

with 7% in hospital and 26% psychotic of the "phenothiazine-treated" group. The methods of selection, the environment, and the general treatment setting were the same for both groups. Very little if any detailed psychotherapy was found necessary, and in only a few cases was special rehabilitation needed. The average length of stay has also been reduced, from 10.7 to 6.7 weeks. The percentage of patients rated as "symptom-free" has not, however, been increased by phenothiazines; the improvement has been confined to a shift from the "psychotic" to the "residual symptom" group, probably in part due to the strictness of our criteria for recovery.

Details are given of the change in the pattern of treatment of schizophrenia in a general hospital psychiatric unit over the past 13 years. It is suggested that a major revolution has occurred in the treatment possibilities of this illness, which can now also be carried out so easily in a general rather than a mental hospital setting. Skilled handling of the physical treatments is most important, with a determination to use every combination of treatments likely to help any individual patient.

Statistical Note.—The probabilities were calculated by chi-square to give some estimate of the differences, but as the original selection was not randomized the tests may not be fully appropriate. We wish to thank Dr. E. D. West for statistical advice on our figures.

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Place of a Double-barrelled Ileostomy in Ulcerative Colitis and Crohn's Disease of the Colon: a Preliminary Report

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During the past five years we have been employing a double-barrelled ileostomy in certain selected cases of ulcerative colitis and Crohn's disease of the colon. In essence, this procedure consists in dividing the ileum about 9 in. (23 cm.) from the ileocaecal valve, bringing the proximal cut end of ileum to the surface in the right iliac fossa to form a standard ileostomy, and bringing the distal cut end of ileum to the surface in the right hypochondrium. By this means the colon is defunctioned and it is also easy to apply topical therapy, such as corticosteroids, to the entire colon by dripping a solution into the distal ileal stoma. In addition to its allowing efficient application of topical treatment to the colon, conservative surgery can be practised on the isolated colon without the disadvantage of a faecal stream being present. The essential aim has been to see if restoration of the continuity of the gastro-intestinal tract can be performed subsequently without relapse of the disease.

Our object now is to describe the indications we have followed for employing this procedure and to present the results obtained up to the present time. Surgical technicalities are not dealt with, as they will be covered in detail in a separate article.

Indications

Our indications for double-barrelled ileostomy have been (1) severe disease failing to respond to a full medical regime; (2) chronic disease associated with local bowel complications, such as stricture, entero-enteric fistula, or perianal complications such as recto-vaginal fistula or severe fistula-in-ano; and (3) chronic disease in childhood associated with failure of normal development.

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It will be appreciated that the orthodox treatment for all three of these categories is total colectomy with permanent ileostomy, although some would be suitable for the less orthodox procedure of subtotal colectomy with ileo-rectal anastomosis as employed by Aylett (1959).

Results

Thirty-one cases have been treated with double-barrelled ileostomy, the results being summarized in Tables I and II. We here describe some of the problems associated with our three indications for this procedure together with illustrative examples from each group.

1. Severe Disease Failing to Respond to Medical Treatment

Our experience has been that the great majority of attacks of ulcerative colitis can be terminated successfully by medical treatment. The medical management of a severe attack requires intensive hospital care, which must include certain basic general measures, such as control of water and electrolyte balance, blood transfusion, and maintenance of nutrition. In addition, specific therapeutic agents should be used to encourage rapid termination of the attack, and in our own hands the combined use of systemic prednisolone and topical hydrocortisone, applied by means of a rectal drip, has been the usual approach. Other agents such as anticholinergics—for example, propantheline bromide—and sulphasalazine (Salazopyrin) have occupied a secondary role. The regime which we have employed has already been described in detail (Truelove, 1962).

When medical treatment appears to be failing, colectomy is the orthodox treatment. If done as an emergency procedure this carries a high mortality rate even in the best hands, being

approximately 30% in the series reported by Lennard-Jones and Vivian (1960) from St. Mark's Hospital and the Central Middlesex Hospital and in that reported by Goligher (1961) from Leeds. Moreover, it is known that attacks of ulcerative colitis may be very severe and yet be followed by years of freedom from symptoms. Therefore, if the acute disease can

be controlled by a lesser measure which leaves open the possibility of retaining the colon, there is an obvious advantage; especially so as radical surgery can always be employed as a final resort if the lesser measure is unsuccessful.

