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CARCINOMA OF THE STOMACH*

BY

HAROLD C. EDWARDS, C.B.E., M.S., F.R.C.S.

Surgeon to King's College Hospital, London

[WITH SPECIAL PLATE]

The belief is widespread that cancer of the stomach is less amenable to surgical cure than cancer occurring in most other situations in the body. This may be founded on truth, but the hopelessness which it often arouses is a great deterrent to progress. The thought engenders a sense of futility which blunts endeavour, and offers a ready excuse for failure. It cannot be denied that little comfort can be found in some of the many recent statistical analyses, or from the conclusions drawn therefrom. Harnett (1947), for example, found that only 56 of 1,405 patients alleged to have carcinoma of the stomach lived for five years, and Payne (1940) found that only seven patients out of every 100 suffering from this disease left hospital after an operation which might possibly have resulted in cure. He thought that probably only one of these would survive for five years. Pack and Livingston (1939) epitomized the position by their view that even if every patient with carcinoma of the stomach were admitted to the best surgical clinic in the world 95% of them would be dead of the disease in 18 months.

At a lower ebb still is the statement made by a hospital physician that in six years of practice he had not seen a single patient with carcinoma of the stomach whose life had been usefully prolonged by surgery (Leys, 1937). And, finally, there is a statement made by a surgeon in 1949 that "it [cancer of the stomach] kills, on the average, if untreated, in just over a year. Prolongation of life to a few years, say five, is only exceptionally achieved, thus proving that treatment at present available does not control the disease—in other words, treatment is ineffective."

All these statements conjure up a picture of unrelieved gloom. Whilst one cannot but accept the careful analyses of Harnett and Payne, yet one cannot resist challenging their implication and that of the other statements. For there are certain things which encourage one to view the prospect, not with gloom, but with hopefulness.

It should be asked, "Is cancer of the stomach in its early stages curable? Is it possible to diagnose it before it has passed beyond the bounds of cure by operation?"

The Natural History of Cancer

The average length of time elapsing between the onset of cancer of the stomach and death as a result of it cannot be estimated with certainty, for, even if the onset is regarded as being synchronous with the experience by the patient of symptoms, the truth is difficult to arrive at because of the excusable vagueness of the patient himself.

Osler and McCrae (1900) thought that expectation of life rarely exceeded 18 months to two years. They were, incidentally, of the opinion that surgery was less likely to be effective for carcinoma of the stomach than for cancer of the uterus and breast, because of its effect upon nutrition, which hastened the onset of death. This does not imply, however, that cancer of the stomach grows more quickly than cancer elsewhere.

Among my own patients the time elapsing between onset of symptoms and admission to hospital ranges from one month to over 10 years. If all cases with a history of more than five years be excluded, the average length of history in 113 cases between onset of symptoms and attendance at hospital is 16 months. Furthermore, of these 113 patients, 40 were "operable." One cannot help feeling that Cade's (1949) suggestion that the natural history—that is, time of onset to time of burial—averages 12.2 months is wide of the mark. There is also an obvious fallacy in allowing the average natural history of cancer of the stomach, even if it were known, to influence one too strongly. It would be as illogical to do so as to refrain from making provision for one's old age because the allotted span is 70 years.

A Localized Lesion

There is little if any evidence that cancer of the stomach spreads on the average any more quickly than does, say, cancer of the breast, or that it metastasizes sooner. There is indeed every reason for thinking also that it is as easily eradicated by operation at a comparable stage of the disease, for the glandular spread is certainly no wider. And even if the liver is more in the path of spread in cancer of the stomach than in cancer of the breast, skeletal and thoracic secondary deposits are far less common. It is true that radiation has an application to cancer of the breast not shared by cancer of the stomach, but that does not affect the issue *qua* the effectiveness of surgical treatment. In 1900 Mayo Robson had already come to the conclusion that cancer of the stomach was in fact more favourable for radical surgery than cancer of the breast or cancer of the tongue.

