A Clinical Lecture ON CANCER OF THE STOMACH*

BY

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Cancer of the stomach is admitted to be a very depressing disease. It kills about 10,000¹ a year in England and Wales, and is said to account for one-third of all cancers in men and one-fifth in women.² It is so insidious in onset, and so painless in progression, that it often passes unnoticed until it is too late for successful operation. But in spite of these facts there is too much pessimism about it in the minds of both the medical profession and the public, who often think and say that it is incurable, and therefore patients are not encouraged to come for operation, which is the only treatment that can cure the disease. If a radical operation is done early there is a hope of cure in a fair proportion of cases; and from palliative operation of much relief and prolongation of life. As it is, only a small proportion ever come to the surgeon; less than 50 per cent. of these come in time for any operation to be justifiable, and less than 30 per cent. in time for radical resection. The mortality from this operation, when performed by experts, used to be about 10 per cent., but D. C. Balfour³ reduced this to 5 per cent. in his last 200 resections. Finsterer⁴ had a mortality of 6 per cent. in 211 simple resections, and 41 per cent. in 129 complicated resections—that is, when the growth had invaded surrounding organs, such as the colon or pancreas. Gatewood,⁵ analysing all the cases of cancer of the stomach admitted to the Presbyterian Hospital, Chicago, during the ten years 1920–30, states that 209 were operated upon, including fifty-eight resections, with a mortality of 18 per cent. Balfour has reviewed 128 patients at the Mayo Clinic who had survived resection for over ten years; this number formed 20 per cent. of those who had survived this operation, performed at the Clinic between 1910 and 1920. Finsterer found that 17.4 per cent. of those discharged healed were well after ten years. Gatewood reports 39.5 per cent. of those who survived resection well after five years and without any sign of recurrence. These results of late operations are stimulating, and should encourage doctors to persuade patients to come for operation much earlier than they do at present, in the sure hope of much better results in the future.

Although I have not had time to trace all my patients, I want to bring to your notice the following encouraging cases of my own.

CASE I.—*Cancer of the Stomach: Partial Gastrectomy. Well Seventeen and a Half Years Later*

Mrs. E., aged 41, a patient of Dr. Brackenbury. She had suffered increasingly from indigestion for three years. She had had haematemesis and had wasted rapidly. Radiography revealed pyloric obstruction. I had felt a tumour of moderate size in the epigastrium a little to the right of the middle line. The patient looked ill and anaemic, was vomiting large quantities about once a day, and was unable to take solids. I therefore advised operation.

Operation on August 21st, 1915, in the private ward at Guy's Hospital. (Dr. Brackenbury present.) A long incision was made in the epigastrium to the right of the middle line. A dilated stomach, hypertrophied and oedematous, was found, and a pyloric ulcer of large size extending half-way along the lesser curvature from the pylorus, around which it formed a wide ring, which was hard and felt like a carcinoma. As

the stomach was particularly movable and there were no growths in the liver, pelvic peritoneum, or glands, I decided to resect the diseased part, and this was done without delay. The gastric artery was doubly ligatured and divided, the left gastro-epiploic also: then the great omentum close to the transverse colon, and the right gastro-epiploic and pyloric arteries. The duodenum was crushed one inch beyond the pylorus and closed with a running suture of linen thread and then invaginated by two purse-strings of the same material. A loop of jejunum was brought up through the transverse mesocolon and sewn to the back wall of the stomach along a selected line, a little on the cardiac side of the middle of the stomach. The stomach was divided near the line already mentioned between two clamps, so that no leakage occurred. An opening the same size as the one in the stomach was made in the jejunum and an anastomosis made after the Polya method. Sewing the jejunum to the stomach before the growth was removed greatly facilitated the operation, for the tubular pyloric segment was useful as a tractor; the attachment to the jejunum prevented retraction of the stomach during the insertion of the deep suture. The opening in the jejunum began four inches from the end of the duodenum, and by starting it here there was no tension upon the first part of the jejunum and duodenum, for the proximal part of the jejunum was joined not to the lesser but to the greater curvature of the stomach. The great omentum was not removed, but drawn up over the anastomosis and the stump of the duodenum. The opening in the transverse mesocolon was closed by four interrupted sutures. The operation lasted forty-five minutes, and the patient was not shocked after it. She was infused during the operation, two pints being run into the arm-pits.

