

IDIOPATHIC ULCERATIVE COLITIS

A REVIEW OF 149 CASES

WITH PARTICULAR REFERENCE TO THE VALUE OF, AND INDICATIONS
FOR SURGICAL TREATMENT

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WE ARE referring to the so called chronic idiopathic ulcerative colitis, excluding, as far as possible, cases of amebic dysentery, tuberculous colitis and bacillary dysentery. It is a diffuse process usually beginning in the rectum (95 per cent of Bargen and Mayo's¹ 1,500 cases) and frequently involving the entire colon to the ileocecal valve. Rarely (1.3 per cent of our cases) does it extend into the terminal ileum. It is segmental in rare instances, or may involve only the rectum or a portion of the left colon.

We are not concerned at this time with the etiology of the disease or the relative merits of specific versus non-specific treatment. We, as surgeons, are asked to make important decisions in a group of desperately sick patients. As far as we can tell from our own experience and from the literature, these same decisions must be made whether the disease is infectious or otherwise, and whether specific or non-specific medical treatment is employed.

During the past four years it has been our responsibility to meet any surgical problems that might arise in the cases admitted to the wards at the Massachusetts General Hospital. The number of cases so seen has not been large, but the problems presented have been of the greatest importance, in most instances involving a question of life and death. The relative infrequency with which the decisions have had to be made, the extraordinary variations in the disease, and the resulting difficulty in establishing definite criteria from which to make such decisions have suggested a critical review of the cases at this hospital, with particular reference to those aspects of the disease which pertain to the value of, and indications for, surgical interference.

One hundred forty-nine cases in which a diagnosis of ulcerative colitis seemed definite, according to our present criteria, have been admitted to the wards of the Massachusetts General Hospital during the 20 years prior to January, 1935. During the first decade most of the cases were loosely classed as tuberculosis, many were admitted to the surgical wards and, except in very mild cases, an appendicostomy or cecostomy for purposes of irrigation was advised. During the past ten years the patients have been admitted to the medical wards to be carefully and completely studied in an attempt to exclude tuberculosis, amebiasis, and bacillary dysentery. During this period each case

not responding to medical treatment has been seen in consultation by a surgeon, and if operation was advised has been transferred to the surgical service. The operation of choice has been an ileostomy with complete external diversion of the fecal stream, except in a few cases where the disease was localized and a more distal procedure could be carried out.

Symptoms.—The variations in the symptomatology have resulted in occasional uncertainty as to diagnosis, particularly in the more acute cases. The following points from the histories are of interest.

Blood.—Rectal bleeding is an almost constant symptom. It is described most frequently as “streaks of blood” and was noticed by 87 per cent of the patients in this series. Massive hemorrhage—a symptom of serious importance—is fortunately rare, being found in only 5 per cent of our cases. On the other hand, one of our fatal cases had a profuse diarrhea without gross blood, but with large ulcerations visible through the proctoscope and demonstrated throughout the colon at postmortem examination.

Diarrhea.—This occurs frequently without blood at the onset, and is present in all cases at some stage of the disease. *Constipation* is not uncommon, particularly prior to the onset of acute symptoms; in fact, in the occasional case obstinate constipation necessitating drastic catharsis has been given as the precipitating cause of the protracted diarrhea for which the patient sought relief. Blood and constipation may be associated just as may blood and diarrhea. In one case constipation, alternating with short periods of diarrhea, was present. The patient finally came to the hospital because of bleeding and failure to have a movement for five days.

Onset.—This may be sudden or gradual. One of our patients—a powerful young Harvard athlete—was seized with sudden dizziness and weakness while rowing, followed later by a bloody diarrhea and a temperature of 103°. In other cases, a sudden chill and high fever initiate the attack with an abruptness comparable to that in lobar pneumonia.