The observations made by Versé (1908) are of the greatest interest. He discovered at necropsy a carcinoma of the stomach in each of 12 patients who died from some other cause. No lymph nodes were invaded in any of them, though several were of considerable dimensions and ulcerating. One had been recognized during life. Versé concluded, as a result of these findings, that there is a considerable period during which the therapeutic problem

*Based on an address delivered to the Southampton Medical Society on October 6, 1948.

is purely a local one. Wangenstein (1947) states, also, that of cases in which cancer of the stomach is found at necropsy 25% are confined to the stomach and adjacent lymph nodes.

During the past year I have removed three gastric carcinomas which were shown afterwards to be purely local lesions. Two were suspected on clinical grounds (Cases 1 and 2) and one was discovered by accident.

Case 1.—A woman of 73 had abdominal pain for two years with poor appetite but no appreciable loss of weight. Hb 84%. Acid was within normal limits. No x-ray film was taken. Diagnosis was based on the history. Localized cancer was present on the lesser curve (Plate, Fig. 1a).

Case 2.—A man aged 57 had pain for nine months. His appetite was poor and there was some recent loss of weight. X-ray examination (twice) was negative. No free acid was found, but there was a brisk response to histamine. Occult blood was negative. Diagnosis was based on the history. Two malignant ulcers were present near the pylorus.

Case 3.—A man of 54, with a 17-years history, underwent simple partial gastrectomy for duodenal ulcer. Carcinoma was found in a specimen 1 in. (2.5 cm.) proximal to the pylorus. ("The earliest carcinoma of the stomach I have ever seen"—Professor Magnus) (Plate, Fig. 1b).

The tragedy is that the patient rarely finds his way to operation while his disease is still a local lesion. This is the reason for the low rate of cure, and the blame lies with the failure to make an early diagnosis. It is not because surgery is unavailing or because the cancer is of an unusually virulent nature that the results are so bad.

Precancerous Changes and the Pyloric Ulcer

No clear relation between the duration of symptoms and the possibility of cure can be established. In 31 of my cases with a recorded history not exceeding three months only eight were operable—in the sense that removal gave prospect of cure. Of 31 with a recorded history of between 3 and 10 years, 10 were operable. Pack and McNeer (1948) record a similar experience. Balfour (1937) finds the prognosis after operation to be better amongst older patients and among those who have a relatively long history, and mentions that the outlook for bulky growths is better than for smaller infiltrating ones.

The inoperable cases with a short history were mostly in people ranging in age from 30 to 45. All of the patients with a long history were over 55. It is possible—even probable—that the early symptoms in the latter group were due to precancerous changes in the gastric mucosa or to pre-existing peptic ulcer.

Judd (1942) believes that there are precancerous changes related to a hyperplasia of mucus-secreting cells, for, he says, there is no evidence of a similar hyperplasia in the non-cancerous stomach. Further evidence that mucosal changes may precede cancer is furnished by Comfort, Kelsey, and Berkson (1948), who found a subnormal gastric acidity in a series of 277 patients who developed cancer and in whom gastric analyses were made two to three years before its onset.

Hurst's (1929) hypothesis that carcinoma of the stomach other than ulcer-cancer is invariably preceded by disease (atrophic gastritis, 75% ; chronic gastric ulcer, 20% ; simple adenoma, 4.5%) is not confirmed by the morbid-anatomy

researches of Magnus (1946). It has, however, been established that changes in the gastric mucosa associated with pernicious anaemia predispose to cancer (Bourne, 1948) ; Kaplan and Rigler (1947) find the incidence of cancer in sufferers from pernicious anaemia to be 20 times that in the general population.