She was very well the next day, but vomited once or twice. On August 23rd she frequently vomited small quantities of green, offensive material, and, as half a pint of sodium bicarbonate solution was given without according any great relief, the stomach was washed out at 5 p.m. A very large quantity of bilious liquid was withdrawn and the patient felt much better. She was up on the tenth day, and was walking about on the thirteenth and eating almost full diet. She rapidly regained weight and strength. Microscopically the ulcer proved to be a typical carcinoma.

In December, 1928, Mr. Bellingham Smith performed hysterectomy for a rapidly growing soft fibroid.

In February, 1933, seventeen and a half years after the operation, she was still alive, with no sign of recurrence of the carcinoma.

CASE II.—*Cancer of the Stomach. 1. Primary Gastro- jejunostomy. 2. Secondary Resection. Well Eleven Years Later*

A man, aged 64, referred by Dr. Aston Key. The patient had had indigestion for several years, but he had been much worse for the last six months, with anorexia, wasting, and melaena. When admitted to Guy's Hospital he was thin and very anaemic, the haemoglobin being only 40 per cent. He was sent up with the diagnosis of duodenal ulcer, but the diagnosis in hospital was carcinoma of the pylorus, with obstruction.

Operation on May 25th, 1922. Dr. E. A. Scott, who gave the anaesthetic, considered that the patient would not stand a long anaesthetic and operation owing to his anaemic and bad condition. I therefore performed posterior gastro-jejunostomy well away from a definite pyloric carcinoma, the size of a tangerine orange, completely encircling the pylorus, ulcerated, hard, and at one side piercing the muscle wall of the stomach and showing peritoneal nodules. No secondary growths anywhere. Therefore partial gastrectomy (possibly after blood transfusion) was thought advisable three or four weeks later.

The patient improved so much that blood transfusion was not necessary before the second operation, which was performed on July 10th, 1922, when about half the stomach was removed. The growth was a columnar-celled carcinoma. Good recovery followed, and in January, 1925, the patient was in excellent health, less anaemic and better nourished, and in regular work at his old job of cleaning cars. In February, 1933, aged 75, he was well and acting as a family retainer and doing odd jobs at Hayling Island.

* Delivered at Guy's Hospital.

CASE III.—*Cancer of the Colon: Intestinal Obstruction, Short-circuit Resection in 1919. Cancer of the Stomach: Partial Gastrectomy in 1927. Well in 1933.*

A lady, aged 56, an artist, patient of Dr. Grace Griffith, seen in October, 1919, had been suffering from complete intestinal obstruction for ten days; the vomit was brown and offensive, and the abdomen distended. Upon exploration a carcinoma was found at the splenic flexure of the colon. A short circuit was made between the middle of the transverse and pelvic colons. Two months later the growth was removed through an oblique incision in the left flank, parallel to the intercostal nerves. The swelling had shrivelled considerably and was easily removed, the ends of the colon near the anastomosis being closed without disturbing the stoma. All the colon between the middle of the transverse and pelvic loops was removed, together with the mesocolon and draining lymphatic glands. The patient made a good recovery and remained well until March, 1927, when indigestion with attacks of vomiting developed. There was tenderness in the right hypochondrium, and therefore cholecystitis was suspected; but she did not improve under treatment for this, and the vomiting increased in frequency. Anaemia and wasting, and a vague swelling in the right epigastric region were noticed in August, and carcinoma of the stomach was suspected. On September 19th, 1927, the abdomen was explored. The diagnosis was confirmed: a large carcinoma involving the pylorus and the greater part of the pyloric segment was found. There were enlarged hard glands in the omenta above and below the growth. About two-thirds of the stomach, together with the draining lymphatic glands and omenta were removed. The anastomosis made was after the Polya retrocolic method. In spite of attacks of vomiting for a fortnight, good recovery followed, and the patient returned home a month after the operation. She has remained well ever since. It is now five and a half years since the partial gastrectomy, and sixteen years after the colectomy, and although the patient is 69 years old she is still very active in her garden, travels abroad, and paints and exhibits charming water-colour pictures. Microscopical examinations proved the carcinomatous nature of both growths, which were quite distinct and dissimilar primary cancers.

