

Papers and Originals

Early Surgery in the Management of Severe Ulcerative Colitis

J. C. GOLIGHER,* CH.M., F.R.C.S.; F. T. DE DOMBAL,* M.B., B.CHIR., F.R.C.P.
N. G. GRAHAM,* F.R.C.S., F.R.A.C.S.; G. WATKINSON,* M.D., F.R.C.P.

Brit. med. J., 1967, 3, 193-195

During the last two decades there has been a substantial improvement in the overall outlook for patients suffering from ulcerative colitis. Nevertheless, many patients continue to experience severe attacks of this disease, and the mortality from these attacks is often very high. Thus Gallagher *et al.* (1962) stated that nearly two-thirds of their patients with "fulminating" attacks of colitis during 1950-8 died; Edwards and Truelove (1963) reported a 26.8% fatality rate in all severe attacks treated during the previous decade; while Demole (1956) noted a 40% fatality rate in all acute attacks of colitis.

Recently we also described a large series of cases with severe attacks of ulcerative colitis, the fatality rate of which was considerable, being 9.6% in severe first attacks and 13.7% in severe relapses (de Dombal *et al.*, 1965a). In the care of these patients it had been our practice to submit practically all cases to intensive conventional medical therapy (usually including large doses of corticosteroids), for a period of 10 days or so in the first instance. Only if this regimen failed to secure a remission within that time—or if perforation or massive uncontrollable haemorrhage occurred—was surgical treatment considered.

In view of the disappointing results obtained it seemed to us that a drastic change in our plan of management was justified in the hope of reducing the high mortality. Accordingly we resolved (Watts *et al.*, 1966b) for a trial period to make surgery the sheet-anchor of our therapy in these cases and to invoke surgical aid at a very early stage of severe attacks—within a very few days of the patient entering hospital—*unless there was unequivocal evidence of rapid improvement in his condition on conservative management.*

Since this decision was taken at the end of 1963 some 74 patients have been treated by us for severe attacks of ulcerative colitis; all have been managed according to the plan outlined above. In this paper we report the results obtained and compare them with those previously reported in a similar group of 124 patients managed during 1952-63.

Clinical Material and Methods

Between 1 January 1964 and 30 June 1966 74 patients were admitted to the General Infirmary at Leeds under the care of the professorial surgical unit because they were suffering from severe attacks of ulcerative colitis. Occasionally patients were admitted twice during separate severe attacks, so that the total number of such attacks during 1964-6 was 81. Table I shows the age distribution of the patients at the time of these 81 severe attacks (and, for comparison, the ages of the patients treated for severe attacks of colitis during 1952-63). It will be

seen that the composition of the two series of cases is quite similar in this respect.

Assessment of Severity of Attacks.—All attacks of ulcerative colitis were classified as severe according to the criteria of Truelove and Witts (1955), which are: *severe diarrhoea* (six or more motions a day); *macroscopic blood in the stools*; *fever* (mean evening temperature more than 99.5° F. (37.5° C.), or a temperature of 100° F. (37.8° C.) or more on at least two days out of four); *tachycardia* (mean pulse rate of more than 90 per minute); *anaemia* (haemoglobin 75% or less, allowance being made for recent transfusion); *E.S.R. much raised* (more than 30 mm. in one hour). Many of these severe attacks would have been labelled by some clinicians as "fulminating," but we have preferred to avoid the use of this somewhat imprecise term in assessing the severity of disease in our patients.

TABLE I.—Age of Patient at Time of Each Severe Attack of Colitis

Age	1952-63 (124 Attacks)		1964-6 (81 Attacks)	
	No. of Attacks	% of Total	No. of Attacks	% of Total
0-19 years	34	27.4	12	14.8
20-39 "	44	35.5	35	43.2
40-59 "	28	22.6	25	30.9
60 years and over ..	18	14.5	9	11.1

Plan of Initial Medical Management.—The patients were all managed according to the following regimen. On their admission to hospital an intensive course of conservative treatment was instituted; the vast majority of patients were treated with large doses of systemic corticosteroids—50 mg. of cortisone by mouth six-hourly or 100 mg. of hydrocortisone intramuscularly twice daily—often with sulphasalazine (Salazopyrin) as well (in a dosage of 1 g. six-hourly). Some of the patients received injections of A.C.T.H. (up to 100 units daily). Intravenous replacement of whole blood, plasma, and electrolytes was carried out as dictated by the needs of each individual patient (see Graham *et al.* (1967) for further details). Under this regimen several outcomes of the attack were possible—*remission* with subsidence of bowel symptoms and constitutional disturbance; *death during medical treatment*; *resort to surgical treatment with subsequent recovery* or *operative death.*

Indications for Surgical Intervention.—These were as follows: (1) persistent massive haemorrhage or the development of abdominal physical signs suggesting the occurrence of perforation of the bowel and peritonitis, particularly if associated with (2); (2) sudden deterioration in the general condition of the patient, which was usually a better guide to the occurrence of a catastrophe like perforation than were local physical signs (de Dombal *et al.*, 1965b); (3) in patients over 60 years of age, failure to show a definite clinical improvement after two to three days of conservative management; and

* University Department of Surgery, the General Infirmary at Leeds, Leeds 1.