However, our experience with this group of cases has been disappointing. Sometimes the disease has continued unabated

TABLE I.—*Essential Details of the Patients Treated by Double-barrelled Ileostomy (Age of Patient Refers to Time of Ileostomy)*

Case No.	Disease	Sex and Age	Clinical Course Before Ileostomy	Date of Ileostomy	Subsequent Course	Final Result	Remarks
<i>Group 1. Severe Disease</i>							
1	U.C. and Christmas disease	M 36	Severe first attack complicated by torrential haemorrhage from the bowel (presumably related to the bleeding diathesis) and pyoderma gangrenosum	May 1959	Persistent haemorrhage from isolated bowel. Emergency colectomy performed, but patient died from peritonitis 24 hours later	Dead	At this time no Christmas factor was available for treatment of haemorrhagic state
2	U.C.	M 22	Severe first attack never settling completely in spite of intensive medical treatment	July 1959	Great improvement in general condition and able to pursue full activities, but some bowel symptoms persisting. Colectomy with ileo-rectal anastomosis January 1964	Well, with ileo-rectal anastomosis	
3	U.C.	F 36	Attacks of bloody diarrhoea for five years. Last attack was severe and was complicated by rectal stricture and recto-vaginal fistula, but the ileostomy was performed because of severity of illness	April 1960	Marked general improvement. Elective colectomy four months later in view of gross damage to rectum	Well, with permanent ileostomy	
4	U.C. followed by Crohn's disease	M 35	Intermittent attacks of severe bloody diarrhoea with involvement of whole colon. Colonic biopsy showed typical ulcerative colitis on three occasions. Fistula-in-ano treated by conservative surgery. Attacks becoming more severe	August 1960	At first well. Then developed severe abdominal pain, followed by large bleed from ileostomy. Barium follow-through showed ulcerative ileitis. Laparotomy showed typical Crohn's disease of terminal ileum, confirmed histologically. Resection of terminal ileum and closure of ileostomy, August 1961. Thereafter well until January 1964, when mild bowel symptoms recurred. Sigmoidoscopy and barium enema showed normal rectum and cobblestoning of colon. Colonic biopsy showed Crohn's disease. Responded to local corticosteroid treatment and dichloroprednisolone by mouth	Well, but on local corticosteroid treatment per rectum	This case illustrates the difficulty of distinguishing between ulcerative colitis and Crohn's disease of colon
5	U.C.	M 44	Eight years' intermittent bloody diarrhoea, terminating in very severe attack complicated by massive ischio-rectal abscess	August 1960	Abscess drained surgically. Great improvement in general condition, and returned to full work. Rectum ruined by ischio-rectal abscess; elective colectomy was therefore performed September 1961	Well, with permanent ileostomy	
6	U.C.	F 48	Attacks of bloody diarrhoea for 34 years, with chronic pyelonephritis for last two years, with chronic uraemia	March 1961	Marked improvement in general condition. Blood urea became normal. Weight gain 56 lb. (25 kg.). Developed carcinoma of splenic flexure 1964. Treated by colectomy and ileo-rectal anastomosis	Well, with ileo-rectal anastomosis	Not fit for colectomy in 1961
7	U.C.	M 24	Five years' history of ulcerative colitis, culminating in severe attack	August 1961	Rapid remission after ileostomy, which was closed in February 1962. Attacks recurred from December 1962 onwards and proctocolectomy was performed in June 1963	Well, with permanent ileostomy	
8	U.C.	M 36	Two years' history of bloody diarrhoea. Admitted with severe relapse not responding to medical treatment	October 1961	At first did well, with great improvement in general condition and return to full work. Later, bowel symptoms returned. Elective colectomy performed in October, 1962.	Well, with permanent ileostomy	
9	U.C.	F 35	Attacks of severe bloody diarrhoea for 20 years. Abdominal pain was a prominent feature	October 1961	Continued to have bowel symptoms, including abdominal pain, and elective colectomy was performed in September 1962. Developed multiple intraperitoneal abscesses and died 4 weeks later	Dead	
10	U.C.	F 21	Transferred by helicopter from another hospital with severe first attack complicated by massive haemorrhage from bowel	October 1961	After ileostomy developed severe toxic state with marked pyrexia, semi-coma, and jactitation, and also massive haemorrhage from the bowel. Emergency colectomy performed	Well, with permanent ileostomy	
11	Crohn's disease	M 13	Continuous bowel symptoms for 9 years, with severe stunting of growth and inanition	January 1962	Small-intestinal obstruction. Laparotomy showed acute flare-up of small-bowel Crohn's lesions, which were resected. Developed peritonitis and died	Dead	
12	U.C.	M 45	Emergency transfer from another hospital with severe first attack. After transfer, developed perforation of colon	March 1962	Died three weeks later from chronic peritonitis	Dead	Emergency colectomy should have been performed
13	U.C.	M 47	Emergency transfer from another hospital with severe relapse of ulcerative colitis of one year's standing. Failed to respond to intensive medical treatment	June 1962	Five days after ileostomy he developed a confluent staphylococcal pneumonia which did not respond to medical treatment.	Dead	
14	U.C.	F 6	Severe ulcerative colitis for 2½ years, complicated by corticosteroid myopathy	July 1962	Developed peritonitis and died	Dead	Judged to be too ill for colectomy
15	U.C.	M 29	Severe first attack not responding to medical treatment	September 1962	Continued to have bowel symptoms although his general condition improved. Elective colectomy performed in May 1963	Well, with permanent ileostomy	
16	U.C.	F 40	Severe attacks of bloody diarrhoea for 24 years	January 1963	Symptoms settled. Ileostomy closed April 1964	Symptoms have returned	Will probably require colectomy
17	U.C.	F 43	Severe attacks of bloody diarrhoea for 5 years and persistent anaemia	May 1964	Early result good		Too early to judge likely outcome

