Peptic ulcer surgery: selection for operation by 'earning'

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SUMMARY Two groups of patients with chronic peptic ulcer were studied to determine the influence of duration of symptoms and age at operation on the result of surgical treatment.

Independent physical and psychiatric assessments were made.

Statistical analysis of the findings indicates that selection for operation by 'earning' is unreliable in that it fails to identify that group of patients liable to do badly. In its place, a combined physical and psychiatric preoperative assessment of the peptic ulcer patient is recommended.

It has long been believed that the best results of surgery for peptic ulcer are found in those patients who have suffered the effects of ulcer over a considerable period of years. The term 'earning' operation for peptic ulcer, attributed to Gordon-Taylor (Edwards, 1961), describes the practical application of this belief to selection for surgery.

Although most operations for ulcer may be followed by side effects such as dumping and post-prandial discomfort, relatively few patients return with complaints. They tolerate these sequelae, dismissing them, so it is implied, as a minor price to pay for relief from ulcer pain (Illingworth, 1953). Thus it is argued that the patient with a short history of minor symptoms is unlikely to accept the after effects of operation and may well magnify them to the extent of becoming a 'gastric cripple'. It could be in the best interests of such a patient, therefore, to delay operation until it is certain that the ulcer symptoms have left an indelible imprint on his mind.

These ideas relating length and severity of ulcer history to the result of operation have been embellished over the years. Many surgeons who support Gordon-Taylor's dictum believe that 'earning' is a means of detecting the psychiatrically ill patient. In the view of such surgeons these patients are intolerant of modest ulcer symptoms, seek early operation and do badly. Thus Visick (1948) came to refuse gastrectomy to patients with psychiatric disorder, stating that 'operation in patients with a pronounced neurotic overlay left too large a legacy of failure'. Capper (1952) equated disorder of the

psyche with the age of the patient and warned that 'intense obsessional young men will need careful consideration'.

But can these widely adopted views be accepted without question? Do the results of surgery for peptic ulcer depend on the age of the patient, the duration of symptoms, or their severity? Is operation to be avoided in psychoneurotic patients? Do such patients seek operation earlier in the history of the disease or at a younger age than their more stable counterparts?

We sought to answer these points by a review of our experience in the Gastro-Intestinal Unit.

Two separate groups of patients were studied.

FIRST STUDY (GROUP A)

One hundred and forty-seven patients drawn from the Gastric Follow-up Clinic were interviewed and re-assessed. All had been treated for proven duodenal ulcer by a variety of operations (Table I) and none less than five years before review (Table II).

On average, these patients had an ulcer history of 12 years before operation, with a range of seven months to more than 25 years. The youngest was under 20 years, the oldest over 70 years of age at the time of operation.

At follow up, most patients made the familiar statement that they 'should have had the operation years ago', but only 20 had had surgery deliberately postponed. Forty-nine had suffered delay in coming to operation for a variety of reasons (Table III).

TABLE I

OPERATIONS USED IN TREATMENT OF DUODENAL ULCER IN GROUP A

Operation	No. of Patients
Polya gastrectomy	119
Billroth I gastrectomy	1
Gastroenterostomy	3
Truncal vagotomy	1
Truncal vagotomy + Polya gastrectomy	7
Truncal vagotomy + gastroenterostomy	7
Selective vagotomy + gastroenterostomy	2
Truncal vagotomy + pyloroplasty	6
Selective vagotomy + pyloroplasty	1
Closure of perforation	0
Total in group	147

TABLE II

DURATION OF FOLLOW-UP IN GROUP A

Years of Age	No. of Patients
0-4	0
5-9	82
10-14	20
15-19	44
20-24	1
25 & over	0

TABLE III

REASONS FOR DELAY IN OPERATION IN GROUP A

Reason for Delay	No. of Patients
Referral refused by family doctor	9
Operation refused by hospital	11
Failure of diagnosis	20
Operation never suggested	29
Total	69

The result of operation was expressed as good, moderate, or bad according to the criteria of Visick as modified by Pulvertaft in 1952 (Table IV).