Dr. Hurst⁶ mentions another patient operated upon by me for a carcinoma of the stomach which had "developed four years after a gastro-jejunostomy, which had been performed for a simple ulcer; no relief had followed, and hyperchlorhydria was still present. The patient was alive and well seven years after the partial gastrectomy. Recurrence with jaundice took place in another patient eight years after partial gastrectomy.

SYMPTOMS AND SIGNS

Cancer of the stomach in its earlier and hopeful stages does not give rise to symptoms which are characteristic of the disease. Anorexia, indigestion, pain, nausea, and vomiting, haematemesis, progressive wasting, and anaemia are suggestive. Hypochlorhydria is too often thought to be a necessary sign of cancer of the stomach: this is only true of the late stages of the disease. In the early and operable stages the free HCl is either at or above the normal in over half the cases. Occult blood in the stools is almost a constant sign.⁷ Radiographic examinations are often negative in the early stages, but if they are repeated—as they should be—at frequent intervals they will ultimately show defective filling and delay, which are very suggestive signs; or they may show an ulcer with a large crater increasing instead of diminishing under treatment. A tumour may be felt in the epigastrium, but in the majority of cases exploration should be undertaken long before a tumour can be felt.

DIAGNOSIS

1. *From Chronic Gastritis.*—The presence of occult blood and of radiographic deformity point strongly to the presence of cancer.

2. *From Simple Ulcer.*—It is often difficult or impossible to make sure that a supposed simple ulcer of the stomach

is not malignant. Hurst and Stewart⁸ believe that over 6 per cent. of gastric ulcers become malignant, and that over 15 per cent. of gastric cancers start in simple ulcers. McCarty used to teach that a large crater—say over 2.5 cm.—indicated malignancy; but this, although very suspicious, is not quite reliable, but if the crater does not diminish rapidly under good medical treatment the suspicion of cancer is great.

3. *From Syphilis of the Stomach.*—Although rare, this has been mistaken for carcinoma of the stomach; especially as hypochlorhydria is marked, but occult blood is usually absent, and the stomach is contracted and shows multiple defects on the x-ray screen. A Wassermann test should always be made.

4. *From Carcinoma of the Pancreas and Chronic Pancreatitis.*—The wasting and anaemia associated with chronic disease of the pancreas have often led to suspicion of cancer of the stomach, but repeated radiographic examinations of the stomach and chemical examinations of the stools should prevent this mistake.

5. *From Empyema of the Gall-bladder.*—Chronic empyema of the gall-bladder has been mistaken for cancer of the stomach because of the dyspeptic symptoms associated with a tumour in the epigastrium, but radiographic and cholecystographic examinations, and the absence of occult blood in the stools, should lead us to a correct diagnosis.

In conclusion, it cannot be too strongly urged that the diagnosis of cancer of the stomach, if it is to be early enough for hopeful resection, must often be made by exploration. Too much time is often wasted on laborious laboratory tests and futile medical treatment, and this "scientific and deadly delay" too often throws away the hope of successful operation. The diagnosis ought to be made in all cases with or without exploration well within two months of the onset of symptoms. Then resection would be possible in about 70 per cent. of the patients presenting themselves.

