REVIEW OF 170 CASES OF PERFORATED PEPTIC ULCER, 1950-1953

By N. F. KIRKMAN, M.D., F.R.C.S.

Senior Registrar, South Manchester Group

For over fifty years, perforated peptic ulcers have been treated as surgical emergencies. The perforation in the base of the ulcer has been sutured at immediate operation. Since 1946, when Hermon Taylor reported his series of conservatively treated perforated peptic ulcers, great interest has been taken in conservative treatment, although it has not been widely adopted. The frequency of perforated peptic ulcers and the difference of opinion as to the best methods of treatment, (Hermon Taylor, 1946, 1951, Beattie, 1951, Chrombie, 1954), suggested that it was worthwhile reviewing the cases of perforated peptic ulcer which had been treated at Withington Hospital during the last four years, 1950-1953. It was thought that the effects of conservative or operative treatment would not be masked by changes in ancillary aids during this period, as it had not been marked by any striking advance in antibiotic therapy or anaesthetic methods; previous advances were being consolidated rather than extended in these four years.

Recent figures for the operative mortality in perforated peptic ulcer vary from 11 per cent., (1948), McElhinney and Holzer, (Junr.), to 4 per cent., (1950), Avery Jones, Parsons, White. In 1946, and again in 1951, Hermon Taylor reported good results and a mortality of 9.6 per cent., using conservative treatment. Stead, (1951), gave a 10 per cent. mortality and Bullough, (1950), a 7.1 per cent. mortality, using non-operative treatment. In the patients presented here, operative treatment has been favoured, although from time to time cases deemed fit for operation have been treated conservatively. These cases have formed a small non-operative series, together with a few cases where the diagnosis was at first in doubt. A second group of conservatively treated cases was formed by those cases of perforated peptic ulcer which were too ill for operation on admission. All cases in the non-operative series were proved to have ulcers at subsequent operation, or shown radiologically to have subdiaphragmatic air and a peptic ulcer on re-X-ray.

Table I shows the results of conservative treatment in 29 cases of perforated ulcer. It will be noted that 19 cases of perforated duodenal ulcers, thought fit for operation, but treated conservatively, recovered, but on the other hand no case unfit for operation was saved by conservative treatment. Cases treated conservatively were given morphia, then aspirated hourly by a Ryle's tube and no oral fluid was allowed for 24 to 36 hours, apart from moistening of lips just before each aspiration. Their fluid requirements were provided by intravenous or rectal fluid and blood transfusions if indicated. Penicillin therapy was started at once. Oral fluid was begun after 24 to 36 hours, provided that there was no rising pulse rate or pyrexia and active peristalsis were present. Doubtful cases were re-X-rayed for evidence of alteration in subdiaphragmatic air. (Hermon Taylor, 1951).

TABLE I
CASES OF PERFORATED PEPTIC ULCER, TREATED CONSERVATIVELY

A. Duodenal ulcer perforations:
i. Cases fit for operation on admission.

Recovered	Died	Total
19	0	19

ii. Cases unfit for operation on admission.

Recovered	Died	Total
0	4	4

B. Gastric ulcer perforations:

i. Cases fit for operation on admission: 0.

ii. Cases unfit for operation on admission.

Recovered	Died	Total
0	6	6

Total—29 cases: 19 recovered, 10 died.

Table II gives the results obtained in treating 125 cases of perforated ulcer by operation. This table confirms the usually reported greater frequency and the better prognosis of duodenal ulcer perforations. (Duodenal ulcer perforations operative mortality—2.4 per cent., gastric ulcer perforations operative mortality—12.5 per cent.).

In all cases except one, the perforation was closed by simple suture, using 60 linen thread. In one case, an urgent partial gastrectomy, Billroth I type was performed, where a 5 cm. perforation was found in the base of a gastric ulcer. The patient was a man aged 68, and he unfortunately succumbed after eight days to low grade upper abdominal peritonitis.

TABLE 2
PERFORATED PEPTIC ULCER, TREATED BY OPERATION
A. Perforated duodenal ulcers.

	Recovered	Died	Total
Males ..	115	2	117
Females ..	7	1	8
Total ..	122	3	125

Per cent. mortality: 2.4 per cent.

B. Perforated gastric ulcers.

	Recovered	Died	Total
Males ..	5	2	7
Females ..	9	0	9
Total ..	14	2	16

Per cent. mortality: 12.5 per cent.

Table III outlines the cause of death in the five patients who died after operation. Two died from further necrosis of the stomach or duodenal wall, which caused re-perforation and, consequent peritonitis. Fig. 1 shows the stomach removed at P.M. in one of these cases, a man aged 51. The sutures inserted at operation may be seen intact with the fresh perforation adjacent. The friable nature of this patient's duodenum was noted at operation, but he was considered unfit for gastrectomy then, and, in spite of ascorbic acid and blood transfusion, he re-perforated on the sixth post-operative day.

