancers in women, more than one-quarter grow in the breast.

As to the kind of tumor found in the breast, you know, there are very many. Most common of all are the ordinary forms of carcinoma, especially scirrhus; also fibro-adenomata, cysts, and occasionally the breast has to be amputated for general hypertrophy. Gross places the percentage of carcinoma at 83 per cent. of the whole number, and 9 per cent. sarcoma, so that practically 92 per cent. of all mammary tumors are malignant.

Williams, in a series of 9,227 cases, makes the frequency of carcinomata 77.1 per cent.; sarcomata, 4.1 per cent.; all others, 18.8 per cent.

It is a well-founded belief, as you know, that carcinoma is apt to be hereditary to some extent; and this is shown in various statistics to run up to 10 or 12 per cent. Thus with one hundred persons with cancer of the breast, about ten will show a history of cancer in some other members of the family, and 90 per cent. no such hereditary tendency.

It is of the greatest importance to remember that cancer of the breast is most common after forty years of age. The youngest person on record with true carcinoma is mentioned by Henry—a young woman of twenty-one; but practically you can discard almost all cases under thirty, and until thirty-five, thirty-six or thirty-seven it is exceedingly rare; but as you approach forty it is commoner. From forty to fifty it is very common indeed, and after fifty to fifty-five it diminishes in frequency. In youth the adenomata and fibromata are the more common forms seen.

And this leads me more especially to impress upon you one thing, that is, that the most benign growth, if it exists in the breast for some time and shows no tendency to disappear, or still more if it increases in size, should be treated as a malignant growth. If a tumor has persisted for five, six or ten years, or sometimes longer, if it does not disappear by the time the woman reaches forty, it will be apt to become malignant. Therefore, any woman verging towards forty, with such a tumor for a number of years in the breast, should be advised to have an exploratory incision made into it. This will determine, in ninety-nine cases out of a hundred, whether or not it is malignant. Don't wait, I beg of you, gentlemen and ladies, don't wait for that old classic symptom, retraction of the nipple, for in nearly one-half the cases it will not exist. I take no account of it, but I make an incision into the tumor, and if it is malignant or suspicious I amputate the entire breast.

There is no question at all at the present day that cancer is of local origin. In my earlier professional life it was one of the disputed points constantly coming up in medical societies as to whether it was a local or from the first a constitutional disease, and if the latter it was said that no good could come from operating upon the breast. But this question of local origin is no longer confronting us. It is a thing settled, a point won, and women must be taught that this brings hope to them.

As an undoubted illustration of such a local origin, let me refer you to that form of cancer to which Sir James Paget firs t directed attention a few years ago, and which is known as "Paget' disease of the nipple." It is often spoken of as "chronic eczema" or "psoriasis" of the nipple. It has been shown not to be an eczema at all, but really a superficial epithelioma of the milk duct in the nipple. Last spring I amputated the breast of an unmarried woman who had had this eczema, so-called, for fifteen years, and had been treated with salves, silver nitrate, copper sulphate, etc., and that by a reputable physician, too, who did not recognize the fact that Paget's disease means malignant disease, and if let alone means disease of the whole breast. In this case it had been allowed to spread throughout the entire breast, and had also invaded the axilla. If, therefore, an ulcer of the nipple does not heal in a rea-

sonable length of time, the breast should be amputated, in order that by the loss of a part we may save a life. This is one illustration of the local origin of it. But in addition we have the fact, already alluded to, that many of the well-recognized cases of non-malignant disease of the breast, tumors which are unquestionably local at first, if allowed to remain, may often become malignant and invade the entire breast.

I will not enter into the question of the parasitic origin of cancer, for this is not at present settled. Many observers are working upon this subject with great assiduity, and will solve, before many more years, the problem whether cancer is really a parasitic disease. If it be answered in the affirmative it will be but another evidence of the fact that cancer is local in its origin, and not a constitutional trouble until very much later.

If, then, cancer of the breast is local at first, can there be a stronger argument for early operation? If you have a fire in the middle of this room, if you see a pile of shavings blazing up, you do not wait until it is a great roaring flame before putting it out. How much more, then, should this be the case when a human life is at stake? I wish, therefore, to impress upon you with the greatest distinctness and greatest force that all cases of cancer, even all tumors that do not disappear in a reasonable time, should be operated upon at the earliest possible moment.