No attempt was made to determine the psychiatric status of patients in this surgical group, either preoperatively or when seen for review.

RESULTS OF FIRST STUDY

Relation of duration of symptoms and age of the patient to outcome One hundred and fourteen patients (77.5%) were judged to have a good post-

operative result (Visick grade 1 or 2). When the length of preoperative symptoms was related to the outcome of operation, it was found that the proportion of good results in each duration group did not differ more than would be expected by chance (Figure 1 and Table Va). Similarly, the age at opera-

FIG. 1. Duration of symptoms and age of patient related to outcome.

tion did not influence the outcome, the proportion of good results being similar in all age groups (Figure 2 and Table Vb).

But all duodenal ulcers may not have the same aetiology and natural history. A man of, say, 40 with a 20-year history may have a different type of ulcer from a man of 40 with a five-year history. Likewise, a 20-year history of ulcer starting in childhood might have a different significance from a 20-year history starting in middle age. Age and duration were therefore considered together in relation to the outcome of operation (Table Vc). The proportion of good results was similar for all age-duration groups.

TABLE IV

RATING OF PHYSICAL OUTCOME (VISICK, 1948, AND PULVERTAFT, 1952)

- 1 No symptoms
- 2 Mild symptoms easily controlled, eg, mild dumping which was suppressed by patient's adjusting his eating habits slightly
- 3s Mild symptoms not controlled (satisfactory), eg, episodes of bilious vomiting at regular intervals, but the patient denied any real disability from this
- 3u Mild symptoms not controlled (unsatisfactory), eg, the patient suffered from residual symptoms severe enough to restrict his life, and in some instances suggested that he had been better off with his ulcer
- 4 Not improved, eg, recurrence of ulcer after surgery, readmission to hospital on account of residual symptoms, or a second definitive operation was necessary

Good surgical results	..	..	1 + 2
Moderate surgical results	..	..	3s
Bad surgical results	..	..	3u + 4

TABLE Va

RESULT RELATED TO DURATION OF SYMPTOMS IN GROUP A¹

Result	Duration of Symptoms in Years						Total
	0-4	5-9	10-14	15-19	20-24	25+	
Good	10 (83%)	25 (78%)	30 (81%)	18 (78%)	20 (77%)	11 (65%)	114
Moderate or bad	2	7	7	5	6	6	33
Total	12	32	37	23	26	17	147

¹There is no increase in the proportion of good results with increasing duration of symptoms.

TABLE Vb

RESULT RELATED TO AGE OF PATIENT IN GROUP A¹

Result	Age in Years							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70+	
Good	1 (100%)	12 (92%)	25 (69%)	33 (75%)	38 (86%)	4 (57%)	1 (100%)	114
Moderate or bad	0	1	11	12	6	3	0	33
Total	1	13	36	45	44	7	1	147

¹There is no increase in the proportion of good results with increasing age.

TABLE Vc

GOOD RESULTS RELATED TO DURATION OF SYMPTOMS AND AGE OF PATIENT IN GROUP A¹

Age Group	Duration of Symptoms in Years			Total
	0-4	5-14	15+	
10-29	2 (100%)	10 (91%)	1 (100%)	13
30-49	3 (75%)	28 (74%)	27 (69%)	58
50+	5 (83%)	17 (85%)	21 (81%)	43
Total	10	55	49	114

¹The proportions of good results in the nine age-duration cells do not differ significantly ($\chi^2 = 1.08$).

FIG. 2. Histogram illustrating that age at operation did not influence the outcome.

Relation of delay in operation to outcome The data suggest that 'earning' is not related to the outcome of operation. But it could be said that of the whole group only 69 patients had suffered delay (Table III) and had truly 'earned' their operation.

When the result of operation in these 69 is compared with that of the remainder, it is seen that the proportion of patients with a good result is the same whether or not delay had occurred (Table VI).