Recurring attacks of fever, marked prostration, rapid loss of weight and strength, with a natural tendency to remissions and relapses are characteristic of the disease. The frequency of recurrence varies. In one of our cases there were five admissions in a year. The longest period between attacks was 12 years. As in the cases studied by Banks and Bargaen,² acute respiratory infections and emotional upsets were the most common precipitating causes.

Complications are common and at times serious. Peri-anal infections, skin lesions which may be acne-like, or diagnosed as erythema nodosum or erythema multiforme; multiple joint pains and swelling, keratitis, iritis and corneal ulcers have been encountered in this series. Of most significance, however, have been those symptoms referable to lack of vitamins; polyneuritis (in one of our cases resulting in temporary paralysis of lower extremities and inability to walk), skin changes, smooth tongue and tachycardia. Polyposis as it occurred in this series was not a true polyposis but rather a hypertrophy of remaining islands of mucosa following large irregular areas of complete destruction of the mucosa membrane and later scar formation

(Fig. 1). Cancerous degeneration, occurring in 2.5 per cent of 800 cases, reported by Barger³ has not been found in this series.

Physical examination is of importance chiefly because of its negative character except for occasional tenderness along the course of the colon and those conditions secondary to the disease such as varying degrees of emaciation and pallor. The most interesting finding was the presence of a palpable spleen in 3 per cent of the cases.

Laboratory examinations are of importance primarily in excluding other

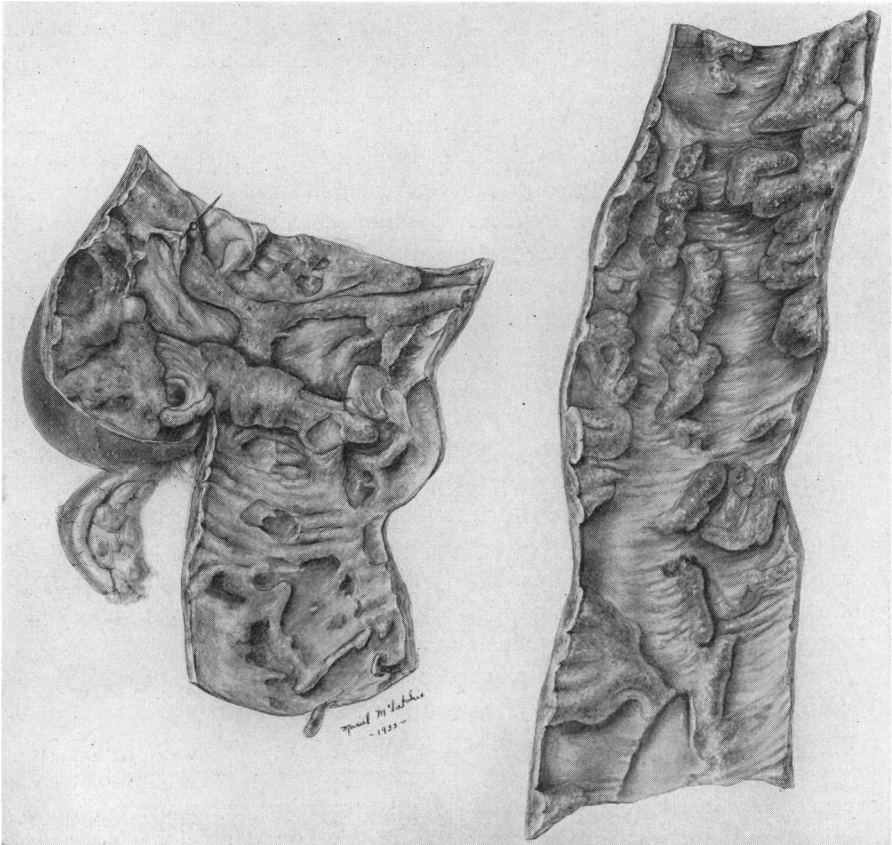


FIG. 1.—Section of the cecum with terminal ileum and of sigmoid from the fatal case dying of a general peritonitis secondary to perforation of the ileum. In this case about 22 cm. of terminal ileum were involved. This specimen shows well the extensive loss of mucous membrane and resulting pseudopolypsis.

conditions such as amebiasis, bacillary dysentery, tuberculous colitis, and in estimating the degree of anemia or changes which have taken place in body chemistry.