I shall not soon forget a lady who came to me about a year ago, whose brother-in-law was a doctor, and a well-educated doctor at that. More than a year before she told him she had a little lump in the breast. He said, "All right, don't worry about it; after a while let me see it." She was a woman, mind you, over forty years of age, yet he did not even examine it to find out how large it was, whether there was any involvement of the axillary glands or any signs of cancer. One year later, when I saw her, the whole breast and the axilla were involved. I removed the breast and cleaned out the axilla, but only the other day I had to do a second operation for a return of the disease. If she had been operated upon at first she would have had a good chance of living, it may be, ten or twenty years, and of dying a natural death from some other cause than cancer. Early amputation while it is a local trouble and not

waiting until it is a general trouble—this should be the rule. This is not the rule among all of us doctors, I am sorry to say; but let the real truth be known to the general public, say to the women of this country, "If you have such a lump in the breast, go and consult the best surgeon you can find. If he pronounces it even possibly a cancer, instant operation should be done, and it should be left entirely to him whether he will remove only the tumor or the whole breast, and clean out the axilla after he has cut into the tumor."

If the tumor is local in the beginning it does not stay so. It will grow either externally towards the skin or internally towards the chest-wall. The little lump, which has been discovered very likely in bathing, the skin being at first freely movable over it, will gradually increase in size and will grow towards the surface, becoming adherent, then purplish and red, and finally ulcerate. It grows also inwards toward the chest-wall; will invade the pectoral fascia and pectoral muscles; then becomes adherent to the ribs and the intercostal muscles. But besides this direct growth outwardly and inwardly there is extension by the lymphatics. Sarcomata involve distant parts of the body through the blood, but carcinomata always invade distant parts through the lymphatics. This is another reason for urging early operation before this invasion from the breast in all directions where the lymphatics run. First of all, the disease extends to the glands in the axilla. Of course, it affects the ordinary glands in the axilla, but you must examine also especially the glands which lie along the great pectoral muscle; perhaps two or three will lie in the intermuscular plane between the pectoralis major and minor and in the space of Mohrenheim, that is to say, the space between the pectoralis minor and the clavicle.

It is a point sometimes overlooked that after you have amputated the breast, you can easily break up the layer of connective tissue between the pectoral muscles simply with the fingers, and reach the coracoid process. Between the upper border of the pectoralis minor and the clavicle, in this space of Mohrenheim, there often exist one or two isolated glands which are infiltrated and enlarged. You may do the best operation in the world according to the best rules, and yet if you leave these infected glands you leave a fire burning that will burn down the house.

As to the lymphatics, very many of them go inward, and some even reach across to the other breast, and therefore occasionally you will find the other breast will become involved and require to be amputated. There are also lymphatics which run directly into the sternum and from there into the mediastinal glands.

Mr. Snow, in the *Lancet* (March 7, 1891), has published a paper upon the bone lesions of cancer of the breast, in which he has stated that there are two spots which we should always examine to see whether or not there is any enlargement and tenderness. The first point is in the sternum just above the articulation of the second rib, that is, at the lower part of the manubrium. It was a surprise to me when I read his statement that nine cases out of twenty-one showed local tenderness just at this point. I have seen, myself, only three cases of involvement of the sternum—two from cancer and one from sarcoma. All three died. In the case of sarcoma, the sternum was too extensively diseased to be removed; in one case of atrophic scirrhus the same was true. In the other case of scirrhus I had already removed the first breast. Through the lymphatics the other breast became involved, and when I amputated it I was obliged to take away a large part of three ribs and of the sternum itself. The other place to which Snow has called attention is in the upper epiphysis of the corresponding humerus. I confess I have never yet seen a case where I could establish this; but I have never sought for it until very lately. Still it may have existed and have been overlooked. I am not prepared to say that it does not exist, but I think it is unusual. He states that while patients do not complain of tenderness, yet we will find it on making pressure; and that they often complain of pain in the sternum, which is regarded as rheumatic, but which is really due to carcinomatous infiltration.