Judin, (1937), and other continental writers, pay more attention to the risk of re-perforation after suture than British authors, (Maingot, 1948). Judin treats most recent peptic ulcer perforations by immediate partial gastrectomy as a routine, partly because of this risk. He claimed the impressive figure of 8.5 per cent. operative mortality for 150 perforated peptic ulcers in 1934. Whilst many think that partial gastrectomy is unnecessary as a general rule, it may be a life saving procedure in cases of perforated gastric ulcer and of gross friability of the duodenum and ulcer base, where tissue vitality is greatly impaired.

Table IV outlines the cause of death in the cases treated conservatively. The first three cases in Table IV, aged 77, 79, 85 respectively were so ill on admission that recovery under any treatment was unlikely. The other cases in Table IV were in a younger age group and some of them could perhaps have been saved by operation.

It will be noted from Table I that no case of perforated gastric ulcer recovered when treated conservatively. Sometimes these cases improved temporarily for a few hours or a few days and then

TABLE 3
CAUSES OF DEATH IN PERFORATED PEPTIC ULCER, TREATED BY OPERATION

Age	Duration of Perforation	Previous Symptoms	Complication	P.M.
Male, 53	1½ hours G.U.	20 years dyspepsia	Paralytic ileus eight days	Re-perforation of gastric ulcer, (4 cm. ulcer)
Male, 51	9 hours D.U.	six days dyspepsia	Paralytic ileus	Re-perforation of duodenal ulcer
Female, 71 ..	24 hours D.U.	two weeks dyspepsia	Heart failure during induction of anaesthesia	Myocarditis
Male, 50	29 hours D.U.	Nil	Paralytic ileus four days	Peritonitis and subphrenic abscess
Male, 68	3 hours G.U.	one month dyspepsia	Peritoneal soiling. Gross G.U. Treated by gastrectomy. Died after eight days	Peritonitis Myocarditis

FIG. 1.—Stomach removed at post-mortem from man aged 51, showing re-perforation of a duodenal ulcer after suture of a previous perforation seven days before. The sutures used may be seen adjacent to the fresh perforation.

TABLE 4
CAUSES OF DEATH IN PERFORATED PEPTIC ULCER, TREATED CONSERVATIVELY

Age	History and Treatment	P.M.
Male, 77	Fell 1 week ago, pneumonia. 9 hours severe epigastric pain. Saline, I.V. penicillin. Dextran. Hb. 75 per cent. Died in 3 days. X-ray—air under diaphragm.	—
Male, 79	6/52 dyspepsia, anaemia, dyspnoea, free fluid. Abdominal pain. Collapsed and died in 12 hours	General peritonitis. Perforated G.U. Second G.U. present
Male, 85	6 hours severe abdominal pain. 2/52 dyspepsia. B.P.: 70/—on admission. Blood, I.V. penicillin. Paralytic ileus. Died in 2½ days	—
Male, 66, B.H. ..	Previous perforation 1943, D.U. Blood and mucus P.R. for months. (Ulcerative colitis 1932). 1 month abdominal pain. Died in 15 hours. B.P.: 115/75	General peritonitis. 2½-in. G.U. with perforation. Pale colonic mucosa—not ulcerated
Female, 66, A.F.	5/52 dyspepsia. B.P.: 210/140. 3/52 vomiting—mass (L) hypochondrium. Rapid, sudden deterioration. Dead in 27 hours (next morning)	General peritonitis. ¼-in. perforation in G.U.
Male, 70, J.K. ..	2 years dyspepsia, 2/52 severe abdominal pain and vomiting—coffee grounds. Stomach held 4 pints of haematemesis fluid. Treated by penicillin, aspiration, rectal drip. Died in 2/52	3 G.U.s. Two had perforated. Large Rt. subphrenic abscess. General peritonitis
Female, 40, E.R.	21 hours acute abdominal pain. Pulseless on admission. Dextran } I.V. penicillin. Blood } Died after 11 hours.	General peritonitis; 1 cm. perforation in G.U. lesser curve
Male, 55, F.T. ..	Known D.U. Perforation with haematemesis on admission. Blood, I.V. penicillin. Died in 2½ days	General peritonitis. Large perforated D.U. with blood vessel in floor of ulcer
Male, 49, A.B. ..	3 hours severe pain, 5 years asthma. Aspiration. Penicillin. Died in 4½ hours.	½-in. perforation of D.U. Free peritoneal fluid—no pus. Heart and liver normal. ? shock
Male, 48, L.P. ..	Polycythaemic vera, enlarged spleen. 3/52 dyspepsia, 4 hours acute epigastric pain. Saline/glucose I.V. Aspiration. Penicillin. Multiple deep thromboses. Died in 30 hours	General peritonitis. Perforated D.U. Grossly enlarged spleen with infarcts. Ante-mortem thrombus in aorta

deteriorated. Case F.T., male, aged 55, was fit for operation for 6 to 12 hours after initial resuscitation and might perhaps have been saved if operated on during this period. Case J.K., male, aged 70, improved temporarily on intravenous fluid therapy and was probably fit for operation for two days, but he slowly declined on conservative treatment and died in two weeks. At P.M. two large perforations were found in two gastric ulcers. Case A.F., female, aged 66, could probably have been saved by draining her perigastric abscess on the day of admission.

