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## CANCER OF THE BREAST\*

BY

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At the Annual Congress of the American College of Surgeons in 1932 one feature of the proceedings was a symposium entitled "Cancer is Curable," and large numbers of so-called "five-year cures" were forthcoming. The choice of subject on that occasion was avowedly propagandist, for it was strongly felt that until it could be brought right home to the laity that cancer is a curable disease early consultation and early treatment, so necessary for success, were not likely to be of frequent occurrence. Furthermore, those organizing that discussion fervently hoped that the medical profession, and especially such as may have been depressed by an unfortunate series of cases, might be convinced anew of the real value of the various methods of cancer treatment in vogue, and would encourage their patients to avail themselves of these curative measures at the earliest moment. Doubtless similar motives actuated the officers of the Section of Surgery in their choice of mammary cancer as the theme for debate.

Some of you may have been privileged to attend the fourth Biennial Informal Conference of the British Empire Cancer Campaign in March, 1937, and have had the good fortune to listen to those apt, well-chosen words of Mr. Cecil Rowntree, who from the chair inaugurated the discussion on the "Present State of the Treatment of Cancer of the Breast"; his participation in the affairs of this Section to-day recalls that successful meeting.

I am persuaded that in extending this invitation to me the Section is really desirous of obtaining such information concerning the end-results of the radical operation for cancer of the breast as may come from a surgeon who, save for a very brief period, has eschewed the methods of post-operative irradiation as a supplement to radical surgery in the cases of mammary carcinoma which are by common usage now classified as Group I and Group II. I have always regarded wide radical surgery as the method of election in almost every patient belonging to these two categories, but my debt to radiotherapeutic colleagues in respect of Group III cases, and of those patients with recurrent disease, is incalculable; I yield to none in my admiration for their humanity, enthusiasm, and optimism in their relations with a class of patient that is largely constituted by those condemned to die.

The methods of radiotherapy are indeed sometimes preferred by me in occasional cases of primary cancer of the breast; thus during the decade 1925-35 I employed, at Middlesex Hospital, *radiation alone* in thirty-nine cases of primary breast cancer, of which twenty-eight were Group III cases, eight belonged to the Group II class, and three were arranged in the Group I category. In the

advanced or "bad surgical risk" type of patient, three only are alive, the length of survival ranging from two to six years. Among those patients of this series who are now dead, one survived eight years and another succumbed only after five and a half years.

In another group of twenty-nine patients, in whom for various reasons a radical operation could not be performed, and who were submitted to a *mere local removal of the breast, irradiation was superadded*; only two survive, but of those patients now dead one lived ten years, one eight and a half years, and two others five and six years respectively. The patients who succumbed after eight and ten years died of maladies unconnected with the mammary carcinoma.

I have thus, for the most part, reserved radiation therapy for the advanced case or those unsuitable for radical surgery. It is with the results of the radical operation for cancer of the breast that I shall concern myself; and although I am conscious of a paucity of numbers I prefer to deal entirely with my own personal cases; these results are set out in the following table:

Total cases of carcinoma of breast dealt with by radical operation from 1908 to 1938, inclusive	603
Cases untraced	7
Number of cases treated by radical operation up to 1928—that is, cases that could have survived 10 years or more	363
Group I cases operated on up to 1928	113
Cases surviving 10 years	95 (84.07%)
Group II cases operated on up to 1928	204
Cases surviving 10 years	60 (29.4%)
Group III cases operated on up to 1928	46
Cases surviving 10 years	3 (6.5%)
Number of cases treated by radical operation up to 1933—that is, cases that could have survived 5 years or more	497
Group I cases operated on up to 1933	163
Cases surviving 5 years	140 (85.88%)
Group II cases operated on up to 1933	283
Cases surviving 5 years	113 (39.9%)
Group III cases operated on up to 1933	51
Cases surviving 5 years	5 (9.8%)
Number of cases treated by radical operation up to 1935—that is, cases that could have survived 3 years or more	551
Group I cases operated on up to 1935	172
Cases surviving 3 years	147 (85.4%)
Group II cases operated on up to 1935	320
Cases surviving 3 years	150 (46.8%)
Group III cases operated on up to 1935	59
Cases surviving 3 years	6 (10.1%)

*Protracted Survival after Radical Mastectomy.*—Of 158 patients who have survived radical mastectomy ten years or more, eight survived twenty-five years; six survived between twenty and twenty-five years†; thirty-three have lived between fifteen and twenty years; and 111 managed to attain a decade of years after their mastectomy.