(4) in younger patients, failure to show a definite clinical improvement after four to five days of intensive conservative treatment. The first two indications called for *emergency* surgical intervention, the patient being brought to operation immediately, or at latest within a few hours of the decision to resort to surgery having been reached. The remaining two indications were regarded as demonstrating the need for *urgent* surgery, the operation usually being performed within the next 24 to 48 hours.

Findings

Outcome of Severe Attacks.—The overall outcome of severe attacks of colitis in the two groups of patients is contrasted in Table II. The remission rate is shown to be slightly lower and the rate of recourse to radical surgery higher in the 1964–6 group. This was inevitable, since occasionally patients were brought to operation who might eventually have gone into remission on more prolonged conservative management, though they more frequently continued to have chronic bowel symptoms (see footnote to Table II). Nevertheless, it is noteworthy that, despite a policy the cornerstone of which was early recourse to surgery, nearly half of the patients seen went rapidly into remission on conservative treatment alone. However, the most striking feature of Table II is the clear reduction in both medical and surgical death rates which has taken place during 1964–6, and which has resulted in a fall in overall mortality from 11.3% during 1952–63 to 1.3% during the period of the present series.

TABLE II.—Overall Outcome of Severe Attacks of Colitis

Outcome	1952–63 (124 Attacks)		1964–6 (81 Attacks)	
	Cases	%	Cases	%
Remission	65*	52.4	38	46.9
Resort to surgery	40	32.3	43	53.1
Deaths { Under medical treatment	6	4.8	0	0
{ Operative	8	20.0†	1	2.2†
{ Total	14	11.3	1	1.3

*Excludes a further 13 patients who were not brought to surgery but continued for over 12 months with chronic symptoms (and hence cannot be classified as remission cases).
† Indicates percentages of patients who came to operation in each group.

Outcome of Severe First Attacks.—The mortality from colitis is always greatest during the first few months of the disease (Hurst, 1935; Demole, 1956; Edwards and Truelove, 1963). It is therefore particularly gratifying that none of the 19 patients who have been seen by us in severe first attacks during 1964–6 have failed to survive this initial attack (Table III). We have previously shown that it is in first attacks of colitis that the colon is most likely to perforate (de Dombal *et al.*, 1965b), and it is interesting to note that during 1964–6 we did not encounter a single instance of free perforation in an initial severe attack of colitis.

TABLE III.—Outcome of Severe First Attacks of Colitis

Outcome	1952–63 (73 Attacks)		1964–6 (19 Attacks)	
	Cases	%	Cases	%
Remission	38*	52.2	10	52.6
Resort to surgery	20	27.4	9	47.4
Deaths { Under medical treatment	2	2.7	0	—
{ Operative	5	6.9	0	—
{ Total	7	9.6	0	—

* Excludes 13 patients whose symptoms persisted for over 12 months but who did not come to surgery.

Outcome of Severe Attacks in Elderly Patients.—Relatively few of our patients were over 60 years of age, which means that only small groups of cases are available for analysis (see Table IV). Though we were specially ready to resort to surgical treatment in the management of this type of case in the 1964–6 period, in fact no less than half of these older patients in this latter period very rapidly improved on conservative management. Of the remainder who came to early

operation none died, compared with 50% during the 1952–63 period.

Operations Performed.—Most patients were submitted to a one-stage total proctocolectomy and ileostomy (Table V). Details concerning the technique of this operation have been presented elsewhere (Goligher, 1954, 1961, 1967), and the question of choice of operative procedure has also been discussed (Watts *et al.*, 1966a). In the present series one young child aged 8 underwent colectomy and ileostomy, with preservation of the rectum. A further patient, a woman aged 29, was admitted with an extremely severe attack of residual proctitis after a previous colectomy and ileorectal anastomosis elsewhere; she was subjected to excision of the rectum and had an ileostomy established, with uneventful recovery. The patient who had a negative laparotomy merits comment. While under intensive conservative care for a severe attack of colitis he developed tachycardia and pyrexia, together with extreme abdominal rigidity and tenderness. Perforation of the colon was suspected, but at laparotomy no such lesion was found, though the sigmoid colon was clearly the seat of active colitis. The abdomen was therefore closed without removal of the colon or ileostomy for what appeared to be a distal proctocolitis, and the patient subsequently went into remission.

