Remarks

ON THE

TREATMENT OF GASTRIC ULCER.*

BY

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It is not only just but expedient that physicians should recognize and acknowledge the splendid work which their surgical colleagues have accomplished within recent years in the domain of gastric surgery. So excellent have been their results in certain classes of cases that one is not surprised to find a growing tendency among all sufferers from any variety of gastric trouble to gravitate to the consulting rooms and hospital wards of the operating surgeons.

Fifteen years ago the physician called the surgeon to his assistance when some calamity, such as perforation, had arisen in connexion with the treatment of a gastric case. To-day there are signs that the positions are becoming reversed, and it may be that somewhere in the near future it will rest entirely with the surgeon to decide what cases he will himself treat and what he will relegate to the care of the physician. Needless to say, the prospect that such a state of affairs may arise is not altogether pleasing to the physician, and, furthermore, I believe, if it does happen, that it will neither tend to the advancement of scientific surgery nor lead to greater confidence on the part of the public. There is great need that the physician and surgeon should continue to work together, for there is still room for both, and in no section of human ailments is it more necessary that they should work together, and their relative powers and limitations be recognized, than in the case of gastric derangements.

A feeling appears to have gained a hold in the minds of the surgical profession that their medical colleagues have been slow to recognize the possibilities for good that lie within the scope of the knife, and have accordingly been slow in seeking for surgical assistance, whereas the physicians, on the other hand, appear to have become imbued with an idea that surgeons were occasionally reckless in undertaking operations, and were not too punctilious in giving up the future care of the patients.

These points of view, and perhaps others, have led, I believe, to a certain amount of estrangement between physicians and surgeons, and the short paper which I bring before the Academy to-night is written with the best intentions to endeavour to show what the physicians may fairly claim to be able to accomplish, and the extent to which surgical interference may be productive of good in the treatment of cases of gastric ulcer. I trust also that what I have to say may do something to remove any feelings of distrust which the two great branches of the medical profession may entertain towards one another.

My surgical colleague, Mr. William Taylor, has lately mapped out certain lines which he is disposed to follow in regulating his practice in the treatment of gastric ulcer, and I am pleased to say that I am in complete agreement with him in nearly every instance.

The rules which I have formulated for my own guidance are somewhat upon the following lines:

1. Cases of acute ulcer of the stomach may be confidently expected to get well with a course of sufficient rest combined with suitable dietetic and medicinal treatment. Should perforation, however, occur, as it sometimes does, even during a course of the above-mentioned treatment, then it is almost needless to say that surgical assistance is imperatively called for. On the other hand, should hæmorrhage—even several successive hæmorrhages—occur, I am not prepared to advocate operative interference in these acute cases. This is, I think, the only point upon which I am unable to agree with Mr. Taylor, who considers that where a copious hæmorrhage has taken place, and more particularly where there is an immediate recurrence of it, an attempt should be made to secure the bleeding vessel in the floor of the ulcer. His reasoning, however, that a life may be lost which

an operation would have saved, is worthy of careful consideration.

2. In all cases of chronic gastric ulcer (of a non-malignant type), unless it is apparent at the time that pyloric obstruction has been already produced by the ulcer, I consider it is only fair to give the patient a chance of recovery in the first instance by a course of treatment similar to that employed in acute cases. I am bound to admit that, in the great majority of cases where the symptoms have been in evidence for a year or longer, recurrence of such symptoms takes place within a longer or shorter period, as the case may be, even although a cure appeared to have been effected as the result of the rest combined with dietetic and medicinal treatment. I am convinced, however, that a small proportion of these cases remain permanently well, and for this reason I believe the physician is justified in attempting the cure.

It is in the chronic cases, where symptoms recur, that surgical interference has been followed by the most brilliant results, and it is in such cases that I gladly recognize the good effects that follow the operation of gastro-enterostomy when performed by a skilful surgeon; but it must be admitted that even when we exclude such occasional accidents as the occurrence of the vicious circle or perforation from an intestinal ulcer which has formed at a point opposite the opening of the stomach, there is still a margin of cases, whose number is at present unknown, in which all the previous symptoms reappear after operation. Nevertheless, there should be no hesitation in recommending a gastro-enterostomy to be performed in all chronic cases in which there is an undoubted recurrence of symptoms pointing to a chronic ulcer.