*Association with Carcinoma of Other Parts of Body.*—Two patients have subsequently developed a primary carcinoma of the stomach; one twelve and a half years, one five years after mastectomy. Two patients have subsequently developed carcinoma of the rectum, each six years after mastectomy; two patients presented themselves with a simultaneous carcinoma of the rectum and

\* Read in opening a discussion in the Section of Surgery at the Annual Meeting of the British Medical Association, Plymouth, 1938.

† These represent 1913 and 1914 cases. The war years furnish no statistics.

a carcinoma of the breast; both did badly and died of their rectal carcinoma. One patient survived an excision of the cheek, jaw, and floor of mouth ten years, and then developed a carcinoma of the breast; at the moment, two and a half years after mastectomy, she is alive and well.

#### Operative Mortality

There have been eight deaths in this series of 603 cases: one patient, inadvertently operated upon on the first day of her menstrual period, lost an inordinate amount of blood and died rapidly from the results of haemorrhage; another patient with diabetes, who had been under severe dietetic treatment before the days of insulin, died from exhaustion at the termination of the operation; one died of mesenteric thrombosis; one of erysipelas ten weeks after operation; one patient, where surgical removal was effected by diathermy, developed a wound infection with the Klebs-Löffler bacillus, from which she succumbed; one with advanced heart disease died of heart failure, one from bronchopneumonia, and one of a pontine haemorrhage which took place during the operation.

#### The History of the Radical Operation

It is indeed appropriate that this discussion on cancer of the breast is being held in Plymouth, for this city cradled the "father of modern breast cancer surgery." Although cancer of the breast had been operated upon as far back as the Byzantine Period by Paul of Aegina, it was Charles Moore, born in Plymouth in 1821, and later surgeon to Middlesex Hospital, who in 1867 enunciated the necessity for removing, in addition to the entire breast, any unsound adjoining textures. Time does not permit me to do more than mention the names of Lister, Mitchell Banks of Liverpool, Gross of Philadelphia, Halsted of Baltimore, Harold Stiles and Heidenhain, Watson Cheyne, and my old master Alfred Pearce Gould.

The story of breast cancer would, of course, be incomplete without the name of my friend and colleague Sampson Handley, whose reputation in this sphere is international. These are the giants associated with the evolution of the radical operation for mammary cancer. Grey Turner first taught me the advisability of removing the clavicular head of the pectoralis major.

It was remarked by perhaps the wisest British surgeon of this century that where the ancillary methods of surgery are added to the knife in dealing with cancer the extent of the operative removal inevitably becomes curtailed; nor is it otherwise in the treatment of mammary cancer. Pre-operative and post-operative irradiation has gradually restricted the extent of surgical ablation; the curtailment is noted especially in the amount of skin removed, the clearance of the axilla, etc. By some, radium has even been regarded as the equal, if not the superior, of radical surgical removal. The figures produced by my friend Geoffrey Keynes are worthy of the closest study, and, emanating from the practice of so distinguished, experienced, and learned a surgeon, must command our earnest attention.

In order to secure some information as to the practice of other surgeons in respect of pre-operative and post-operative irradiation, I approached seventy-two of my friends throughout Great Britain, sending them the following questionnaire:

#### QUESTIONNAIRE ON CARCINOMA OF BREAST

1. For the ordinary "operable" cases of carcinoma of the breast (Stages 1 and 2 of the Geneva Convention) what is your usual treatment?

- Radical mastectomy alone.
- Operation plus radiation therapy.
- Radiation therapy alone.