Cancer Secondary to Ulcer

The controversy regarding the exact position of ulcer in relation to cancer is still with us, and there is little to add to Ewing's (1919) statement that the relation of ulcer to cancer is "rather close, quite obscure, and, as yet, incompletely explained." Whatever may be this relationship, one fact at least is known—that an ulcer crater in the pyloric antrum is either actually malignant or potentially so. It is in my opinion rare to see such change in an ulcer on the lesser curvature. Matthew Stewart's (1931) well-known work is relevant here. He thought that the incidence of the development of cancer in a peptic ulcer was 25% for pyloric ulcers and 4.6% for ulcers elsewhere on the lesser curve.

But what is perhaps more important than argument based on clinical or pathological evidence about the relation between chronic ulcer and malignant disease is the fact that it is impossible, at least in my experience, to distinguish by any known means between a simple ulcer in the pyloric antrum and a malignant one. For this reason

FIGS. 2 and 3.—Pre-pyloric ulcer: (2) is malignant, and (3) is simple. No distinction could be made between the case histories on clinical investigation (Cases 4 and 5).

all ulcers in this situation should be operated on at once, and without waiting for unequivocal evidence of malignancy. This is illustrated by several cases, of which the following are some examples.

Case 4.—A married woman aged 55 had epigastric pain for two and a half years. Gastric acidity and blood count were within normal limits. Radiographs showed a pre-pyloric ulcer crater (Fig. 2). Improvement followed medical treatment, and in February, 1946, the patient left hospital clinically improved. In November, 1946, she had a recurrence of symptoms, and was submitted to surgery. A small growth near the pylorus was found at operation, with extension along the gastro-hepatic omentum. There was no obvious spread to the lymphatic nodes. A radical gastrectomy was performed, and microscopy showed an undifferentiated carcinoma. Death occurred 10 months later, with secondary deposits in the liver, the abdominal wall, and the spine.

Case 5.—A man aged 53 had had symptoms for four years and nine months. The blood count was within normal limits, there was a moderately high acid curve, and the test for occult blood was negative. X-ray films showed a pre-pyloric ulcer crater (Fig. 3). At operation an indurated ulcer adherent to the pancreas was found just proximal to the pylorus, and

partial gastrectomy was performed. Microscopy showed no evidence of cancer. Three and a half years later the patient is alive and well.

It will be noted that the two case histories and the x-ray appearances were almost identical, yet one was malignant and the patient is now dead; and the other simple, and the patient is now in good health.

Case 6.—A diabetic woman aged 47 had complained of discomfort after meals for some years. Three years before she had come to hospital she was comparatively free from pain, but during the six months preceding admission she had suffered renewed pain three-quarters of an hour after meals, was occasionally sick, and had lost one stone (6.4 kg.) in weight. In January, 1948, a barium meal showed an ulcer crater near the pylorus (Fig. 4). Improvement followed medical treatment, and there was some gain in weight. Repeat barium meals in

FIG. 4.—Pre-pyloric ulcer proved malignant at operation (Case 6).

March and April showed persistence of the lesion. There was no free acid, but response to histamine was brisk and the blood count was normal. In view of persistence of the x-ray filling defect and a recurrence of symptoms the patient was referred for operation. A hard plaque of growth, with a sandpaper surface, was found near the

pylorus, and a radical resection was performed. Microscopy confirmed the diagnosis, and showed secondary growth in one of the glands removed. The patient is alive and in fair health 12 months later, but the prognosis is not good.

Case 7.—A man aged 62 was admitted to an E.M.S. hospital in September, 1945. There had been a 12-months history of pain and, later, sickness, but previously he had been healthy. At operation the surgeon noted an indurated area in the wall of the stomach at the pylorus, with no glandular involvement.

In spite of the history and the situation of the lesion, it was adjudged to be simple, and a gastro-enterostomy was performed. In February, 1949, after an interval of three and a half years, he was admitted to King's College Hospital in a wasted and anaemic condition, with a swinging temperature. A laparotomy was performed and an inoperable carcinoma near the pylorus was

found. Fourteen days later the patient died; Fig. 5 is a photograph of the stomach obtained at post-mortem examination.