The question of the hydrochloric acid content of the gastric secretion has an important bearing upon the treatment of gastric ulcer, whether the treatment be dietetic and medicinal or whether it be surgical; but it is not within the province of this short paper to discuss the diagnostic significance of the absence or presence of free hydrochloric acid in the various derangements of the stomach, although the importance of having a chemical examination made of the stomach contents after a test meal has been given is now fully recognized as affording a distinct help in the diagnosis of functional as well as organic cases. I can only touch at present upon the result of chemical investigations that have been made in recent years in connexion with cases of gastric ulcer.

Dr. Willcox, of St. Mary's Hospital, London, published¹ a critical review of the estimation and quantitative significance of hydrochloric acid in the gastric contents, and from it I extract the following table:

HCl may exist as—

I. Free hydrochloric acid—that is, the acid is not combined with any base either inorganic or organic.	Active hydrochloric acid.
II. Hydrochloric acid which is combined—	
(a) With proteins.
(b) With other nitrogenous organic bases.	
III. Hydrochloric acid which is combined with inorganic bases to form neutral salts—for example, sodium chloride.	

The first two combined he calls "active hydrochloric acid." They must have been secreted by the stomach, and, as is shown in the table, are equal to the free HCl + the HCl combined with proteins and other organic bases.

Many workers, such as Vaughan Harley and Goodbody, in making a quantitative examination of the gastric contents, determine the amount of volatile acid, the amount of free HCl, the amount of HCl combined with proteins, and also the amount of HCl combined with minerals.

The point, however, upon which I desire to concentrate attention is that in the great majority of cases of gastric (and also of duodenal) ulcer the "active hydrochloric acid" is markedly increased, and free hydrochloric acid is present in excess. The condition, as you are aware, is spoken of as hyperhydrochloria or hyperchlorhydria.

I cannot here indulge in a recital of the numerous theories that have been put forward to explain the occurrence of a gastric ulcer, but it is now pretty generally accepted that an excess of HCl in the gastric secretion is an important factor in its causation. Bolton

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found that if gastrototoxin is introduced into the wall of the stomach of an animal, necrosis and ulcer will result, but not if the HCl has been previously neutralized by sodium bicarbonate. If we admit, therefore, that there is an excess of HCl in cases of gastric ulcer; if we further admit that probably the excess of HCl is an important factor in producing the ulcer; and if it can be also admitted that the presence of the excess of HCl is an important agent in the production of pain and in the prevention of the healing of the ulcer, then we are in a position to approach the relief of such a condition by methods founded on a sensible basis. That is, we must endeavour to get rid of the excess of hydrochloric acid in the gastric contents. Now let us consider in what way we may hope to accomplish this.

First of all, there is the administration of alkalis, given with the object of neutralizing the excess of acid. At best the relief afforded in this way is only of a temporary nature, even if harm is not done by the use of bicarbonate of sodium, which is so frequently used.

Secondly, attention has already been directed to the important fact that HCl combines in the stomach with proteins given as food, so that the importance of a diet rich in easily assimilated proteins at once becomes evident. Lenhartz took advantage of the fact that HCl in the gastric secretion combines with protein food, and introduced with great success the treatment of acute gastric ulcer by what is known as the method of "immediate feeding," by which much larger quantities of food rich in proteins are given than was previously thought advisable. To the details of this method I shall subsequently refer.

Thirdly, the administration of a ferruginous preparation, such as the dried sulphate of iron, may be considered capable of using up some of the excess of HCl in the gastric contents by forming an albuminate and a chloride compound. Investigations have shown, moreover, that there is an excess of HCl present in cases of chlorosis, and we are familiar with the frequency with which anaemia and gastric ulcer are combined, so that in the administration of an iron preparation in cases of gastric ulcer we may prescribe it with a double object, first as a means of using up the excess of HCl, and, secondly, to relieve the anaemia.