(Continued overleaf)

despite the defunctioning ileostomy, and emergency colectomy has been necessary while the patient was still seriously ill—for example, Case 10. In other patients there has been temporary benefit, but the disease process has subsequently again become severe and necessitated colectomy, although this was usually an elective procedure—for example, Case 8.

2. Chronic Disease Associated with Local Bowel Complications

Our standard approach in such cases involves a three-stage procedure:

Stage 1.—Creation of a double-barrelled ileostomy, to be followed by local treatment to the defunctioned colon.

TABLE I.—*Contd.*

Case No.	Disease	Sex and Age	Clinical Course Before Ileostomy	Date of Ileostomy	Subsequent Course	Final Result	Remarks
<i>Group 2. Chronic Disease with Local Complication</i>							
18	U.C.	F 35	Five months' history of bloody diarrhoea and severe abdominal pain. Diagnosed as ulcerative colitis and complicated by a large recto-vaginal fistula	August 1959	September 1959, repair of recto-vaginal fistula. October 1959, closure of ileostomy. Thereafter was well and at full work until in October 1960 she developed another recto-vaginal fistula, small and high in vaginal vault (possibly due to small focus of residual infection). November 1960, second double-barrelled ileostomy. Spontaneous healing of the fistula followed May 1961, closure of ileostomy	Well	
19	U.C.	M 54	Twenty years' history of ulcerative colitis with ultimate development of sigmoid stricture and fistula-in-ano	December 1959	January 1960, resection of sigmoid stricture. Subsequently excision of fistula-in-ano. Thereafter his general condition showed marked improvement, but colitis remained active sigmoidoscopically, and elective colectomy was performed in July 1963	Well, with permanent ileostomy	
20	Crohn's disease	M 41	1939, diarrhoea and perianal fistulae, which healed with conservative surgery. Thereafter well for nine years. 1948, developed recurrent attacks of diarrhoea. 1960, barium enema showed two colonic strictures	December 1960	December 1960, resection of two strictures of colon. February 1961, closure of ileostomy	Well	
21	U.C.	M 51	Six years' history of ulcerative colitis with ultimate development of sigmoid stricture	February 1961	March 1961, resection of sigmoid stricture. June 1963, closure of ileostomy	Well	
22	U.C.	F 39	Two years' history of ulcerative colitis with recurrent anaemia and sigmoid stricture	April 1961	May 1961, resection of sigmoid stricture. June 1961, thyroidectomy for large colloid goitre. August 1961, ileostomy closed	Well	
23	Crohn's disease	F 29	Five years earlier developed recurrent abdominal pain, for which laparotomy was performed; diagnosis of regional ileitis made. Thereafter had abdominal pain, bouts of diarrhoea, and severe loss of weight. Transferred from another hospital as an emergency admission with pyrexia, severe wasting and uncontrollable diarrhoea. Barium studies showed Crohn's disease with fistula between terminal ileum and sigmoid colon	May 1961	General condition steadily improved after ileostomy, and in June 1961 the definitive operation of resection of terminal ileum, caecum, sigmoid colon, and fistulous area was performed. Thereafter improvement continued to take place. Ileostomy closed during subsequent admission in March 1962	Well	
24	Crohn's disease	F 25	Seven years' history of intermittent diarrhoea with some blood and mucus in stools. Barium studies showed widespread Crohn's disease of colon with fistula between descending colon and mid small bowel.	March 1962	April 1962, left hemicolectomy with excision of fistula and local resection of small intestine. Following this, general condition improved steadily. June 1963, closure of ileostomy	Well	