Table V compares the effect of age on perforated ulcers, (A) treated by operation, with those (B) treated conservatively. The expected influence of age is shown in both series. Age appears to have

influenced the non-operative group adversely; for instance out of seven patients in the fifth decade treated expectantly, three died. In 32 similar patients treated by operation none died.

Table VI shows the incidence of the various types of perforated peptic ulcers which occurred in 19 women in this series. There were more perforated gastric ulcers than duodenal ulcer perforations and the average age of perforation in women is 54.5 years compared with 48.3 years in men.

Discussion

Although the number of cases treated conservatively in this series is not large, it is sufficient for some inferences to be drawn when the figures are

TABLE 5

A. AGE INCIDENCE AND MORTALITY IN PERFORATED PEPTIC ULCER, TREATED BY OPERATION

Age Group	Recovered	Died	Total
15—20	3	0	3
21—30	17	0	17
31—40	28	0	28
41—50	32	0	32
51—60	23	3	26
61—70	23	1	24
71—80	9	1	10
80+	1	0	1
	136	5	141

B. AGE INCIDENCE AND MORTALITY IN PERFORATED PEPTIC ULCER, TREATED CONSERVATIVELY

Age Group	Recovered	Died	Total
21—30	4	0	4
31—40	4	0	4
41—50	4	3	7
51—60	5	1	6
61—70	0	2	2
71—80	2	3	5
81+	0	1	1
	19	10	29

TABLE 6

PERFORATIONS OF PEPTIC ULCERS IN WOMEN

Perforated gastric ulcers: 11, average age 55 years.
Perforated duodenal ulcers: 8, average age 54 years.

Treatment	Gastric Ulcers		Duodenal Ulcers	
	Recovered	Died	Recovered	Died
Operative	9	0	6	1
Conservative	0	2	1	0

compared with those of the group treated by operation.

1. The prognosis of a perforated gastric ulcer treated conservatively is bad; when treated operatively the prognosis is better, (12.5 per cent. operative mortality), but not as good as that of a perforated duodenal ulcer treated by operation.

From observation at operation, it was frequently noted that perforated gastric ulcers, especially if anteriorly placed, showed no signs of closing or being occluded by adherence to adjacent viscera. Beattie, (1951), stresses this point in discussing conservative treatment of perforations.

2. As age increases, the frequency of perforations of other abdominal viscera increases, i.e., perforations of the biliary tract, the colon and the small bowel. These often present a clinical picture closely simulating peptic ulcer perforations and delay in diagnosis and operative treatment in these cases may be fatal (Chrombie, 1954).

Doll, (1950), showed that in a series of 86 perforated gastric ulcers in men, seven were carcino-

matous; operation at the time of perforation alone offers such cases the chance of a successful issue and operation is often the best means of palliation. Doll maintains that contrary to popular belief, perforation of a gastric carcinoma does not necessarily indicate inevitable peritoneal metastases. The late Gray Turner, (1946), pertinently asked how many patients will lose their lives through having conservative treatment for a wrongly diagnosed peptic ulcer perforation. It is the older patients with the greater potential variety of upper abdominal lesions who will provide most of the mistakes of conservative treatment. On the other hand, it must be remembered that 19 cases of proved duodenal ulcer in the present series, in otherwise fit patients, were treated conservatively with no mortality, their average age being 44.3 years.

From the details of this series and the points outlined above, it seems fair to suggest:

1. That cases of probable perforated gastric ulcers should be rendered fit for operation as soon as possible and treated by operation. This means all cases over 50 years of age, especially women, presenting with signs of sudden severe peritoneal irritation.

2. That the value of expectant treatment is chiefly in dealing with young patients who have also some additional chronic disease such as diabetes, chronic bronchitis, etc. In young patients the possibility of a perforated appendicitis must be seriously considered.

3. Although simple suture of the perforation is all that is required in the great majority of cases, there are a few, which might be saved by urgent gastrectomy, where the ulcer base is extremely friable and likely to perforate again, or where the ulcer is malignant, (three in this series).

Summary

170 cases of perforated peptic ulcer are presented. The majority, 141, were treated by operation, 29 were treated conservatively.

Details of age incidence and mortality, and the results of treatment, are given.

The advantages and drawbacks of conservative and operative treatment are discussed.

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