Proctoscopy represents the most important single method of examination. Positive findings were present in all of the cases in this series. The appearance of the mucous membrane varies with the stage or manifestations of the individual case. The mucosa may be covered with a grayish mucopurulent

film which when gently wiped leaves a dark red granular bleeding surface. The outstanding characteristic is the diffuseness of the process. The red granular edematous mucous membrane, bleeding easily on slight trauma, may be studded with small white dots which represent small miliary abscesses in the mucosa, later breaking down to form the small superficial ulcerations of a later stage. These ulcerations may be small and seen with great difficulty or they may reach one or two centimeters in diameter, coalescing with adjoining ulcers, leaving large areas entirely without mucosa, with islands of edematous dirty red mucous membrane (Fig. 1), giving the appearance of multiple polypi. The valves are involved in the process and later may be scarcely perceptible in the late, rigid, narrow, tube like rectum. These findings are in contrast to the characteristic picture in amebic dysentery where small, superficial, slightly elevated ulcerations are found scattered in an otherwise normal appearing mucosa. From a tuberculous colitis the differential diagnosis by proctoscope alone may be more difficult. According to Martin,⁴ diffuse tuberculous colitis with ulcerations visible through the proctoscope is very rare except in a patient bedridden from tuberculosis. The tuberculous process advances from the ileocecal region downwards and through the proctoscope the ulcerations vary from a few millimeters to several centimeters in diameter with irregular outline. The intervening mucosa, slightly reddened, may be differentiated from ulcerative colitis with difficulty by one less experienced. Martin lays great stress on the fact that rarely does one find the diffuse contractions of the bowel and diminution in size of rectal valves in tuberculosis that is frequently seen in ulcerative colitis.

Roentgenographic examination by barium enema is next to proctoscopy our most valuable aid. There is early a loss of haustral markings, spasticity, rapid emptying, with the sawtooth serrations due to existing ulcers and later the characteristic contracted, stiff leadpipe appearance, not infrequently with one or more strictures.

The *diagnosis* is suspected in cases of bloody diarrhea with positive proctoscopic and roentgenologic findings, and is accepted when careful hospital study, including serologic and bacteriologic studies exclude tuberculosis, amebiasis, and bacillary dysentery as probable causes. In more recent cases an unsuccessful course of emetine or yatren may be given as additional evidence against an amebic infection. A negative roentgenogram of the chest is accepted as excluding a diffuse ulcerative colitis from tuberculosis. On the other hand, tuberculosis of the lungs may occur in association with a chronic idiopathic ulcerative colitis, as shown by pathologic and bacteriologic study of the diseased colon.

FATAL CASES.—Of the 149 cases in our series there have been 27 deaths, a hospital mortality of 18 per cent. Twenty or 74 per cent of the deaths followed some type of operative procedure.

Causes of Death.—Of 27 deaths in this series, 18 patients came to necropsy. Of these 18 cases, 13 had some type of operation and five died without operative interference (Table I).

TABLE I
Causes of Death in 18 Cases Examined Postmortem

Without operation	Number
General peritonitis from perforation of colon.....	3
Widespread sepsis.....	1
Extensive local disease—pneumonia.....	1
 After operation	
General peritonitis from perforation of colon.....	3*
General peritonitis from perforation of ileum.....	1†
General peritonitis from opening of appendix stump after ileostomy and appendectomy.....	1
General peritonitis without obvious cause.....	4
Extensive local disease—pneumonia with abscess formation.....	1
Bronchopneumonia.....	1
Abscess of lungs.....	1
Pulmonary edema—fatty degeneration of liver, pulmonary tuberculosis(?), intestinal obstruction.....	1
	—
	18

* In all three cases perforation occurred before operation.