TABLE VI

RESULT IN PATIENTS SUFFERING DELAY COMPARED WITH THE REST IN GROUP A

Assessment	Operation Delayed	Operation Not Delayed	Total
Good result	51	63	114
Moderate or bad result	18	15	33
Total	69	78	147

 $[\chi^2 = 0.99 (P > 0.1)]$

Outcome of operation in patients with a short history Conversely, patients with a short history could be said to be 'non-earners'. Occasionally a patient comes to operation almost immediately. If perforation or haemorrhage is the presenting sign of the ulcer, there may be little or no antecedent dyspepsia. Such patients, if the idea of 'earning' be correct, should complain of the sequelae of operation. No patient in our series presented without some premonitory history. The shortest history was seven months. There were 12 patients who had had symptoms for less than five years. In these, the result of operation five or more years later was good

in 10—an outcome comparable with that in those patients who had suffered for a considerable length of time before operation.

SECOND STUDY (GROUP B)

There were 178 patients in this group. They differed from group A in three important respects. First, they had been referred to the Unit for treatment of ulcer symptoms at least 10 years after group A. Secondly, each patient, in addition to being examined clinically by the physicians and surgeons, was psychiatrically assessed before conventional treatment of the ulcer. Thirdly, the group included 28 cases of primary gastric ulcer. The diagnoses of the group are shown for both sexes in Table VII. The distributions of age, sex, length of history, and type of ulcer in these patients are typical of hospital peptic ulcer populations in Great Britain and the USA (Jones, 1956; Susser, 1967; Johnson, 1962; Gainsborough and Slater, 1946).

One hundred and twenty-two (68.5%) were judged to have clear evidence of some psychiatric disorder (Table VIII). All patients in the group were kept under observation for 30 months without being given specific psychiatric treatment. During this period, 98 of the 178 patients came to surgery

(Table IX). Of the 98, 64 (65%) had been diagnosed at their initial assessment as being psychiatrically ill. But neither pre- nor postoperatively were the physicians or surgeons of the Unit informed of the results of these psychiatric studies so that their choice of treatment, whether medical or surgical, and their opinion of its results could remain unbiased.

After operation the results, both physical and psychiatric, were assessed and recorded independently at six-monthly intervals over the duration of follow up. The physical outcome was assessed as in group A according to Visick's criteria (Table IV). The psychiatric outcome was judged to be good, unchanged, or bad as compared with the pre-operative assessment (Table X). At the 30-month follow up, 10 of the 98 surgical patients were not seen (nine of the 64 with psychiatric symptoms and one of the 34 without).

TABLE X

RATING OF PSYCHIATRIC OUTCOME IN GROUP B

- 1 Symptoms gone
 - 2 Symptoms better
 - 3 No change in symptoms
 - 4 Symptoms worse
 - 5 New symptoms, ie, psychiatric symptoms which developed during course of follow up in patients who had had no psychiatric symptoms at initial interview.
- Good = 1 + 2
Unchanged = 3
Bad = 4 + 5

TABLE VII

SEX DISTRIBUTION AND DIAGNOSIS IN GROUP B

Diagnosis	Male	Female	Total
Duodenal ulcer	106 (77.4%)	31 (22.6%)	137 (100%)
Gastric ulcer	16 (57.1%)	12 (42.9%)	28 (100%)
Duodenal and gastric ulcer	11 (84.6%)	2 (15.4%)	13 (100%)

TABLE VIII

PSYCHIATRIC DIAGNOSIS AT INITIAL INTERVIEW IN GROUP B

Diagnosis	No. of Patients
Depression	48
Anxiety	41
Character disorder only	30
Organic psychosis	1
Other psychoses	2
Without psychiatric symptoms	56
Total	178

GENERAL CHARACTERISTICS OF GROUP B PATIENTS TREATED SURGICALLY The 98 patients in group B who were treated surgically for ulcer showed the same general characteristics in respect of duration of symptoms and age at operation as group A (Tables XI and XII). The youngest was under 20 years of age and the oldest over 70 years at the time of operation, and the length of ulcer symptoms ranged from 1.5 years to 50 years.