When we come to the question of the treatment of chronic ulcers that have not proved amenable to the methods that meet with success in acute cases, it is surely a tremendous advantage to the physician to be able to rely on the help of his surgical colleagues who will perform a gastro-enterostomy and cure the patients. It is only right that we should endeavour to obtain an answer to the question—How does this operation afford relief and effect the healing of a chronic ulcer?

I have never hesitated to teach that, in my opinion, gastro-enterostomy was not a sound or scientific procedure. I have maintained that where possible the removal of the ulcer, to be followed afterwards by suitable dietetic and medicinal treatment, would be a more surgical undertaking and more likely to end in permanent benefit to the patient. I recognize, however, that in some cases the removal of the ulcer might be impossible, and that a gastro-enterostomy is at present the operation which surgeons most readily undertake, and although I am not altogether in favour of having a second opening made in the stomach when the pylorus is patent, still I am bound to testify to the excellent results which follow the procedure. Many reasons have been adduced to explain the curative action of a gastro-enterostomy, but it is now pretty generally admitted that the second opening in some way relieves the hyperhydrochloria.

Willcox, in the criticism before referred to, published the result of the examination of the gastric contents in five recent cases in St. Mary's Hospital before and after gastro-enterostomy for gastric ulcer.

He found that *free* hydrochloric acid was absent in three cases after the operation, although present before the gastro-enterostomy was performed, and, further, that in every case the *active* hydrochloric acid was reduced after the operation. Bile and mucin were found in all the cases after the operation, and this has led him and others to assume that these were carried from the duodenum into the stomach through the new opening, and without doubt that the presence of bile, etc., in the stomach had the effect of partly neutralizing the HCl

secreted by the stomach. There can be little doubt also that the opening into the intestine favours the escape of the highly acid gastric secretion.

I was under the impression that the view was prevalent among surgeons that the partly-digested food passed directly from the stomach into the small intestine after a gastro-enterostomy had been performed, and thus gave rest to the wall of the stomach and the ulcer it contained. But, while one authority states that where the pylorus is patent it is quite easily demonstrated by means of bismuth in the food and x rays that the food continues to escape from the stomach by way of the pylorus, another equally eminent observer has equally plainly observed the food passing through the gastro-enterostomy opening directly into the jejunum. If it were beyond question that the food continued to pass through the pylorus, then it removes one of the most serious objections which I had formed against gastro-enterostomies, for it was apparent that it could not be right to divert the food away from its natural course, where its stimulating effects in the duodenum would be lost on the pancreatic and hepatic secretions.

It is true that in some cases of chronic ulcer, where the symptoms have extended over several years and much inflammatory thickening is found, the active hydrochloric acid may not be much raised or may only be normal in amount, but still it is said (Willcox) that these cases are also cured by a gastro-enterostomy. From this observation one is not unnaturally led to suppose that other factors enter into the cure by operation besides the relief of the hyperhydrochloria.

I now wish to examine the treatment of acute ulceration a little more in detail. Rest, milk diet, relief of constipation, with bismuth and alkali mixtures, and iron, form the basis of the lines on which most physicians in this country work.

In London rectal feeding has been much more extensively employed than has ever been the case here. In Dublin a milk diet (of from two to three pints a day) has been attended with excellent results, and is that upon which I have on the whole relied. For many years, however, I have been emphasizing the fact that iron is very scantily represented in milk. Stockman in 1891 calculated that 5 pints of milk would be required to supply the amount of iron required daily by a full-grown adult, and, to quote Hutchison, "for this reason persons who are kept for a long time on a purely milk diet are apt to become anaemic." As previously stated, patients with gastric ulcer are practically always anaemic, and a milk diet makes them more so. Undoubtedly milk is one of the least irritating of foods in causing a flow of gastric secretion, but there is no doubt that in eggs we have another food which is of the greatest value in the dietary of cases of ulcer of the stomach. The egg albumen readily takes up HCl, and so relieves the hyperacidity. The yolk is of great nutritive value, as it contains protein and a large amount of fat; but, furthermore, it is comparatively rich in iron, which is present as an organic compound, probably with nuclein, and, therefore, as an organic compound it is easily absorbed.