† Twenty-two cm. distal ileum involved at time of operation; perforation through diseased bowel after operation.

Six of the 12 deaths from peritonitis were due to perforation of the bowel. It is interesting that as far as one could tell from the clinical records there was little evidence to suggest the exact time at which perforation had occurred. It is also of interest that in four of the cases death had occurred without extension of the disease to the ascending colon and cecum.

Records of fatal cases were gone over carefully in the hope of being able to segregate the group in which death was most apt to occur.

Age seems to be important. Ulcerative colitis is a disease of childhood through early middle life, 88 per cent of our cases occurring in patients under 50 years of age. The hospital mortality in this group was 13.7 per cent, as contrasted with 41 per cent in the group 50 years of age and over.

The number of attacks seems to have no great bearing on the seriousness of the individual relapse. In the two cases with longest intervals between attacks—12 and nine years—the second attack of each proved to be of the acute fulminating type with death from perforation within six weeks of the onset of symptoms.

Continued septic fever, rising pulse, abdominal pain, increasing abdominal tenderness or distension, massive hemorrhage, nausea, vomiting or inability to eat, are serious symptoms and were present singly or in combination in the fatal cases.

TREATMENT.—*Medical Treatment.*—Whereas formerly patients were admitted to and treated on either medical or surgical wards, all patients are now treated on the medical wards. The basic principles of treatment are: (1) rest, (2) high vitamin, high caloric, low residue diet; (3) eradication of focal

infection; (4) adjustment of social and psychiatric problems; (5) multiple transfusions. These form an integral part of the management of all the seriously ill patients whether or not operation becomes necessary. We have seen no ill effects from properly given transfusions as feared by Emery and Wasika.⁵ The largest number given to one patient during a single entry was seven. This patient survived an ileostomy and later a total colectomy; (6) irrigations; a variety of solutions have been used for irrigating the diseased colon, either through an appendicostomy or per rectum. Dilute silver nitrate, dilute solutions of potassium permanganate, acriflavin and Dakin's solution have all been in favor over varying periods of time. No one has any real claim to superiority over any other. We are unable to convince ourselves that irrigations of any type are of value and believe they may be harmful in the more acute cases. The one local procedure which has been used over a period of years is the gentle installation of warm starch solution into the rectum. This seems to give enough temporary relief to the badly irritated rectum to justify its use; (7) autogenous vaccines and ulcerative colitis anti-streptococcus serum have been used on a few patients but are not an integral part of the treatment; (8) emetine hydrochloride and yatren may be used on occasion as additional evidence for or against an amebic infection.

SURGICAL TREATMENT.—The surgical procedures used in an attempt to help control the disease are noted in Table II.

TABLE II
Operations Employed in 140 Cases of Ulcerative Colitis

Operation	Number	Deaths	Mortality Per Cent
Appendicostomy	4	2	50
Cecostomy	2	0	0
Colostomy	4	2	50
Resection and anastomosis	1	0	0
Ileostomy	54	15	35
Colectomy:			
subtotal 8			
total 2	10	1	10
Miscellaneous	22	2	9

There is nothing in a study of the above cases to alter our belief that the only operation which is indicated in ulcerative colitis is one which will give complete rest to the affected bowel by external diversion of the fecal stream proximal to the disease; and with few exceptions this means ileostomy. Failing this the only other recourse is extirpation of the colon.

Incidence of and Immediate Results after Ileostomy.—Although 54 or 36 per cent of the 149 patients have had ileostomies, the incidence of 41 per cent which has occurred in the past ten years probably more nearly represents the proportion of hospital patients who ultimately are operated upon. Ileostomy is not a curative procedure but the striking drop in temperature and pulse (Chart I) and the general improvement of the patient suggest the value

of complete rest to the badly diseased bowel. Unfortunately, the improvement is not always so striking as suggested in the accompanying chart. A rapid fall of temperature by crisis or lysis is sufficiently common, however, to leave little doubt in our minds as to the value of an ileostomy as a life-saving procedure.

