An Address

ON

INDICATIONS FOR SURGICAL TREATMENT
IN PEPTIC ULCER *

BY

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(With Special Plate)

There is perhaps no subject on which opinion is so divided as that of the surgical treatment of gastric and duodenal ulcer. On the one hand we find the enthusiasts for medical treatment who consider perforation to be the only indication for surgery, who record the cure of large penetrating ulcers by strict medical measures, and who point to the derelicts of surgery who consult them. On the other we find the advocates of surgical measures who cite the many cases of perforation which have occurred during the course of medical treatment, the precarious health of the person relieved but not cured by medicine, and the inability of the majority of the population to fulfil the requirements of an adequate medical regime. Among surgeons there is a wide divergence of opinion as to whether extensive resections or more conservative measures should be the rule in the operative treatment of ulcer.

My object in this address is to review the data on which treatment is based, and to endeavour to define the indications for surgical help in such treatment and the lines which surgical aid should take. The idea that physicians and surgeons should be ranged in opposing camps in regard to the treatment of peptic ulcer is contrary to the whole spirit of modern medicine and to the best interests of the patients.

Increase in Ulcer Cases.—All are agreed as to the frequency of peptic ulcer and the ill-health, disability, and misery to which it gives rise. It would appear to be on the increase and to have changed in type and incidence. Even when we allow for the greater knowledge and capacity for recognition of the condition, and for the consequent change in outlook of the medical profession, statistics would seem to indicate that the incidence of peptic ulcer has increased during the past twenty years. Table I gives the figures for the Royal Infirmary, Edinburgh, for the two-year periods October, 1910-12 and 1930-2.

TABLE I

	No. of Cases 1910-12	No. of Cases 1930-2
<i>Medical Wards</i>		
Gastric ulcer	191	247
Duodenal ulcer	41	382
<i>Surgical Wards</i>		
Gastric ulcer	111	77
Perforated gastric ulcer	44	38
Simple pyloric stenosis	84	301
Duodenal ulcer	58	
Perforated duodenal ulcer	47	300
Total	576	1,345

It is seen that the cases diagnosed as ulcer have multiplied nearly two and a half times, the increase being

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almost entirely in cases of duodenal ulcer. While this is undoubtedly due in part to improved diagnosis, based largely on radiology, the increase in the number of perforated ulcers—338 as against ninety-one—cannot thus be accounted for. With the reputed improvement in medical treatment, with the much greater number of cases treated surgically, and with the establishment of many well-equipped provincial hospitals dealing with emergency cases which formerly would have come to Edinburgh, the natural expectation would be that the number of cases of perforated ulcer would decrease. Since they have multiplied nearly fourfold we may reasonably infer that peptic ulcer is on the increase.

Incidence.—Twenty years ago gastric ulcer was regarded as a common disease of the anaemic female and duodenal ulcer a relatively rare disease of the male. To-day we know that both gastric and duodenal ulcer are more frequent in the male, that duodenal ulcer is more frequent than gastric ulcer in both sexes, and that coincident duodenal and gastric ulcers are by no means uncommon. As the last two points have been disputed I will give briefly my own experience.

Duodenal Ulcer in the Female.—It is still maintained by many that gastric ulcer is common and duodenal ulcer rare in the female. I have found that duodenal ulcer is more than twice as common as gastric ulcer in the female. Table II gives the figures of all cases of ulcer on which I have operated in both hospital and private practice during the past twelve years.

TABLE II

Duodenal Ulcer Alone		Gastric Ulcer Alone		Coincident Gastric and Duodenal Ulcer	
Male	Female	Male	Female	Male	Female
438	176	37	48	55	26

In this series of cases duodenal ulcer was two and three-quarter times as common as gastric ulcer in the female. That this was not a local incidence peculiar to the South-East of Scotland is proved by an analysis of the figures. In my hospital cases, over 90 per cent. of which were drawn from the South-East of Scotland, the figures for peptic ulcer in the female were: duodenal ulcer 105, gastric ulcer fifty-one, a ratio of two to one. In cases in private practice, of which less than 50 per cent. came from this area, the figures were: duodenal ulcer ninety-seven, gastric ulcer twenty-three, a ratio of over four to one. My belief is that duodenal ulcer is a malady very frequently overlooked in the female, the symptoms often being attributed to gall-bladder disease.