I said a moment ago that I was urgently in favor of an early operation, and that the local origin of the disease was one of the strongest arguments in favor of this, but that I should reinforce it when we came to the statistics of cure.

What do we mean by cure? We mean that if a patient has escaped recurrence for three years, she will almost certainly never have a return of the disease. Recently, Curtis fixes different limits

for different localities, *e. g.*, in the larynx and rectum, four years, as, here, return not uncommonly takes place within four years; but in the breast, when a woman escapes for three years, practically at the end of that time you can say to her, "You are safe." There are certain cases in which ten, fifteen or twenty years afterward the patient has had cancer of the rectum or uterus, but these are most likely cases of an independent origin totally without reference to the original cancer of the breast. We take, therefore, by common consent of surgeons, three years as the limit of safety.

Next, in those who have a return, does it do any good to operate? Does it pay? I believe it does pay except in what are rightly deemed inoperable cases. Even in a case in which the glands and the pectoral muscles are involved, and you are quite sure the patient will have a return, we can say definitely that life may be prolonged twelve to sixteen months more than without operation. And when you consider that nowadays an amputation of the breast, done antiseptically, means for the first twenty-four hours discomfort from the ether, and somewhat from pain, but is attended by but little danger and by little if any rise of temperature worth speaking of, is not such a result worth having? A woman said to me some time since, "I am perfectly amazed that you can do so grave an operation as this and I not have any pain afterwards." But this is not an uncommon thing in these days.

But this moderate prolongation of life is not the only thing. Sometimes you get, by repeated operations, in an unpromising case, a permanently good result. I have had several cases in which I have operated twice, and sometimes even repeatedly, and they lived five, and even ten, years afterward without return. Just at the time I graduated I assisted the late Samuel D. Gross in operating on a woman with sarcoma of the breast, from whom he had removed fifty-two tumors in twenty-three operations in four and one-half years, the last operation being the one in which I assisted; and the woman lived eleven years afterwards and died of some other disease. I do not know which most to admire in this case, the persistence of the surgeon or the bravery of the woman.

Not only does operation prolong life; it does something more. An ordinary case allowed to run its course will cause a great deal

of pain and distress from the ulceration and foul discharge. The growth extends also into the axilla, surrounds the vessels and nerves, causing enormous œdema of the arm, and by pressure on the nerves intense and most distressing pain. But more than this, you not only will remove this source of pain and œdema, but you will render it probable that the woman will possibly die of internal cancer rather than external. All who have treated cancers know how much less painful the internal are, because they cannot ulcerate and become offensive. When I recommend such an operation I say it prolongs life, and when death comes it is much less painful, distressing and repulsive.

Now, as to permanent cure. In 1,234 cases analyzed by Gross, he found 146 cases of cure; that is to say, 11.83 per cent. cured, and that in 1880 before we had learned to operate rightly. I think it a most important thing that women should know that when they have cancer of the breast you can no longer write over their homes the inscription, "Abandon hope, all ye who enter here;" but you can say to them that there is a definite and probable cure. Those were the statistics in 1880, but not long ago Curtis published a paper in which the statistics showed that in cancer of the breast 20.7 per cent. lived for three and more years, after operation, free from the disease, and that, therefore, almost that number are free for the rest of their lives; that in the rectum those living free from recurrence for four years was 21.3 per cent., and what may well surprise us, in the uterus the percentage of cure was 44.8 per cent.

Dennis, in a paper read before the American Surgical Association, reported 25 per cent. cured; and within the present year Bull has published the result in 108 cases in which he has obtained 30 per cent. of cure, and I fully agree with him in the statement that if we could only get the cases early—if women only understood that when they have a lump in the breast, if it is removed early, before glandular infection takes place—we can promise one-half of them a cure. Compare this with the 11.83 per cent. promised fourteen years ago, and we see what immense progress has been made.