Case 8.—A man of 58 had complained of epigastric pain of 5-6 months' duration. An x-ray film on September 13, 1946, had showed a pre-pyloric ulcer, and he was treated medically. For a period of five months the treatment was effective so far as the symptoms were concerned, but pain then recurred, and the patient was eventually again referred to hospital, 12 months after his first x-ray examination. He was now extremely ill, with an Hb of 36%. Free acid was present and there was a response to histamine. At operation a large growth at the pylorus adherent to the pancreas was found. Radical operation was performed, and removal included a portion of the head of the pancreas. On July 8, 1948, nine months after

operation, obstructive jaundice was reported, and the patient was last heard of on April 20, 1949. He was then approaching death, with severe jaundice and ascites.

Factors Contributing to Delayed Diagnosis

Negative Findings

It is common knowledge that the patient's reluctance to seek medical advice is one of the chief causes of delay in diagnosis. Harnett found that, of the 1,405 patients with cancer already quoted, 35.5% did not seek advice for an average period of six months. It must be added that 19% of these were treated symptomatically for three months, and that 1% were, it is alleged, told that they had nothing to worry about. Cooper (1941) estimated that in the U.S.A. the patients are responsible for an average delay of eight months. The general practitioner is blamed for an average delay of four and a half months, while delay in hospital before surgery is sought is anything from one to six months.

I do not wish here to enter into a discussion on how best to reduce the delay imposed by the patient on himself. Many suggestions have been made, such as restriction in the sales direct to patients of alkalis, which, as Finch (1948) imaginatively puts it, give rise to "cancers of the stomach buried under mounds of powder"; the receipt, on the fortieth birthday, of a warning letter from a benevolent Minister of Health (Hermon Taylor, 1948); special cancer detection clinics (Wangensteen, 1947); and employment of mass radiography. Fordyce, Swenson, and Harvey (1944) experimented with the latter. Altogether, 2,413 subjects of over 50, with no symptoms referable to the stomach, were x-rayed. The total "bag" amounted to three—two carcinomas and one lymphosarcoma.

Some of these suggestions may perhaps be worthy of serious consideration, but here I am more concerned with our own failings. We ought to try to put our own house in order before concentrating upon the problem of how to bring the patient to the doctor.

It goes without saying that the clinician must always himself bear the blame for missed diagnoses, whatever may be the reports from those who are responsible for ancillary methods of diagnosis. The statement is often made that cancer of the stomach does not cause symptoms until a late, and sometimes incurable, stage is reached. This statement is, on the whole, quite erroneous. The ulcer-cancer of the lesser curve (including the pre-pyloric region) always causes symptoms even while the growth still remains localized to the stomach. It is only in cancer affecting the greater curvature and body of the stomach that symptoms referable to the stomach may not arise early. This lag, however, is to some extent compensated by the fact that growths in this region may be well differentiated, and sometimes polypoid, so that they remain a localized lesion for a comparatively long time. In growths of the body and greater curvature, the symptoms are often insidious, and diagnosis requires the most careful elucidation of the history. It is, of course, the patient suffering from cancer in this situation who so often fails to seek advice until the growth is far advanced.

The early symptoms may be gastric discomfort, not at first amounting to pain, but persistently and insidiously increasing; a gradual loss of appetite, going on to frank anorexia; lack of energy, and increasing liability to fatigue; loss of weight; or breathlessness from anaemia.

Case 9.—In February, 1932, a woman aged 54 was referred by Dr. Harold Moody because of increasing tiredness and breathlessness on exertion. A blood count confirmed a secondary anaemia (Hb 56%), and in the gastric residuum fresh blood was found (Dr. R. A. McCance). This led to

FIG. 5.—Photograph of pyloric region of stomach 3½ years after gastroenterostomy for pyloric ulcer (Case 7).