TABLE IV.—Outcome of Severe Attacks of Colitis in Elderly Patients

Outcome	1952–63 (16 Attacks)	1964–6 (9 Attacks)
Remission	4	5
Resort to surgery	9	4
Deaths { Under medical treatment	3	0
{ Operative	5	0
{ Overall	8	0

TABLE V.—Type of Early Surgery Employed

	1952–63 (40 Cases)	1964–6 (43 Cases)
Proctocolectomy and ileostomy	32	40
Colectomy and ileostomy	6	1
Rectal excision and ileostomy	—	1
Laparotomy and closure	—	1
Other procedure	2	—

Cause of Operative Death.—There was one operative death, that of a young man of 29 who suffered in addition from cirrhosis of the liver with portal hypertension. At operation a considerable quantity of ascitic fluid was found in the peritoneal cavity. Subsequently ascitic fluid escaped through the main wound, which broke down on the ninth postoperative day and required resuture. Serous fluid continued to pour through the wound for some weeks and the patient eventually died. It is arguable that this man's death was incidental to his colitis, but, in view of the abdominal wound breakdown and of the well-known association between colitis and liver disease, we have classified this as a related death.

Discussion

In assessing the results of treatment of certain disease processes, such as severe attacks of ulcerative colitis or bleeding peptic ulcer, for which the alternatives of medical and surgical management are available, it is essential to remember that, according to the manner of selection of patients for these respective modes of therapy, success with one may be achieved largely at the expense of a high mortality with the other. The important yardstick, therefore, in gauging the value of any change of therapeutic policy is the effect on the *overall mortality*.

Accordingly, in examining the influence of our recent practice of resorting at an earlier stage to surgical treatment in severe attacks of colitis, we have paid special attention to the overall mortality, comparing it with that obtained when a tardier and more restricted use of urgent or emergency opera-

tion was in force (Table II). It will be seen that the overall fatality rate of severe attacks since this new regimen has been adopted was only 1.3%, which contrasts with 11.3% previously—a difference that is highly significant. It is also interesting to note that since January 1964 there have been no medical deaths in 81 cases and the operative mortality in the 44 cases coming to urgent or emergency operation has amounted to only one case, or 2.2%. This compares with 6 medical deaths in 124 cases during 1952–63 (a mortality of 4.8%) and a surgical mortality in the 40 cases proceeding to operation during that period of 8 cases (or 20%).

Possible Fallacies

On the face of it, therefore, it might seem that the policy of earlier surgery has achieved its objective of rendering severe attacks of colitis less hazardous; but before reaching this conclusion certain possible fallacies need to be considered.

(a) It may be questioned whether there has been any alteration not only in the timing but also in the type of surgical intervention during the second period. However, it will be seen from Table V that the operations employed were very similar during both periods under review and consisted usually of proctocolectomy, or colectomy, and ileostomy. There was indeed a slightly higher proportion of proctocolectomies to subtotal colectomies in 1964–6 than in 1952–63, but it is debatable in which way this might have affected the operative mortality, and inconceivable that it could have been responsible for reducing it to the extent shown in Table II.

(b) The possibility that a slight difference in the *form* as well as in the duration of medical treatment in these two periods may have influenced the mortality somewhat requires also to be examined. Though systemic corticosteroid therapy was consistently used in the 1964–6 period, in the first three years of the 1952–63 period corticosteroids were omitted in roughly half the cases during the conduct of the M.R.C. collective controlled trial of corticosteroid preparations in the treatment of ulcerative colitis (Truelove and Witts, 1955). But the total number of patients not receiving corticosteroids amounted to only one-quarter of the 124 in the 1952–63 group, and their mortality (12.5%) was little higher than that of the remainder of the group (11.0%). The medical therapy given to the 1964–6 cases may in general have therefore been marginally more potent than that used for the 1952–63 group; but we find it hard to believe that this slight difference could have played a major part in bringing about the striking reduction in the medical and overall mortalities of the more recent of the two groups of patients. It seems more reasonable to attribute the drop in medical mortality in this group largely to the earlier resort to surgery, and the gratifying thing is that this has been attended also by a striking fall in the surgical mortality.

(c) Much more serious is the criticism that the composition of the two groups of cases being contrasted in this study may be dissimilar. The influence of the age of the patient on the risks of a severe attack of colitis has been clearly shown in our previous study (de Dombal *et al.*, 1965a). Analysis of the age of distribution of the patients in our two groups of cases (Table I) shows, however, that they are roughly similar in this respect. It should be emphasized, too, that each of our two series represented nearly *all* the patients with severe attacks of colitis coming to the same hospital centre during the periods under review, the severity of the attacks having in each instance fulfilled certain well-defined criteria (Truelove and Witts, 1955).