RESULTS OF SECOND STUDY

Tolerance of ulcer symptoms If the psychiatric patient is intolerant of his symptoms, then he will present for operation at a young age or with a short length of history. The patients with psychiatric symptoms were slightly younger (mean 41.8 years) than those without psychiatric symptoms (mean

TABLE IX

PSYCHIATRIC DIAGNOSIS AT INITIAL INTERVIEW RELATED TO SUBSEQUENT PHYSICAL TREATMENT IN GROUP B

Assessment	Total Group	Subsequent Treatment	
		Surgical	Medical
With psychiatric symptoms	122 (69%)	64 (65%)	58 (72%)
Without psychiatric symptoms	56 (31%)	34 (35%)	22 (28%)
Total	178 (100%)	98 (100%)	80 (100%)

$[\chi^2 = 1.06 (P > 0.05)]$

TABLE XI

DURATION OF SYMPTOMS BEFORE OPERATION IN PATIENTS WITH AND WITHOUT PSYCHIATRIC SYMPTOMS IN GROUP B

Duration (yr)	Psychiatric Symptoms		Total
	No. with	No. without	
0-4	6	5	11
5-9	12	7	19
10-14	22	6	28
15-19	8	6	14
20-24	8	5	13
25+	8	5	13
Total	64	34	98

TABLE XII

AGE AT OPERATION IN PATIENTS WITH AND WITHOUT PSYCHIATRIC SYMPTOMS IN GROUP B

Age (yr)	Psychiatric Symptoms		Total
	No. with	No. without	
0-9	—	—	—
10-19	—	1	1
20-29	8	4	12
30-39	24	4	28
40-49	13	7	20
50-59	15	11	26
60-69	4	6	10
70+	—	1	1
Total	64	34	98

47.6 years) but the average ages fell within the same decade (Table XII). There was, however, no significant difference in the length of history before operation (Table XI). (Psychoneurotic patients had a mean history of 14.2 years, compared with a mean history of 16.1 years for the remainder of the group.) Thus in our series, there is no evidence that the psychiatric patient comes to surgery at an earlier stage in his ulcer history than does the normal patient.

Duration of symptoms and age of patient related to physical result In exactly the same way as in group A the outcome of operation was examined in relation to the length of history and the age of the patient (Tables XIII and XIV). These short-term results of surgery were uninfluenced by the duration of the patient's symptoms or his age. Six of the 64 psychoneurotic patients and five of the 34 normal patients had a history of less than five years. The proportions of patients with minimal symptoms in these two subgroups did not differ significantly. Ten of the 11 patients had a good result (five psychiatric and five non-psychiatric) an outcome at least as good as in the remainder of the patients who had suffered from ulcer dyspepsia over a longer period of time.

Thus, neither in the short nor in the long term

TABLE XIII

DURATION OF SYMPTOMS RELATED TO PHYSICAL RESULT AT 30 MONTHS IN GROUP B¹

Duration of Symptoms (yr)	Patients with Psychiatric Symptoms		Patients without Psychiatric Symptoms		Total
	No. of Patients Seen	Good Result	No. of Patients Seen	Good Result	
0-4	6	5	5	5	11
5-9	9	7	7	5	16
10-14	20	13	6	5	26
15-19	7	4	5	5	12
20-24	8	5	5	4	13
25+	5	4	5	5	10
Total	55	38	33	29	88

¹Nine patients without and one patient with psychiatric symptoms were not seen at 30-month follow up

TABLE XIV

AGE AT OPERATION RELATED TO PHYSICAL RESULT AT 30 MONTHS IN GROUP B¹

Age of Patient (yr)	Patients with Psychiatric Symptoms		Patients without Psychiatric Symptoms		Total
	No. of Patients Seen	Good Result	No. of Patients Seen	Good Result	
0-9	—	—	—	—	—
10-19	—	—	1	1	1
20-29	7	6	4	3	11
30-39	22	16	4	4	26
40-49	9	7	6	5	15
50-59	13	8	11	9	24
60-69	4	1	6	6	10
70+	—	—	1	1	1
Total	55	38	33	29	88

Nine patients without and one patient with psychiatric symptoms were not seen at 30-month follow up

FIG. 3. Histogram relating the physical results of surgery to the stability or otherwise of the patient.

results of surgery for chronic peptic ulcer is there support for the concept of 'earning'. Better results are not achieved in patients who have suffered from ulcer dyspepsia for a considerable time, nor is the outcome bettered by delay in operation. We now consider the results of surgery in patients with psychoneurotic symptoms.