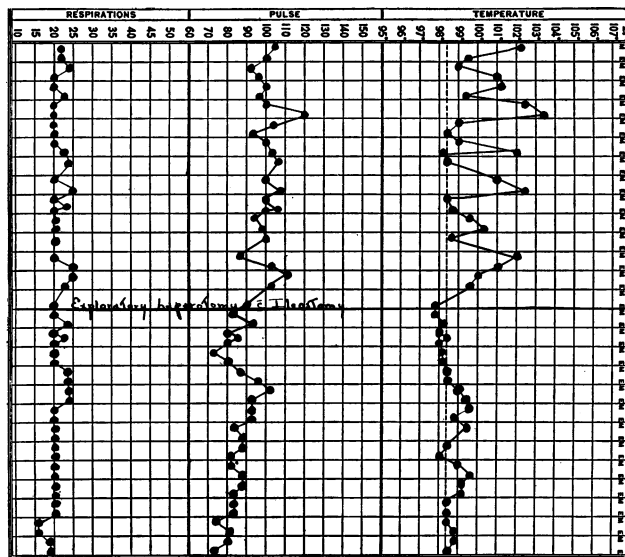


CHART I.—Shows striking drop in temperature immediately following ileostomy. This patient remained well for five years; later requiring subtotal colectomy for repeated hemorrhages.

We look upon ileostomy as a permanent condition. Rarely if ever under our present regimen will a badly diseased colon become free from disease after ileostomy. Should healing take place, multiple strictures and contractions will result making subsequent function impossible. Rather do we look upon ileostomy as the first stage of a removal of the diseased bowel in what will eventually probably be a high proportion of cases.

Mortality Rate and Causes of Death after Ileostomy.—Fifteen or 35 per cent of the 54 patients died. Decisions were made and operations done by 13 different surgeons. The benefits to the patient of the concentration of the more unusual and difficult problems to a small group of men is shown in Table III.

TABLE III

Mortality Rates Following Ileostomy According to Number of Operators

	No. operations	Deaths	Mortality per cent
Group I (2 operators).....	20	3	15
Group II (11 operators).....	34	12	35

A study of the fatal cases after operation fails to show specific reasons for the variation in mortality between the two groups.

TABLE IV

Causes of Death after Ileostomy

Group I	General peritonitis from	
	perforation of colon (autopsy).....	1
(2 operators)	perforation of diseased ileum (autopsy).....	1
	Progression of disease (autopsy).....	1
Group II	General peritonitis from	
	open appendix stump (autopsy).....	1
(11 operators)	no obvious cause (autopsy).....	3
	Bronchopneumonia (autopsy).....	1
	Abscess of lungs (autopsy).....	1
	Acute fulminating attack (no autopsy).....	1
	Cause undetermined (no autopsy).....	4
	Massive hemorrhage (no autopsy).....	1

From the records one finds that in Group I the patient dying of "progressive disease" had been erroneously diagnosed as cancer and an exploration done. In Group II all except two patients had an exploration under general or spinal anesthesia and in five cases the appendix was removed at the time the ileostomy was done. The patient dying of general peritonitis secondary to an open appendix stump seems to us to be of sufficient significance to report in detail.

CASE REPORT

A boy of 16 was discharged from the medical wards July 22, 1933, 29 days after admission, for what was taken to be a mild ulcerative colitis. Two days after returning home he suddenly felt sick, vomited, had abdominal pain and movements every two hours. He lost ten pounds in five days. He was acutely ill on admission, vomiting and having almost constant bloody movements. With no improvement in 48 hours an ileostomy was advised and done under novocaine infiltration. An edematous fibrin covered appendix presented in the wound, the cecum was red, edematous, and there was a small amount of clear fluid. The operator was fearful of leaving the appendix and removed it, burying the stump with a fine catgut suture. An ileostomy was done. The immediate response to operation was fairly satisfactory except that he had more abdominal discomfort than usual. Six days after operation there was a marked increase in pain, with vomiting, elevation of temperature and death three days later. At autopsy there was a general peritonitis, the stump of the appendix being wide open.