It must be admitted that even these criteria allow considerable variation in the severity of attacks, so that there could be a difference in the proportion of particularly ill patients in the two series. Indeed, it has been our clinical impression that the virtually moribund type of case with severe acute colitis has become rather less common in recent years. But, even so, it must be pointed out that some 25 to 30 patients presented during 1964–6 in particularly severe attacks of colitis (with 10 to 15 bowel actions per day, massive rectal blood loss, fever up to 105° F. (40.5° C.), severe electrolyte disturbance, and so on); and *not one of these patients failed to survive the attack*, even though most of them were brought to radical surgery at an early stage.

Therapeutic Trial

Of course the only way to avoid uncertainties of this kind is to plan a properly controlled therapeutic trial, in which the patients are allotted in entirely random fashion to the forms of therapy on trial. Such a trial to compare the efficacy of early surgical intervention against intensive conservative treatment, including corticosteroid therapy for severe attacks of colitis, has already been proposed by us (Goligher, 1956) and by Edwards and Truelove (1963). The results which we now report with early surgery cannot therefore provide a conclusive evaluation; but, like the smaller—also uncontrolled—trial of Gallagher *et al.* (1962), they suggest strongly that in certain centres with extensive experience of colitis surgery this regimen may be the best method of treating severe attacks of this disease.

One objection to the practice of early surgery is that it may occasionally result in some patients with a short history of disease coming to urgent operation, when they might possibly have secured a remission of their severe attack on more prolonged conservative management. This objection is all the more important in view of the radical nature of the surgery involved. However, Table II indicates that the number of such patients who would eventually secure a remission is small (52% versus 46%). Moreover, our own follow-up studies (Watts *et al.*, 1966c) and those of Edwards and Truelove (1963) have shown that a high proportion of those patients who manage to survive a severe attack of colitis on conservative treatment eventually suffer further such attacks, and often end up with radical surgical treatment or succumb to their disease. The conclusion is inescapable that many of them would have fared much better if they had undergone operation at an earlier stage of their illness.

Summary

This paper presents an analysis of the outcome of 81 severe attacks of ulcerative colitis treated during 1964–6. All patients were admitted to hospital, and surgical aid was invoked at an early stage if there was no response to a short course of intensive conservative measures.

Thirty-eight patients underwent remission on conservative treatment and 43 came to operation; there were no medical deaths, but one patient died postoperatively of cirrhosis of the liver. The overall mortality in these severe attacks was thus 1.3%, which is significantly less than the overall mortality of severe attacks of colitis during the previous decade, when operative treatment was resorted to less readily.

These findings strongly suggest that early radical surgical treatment may have considerable advantages for patients with severe attacks of colitis which fail to respond rapidly to intensive medical treatment, but the possible fallacies of conclusions drawn from an incompletely controlled trial are emphasized.

REFERENCES

- de Dombal, F. T., Watts, J. McK., Watkinson, G., and Goligher, J. C. (1965a). *Proc. roy. Soc. Med.*, **58**, 711.
 ——— (1965b). *Ibid.*, **58**, 713.
 Demole, M. (1956). *Gastroenterologia (Basel)*, **86**, 608.
 Edwards, F. C., and Truelove, S. C. (1963). *Gut*, **4**, 299.
 Gallagher, N. D., Goulston, S. J. M., Wyndham, N., and Morrow, W. (1962). *Ibid.*, **3**, 306.
 Goligher, J. C. (1954). *Ann. roy. Coll. Surg., Engl.*, **15**, 316.
 ——— (1956). *Gastroenterologia (Basel)*, **86**, 718.
 ——— (1961). *Brit. med. J.*, **1**, 151.
 ——— (1967). *Surgery of the Anus, Rectum, and Colon*, 2nd ed. London.
 Graham, N. G., de Dombal, F. T., Watkinson, G., and Goligher, J. C. (1967). In preparation.
 Hurst, A. F. (1935). *Lancet*, **2**, 1194.
 Truelove, S. C., and Witts, L. J. (1955). *Brit. med. J.*, **2**, 1041.
 Watts, J. McK., de Dombal, F. T., and Goligher, J. C. (1966a). *Brit. J. Surg.*, **53**, 1005.
 ———, Watkinson, G., and Goligher, J. C. (1966b). *Gut*, **7**, 16.
 ——— (1966c). *Brit. med. J.*, **1**, 1447.