INDICATIONS FOR OPERATION

A suspicion of the presence of cancer of the stomach, especially if supported by radiographic evidence and the presence of occult blood, makes early exploration desirable. This is the best way to discover cancer of the stomach in its early and curable stages. In the later cases, when the diagnosis is obvious, operation is indicated (1) *when there is evidence of existing or threatening pyloric obstruction*; for, at the least, relief can be given by short circuit or palliative resection. (2) *When there is reasonable hope of resection.* Here it is most important to remember that cancer of the stomach starts at the pylorus in nearly two-thirds of the cases, and long remains localized and resectable.⁹ Even at death there are no secondary growths in over a third of pyloric cancers. Therefore we must not lightly conclude that a growth of the stomach is inoperable. On the other hand, it is important not to submit patients to unnecessary explorations when the growth is irremovable, as is indicated by the discovery of (1) hard nodules of secondary growth in the pelvic peritoneum, by rectal or vaginal examination; (2) enlarged, hard glands at the root of the neck, especially under the lower end of the left sterno-mastoid; (3) nodules of growth at the umbilicus or under the skin of the abdomen; (4) ascites indicating peritoneal growth or obstruction of the portal vein; (5) nodular enlargement of the liver; (6) the large size, fixation, and awkward position of the growth as felt clinically and estimated by repeated radiographic examinations. The growth may be so fixed, or so high, involving the cardia, that resection is impossible; but in doubtful cases it is wise to explore, for occasionally the clinical signs and the x-rays mislead,

and resection proves possible. The mere size of a palpable but mobile tumour does not make resection impossible. Sometimes the disease proves to be either an innocent growth or simple but extensive ulceration, curable by operation.

CHOICE OF ANAESTHETIC AND OPERATION

Finsterer has shown us that local is here much safer than general anaesthesia. Although the method is tedious, it certainly lessens shock, and diminishes the danger of thoracic complications. After morphine 1/3 grain and hyoscine 1/100 grain have been injected about half an hour before the operation to make the patient comfortably sleepy, novocain 0.75 per cent. is used to produce local and block anaesthesia of the upper part of the abdominal wall. Directly the abdomen is opened splanchnic anaesthesia is carefully induced, with the aid of a long needle passed deeply between the upper parts of the aorta and inferior vena cava. Sometimes a little gas and oxygen, or oxygen and ether, is necessary to complete the anaesthesia.

In most cases of cancer of the stomach it is necessary to remove an inch or more of the duodenum, and from one-third to three-quarters of the stomach, depending on the site and extent of the growth. After such extensive resections direct union of the cardiac remainder to the duodenum after Billroth's first method is impracticable without undue tension, even when the duodenum has been freely mobilized. Therefore it is better to close the duodenum and to join the gastric remainder to the jejunum after the Polya method. When the cardiac remainder is small after high division of the stomach, it is easier to close the upper part of the gastric wound and to use Billroth's second method of anastomosis—of the jejunum to the lower part only of the cardiac remainder. It is also better to bring the loop of jejunum up in front of the transverse colon after Balfour's and Moynihan's methods; for if recurrence takes place, as it often does, about the pancreas and transverse mesocolon, obstruction of the anastomosis is not so likely as when a retrocolic anastomosis is made.

When the abdomen has been opened the first step is to explore thoroughly to make sure if resection is practicable. Secondary growths in the liver, parietal or pelvic peritoneum, pancreas, mesentery, or transverse mesocolon make a radical cure impossible, and so do invasion of the cardiac orifice and fixation of the growth to the large blood vessels, such as the coeliac axis.

Sometimes the general condition of the patient and the way he behaves upon the table make primary resection too hazardous. Then pyloric obstruction may be relieved by gastro-jejunostomy, with entero-anastomosis. After this the patient may become so much better that a secondary resection can be safely carried out. Frequently, although a radical cure appears to be beyond hope, palliative partial gastrectomy is better than gastro-jejunostomy, for the mortality is not much greater, and the patient gets far more relief as well as greater prolongation of life.