Cholecysto-duodenal Syndrome.—Some years ago I described under this term a symptom-complex which is found almost exclusively in female patients, in which the history given by the patient appears to point to gall-bladder disease, but accurate investigation or operation reveals a chronic duodenal ulcer. The patient is usually a stout housewife, whose chief complaints are of flatulence and attacks of epigastric pain. She states that the pain has no constant relation to the taking of food, and she has not noticed the periodicity so characteristic of duodenal ulcer. She has excluded potatoes and fried foods from her dietary because of the flatulence and discomfort which they induce. She describes attacks of acute pain, lasting for a few hours, suggestive of biliary colic. These attacks, however, have not the intensity of true biliary colic. Not infrequently she gives a history of faint and transient jaundice (duodenitis). Only with the greatest difficulty and after repeated cross-questioning

can any history of periodicity or of hunger pain be elicited. It will be found on inquiring as to habits that these patients habitually take "snacks" between their regular meals and, by thus anticipating the onset of hunger pain, mask the clinical picture. The female patient employed in office or factory, however, gives the typical history which we meet with in the male. During the past few years we have found, particularly in hospital practice, that quite 10 per cent. of the female patients referred as cases of cholecystitis were in fact suffering from duodenal ulcer. In not a few both conditions were present. In the majority *x*-ray investigation by cholecystography and barium meal cleared up the diagnosis. In those cases in which the history had appeared so typical of gall-bladder trouble that *x*-ray investigation had been omitted, the duodenal lesion was revealed at operation.

Coincident Gastric and Duodenal Ulcer.—I find in my earlier records no mention of this condition. Eleven years ago I had it brought forcibly to my notice by two cases, in one of which I failed to discover a large penetrating gastric ulcer when doing a gastro-enterostomy for a duodenal ulcer which had previously perforated; and in the second another surgeon had done a sleeve resection for an hour-glass stomach and had failed to notice that the patient also had a duodenal ulcer with stenosis. Since then I have operated on eighty-one cases in which there were coincident ulcers in stomach and duodenum. These occurred in a total of 780 ulcer cases. In my series, out of a total of 695 patients with duodenal ulcer, eighty-one, or 11.6 per cent., had a coincident gastric ulcer, and out of 166 patients with gastric ulcer eighty-one, or 49 per cent., had a coincident duodenal ulcer. The two lessons I draw from these observations are, that the aetiology of the two types of ulcer must be the same and that assessment of the total pathology should invariably be the first step of an abdominal operation.

AETIOLOGY

While it cannot be claimed that we possess anything approaching a full understanding of the causes of chronic peptic ulcer, we do know that certain factors contribute to its onset and persistence. Rational surgical treatment must take cognizance of these factors. We have abundant evidence that there is a type of individual peculiarly prone to ulcer and that heredity plays a part. I have often found that three or four members of the same family have suffered from ulcer; I have operated for duodenal ulcer on a man and his two sons, and in another family on three sisters. The "ulcer type," usually male, is the sthenic, active, anxious-minded worker whose profession or business takes precedence over meals or sleep, and who is often a pace-maker in our unnatural modern civilization. Were ulcer confined to the extreme examples of this type with their hereditary predisposition, there would be no justification for this lecture, since surgery must be held in check and operation undertaken only after the most serious consideration in this dangerous ulcer-forming type. There are, however, a very large number of sufferers from ulcer who constitutionally must be placed between this and the stout phlegmatic type in which ulcer is comparatively rare.

Important factors in causation are irregular meals, lack of open-air and sunshine, lack of sleep, and excessive use of tobacco, all of which tend to produce an autonomic instability with a hyperactive, hypersecreting stomach. Given some factor which produces a local necrosis or a lowering of vitality at some point in the stomach or first part of the duodenum, with the development of an acute ulcer, the persistence and development of the latter into

a chronic lesion will be greatly favoured by these conditions.

We know that various toxic and infective conditions are apt to be associated with acute ulceration in the stomach or duodenum—for example, the toxæmia from extensive burns and in fatal peritonitis. A slight toxic lesion in the stomach or duodenum, which under ordinary circumstances would heal rapidly, may, in the predisposed individual with his autonomic instability induced by the hurry and worry of modern life, lead on to a chronic and irritable ulcer. Focal infection, be it in teeth, tonsils, air sinuses, or appendix, is, in my opinion, not without significance. It is, however, but one factor, and that not the most important, in the maintenance of ulceration. How often have we seen complete symptomatic cure of ulcer result from a country holiday, without removal of focal sepsis, without alkalis, without care in diet, and without any ban on tobacco. Can any treatment of ulcer be of permanent effect which does not also prescribe fresh air, sunlight, and exercise? My reason for referring briefly to these points in aetiology is to emphasize at the outset the essential fact that surgery, where deemed necessary, must be but an incident in the treatment of a condition so largely dependent on constitution and on habit.