FIG. 6.—Carcinoma of greater curvature in woman of 54, whose main symptom was breathlessness on exertion. Patient remains well 17 years after operation (Case 9).

x-ray examination, and to the demonstration of a large defect on the lesser curve. At operation a growth of the mid-gastric region was found, with no evidence of involvement of the serous coat, and no evidence of lymphatic spread. A partial gastrectomy was performed (Fig. 6). The patient made an excellent recovery, and within two months the blood count returned to normal.

Over 17 years later,

the patient, now 72, reports that she is very well considering her age. An interesting feature is that five years before partial gastrectomy Mr. Norman Lake performed a radical mastectomy for cancer, so the patient has survived for 22 years an operation for cancer of the breast and for 17 years an operation for cancer of the stomach.

It can be taken as axiomatic that gastric symptoms arising for the first time in previously healthy patients of the cancer age always have an organic cause and that the commonest cause is cancer, and that secondary anaemia at the cancer age must have a primary cause and that cancer of the stomach is one of them. The fact that ancillary diagnostic methods give negative results does not in any way disprove these statements. It is merely evidence that these methods are unable to reveal the cause. They do not remove it; and the clinician should insist on discovering it, even to the point of insistence upon exploratory operation.

Radiology

It may seem a little out of place for a surgeon even to hint at criticism of radiology, upon which he depends so much. But many radiologists with whom I have talked agree that there is a very real danger that recourse to surgery, at least for ulcer-cancer, may be retarded rather than accelerated by radiology, for reference of a case to the surgeon often awaits a radiologically demonstrable growth. It often happens that a patient is x-rayed at intervals while under medical treatment and is not referred for surgery until the radiologist can say with assurance that the lesion is malignant.

It has been my experience that, by the time the radiologist is in a position to say that an ulcer of the lesser curve or pre-pyloric region is malignant beyond doubt, the growth has passed the stage in which there is probability of cure. Though the growth may be "operable" in the sense that all disease apparent to the naked eye may be eradicable, the prognosis is poor, and may be compared with late cases of carcinoma of the breast in which there is involvement of the overlying skin and enlarged axillary glands. The radiologist, in fact, is often made to carry too heavy a responsibility—more than is justified by the ability of radiography to diagnose with assurance cancer at an early stage. He himself will be the first to admit this. And in the final analysis the real responsibility is the clinician's, who ought to regard radiology as only one, and not the only one, of the sources of information guiding his actions.

There is one further point that I hope I may be excused for mentioning. There is a tendency amongst the less-experienced radiologists to include advice to the clinician in their reports. It is far better for the latter to be factual,

and not advisory. To quote an example: "Filling defect lesser curve? simple? malignant. Advise repeat x-ray in two months." Such a report should end at "malignant." Better still would it be if it read: "There is a filling defect on the lesser curve which may be caused by malignant disease."

The Therapeutic Test

Another cause for delay is the "therapeutic test," which is completely fallacious. It is only to be expected that the symptoms of cancer may be considerably relieved by diet and rest. The patient may even put on weight, and an ulcer crater be shown radiologically to shrink in size. The reason for these events may be that, once the growth has breached the mucosa, peptic ulceration begins, and will progress more quickly than ulceration due to the growth itself. It may also respond to medical treatment, with both clinical and radiological improvement. This in fact is the explanation given for the association between ulcer and cancer by those who dispute that peptic ulcers may become malignant.

Such a therapeutic test should be completely eliminated from practice.

Ancillary Methods of Diagnosis Other than Radiology

Gastroscopy may be invaluable, though it is not consistently reliable, and negative findings are not conclusive. Its value is probably not so much in differentiating between a simple and a malignant ulcer, but in defining the presence of a lesion missed radiologically, or in confirming the presence of a lesion when the x-ray findings are in doubt. All gastroscopists have had triumphs, to the patient's advantage, and it is idle for detractors of the method to deny its great usefulness.