Sometimes when resection is impracticable, exclusion of the cancerous part of the stomach is better than gastro-jejunostomy. The stomach is divided above the growth, the distal opening is closed, and the proximal or cardiac opening is joined to the jejunum.

CONCLUSION

1. We are far too pessimistic about cancer of the stomach, and ought to know that a fair proportion of cases can be cured by early operation.

2. Comparatively few cases are ever sent to the surgeon, and less than a third of these come in time for a radical operation to be possible.

3. The diagnosis can and should be made much earlier than it is, even if exploration is necessary to decide this in doubtful cases.

4. In spite of deplorable procrastination in the past, nearly 20 per cent. of the patients who survived resection (at a risk of about 10 to 15 per cent.) were well over ten years later. Much better results will surely follow earlier resections.

REFERENCES

- ¹ Registrar-General's Report, 1921. (Over 8,000 died from cancer of the stomach in England and Wales in 1921; 1,000 more than in 1919. The records no longer give separate figures for cancer of the stomach.)
- ² Turner, Grey: *Glas. Med. Journ.*, 1931, cxvi, 137.
- ³ Balfour, D. C.: *Collected Papers Mayo Clinic*, 1931, p. 80.
- ⁴ Finsterer: *Wien. klin. Woch.*, August, 1929, p. 1125; *ibid.*, September, 1929, p. 1157.
- ⁵ Gatewood: *Surg., Gynecol. and Obstet.*, 1933, lvi, 2142.
- ⁶ Hurst and Stewart: *Gastric and Duodenal Ulcer*, 1929, p. 430.
- ⁷ *Wien. klin. Woch.*, 1931. (Professor Berger of Vienna says it is found in over 90 per cent. of cancers of the stomach.)
- ⁸ *Loc. cit.*, p. 381.
- ⁹ Billroth: *Clin. Surg.* (New Sydenham Society, 1881.)

TREATMENT OF MENSTRUAL IRREGULARITIES*

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Disorders of menstruation are among the common gynaecological ailments with which the general practitioner has to deal. Excessive menstruation is very frequently seen, and irregular uterine haemorrhage in which the rhythm of the menstrual cycle is lost is common at the menopause. It is the experience of all practitioners that such irregularities of the menstrual functions may be encountered without gross lesions being present either in the uterus or in the ovaries. It is quite true that irregular haemorrhage is seen in such conditions as carcinoma of the cervix and in polypi, but in these cases menstruation itself occurs rhythmically and the abnormal haemorrhage is superimposed upon the cyclical bleeding. The type of patient now under consideration is the woman who has some form of menstrual irregularity independent of the presence of either tumour or inflammation of the pelvic organs. Such cases are extremely common. It is impossible to appreciate the significance of these ailments without some idea of the modern work on the physiology of menstruation, and it will perhaps be more logical if a short review of this work is first given.

PHYSIOLOGY OF MENSTRUATION

The process of ovulation whereby an ovum is discharged from a ripe Graafian follicle is limited to the child-bearing period of life. Ovulation never occurs before puberty nor after the menopause. It has been shown that it is restricted to about half-way between two periods. It is customary to consider the normal menstrual cycle as being one of twenty-eight days, the first day of the bleeding being taken as the first day of the cycle, and with this standard ovulation is restricted to about the fourteenth day—that is to say, fourteen days after the first day of the previous menstrual period. After ovulation a corpus luteum is formed from the follicle which has discharged its ovum, and within a few days it attains full development, producing the characteristic grey or yellow convoluted body in the ovary. When menstruation begins, or perhaps shortly before, retrogression arises in the corpus luteum, which gradually becomes converted into a structureless hyaline body known as the corpus albicans.

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