25	U.C.	F 54	Intermittent attacks of ulcerative colitis for 32 years. Barium enema showed sigmoid stricture	November 1962	Resection of sigmoid colon later in November 1962. She continued to have some bowel symptoms; closure of ileostomy was deferred	Still has double-barrelled ileostomy	
26	U.C.	F 54	Severe first attack of ulcerative colitis culminating in development of large recto-vaginal fistula	July 1963	General condition steadily improved	Well, but still has double-barrelled ileostomy	
27	U.C.	F 56	Three years' history of ulcerative colitis with ultimate development of sigmoid stricture	February 1964	February 1964, resection of sigmoid stricture	Still has double-barrelled ileostomy	Recent case. Closure of ileostomy is contemplated in future
<i>Group 3. Children failing to develop normally.</i>							
28	U.C.	M 13	Three years' history of ulcerative colitis with stunting of growth. Height 4 ft. 4 in. (132 cm.) and weight 73 lb. (33 kg.). Developed multiple perianal abscesses and fistulae, and also a sigmoid stricture	March 1960	General condition rapidly improved; marked gain in weight and height, with normal puberty. July 1960, perianal fistulae treated by conservative surgery. January 1964, resection of sigmoid stricture. April 1964, closure of ileostomy. At this time he weighed 115 lb. (52 kg.). (He is bigger than his father who is a short man.)	Well	
29	U.C.	M 15	Severe ulcerative colitis since age of 9 years with subacute hepatitis which responded to corticosteroids. Stunting of growth and remaining infantile. Height 5 ft. 2 in. (157.5 cm.). Weight 92 lb. (42 kg.)	April 1961	General condition improved greatly. Puberty at age 16. August 1963, closure of ileostomy. Has been symptom-free and has continued to grow. Present height 5 ft. 8 in. (173 cm.). Present weight 122 lb. (56 kg.)		
30	U.C.	F 13	Severe ulcerative colitis since age of 7 years with marked stunting of growth. At time of ileostomy was 4 ft. 8 in. (142 cm.)	June 1961	General condition improved greatly. Menarche at age 15. Continuing to grow. Present height 5 ft. 1 in. (155 cm.). Still has some colonic symptoms	Mild colonic symptoms, requiring local corticosteroid therapy	Will possibly require elective colectomy
31	U.C.	F 13	Four years' history of ulcerative colitis with stunting of growth. Height 4 ft 4 in. (132 cm.). Weight 55 lb. (25 kg.)	June 1961	General condition improved. Menarche at age 15. January 1964, closure of ileostomy. Present height 4 ft. 10½ in. (148.5 cm.). Present weight 70 lb. (32 kg.)	Well	

TABLE II.—Summary of Results

	No. of Cases	No. With Closure of Ileostomy	No. Still With Ileostomy	Well After Colectomy	Deaths
Group 1	17	2	1	8	6
Group 2	10	6	3	1	0
Group 3	4	3	1	0	0

Stage 2.—The definitive procedure: either laparotomy with local resection of the affected portion of the bowel, to be followed by further medical treatment, or repair of recto-vaginal fistula or fistula-in-ano.

Stage 3.—Closure of ileostomy.

Three general points are worth making about this three-stage procedure. First, it is usual for us to perform the stages with a minimum of several weeks between them and to apply vigorous medical treatment, both systemic and topical, throughout the entire period to damp down the underlying disease. Secondly, it has been found that resection of portions of a defunctional colon is technically easy. Thirdly, little attention need be paid to classical points of section, because in the absence of a faecal stream the blood supply is adequate for perfect healing no matter where the colon is divided; in other words, the most limited resection is feasible.