The *blood picture*, as Osler and McCrae pointed out 50 years ago, follows no recognizable pattern. In 49 of 102 of my patients secondary anaemia was a marked feature; in 46 the blood count was within normal limits; and in seven the red cells were above 5,500,000 per c.mm. The importance of blood examinations is not in differential diagnosis so much as in the fact that the presence of an otherwise unexplained secondary anaemia should lead to an investigation of the stomach as being a possible site of its cause. Ariel, Rekers, Pack, and Rhoads (1943), who found that anaemia occurs in the majority of carcinoma cases, do not think it is caused by deficient ingestion of food and blood loss, for administration of iron fails to secure a response until the growth is removed, when normal ability to respond returns. They suggest that the growth itself interferes with protein metabolism. The test for *occult blood* is usually positive, but in my experience not invariably so.

Gastric Secretions.—Absence of free hydrochloric acid is in favour of a diagnosis of cancer, but its presence, as is well established, is not to be regarded as evidence against cancer. Of 91 of my cases, complete achlorhydria was noted in only 17. There was absence of free acid in 59, 13 of which gave a positive response to histamine. In 14, acid values were within normal limits, and in one it was far above normal. Cancer of the pylorus attacking the robust man who has enjoyed a singular freedom from any complaints from his stomach despite habitual dietetic indiscretions—he whom Schmidt (1911) called the gastric athlete—will often show a normal acid curve. Tabora (1905) thought that lesser-curve growths are likely to be associated with hypochlorhydria, and pyloric cancer with hypersecretion. This, in general, has also been my experience. Of more significance than the acid values is the finding of fresh blood in the residuum.

H. C. EDWARDS: CARCINOMA OF THE STOMACH

FIG. 1.—(a) Localized cancer of lesser curve in Case 1. ($\times 5$.)
(b) Very early cancer proximal to pylorus in Case 3. ($\times 7$.)

S. BENDER: PLACENTAL METASTASES IN MALIGNANT DISEASE COMPLICATED BY PREGNANCY

FIG. 1.—Case 4. Metastases of carcinoma in placenta. ($\times 100$.)

FIG. 3.—Case 6. Placental metastases. ($\times 100$.)

FIG. 2.—Case 4. Primary carcinoma in ethmoid. ($\times 100$.)

FIG. 4.—Case 6. Primary carcinoma in stomach. ($\times 100$.)

H. KEEN: CRANIAL ARTERITIS PRESENTING AS MENINGITIS

FIG. 1.—Langhans giant cells in media. ($\times 500$.)

FIG. 2.—Cross-section of whole artery. ($\times 120$.)

Peritoneoscopy is of no value for early diagnosis, but may, according to Narancio, Pierson, McNeer, and Pack (1945), by determining the presence of metastases, be instrumental in saving the patient from unnecessary major surgery. *Biopsy*, both under gastroscopic vision as suggested by Kenamore, Scheff, and Womack (1946), and blindly, as described by Wood, Doig, Motteram, and Hughes (1949), is thought to be of value in the investigation of diffuse lesions of the stomach, but has little or no application here. Of greater usefulness is the microscopical examination of fragments obtained from *gastric lavage* (Einhorn, 1894) or *aspiration* (Hawksley, 1948), when a positive result is diagnostic. Recently, the *smear technique* of cytological diagnosis developed for diagnosis of uterine cancer by Papanicolaou and Traut (1943), and applied to gastric investigation by Graham, Ulfelder, and Green (1948), and other workers, offers great possibilities. As yet, however, few cytologists are available who have had enough experience to recognize with certainty an isolated cancer cell.

Finally, *laparotomy*—though diagnostic *amour-propre* may suffer—must be resorted to when other avenues of inquiry have failed to reveal the cause of the symptoms. I cannot refrain here from quoting Rowlands (1918): "Much time is wasted on laborious attempts to arrive at a diagnosis from various laboratory tests. This 'scientific and deadly delay' (Mayo) often throws away the opportunity of radical and successful operation."