Effect of operation on the psychiatrically ill patient (1) Is the physical result disappointing in that psychiatrically ill patients are prone to develop dumping, bile vomiting, and other postoperative upsets?

The good physical results of surgery in the 64 patients of group B labelled as having psychiatric symptoms are compared with those in the 34 stable patients in Figure 3. The results 30 months after operation provide justification for the claim that the psychoneurotic patient does less well than the stable patient (Table XV). But good physical results were obtained in at least seven out of every 10 psychiatric patients, a picture which is not nearly so pessimistic as has been suggested by others. Even without the benefit of formal psychiatric therapy, these neurotic patients profit from surgery.

(2) Does the patient deteriorate psychiatrically after operation? Another argument against operation in the psychiatrically ill patient admits the possibility of a good physical result while claiming that in psychological terms removal of ulcer symptoms deprives these patients of a means of escape (Browning and Houseworth, 1953). They then no longer have the excuse of their dyspepsia to shield them from upsetting situations and therefore they deteriorate

TABLE XV

PHYSICAL RESULTS AT 30 MONTHS IN PATIENTS WITH AND WITHOUT PSYCHIATRIC SYMPTOMS IN GROUP B¹

Assessment	Psychiatric Symptoms		Total
	No. with	No. without	
Good physical result	38	29	67
Moderate or bad physical result	17	4	21
Total	55	33	88

¹Nine patients without and one patient with psychiatric symptoms were not seen at 30-month follow up.
[$\chi^2 = 4.01$ ($P < 0.05$)]

ate psychiatrically. Ely and Johnson (1966) state that 'it appears that gastrectomy with its relief of ulcer symptoms was instrumental in pushing these new (psychiatric) symptoms into significance'.

Our results do not support this claim, for we find that among the 55 psychiatrically ill patients seen at the 30-month follow up, good physical and good psychiatric results are associated (Table XVI).

TABLE XVI

ASSOCIATION OF PSYCHIATRIC AND PHYSICAL RESULTS IN GROUP B¹

Assessment	Psychiatric Result		Total
	Good	Unchanged or Bad	
Good physical result	22	16	38
Moderate or bad physical result	2	15	17
Total	24	31	55

¹Nine patients were missing at 30-month follow up.
[$\chi^2 = 10.16$ ($P < 0.01$)]

THE SEVERITY OF THE ULCER RELATED TO THE OUTCOME OF OPERATION

Duration may not be indicative of severity. A severe ulcer could be defined as one responsible for the complications of haemorrhage, stenosis, or previous perforation. According to these criteria, 48 (32.6%) of the 147 patients in group A had a severe ulcer. Forty of the 48 had a good result of operation. Ninety-nine patients did not have a severe ulcer, of whom 74 had a good result. There is no significant difference between these groups ($\chi^2 = 1.37$).

In group B, 42 (42.8%) of the 98 patients coming to surgery had a severe ulcer: 23 of the 64 patients with psychiatric symptoms and 19 of the 34 without psychiatric symptoms (Table XVII). In patients without psychiatric symptoms the good results of surgery do not depend on the severity of the ulcer (Table XVIII). The bad results of surgery are concentrated in that group of patients with psychiatric symptoms but without severe ulcer.