2. If the operation and radiation therapy—what form does this usually take?

3. Do you give pre-operative deep x-ray as a routine?

4. Do you give post-operative deep x-ray as a routine?

5. What treatment do you use for advanced cases (Stage 3 of the Geneva Convention)?

6. What treatment do you use for local recurrences? (Skin nodules, axilla, and supraclavicular triangle.)

7. Do you think that routine deep x-ray improves results of radical mastectomy? If you have any statistics readily available which prove this point or for the general results of your treatment of carcinoma of the breast would you add them below?

Unfortunately no very useful information for future guidance is forthcoming. Four different usages prevail: of the surgeons interrogated 25 per cent. make no use of irradiation as a supplement to radical operation; 44 per cent. use some form of irradiation in every radical mastectomy; 29 per cent. employ irradiation in Group II cases after radical mastectomy, and 2 per cent. favour the method of irradiation alone without radical removal.

The general tendency of surgical opinion is certainly towards the more frequent employment of supplementary irradiation, yet no figures to warrant the constant and universal use of post-operative irradiation therapy are quoted by any observer. Some who employ post-operative irradiation have even naively stated that patients have confessed that the ordeal of irradiation is worse than radical operation.

I am not here to contrast one method of treating cancer of the breast with another, nor could I draw any fair conclusion as to their respective merits. A paper on prognosis in carcinoma of the breast, written by R. W. Scarff and R. S. Handley (1938) concerns itself primarily with the evaluation of histological grading, but this has been employed in only a few of my cases. The histological points on which mammary tumours have been graded by Patey and Scarff are:

- Tubule formation; if well marked, this is favourable.
- Pronounced irregularity in size and outline of nuclei; the greater the irregularity, the worse the prognosis.
- The presence of hyperchromatic nuclei and of mitotic figures; the greater the number, the worse the prognosis.
- The presence of secretion is regarded as favourable.

Little stress is laid upon other points, such as cell degeneration, infiltration by lymphocytes, or the appearance of the stroma.

Employing these criteria, Scarff divided breast carcinomata into three grades of malignancy, but he does also admit that the presence or absence of axillary metastases is perhaps the most important single factor in prognosis, although this might seem an arbitrary standard by which to judge the clinical stage of the disease.

Where information is lacking as to the histological grade of the breast tumour no two series of cases or of treatments can be fairly compared. Apart from histological grading and the clinical stage of the disease the resisting power of the patient to cancer may also play an important part in prognosis; geographical environment may not be altogether negligible in determining the end-results.

#### Late Recurrences

It seems strange that cancer of the breast may recur as long as thirty-one years after the initial operation; Frank Steward (1925) records such a case operated upon

initially by Sir Henry Butlin, and mentions another of Sir Anthony Bowlby's. I have myself seen a carcinoma of the breast recur in the pelvis as a mass, the histological structure of which was reported as a "spheroidal-celled carcinoma of mammary type." The breast had been removed by Sir Cuthbert Wallace for carcinoma thirty years before. Three cases of recurrence in the scar have been observed by me twenty-one, twenty-two, and twenty-three years after operation by other surgeons. A case of my own developed a recurrence in the scar seventeen years after a radical operation, and this followed a few weeks after an acute attack of pyelonephritis, for which I had been called to treat the patient. I have seen local recurrence follow an operation for haemorrhoids performed sixteen years after the initial amputation; two recurrences followed gall-bladder operations, and one seemed consequent upon a hernia operation performed under a local anaesthetic six years after the mastectomy.

In most cases late recurrence has progressed disastrously, but exceptions are met with. One patient, operated upon for a mammary cancer seventeen years previously, developed a recurrence at the clavicular end of the scar. This was "flared" by radium, quickly becoming adherent to the clavicle; glands in the posterior triangle of the neck rapidly made their appearance, and there was increasing oedema of the arm. A "fore-quarter amputation" was performed, and the posterior triangle of the neck was cleared out at the same time. The patient survived two years, dying of metastases in the spine.

Certain *geographical localities* seem to "breed" a carcinoma of the breast of less malignant type: Mid-Hertfordshire has, in my experience, produced many ten-year and even twenty-year clinical "cures"; the Biggleswade and Sandy area of Bedfordshire seems conspicuous for the malignancy of cancers of all sorts.