Mention may be made of the occasional positive contribution to health which a negative laparotomy may make. I can record at least two cases in which a negative laparotomy cured "cancer." One of them was that of a doctor with a characteristic history, including loss of weight. Recovery after a negative laparotomy in 1938 was complete, symptoms disappearing and normal weight returning, and the patient served throughout the war in an exacting administrative post in the R.A.M.C.

The Scope of Surgery

Recent momentous advances in pre-operative and post-operative care, anaesthesia, and surgical technique have greatly increased the boundaries of the surgery of gastric cancer, and the small but important group of cases of cancer of the cardia (Welch, 1885—8% of 1,300 cases of carcinoma of the stomach), previously thought to be hopeless, have been brought within the scope of surgical cure. Many surgeons do not hesitate to attempt resection even if a growth has involved the colon, the pancreas, the spleen, and even the liver. Though such extensive operations may not materially affect the rate of cure of cancer of the stomach, there is little doubt that they are justified, first, because the removal of a growth associated with the stomach, even if removal is not complete, may greatly reduce suffering; and, secondly, the improbable sometimes happens, as illustrated by Case 10.

Case 10.—A wizened little man of 52 was admitted to King's College Hospital in April, 1935, after consultation with Dr. Beattie Davidson. He had a mobile lump in the epigastrium as big as a man's fist. For three months previously, and following an attack of influenza, he had felt some pain in the epigastrium, accompanied by flatulence, and there had been much loss of weight. The blood count was within normal limits, and there was complete achlorhydria. The diagnosis of carcinoma of the stomach was so obvious that no x-ray confirmation was thought necessary, and the patient was submitted to operation on April 10. The mass was found to be a growth of the greater curvature of the stomach. It had involved the transverse colon, and there were secondary

deposits in the glands of the lesser curve. The greater part of the stomach was removed, together with a portion of the transverse colon and the lymphatic field (Fig. 7), and a temporary caecostomy was made after gastro-jejunostomy and direct suture of the residual transverse colon. He lived in fair health until August, 1948, 13 years and 4 months after operation, and died from pneumonia.

FIG. 7.—"The improbable sometimes happens." Anaplastic carcinoma involving glands on lesser curve and infiltrating transverse colon. Patient lived for 13 years and 4 months after this operation, and died from pneumonia (Case 10).

All recent reports show that the proportion of "resectable" cancers now reaching the surgeon has increased, and that the mortality of operation has greatly decreased during the past decade (Pack and McNeer, 1948; Marshall and Phillips, 1949; Engel, 1947; Walters, Gray, Priestly, and Waugh, 1948), and since the publication of Walton's figures in 1939—figures which could have been equalled by few of his contemporaries and excelled by none. This increase in resectability rate is probably not due so much to earlier diagnosis, though there are very welcome signs of improvement here, as to the great widening of the boundaries of surgery itself.

Extent of the Operation

Surgeons differ considerably in their interpretation of what is meant by the "radical" operation, and also by the term "operable." Such differences are inevitable, and are beyond the scope of this discussion. The important matter is whether it is necessary and advisable to remove the whole stomach in every case of carcinoma. There is no great difference of opinion about this when the growth is in the proximal part of the stomach, but the difference is marked when it is situated in the distal two-thirds.

There are many reasons against interpreting the radical operation to be total gastrectomy. Those who practise this operation as a routine do so because of the danger of recurrence of growth in the gastric stump, and on the more theoretical grounds that it is illogical to remove a part of an organ for cancer (for example, cancer of the breast) and that the barrier to spread of cancer is at the cardia. Recurrence in the stump, however, is not a common cause of failure. Lefèvre (1947), who awaits more evidence before being convinced that total gastrectomy should be a routine measure, found such recurrence as a single feature in only 3 out of 15 reoperations, and in only 9 out of 105 partial gastrectomies for cancer. My own experience, too, is that recurrence here is not common, and when the mortality of total gastrectomy (around 40%) is compared with that of partial or subtotal gastrectomy (around 10%), it is clear that the number of deaths caused by the attempt to avoid recurrence in the stump will greatly exceed failures due to recurrence in the stump.