THE RATIONALE OF THE SURGERY OF ULCER

I regard an ulcer of the stomach or duodenum as essentially a condition requiring treatment on medical lines. Surgery may be called in to help when the reparative process has led to stenosis and mechanical difficulty, when, in spite of the maximum care which the patient can give, the ulcer breaks down repeatedly, when repeated hæmorrhages cause prolonged disability or endanger life, and when a chronic ulcer, failing to heal, threatens malignancy. Probably there would be little ground for controversy had gastric surgery been restricted to its primary field of relieving obstruction and of removing malignant or potentially malignant ulcers. It was the very success of the early cases of gastro-enterostomy for stenosis that led to the abuse of this most beneficent operation. Its employment as a short cut to cure in irritable ulcer, as a "hit at random" in cases with no ulcer but with similar symptoms, as a "drainage operation" in cases of visceroptosis and of atonic stomach, led to an accumulation of surgical derelicts, bitter complainers, the driftwood of an uncontrolled springtide of surgery. Even when confined to genuine ulcer cases the sequel of stomal or jejunal ulcer in a certain proportion of patients, variously estimated as from 2 to 30 per cent., turned the minds of surgeons to some alternative operation and the non-surgically minded to more intensive and prolonged medical treatment. On the Continent the balance inclined to more and yet more radical surgery—the removal of the whole ulcer-bearing area; in this country and in America, by associating the names of Sippy and MacLean with a somewhat stricter observance of an old-time medical regime, it swung to the conservative extreme.

A considerable residue of stenosing and refractory ulcers which medicine has failed to cure has again brought the surgical treatment of ulcer to the fore. Before embarking on any operation for ulcer certain points must be observed. Dental sepsis must be dealt with, and any bronchial irritation must be allowed to subside completely otherwise chest complications will assuredly set in. An *x*-ray examination to determine the presence and degree of stenosis, the activity of the gastric musculature and the emptying of the stomach, must be carried out. A chemical analysis of the gastric secretion, to determine the degree of acidity, is indispensable.

SURGERY OF GASTRIC ULCER

The indications for surgery are threefold: (1) stenosis, hour-glass stomach; (2) penetrating ulcer failing to yield to medical treatment—potentially malignant; (3) bleeding ulcer where two or more haemorrhages have occurred. In (2) and (3) operation must include the ablation of the ulcer, whether it be by local excision followed by gastro-enterostomy or by partial gastrectomy; the latter, though more radical, is often the easier and more satisfactory operation. In dealing with hour-glass stomach we find that the ulcer is often partially healed, of old standing, and showing, as we know from experience, little if any tendency to malignancy. We are therefore justified in these cases in performing a suitable short-circuiting operation in place of radical excision, if the patient's condition seems to render this more prudent. The low acidity associated with the majority of cases of gastric ulcer makes the development of a stomal or jejunal ulcer unlikely.

SURGERY OF DUODENAL ULCER

In an old-standing case, with stenosis and relatively low acidity, the operation of choice is a posterior gastro-jejunostomy. No operation in surgery gives such gratifying results: only a technical fault can lead to failure.

(a) Type of case suitable for gastro-jejunostomy. (b) Type of case in which gastro-duodenostomy is preferable.

At the opposite extreme we have the irritable recurrent ulcer with hyperactive stomach and high acid content, often in the lean, anxious type of individual. Only when the physician has exhausted his therapeutic measures will the surgeon undertake to intervene. This type, the ulcer-former, must be treated as a special problem, with operation as a questionable incident in, and adjuvant to, his medical cure. To perform a gastro-jejunostomy in such cases is to court the formation of a stomal or jejunal ulcer. It is for this type that the operation of gastro-duodenostomy is to be preferred (see figure above).

Gastro-duodenostomy

This operation, while short-circuiting the ulcer-bearing area of the first part of the duodenum, deflects the acid gastric content into the second part of the duodenum, a region more alkaline in content and more tolerant of acid than the jejunum. A certain amount of regurgitation of duodenal content into the stomach occurs, lowering the acidity, and stasis from pyloric spasm is removed. The operation is admittedly more difficult to perform than gastro-jejunostomy. It requires adequate mobilization of the second and the commencement of the third portion of the duodenum, with division of the peritoneum and fascia propria, which hold these parts. The operation should be performed without clamps to eliminate any risk of devitalization of tissue near the suture line (Fig. 1 on Plate).