It is sometimes objected that the operation is dangerous; and I confess I was greatly astonished in reading, so lately as June 16th,

of this year, in the *British Medical Journal*, Williams' paper on the mortality in these cases. He has collected 489 cases in the metropolitan hospitals of London, with 46 deaths, or 9.4 per cent. I confess that, from the experience, at least, of American surgeons, this seems astonishingly high. Williams attributes much of the danger to cleaning out the axilla; and even Treves, in my opinion, makes the gravest mistake in recommending that the armpit be let alone unless the glands are perceptibly enlarged. Most noxious advice!

Let us look at some of the facts. Dennis has reported 71 cases consecutively with but one death, and that from a bleeder; Weir has reported 125 consecutive cases without a death; Bull, 108 cases with three deaths, or a little over 2½ per cent., and I have had 84 consecutive cases, of which I have notes, without a single death. Unfortunately, the exigencies of a busy life have prevented my keeping notes of most of my cases. I am quite sure, however, that in at least 200 cases I have had but one death, and that a case in which, with my present larger experience, I should not have operated. Moreover, in a very large proportion of the later cases, all of these surgeons open the axilla and remove all the fatty tissue and glands. For several years it has been my almost invariable rule. I cannot understand, therefore, when we take the results of four American surgeons, recording 388 cases with four deaths, a mortality of only one per cent.—I cannot understand, I say, how it is that English surgeons show a mortality of 9.4 per cent.†

How have we reached such admirable results? First, we get the cases much earlier than we used to, and, by the improved methods as to operation, the results as to cure have been raised from Gross' percentage of 12 up to 25, 30 or a possible 50 per cent. of cure. Women are coming to understand that instead of giving up all hope and regarding themselves as doomed, they can be cured. Next, the thoroughness of modern operations is an important factor. I mean by a thorough operation, this: In the first place, that the entire breast must be removed. I have seen cases, and not a few, where the family physician, and even some where

†Since this lecture was delivered, Halsted (*Annals of Surgery*, November, 1894) has reported 76 cases without a death, making the American statistics of five surgeons 464 cases with four deaths—a mortality of 0.86 per cent.

surgeons of repute, have recommended that the tumor alone should be removed. When I tell a woman that I must operate I do not enter into any of the surgical details. If she says, "Well, I suppose you will do nothing but take out the tumor," I reply, "On that point I must be the sole judge, because that is a technical point, and if you say to me, 'I am not willing to have the breast amputated, but only the tumor,' then I simply must say this, 'That you must find some other surgeon, for I will not be fettered in the slightest degree. You must give me liberty to cut into the tumor, and then, knowing its character, to use my best judgment as to what shall be done.'" Then, either she finds some other surgeon, or I am free to do what is right.

An incision into the tumor is the first step of the operation. I remember very well indeed, in 1865, a dramatic scene at the clinic of Langenbeck. He removed a breast, made a section and opened an abscess. He looked at it a moment nonplussed, then, looking around the class, said, "I never did that but once before in my life." More than once I have had occasion to be extremely glad that I have made such an incision. If you find it is not a malignant growth, you can remove the tumor, and if you find it is malignant, what matter, when you are going to take away the whole breast? But not only must the whole breast be removed—all of the diseased skin must be excised. I am not an advocate of the "dinner-plate incision," however, of the late Samuel W. Gross. That is often, I think, a needless sacrifice of most useful skin. But I am persuaded that I have made a mistake often, and many of us make the mistake, of sacrificing too little of the skin and, thereby, sacrificing everything in the end by a return of the disease. Better lose a little more skin and save a life, than to be saving of the skin, forgetful that life may thereby be sacrificed. All the diseased skin, and a little more, must go. The excision must extend into an absolutely non-infected area. Remember how these malignant tumors increase in size. It is not by additions on the outside, layer by layer, nor yet by growth from the inside; but here, there, everywhere, on the periphery of the tumor, they grow by independent foci of disease, which are revealed only by the microscope. No unaided eye can see them; not even the most delicate touch can feel them. This being so,

you must make your incisions far away from the limits of perceptible disease, in skin where there are no such foci of infection.