3. Chronic Disease in Childhood Associated with Failure of Normal Development

In some examples of ulcerative colitis in childhood it is possible to hold the disease in check reasonably well with corticosteroid treatment, but at the price of preventing the child from developing normally. The reason for the failure to grow and to pass through puberty is probably complex, and can be attributed in part to the disease and in part to the corticosteroid treatment.

In a few of these patients in whom we have been anxious to preserve the colon, if possible, a double-barrelled ileostomy has been done and only local corticosteroid treatment employed for the colitis. The results in the small group in which we have used this technique have been encouraging. Growth in height and weight has been rapidly resumed and puberty reached. It has been our practice to leave the colon uncoupled until the secondary sex characteristics are established and ideally until the child is as big as the parent of the same sex.

Discussion

A surgical procedure to isolate the colon was first described by Brown (1913), who performed a terminal ileostomy and caecostomy. Among his 10 cases there were several which were probably examples of ulcerative colitis. The use of topical therapy in ulcerative colitis likewise has a long history. For example, Hurst (1921) made use of an appendicostomy to allow the colon to be irrigated, although the therapeutic agents at his disposal can have had little beneficial effect. Topical therapy with corticosteroids applied per rectum has been in use in this hospital since 1955 (Truelove, 1956, 1957), and independent controlled trials have demonstrated that the treatment is beneficial (Truelove, 1958; Watkinson, 1958; Matts, 1960). It was therefore a logical step to see whether a double-barrelled ileostomy with diversion of the faecal stream would make local corticosteroid treatment more effective in severe ulcerative colitis. In addition, it also seemed possible that isolating the colon and applying local corticosteroid treatment would allow some local complications to be treated by limited surgery rather than by colectomy.

The first of these possibilities has not materialized. If severe ulcerative colitis does not respond to a full medical regime it is unlikely that the addition of a double-barrelled ileostomy with intensive local therapy will control the disease.

If the attack is acute and medical treatment is failing, an emergency colectomy should be performed even though this is still a dangerous operation. If the attack is less acute it may be best to carry out a double-barrelled ileostomy even though colectomy may be required later. In these circumstances the colectomy is usually an elective operation and comparatively easy to perform.

In our second category of patients—that is, those with certain local colonic or rectal complications—the technique of double-barrelled ileostomy combined with local corticosteroid therapy and limited surgery to the isolated colon has been encouraging. We intend to continue with this combined technique in suitable selected cases.

In the special group of children with stunted growth due to ulcerative colitis or to its treatment with corticosteroids, the results have also been encouraging. It can be questioned whether this approach to the treatment of ulcerative colitis in childhood is justified in view of the risk of carcinoma of the colon in such cases (Lagercrantz, 1955; Michener *et al.*, 1961). However, a variety of other factors influence the development of carcinoma in ulcerative colitis (Edwards and Truelove, 1964), especially the presence of continuous symptoms, and it is therefore possible that if the patient is rendered entirely symptom-free the risk of carcinoma may be reduced.

In this article we have grouped together ulcerative colitis and Crohn's disease affecting the colon as if they were one and the same disease, which may indeed be so. Without concerning ourselves with this philosophical question, we nevertheless believe that a double-barrelled ileostomy followed by limited surgery is especially valuable in those patients with the clinical picture of Crohn's disease affecting a part of the colon.

It may seem strange that we have called this a preliminary report when we have been using the technique for five years. However, as ulcerative colitis and Crohn's disease can recur after years of freedom from symptoms, we judge that prolonged observation of the present cases and of others will be necessary before we can assess its value with a good measure of assurance. At present we are satisfied that the technique described is a valuable addition to the treatment of ulcerative colitis and Crohn's disease of the colon in selected cases.

Summary

Thirty-one selected patients with ulcerative colitis or Crohn's disease of the colon have been treated during the past five years with double-barrelled ileostomy combined with local steroid treatment of the isolated distal bowel.

The aims have been efficient topical therapy, the possibility of conservative surgery to the isolated colon, and the feasibility of restoring the continuity of the bowel subsequently without relapse of the disease.

The cases fall into three groups: (1) those with fulminating disease; (2) those with local bowel complications; and (3) those with chronic disease in childhood.

The results in the second and third groups have been encouraging. In the first group, however, although some patients rapidly responded to treatment, others failed to be controlled.

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