I have performed this operation in 159 persons—seventy-eight males and eighty-one females—mainly in cases deemed unsuitable for gastro-jejunostomy owing to high acidity and absence of true stenosis. The results, as one might expect, do not equal those of gastro-jejunostomy. In a recent review of cases at periods of from one to twelve years after operation, the results were excellent in 64 per cent., the patient was relieved but not cured in 25 per cent., and in 11 per cent. the patient was still complaining of dyspepsia. Two cases of stomal ulcer occurred; in both, symptoms had persisted without intermission since operation, although the gastric acidity had been lowered. Both received immediate and lasting relief from a secondary gastro-jejunostomy. In two cases bilious vomiting persisted after gastro-duodenostomy owing to axial rotation of the duodenum through inadequate mobilization; a secondary gastro-jejunostomy gave lasting relief. So gratifying have been the ultimate results after the twofold anastomosis that I have seriously considered performing the double operation in cases with high acidity and a somewhat fixed duodenum.

Associated Duodenal Ileus.—The radiological demonstration of duodenal stasis in cases of duodenal, gastric, or stomal ulcer cannot be ignored with impunity. Whatever form of gastric anastomosis is decided on a duodeno-jejunal anastomosis should be added. Little time is required for its performance, and the patient's convalescence will be smooth and his comfort afterwards ensured. Particularly in cases of jejunal ulcer with induration in the mesocolon and root of the mesentery, no matter what procedure is adopted, duodenal stasis should be relieved (Fig. 3 on Plate). I have never had reason to regret supplementing a gastric anastomosis by a duodeno-jejunosomy: I have on several occasions regretted its omission.

Eradication of Other Infective Foci.—Whatever be the significance of infection as a primary factor in the cause of ulcer, and I believe it to be considerable, there can be no doubt of the almost constant presence of a streptococcus, usually obtainable in pure culture, in the base of a peptic ulcer. Reference has already been made to the necessity for attention to oral sepsis as a pre-operative measure. It should, indeed, be a first step in medical treatment. No operation for peptic ulcer is complete which does not include a search for other infective foci in the abdomen, particularly in the appendix and gall-bladder. The appendix will frequently be found diseased and should be removed in all but aged patients. Not infrequently the gall-bladder will be found to be the seat of infection as well.

The Abdominal Triad.—The coincident presence of active lesions in the stomach or duodenum, or both, in the gall-bladder and in the appendix gives rise to a clinical picture difficult to interpret if the frequency of this triad of lesions be not borne in mind. I have operated on twenty-nine cases in which active lesions were found in all three situations and were all dealt with (Fig. 2 on Plate). In several cases a streptococcus of the same type has been grown from all three lesions. Failure to remove an infected gall-bladder or appendix, or both, will not only tend to post-operative residual symptoms but will favour a recurrence of peptic ulceration and more especially the development of a stomal ulcer. The gall-bladder, the appendix, and the lymph follicles of the stomach and duodenum would appear to be the seats of election for streptococcal settlement. In the case of the gall-bladder and appendix an indolent infection results; in the gastro-duodenal site digestion leads to open ulceration. Short of any effective specific therapy, comprehensive and radical surgical treatment offers the surest promise of durable relief.

SURGERY OF THE BLEEDING ULCER

The problem of the bleeding ulcer is one of undoubted difficulty. Whether and when active surgical intervention should replace expectant therapy is a question to which no dogmatic answer can be given. There is a general but false belief that bleeding from a peptic ulcer is very seldom fatal. Bulmer found that of a total of 249 cases of haematemesis due to chronic peptic ulcer, death occurred in twenty-nine (11.6 per cent.); out of eighty-nine males fifteen died (16.8 per cent.). My practice has been to advise medical treatment for the first haemorrhage, and at the second to wait for ten days and then operate. To my chagrin I have seen three patients die during this period of waiting.

When a second haemorrhage occurs in males an immediate operation, preceded and followed by a blood transfusion, should be seriously considered. When the ulcer is gastric, excision or ligation of the main blood vessels, followed by gastro-enterostomy, should be performed; when the ulcer is duodenal, narrowing of the pylorus and gastro-jejunostomy should suffice. The after-results of operation for bleeding ulcer are not altogether favourable. In one-third of my cases there has been a return of bleeding, in one case as long as six years after operation.