One of the most important improvements in the same direction has been the removal of the whole of the pectoral fascia, and you need not be very particular about the pectoral muscle itself. If it be infected, the whole of the muscle should be sacrificed. I have taken away, in a few cases, the entire pectoral muscle, and really, as far as the usefulness of the arm was concerned, it made little difference. If it is infected it must go. Everything that is infected must go.‡

Heidenhain, some time since, examined microscopically a large number of breasts which had been amputated, as to the involvement of the pectoral fascia and muscle, in order to determine whether the surgeon had gone deeper than the disease or not, and prognosticated whether there would be a return or not according to his finding on this point; and he was correct in almost every case.

Another method of determining whether the surgeon has removed all the diseased deeper tissues, was recently introduced in this country by Mr. Chiene, of Edinburgh. It was devised by one of his assistants, and is known as Stiles' method. When you have made your elliptical incision for removal of the breast, make a little cross cut at one point. This will enable you to replace the breast on the chest in its original position by making the little nick on the breast and that on the chest correspond. The moment the breast is removed it is washed in water to cleanse it from blood. Then make several incisions into its pectoral or under surface and put it in a solution of nitric acid 1–20, for five to ten minutes; then wash it again in clean water and put it for a few moments into methylated spirit. All this can be done by an assistant while you are clearing out the axilla. When this is done, examine the breast. Where the nitric acid has acted on the cancerous tissue it has a grayish translucency, which is in sharp contrast to the rest of the breast. If, then, on the under or pecto-

‡ In Halsted's paper, already alluded to, he advises in all cases the removal of the greater, and often of the lesser, pectoral muscles, and the cleaning out of the supraclavicular space if there is the slightest evidence of glandular infection. His method is by far the most radical thus far proposed, and I believe it is better than even that which I have described. Certainly, the statistics he gives seem to establish its merits.

ral surface you find any patches of gray translucent tissue, you have evidently left diseased tissue on the chest-wall. By the little nicks you can fit the breast into its original place, determine just where the diseased part has been left, and remove it.||

Having amputated the breast, what next? Open the axilla and clear it of everything except the vessels and nerves. I think I can say safely, that with probably one exception in ten, in armpits in which, in examining through the skin, I have found no enlarged glands whatever (and this is especially true of fat women), I have found at the operation that they were enlarged. Therefore, my rule, where the disease is malignant, is now invariably to open the armpit thus: Continue the incision out along the border of the great pectoral or the latissimus-dorsi. When the skin and fascia are cut through, I abandon the knife and use the forceps and Allis' blunt dissector to tear through the tissues. Your first landmark will be the axillary vein, which you will easily recognize by its dark blue color. This guides you at once to the artery and the bundle of nerves. It is not a dangerous procedure if you will only be careful. The Allis blunt dissector, of course, will not cut any vessels, and so does not obscure the tissues by staining them with blood. The few vessels that are torn and bleed are seized at once by hæmostatic forceps. The only danger is that of tearing the vein—a very serious accident, but one not liable to occur with reasonable care even when the glands are closely adherent to the walls of the vein.

The next structure to be avoided is the subscapular artery and vein running down the anterior border of the scapula, which you can always easily find. Along with them runs the second subscapular nerve, which we should always save unless it is involved in the diseased tissues. As it goes to the latissimus-dorsi and teres major, if you cut it it makes a serious inroad on the movements of the arm. Watch, therefore, for the artery and nerve.

Having now cleaned out the armpit, separate the pectoral muscles, and every now and then you will catch some enlarged

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|| If Halsted's method is used it would not be needful to use this means of determining whether there is any such deeper infiltration since the pectoral muscle is removed with the breast.

glands there. Having lifted up the great pectoral muscle, look in and feel with your fingers; push the fingers between the pectoral muscles all the way up above the lesser pectoral to the clavicle, *i. e.*, to the space of Mohrenheim, where you will often find a diseased gland. When you have taken out the whole breast; when you have excised all the infiltrated skin; when you have removed the fascia and, if need be, the pectoral muscle; when you have cleaned out the axilla; when you have gone between the two pectoral muscles and have cleaned out the space of Mohrenheim, then you have done a complete modern operation; then you will be rewarded not by the 12 per cent. of cures of 1880, but by the 25 or 30 per cent., and in early cases by the even possible 50 per cent., of 1894.