Stockman calculated that seven and a half ordinary-sized (2 oz.) eggs yield sufficient iron to supply the blood of an adult with its daily requirement in this respect. For these reasons I have been accustomed to add the albumen water and the beaten-up yolk in soda water of one or two eggs daily to the milk diet.

Where Professor Lenhartz's treatment has made a departure from recognized methods is in the rapidity with which he increases the amount of nourishment given to the patient by the mouth. I have the strongest objection to be tied down to hard and fast rules which must be slavishly followed in every case irrespective of the special characteristics of the patient or of the disease; but I was agreeably surprised to find how little modification on the whole it required when one comes to put the treatment into practice. The details of the treatment are:

1. Rest in bed for four weeks, during the first two of which the patient is not even allowed to sit up for any reason whatsoever.
2. An ice-bag is kept on to the epigastrium for the first two weeks.
3. The dietary consists of 10 oz. of milk and one beaten-up egg on the first day, and each successive day $3\frac{1}{2}$ oz. of

milk and one egg beaten up with sugar are added until a total of $1\frac{1}{2}$ pints of milk and six or eight eggs are consumed, and this corresponds with the eighth day. From the third to the eighth day, according to the disappearance of symptoms, 1 oz. of raw, or nearly raw, minced beef or chicken is given, and increased next day to 2 oz. if well borne. About the eighth day a little well-boiled rice is given, followed in a few days by softened bread, and then a small amount of bread-and-butter. The number of eggs are gradually reduced, and one or two of them are given, lightly boiled, as the other food is increased. During the third week more mince and pounded fish are given, and by the end of the fourth week the patient is able to partake of normal diet and to get out of bed. He leaves hospital about two weeks after.

4. As to medicine: For the first ten days 30 grains of subnitrate of bismuth without mucilage are given thrice daily, and towards the end of the first week pills are administered containing dried sulphate of iron and light magnesia. The amount of sulphate of iron may be increased from $7\frac{1}{2}$ grains to 30 grains daily.

5. The bowels are not interfered with during the first week, although a natural action may occur, but afterwards an enema, if required, is administered every fourth day.

There is nothing of very much importance in all this detail—nothing that appeals for its enthusiastic and slavish adoption any more than for its scornful rejection. To me it seems that there is included in the method one outstanding principle, the adoption of which, if it can be carried out with safety to the patient, is an advance on previous dietetic methods. This principle is the giving of easily assimilated protein food in rapidly increasing amount, so that the excess of free HCl is taken into organic combination, and by giving a large amount of nutriment the strength of the patient is quickly restored, and the gain in weight is marked. I have not used the ice-bag. Professor Lenhartz is a strong advocate for a supply of good teeth, and instructs his patients to masticate slowly. We all agree in the necessity for teeth that can chew. It is possible that much ill-health and anaemia may arise from continued absorption or the swallowing of septic material in cases of dental caries, but the want of grinders is, I fancy, greatly to blame in the production of gastric ulcer. For the person who is unable to chew falls back upon soft carbohydrate food, which tends to produce excess of HCl without using it up by forming organic compounds.

I wish to refer very briefly to my own experience in the adoption of Lenhartz's treatment, which I have followed fairly closely in all respects with the exception of the ice-bag.

In a case of chronic ulcer with gastrectasis the patient, a labourer, aged 28 years, was put on the treatment on May 5th last, when he weighed 7 st. 1 lb. He left hospital free of all symptoms on June 22nd, when he weighed 9 st. 4 lb. (a gain of 2 st. 3 lb.). His symptoms of pain and discomfort returned in August. He again entered hospital on November 4th, when he was transferred to the surgical wards under Mr. Taylor's care, and a gastro-enterostomy was performed and an ulcer found. He is now in excellent health, I am told.

In three cases of acute ulcer in women the results were most satisfactory.

One remained in hospital under this treatment from May 25th until June 22nd. She left free from symptoms, was eating ordinary diet, and increased in weight from 7 st. 4 lb. to 8 st. 7 lb., and is still in good health.