After-treatment.—Many of the unsatisfactory results following the surgical treatment of ulcer are traceable to a neglect of after-care. Hyperacidity in the immediate post-operative period may determine the onset of jejunal ulcer, and any evidence of it in the shape of discomfort

and heartburn must be rigidly controlled by alkalis and belladonna. A regulated diet excluding all spices and salt-cured articles of diet must be persevered with for six months, and smoking should be regulated. Care at this period will be well repaid.

SUMMARY

1. Peptic ulcer would appear to be an increasingly common disease.
2. It requires constitutional rather than local treatment.
3. Surgery must supplement and not replace medicine in its treatment.
4. Stenosis, intractability, recurring haemorrhage, and associated abdominal lesions are the indications for surgical intervention.
5. For gastric ulcer, ablation of the ulcer, preferably by partial gastrectomy, is desirable in view of potential malignancy.
6. For duodenal ulcer with stenosis and low gastric acidity, posterior gastro-jejunostomy gives uniformly good results.
7. For recurring duodenal ulcer, with high acidity and no stenosis, gastro-duodenostomy should be preferred.
8. Associated duodenal ileus should be relieved by duodeno-jejunostomy.
9. Lesions in the appendix and gall-bladder should be looked for and, if found, dealt with radically.
10. Recurring haemorrhage in a male subject may call for immediate operation, preceded and followed by transfusion.
11. After-care with a rigid control of acidity is essential.

THE TREATMENT OF ARTHRITIS*

BY

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To attempt to deal exhaustively with the many methods for the treatment of arthritis which have been put forward would occupy far more time than can be given to a single lecture. I shall therefore deal only with such as appear to be of practical value or which have a popular vogue; even then I may be guilty of omissions due to lack of personal acquaintance with some methods or failure to put others to a sufficient test.

CLASSIFICATION

Some definition of the limits of my subject is necessary, and for this purpose three heads may be adopted.

1. *Rheumatoid Arthritis.*—This is a crippling disease affecting many joints, predominantly those of the extremities, and varying in the degree of acuteness; in some cases it is mildly pyrexial and rapidly progressive; in others, apyrexial and chronic. Once it attacks a joint it rarely leaves it without irreparable damage, even if slight, differing in this respect notably from rheumatic fever or subacute rheumatism. While many varieties are described, it is not necessary to detail them, since the treatment of all proceeds upon the same lines. There is usually a septic focus, and the disease commonly begins in the first half of adult life.

2. *Metabolic Arthritis.*—The two chief forms are: (a) climacteric arthritis, which mainly affects the knee-joints of women at the menopause; and (b) gout, which is outside our present subject.

3. *Osteo-arthritis.*—This is a chronic disease of later years, degenerative in character, which may be limited to

one joint, and never attacks many unless an infective or metabolic factor is also present. It usually involves large joints and is commoner in men. Climacteric arthritis, if untreated, will develop into osteo-arthritis, and some clinicians hold that malum coxae senile is climacteric in nature.

INFECTIVE FACTORS

Rheumatoid arthritis is the product of three aetiological factors which may be defined as the seed, the soil, and the environment. Treatment, to be logical, should be directed to one or more of these factors, except in so far as it is required for the relief of symptoms such as pain and deformity.

As I have already said, a septic focus is present in most if not all cases, from which is derived the seed of the disease, and to look for and deal with foci is the first step in treatment. Such a focus may be easy to recognize—for example, septic teeth or tonsils—or it may be difficult, calling for radiological examination of the tooth sockets or expert investigation of the tonsils, pharynx, and nasal sinuses, though some indication of the probable source will usually be found in the course of an ordinary clinical examination. I have seen a few cases in which the source of infection was a small septic lesion in the extremities, such as a septic nail-bed. Where there has been a long continuance of septic conditions in the mouth, nose, or throat, it is almost inevitable that there will be secondary foci established in other parts of the digestive tract—the gall-bladder, the appendix, or the colon—which will be more difficult to deal with. Where a definite focus is found and eradicated the results are sometimes very striking, and the patient is cured, though possibly left with one or more joints crippled in a minor degree. Apart from gonorrhoea it is uncommon, in my experience, for the uro-genital tract to provide the focus of infection, but it must not be overlooked in the course of examination. It may prove very difficult to find a focus, and there is a form of arthritis recognized by some

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FIG. 1.—Gastro-duodenostomy. Duodenum mobilized. First row of sutures inserted. Dotted lines indicate the position of openings in stomach and duodenum.

FIG. 2.—The abdominal triad. Chronic cholecystitis with gall-stones, stenosing duodenal ulcer, and subacute appendicitis.

FIG. 3.—Gross duodenal ileus, associated with stomal ulcer, following gastro-enterostomy.