Sometimes you will find it impossible to reclose the wound. So much skin has been taken away that it is not possible to approximate the edges. There are two methods remaining; one is to take a bit of skin from the arm or thigh and transplant it bodily to close in the raw space, or later upon the granulating surface (Thiersch's method). The other is a method which you have all adopted at various times, that is, by undermining the skin above or below and then sliding it so as to make it cover the opening. Shrady some time ago suggested a modification of this, that instead of simple undermining and sliding we should dissect both above and below the wound two flaps, each with a broad pedicle, and slide them up and down respectively. If need be, the skin above and below can then itself be undermined and the wound thus be closed. I used this method not very long ago on an exceedingly large sarcoma, and I observed one thing which led me a little to question whether the detail might not be changed to advantage, viz., the two outer flaps united very nicely, but of the two inner a considerable portion became gangrenous, due to the difference of blood supply to the outer and inner flaps. The outer flaps have a favorable blood supply from the vessels of the axilla, but the pedicles of the inner flaps reach the middle line where the blood-vessels are small and do not afford an ample blood supply by inosculation.

After you are through, one question remains—that of drainage. You know that the trend of surgical sentiment is strongly in favor of doing without drains, and I believe in that. A drain is a door

for possible bacterial infection. I dislike drains, therefore, as a possible source of infection; but I have tried without drains and almost always have come to grief, for this reason—adjust the dressing as you will, you cannot make such pressure as will keep the flaps absolutely in apposition to the chest-wall, and you will have "dead spaces" in which the wound fluids accumulate, thus furnishing the best possible nutrient medium for bacterial infection. Therefore, I almost invariably drain. I have seen a wound, when I was through, almost perfectly dry, and yet through the drainage-tube, even the same afternoon, an abundant dressing would be saturated. I do not trust apparently dry wounds, therefore, but drain. But I do not drain in a way that I have often seen, namely, by putting in a drainage-tube and leaving it there for four or six days. You read so many reports which say, "Prompt union at every point except where the drainage-tube was." I put in a drainage-tube to carry off any fluids which may accumulate for the first twenty-four hours. After that there is very little. In some cases I keep it in for thirty-six hours, very rarely after that. When the drainage-tube is removed as early as twenty-four or thirty-six, or even forty-eight hours, the sides of the temporary sinus will collapse and it will be obliterated. After removing the drainage-tube I always put a little bit of gauze in the opening, for perhaps an inch, to keep the opening in the skin patent, and this little path of least resistance will give a sluice-way through which the slight oozing of the next twenty-four hours will readily escape.

As a rule, in cases of amputation of the breast, I say to the class: "This is Saturday. I will dress this case either tonight or tomorrow morning, depending upon whether the dressings are saturated to the margin of the rubber dam—I will dress it anyway at the end of twenty-four hours, and will remove the drain and replace it by a bit of gauze in the opening. Then I will not touch it for two days unless the temperature shows something wrong; but on the third day after the operation I will re-dress and remove the gauze. On the fifth day I expect to dress it again and remove half the stitches; and on next Saturday, the seventh day, I expect to take out all the stitches and show you the woman well, and in ten days I expect her to be able to go home." Commonly,

such patients are out of bed by the fifth day, and often earlier. I always so dress the cases as to keep the parts perfectly quiet, that is to say, the right breast having been amputated and dressed I fix the right arm with a second binder, and if the woman is apt to be restless fix the entire arm with a bandage or binder for four or five days.

It is now a very rare thing for me to have any other result than cure in one week. I can look back, gentlemen, as some of you can, to the old days—the days during the war and thereabouts—with something of horror, when, after amputation of the breast, always by the third, or sometimes the second day, the woman was thirsty, temperature 103° to 105°. How often did erysipelas come on; nay, how often did blood-poisoning ensue, and how often was life destroyed. Even Billroth reported a mortality of 23 per cent. from septicæmia, pyæmia, erysipelas, etc. Now look at the contrast. You can amputate the breast and clean out the armpit and yet have your patient well in one week, with almost no fever and almost no pain, except in occasional cases.

I thank you for your courtesy and attention, and hope that some of the facts to which I have called your attention may be good seed, fall upon good ground, and bring forth an hundredfold of good to your patients and yourselves.