Walters *et al.* (1948) believe that the removal of the lymph nodes can be as complete in partial as in total gastrectomy, and that when further difficulty is met after partial gastrectomy for cancer it is seldom that recurrence in the stump is the major problem. They think, therefore, that total gastrectomy should be performed only when a less extensive removal would not eradicate all the cancerous tissue in the stomach, and with this I would agree.

There is also another aspect. The surgeon is interested in something more than the black-and-white of death and survival after operation. As Stammers (1948) comments, life is quality, not quantity, and the patient after total gastrectomy is usually in a poor nutritional state and incapable of relishing the simple enjoyments of life; moreover, he often suffers from uncontrolled regurgitation into the mouth because the cardia has been removed. His condition is far less happy than that of the patient who retains a portion of his stomach, even if this be small, so that the cardia remains intact.

Palliative Operations

As Lahey, Swinton, and Peelen (1935) pointed out, the number of palliative operations—for example, gastroenterostomy—is being reduced in direct proportion to the widening scope of operability. Most surgeons will agree with Morley (1949) that the best palliative is removal of the growth, even in the knowledge that thereby all cancer present is not eradicated.

Despite contrary views, I hold to the opinion that gastroenterostomy for the relief of pyloric obstruction due to inoperable cancer may sometimes be helpful. It can easily be performed under local analgesia, and the ordeal to the patient is not a serious one. Allison (1949) condemns gastrectomy for the treatment of inoperable growths at the cardia, and prefers to do an oesophago-jejunostomy. Tanner (1947) also recommends a by-pass operation for this condition. Jejunostomy should, I think, never be contemplated.

It would be unwise, however, to dogmatize too freely upon the relative merits of the various palliative procedures, for the circumstances of each individual patient may outweigh considerations based solely upon theoretical reasoning in coming to a decision on what to do. Palliative operations are not likely to affect longevity very much. The most that can be said of them is that they may, on occasion, make the twilight of existence less unbearable.

Summary and Conclusions

Reference is made to the hopelessness in outlook caused by recent statistical reviews and other statements.

The "natural" history of cancer, though it cannot be estimated with accuracy, is not, on the average, as short as is sometimes believed.

The growth may be a localized lesion for a considerable time, and may bear comparison in this respect with carcinoma of the breast.

It is probable that in some types of carcinoma there are diffuse precancerous changes in the mucosa which may themselves be responsible for symptoms.

Ulcers in the pyloric antrum ought always to be regarded as actually or potentially malignant, and should be operated on. It is impossible at an early stage to distinguish between simple and malignant ulcers developing in this situation.

The main reasons for delay in diagnosis attributable to the medical profession are discussed. The importance of the history in diagnosis is stressed, and the danger that radiology may itself be responsible for delay is suggested.

Ancillary diagnostic methods other than radiological are described. None is consistently reliable.

The scope of surgery, the extent of the radical operation, and the nature of palliative operations are reviewed.

The gloomy implications engendered by mass statistics should not be accepted without challenge, for carcinoma of the stomach is as amenable to surgical cure as carcinoma of the breast at a comparable stage of the disease.

In arriving at a diagnosis the history outweighs in significance all ancillary methods, including x-ray films. If the history is

suggestive, laparotomy should be enjoined despite the fact that other investigations have yielded negative or equivocal results.

The case for routine total gastrectomy for growths of the distal portion of the stomach is not proved, and it is recommended that a portion of the stomach should be left so that the cardia remains intact.

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