The second was placed on the treatment on September 26th, and left hospital on October 31st, having no symptoms, eating all food, and having increased in weight from 7 st. 6 lb. to 8 st. 7 lb.

The third was placed upon the treatment on November 20th, 1909, and she was free from all symptoms, eating all food, and left hospital on January 3rd, 1910.

I have tried the immediate feeding on several other cases where the diagnosis was in favour of a neurosis rather than of ulcer, but the results were not satisfactory.

REFERENCE.

¹ *Quarterly Journal of Medicine*, October, 1909.

ARRANGEMENTS have been made for lectures on tropical subjects to be delivered to nurses at the London School of Tropical Medicine, Royal Albert Dock, E. Any qualified nurse may attend the course, whether she intends proceeding abroad or not.

AN ANALYSIS OF A SERIES OF CASES OF PERFORATED GASTRIC AND DUODENAL ULCERS.

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THE following remarks are based on a series of 11 cases of perforated gastric and duodenal ulcers which have been under my care during the past two years in the wards of the Western Infirmary. The cases, while perhaps in no way very unusual, serve to illustrate many points in the diagnosis, and the results of treatment of these lesions, and some of them, I think, present features of special interest sufficient to warrant their publication.

I have not distinguished the gastric from the duodenal cases for the reason that, in the main, the clinical signs and symptoms are identical, and the treatment is the same. It is not always possible to say to which of the two classes a given case belongs until the abdomen is opened, although sometimes the previous history may suggest a definite site for the lesion.

My cases bear out the generally accepted view that duodenal ulcer is more common in men, and gastric ulcer in women. All the duodenal cases, 4 in number, occurred in males, while of the 7 gastric cases, 6 occurred in females. One of the latter (Case ix) was really a malignant tumour of the pylorus, which gave way suddenly while the patient was in hospital, with the usual sudden acute symptoms of a perforating lesion; while Case xi was a perforated "peptic ulcer" at the line of junction between stomach and jejunum, in a patient on whom a gastro-enterostomy had been performed four months previously.

The ages of the patients varied from 21 to 65 years, the average age being 39 years.

The site of the ulcer in all but two of the cases—that is, in 82 per cent. of the whole—was quite close to the pylorus, and in the whole series was situated on the anterior wall of the organ.

The ulcer presented in most of the cases a more or less definite punched-out appearance, with characteristic hard edges, and varied in size from a very tiny opening to $\frac{1}{2}$ in. or more in diameter. Cases i and iv, both of which died, presented not so much a perforated ulcer as a large ragged opening, which could not be satisfactorily closed by suture. In Case ii, although the history of the attack and the symptoms on admission seemed quite typical, no actual perforation was found at the operation. In Case vii, although I had no doubt as to the diagnosis, operation was not performed immediately, but eight days after admission, for a large subphrenic abscess.

Mortality—Excluding, for obvious reasons, the malignant case above referred to (Case ix), we have 10 cases operated on, of which 7 recovered and 3 died—a mortality of 30 per cent.

Diagnosis.

In considering the question of diagnosis of perforation of stomach or duodenum, it must be recollected that the symptoms most characteristic of this catastrophe are not necessarily those exhibited by the patient when admitted to hospital. The most typical signs are those presented at the very beginning, which therefore come under the observation of the practitioner first called in to see the patient. The signs often described in textbooks as indicating rupture of stomach or duodenum, such as distension of the abdomen, absence or diminution of liver dullness, general tenderness and rigidity, and rise of temperature, are late symptoms, indicating spreading mischief, due probably to perforation, but are not signs to be awaited before arriving at a diagnosis, which can as a rule be made quite early, from a proper consideration of the mode of onset of the illness and the character and site of the rigidity.

The mode of onset is characterized more than anything else by its suddenness. This was a feature in practically all the cases; the terms "stricken down," "doubled up," or "seized" with severe or violent pain being the descriptions commonly given. The importance of recognizing this, the earliest indication of perforation, cannot be too strongly insisted on, and the responsibility for recognizing