TABLE XVII

SEVERITY OF ULCER IN PATIENTS WITH AND WITHOUT
PSYCHIATRIC SYMPTOMS IN GROUP B

Type of Ulcer	Psychiatric Symptoms		Total
	No. with Symptoms	No. without Symptoms	
Severe	23	19	42
Not severe	41	15	56
Total	64	34	98

[$\chi^2 = 3.61$ ($P > 0.05$)]

less severe ulcer disease. In our series, operation is successful in less than 60% of patients with this combination. This is the subgroup that it is important to identify. 'Earning' is an unreliable guide to its recognition because severity of ulceration cannot be equated with the duration of a patient's symptoms or his age. Furthermore, compared with his stable counterpart, the psychiatrically ill patient

TABLE XVIII

SEVERITY OF ULCER AND PHYSICAL OUTCOME OF OPERATION AT 30 MONTHS IN GROUP B

Type of Ulcer	Patients with Psychiatric Symptoms (Nine Missing at 30 Months)		Patients without Psychiatric Symptoms (One Missing at 30 Months)	
	Good Physical Result	Moderate or Bad Physical Result	Good Physical Result	Moderate or Bad Physical Result
Severe	18	2	18	1
Not severe	20	15	11	3
Total	38	17	29	4

[$\chi^2 = 6.43$ ($P < 0.05$)][$\chi^2 = 1.98$ ($P > 0.05$)]

DISCUSSION

It would appear from this study that the chance of a good result of surgery is not greater in the patient who might be considered to have 'earned' his operation. The proportion of good results is very similar whatever the duration of symptoms or the age of the patient. This is true for both series of patients considered here. The concept of 'earning' appears to be an unreliable guide to the surgeon faced with the need to decide whether or not a patient with chronic peptic ulcer merits surgical treatment.

Among the group B patients there is some support for the view that a good result of surgery is less likely if the patient is found to have a coexisting psychiatric disability. The difference between the proportions of good results among the patients with and without psychiatric symptoms is just statistically significant. Even so, 30 months after operation almost 70% of patients with psychiatric symptoms have a good physical result. We found no evidence to support the view that successful surgery will exacerbate psychiatric symptoms. On the contrary, the better the physical result of surgery the better is the chance of psychiatric improvement.

The findings with regard to the severity of the ulcer are contradictory. In group A, the proportions of good results are the same whether or not the patient was classed as having severe ulcer disease. In group B, this statement is true for the patient without psychiatric symptoms, but in those with psychiatric symptoms the outcome of surgery is influenced by the severity of the ulceration. The poor results in group B are concentrated in those patients shown to have psychiatric symptoms coupled with

comes to hospital no earlier in the course of his ulcer disease.

Our study leads us to recommend the adoption of a combined physical and psychiatric assessment.

First, it is necessary to confirm that the patient has an ulcer and that the ulcer merits surgical treatment. As a rough guide to the severity of the ulcer, we have used the presence of stenosis, or a history of previous perforation or bleeding. Such reservations might seem elementary, yet from the literature it is obvious that gastric surgery is at times employed in the absence of proper indications and in the forlorn hope of it doing good (Johnstone, Holbitsky, and Debas, 1967). Secondly, the patient's psychiatric status must be assessed. We have used simple and conventional proformata. These, we believe, could be completed by the clinician and the correct conclusions drawn without recourse to specialized psychiatric help. At the present moment, it would seem to us that one should be cautious in offering surgery to the psychiatrically abnormal patient who does not have a severe ulcer.

We have concerned ourselves with the results of surgery in the *absence* of psychiatric treatment and this conclusion disregards the possible contribution that such treatment might make to the outcome. For the future, a higher proportion of good results might be obtainable in these bad-risk patients because we have evidence from other studies to suggest that, in duodenal ulcer at least, pre- and postoperative psychiatric treatment of the psychiatrically ill patient will improve the chances of a good physical and psychiatric outcome. Such a policy implies cooperation between clinician and psychiatrist from the outset in those patients with

psychiatric symptoms and is contrary to the common practice whereby only when failure is obvious postoperatively is the patient referred to the psychiatrist. By then it may be too late. Psychiatric deterioration has been added to physical failure—an outcome which we believe is avoidable.

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