Sure and accurate knowledge of the dread scourge will one day place in our hands some more specific cure than we at present possess, and much of the heroic in cancer surgery will pass into oblivion. In that golden era gross mechanical destruction of disease and cruel mutilation shall be no more, but even now much encouragement is to be found in the results of the surgery of breast cancer. A chaplain at "Middlesex" told me that during his three years' service at the hospital he had never met any patient who wanted to die. The addition of three years of life may not be always a trifling gift; five years' respite constitutes no paltry achievement; ten years may be a source of abiding joy to patient and relatives; twenty years spells a triumph!

Some may remember how the late Sir James Barrie, in his Rectorial address on "Courage" to the red-gowns of St. Andrews, reminded his listeners that "God gave us memory so that we might have roses in December." The memory of those 158 patients who have each survived more than ten years, perhaps many more years than ten, after an operation for a mortal disease like cancer of the breast, will be for me a reminder that I, too, can have my "roses in December."

It affords me great pleasure to acknowledge the kindly help of many friends. Miss Griffith and Miss Coysh of the follow-up department of Middlesex Hospital have furnished me with information about almost every single case of my own operated on in "Middlesex" since 1925; it is with pleasure that I express my sincere thanks to my registrar, Mr. A. S. Till, who pursues with tireless energy any research on which he is engaged. The courtesy and alacrity with which my questionnaires, sent to many friends, were answered and returned to me were perhaps not surprising, for British

surgeons are a "band of brothers." To the members of the medical profession whom I have assailed with letters I am under a great debt of obligation for the trouble they have taken to collect the information that I desired. To Miss Hall, my late secretary, I am grateful for aiding in the search for patients operated upon long ago. Miss Aspiotis had genius and pertinacity in obtaining news of patients operated upon even as long ago as thirty years. The topographical knowledge of my chauffeur, and many taxi-drivers, to say nothing of their enthusiasm, aided my efforts to secure the information I wanted. My own labours are also not undeserving of some eulogy when only seven cases have remained untraced.

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## TREATMENT OF PAIN IN THE FACE BY INTRAMEDULLARY TRACTOTOMY

BY

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This paper is concerned with three cases of severe pain in the forehead which have been relieved by section, through the postero-lateral aspect of the medulla oblongata, of the pain fibres in the descending tract of the trigeminal nerve—a method recently suggested by Sjöqvist (1938) of Sweden.

The results of surgery in the relief of primary neuralgia of the face are outstandingly good, and, in fact, tic douloureux is one of the most gratifying ailments to treat in the whole realm of medicine and surgery. Important advances have been made since Horsley's description in 1891 of an unsuccessful attack on the sensory root of the trigeminal nerve several years before. It is to Hartley (1892) of America and Krause (1892) of Germany that chief credit must be given for the extradural approach through the middle fossa, which formed the basis of operative procedures destined to obtain so great a success. In the first instance both divided the trunks of the nerve distal to the ganglion, and it was not until a year later that Krause (1893) removed the ganglion itself. In 1901 Spiller and Frazier suggested division of the posterior root instead of removal of the ganglion, and it was this modification which so profoundly influenced all subsequent methods of treatment. Apart from conservation of the motor root, the great advantage of the method is that a fractional anatomical section is generally possible. Immediately behind the ganglion the nerve fibres run in groups corresponding fairly accurately with the three peripheral trunks, and can be isolated according to their relative positions, the mandibular and maxillary fibres occupying the lower and outer two-thirds of the root. Dandy (1929) claims that as the posterior root nears the pons varolii the fibres conducting the various modalities of sensation become rearranged into distinct physiological groups, so that by means of an intradural approach through the posterior fossa it is possible to divide only those fibres which are carrying pain impulses. It is doubtful whether this arrangement occurs in all cases, and there is much experimental evidence to disprove it. However, within the brain stem physiological grouping does take place, and in this position fractional physiological section is possible. Sjöqvist has devised a method by which he is able to divide the pain fibres in the descending limb of the trigeminal