From our own experience and from a study of fatal cases we believe that, except for those patients done for mechanical reasons, the following conclusions seem justified:

(1) Novocaine locally is the anesthetic of choice.

(2) Exploration is dangerous and contributes little if anything to the subsequent care of the patient.

(3) A colon so diseased that ileostomy is indicated is too diseased to make appendectomy safe.

Indications for Ileostomy.—Technical Considerations.—Bargen, Brown and Rankin⁶ have given the following mechanical indications for ileostomy:

- (1) Polyposis with or without carcinomatous degeneration.
- (2) Strictures.
- (3) Incontinent anus.

In addition to these indications we believe that ileostomy has a definite place: (1) as a life-saving procedure, and (2) as a means *per se* or preliminary to subtotal colectomy, of changing a person from a condition of chronic invalidism to one of comparative physical well being and economic usefulness. We do not underestimate the inconvenience of an ileostomy, but we know no better criteria of the seriousness and discomforts of the disease than acceptance of ileostomy by the patient who has known these and feels compensated by the relief which ileostomy has given.

It is easy to say that an indication for ileostomy is the fact that adequate medical treatment has failed. The irregular course of the disease, its tendency to remissions, the insidious manner in which perforation may occur on the one hand, and the desire to do everything possible to avoid an ileostomy on the other, all tend to make the final decision one of the most difficult in medicine or surgery. Of one thing we are certain: absence of definite indications that medical treatment has failed is frequently responsible for "waiting another 24 hours for signs of improvement," possibly finding some indication that such has occurred, then delaying another day only to realize that the time has passed when ileostomy would be of avail.

While certain symptoms and signs are of more significance than others, it is impossible to give any definite criteria which will permit one to say that medical treatment has failed and ileostomy should be done. Those we believe to be of greatest importance in reaching this decision are:

- (1) Massive hemorrhage which usually denotes large and deep ulcerations, and in itself may be an indication for early operation.
- (2) Persistent fever especially if accompanied by a rising pulse.
- (3) Nausea, vomiting or inability to eat, particularly if associated with a serum protein below 5.5 per cent.
- (4) Abdominal pain, increasing distention or tenderness along the course of the colon.
- (5) Continued bloody diarrhea with secondary anemia when the patient's general condition, red blood count and hemoglobin are maintained, but not definitely improved by four transfusions of 500 or 600 cc. of blood at four to seven day intervals.

Any of the above symptoms in a patient over 50 years of age is more serious than in younger patients, and earlier operation is indicated.

In making final decision one must recognize that ileostomy is not curative, and while striking improvement may result from rest of the diseased colon, the patient must still have sufficient reserve strength to withstand the operative procedure and immediate postoperative discomforts.

Technical Considerations.—Rankin⁶ prefers an end ileostomy and describes an excellent technic. It has been our experience that in those cases where operation is done as a life-saving procedure the condition of the patient and the limitations of novocaine anesthesia will not permit closure of the right

gutter. The simplest procedure is a loop ileostomy, drawing a loop of ileum eight to ten inches from the ileocecal valve through a small right rectus or McBurney incision; a strip of fascia and skin are sutured underneath the bowel, as described by Jones⁷ for a colostomy. We have also used the end ileostomy dividing the ileum about eight inches above the ileocecal valve, inverting the distal end and dropping it back into the abdomen without obliterating the space between the bowel and lateral abdominal wall. We are not entirely satisfied with the results. There is a tendency, particularly of the loop ileostomy, to prolapse requiring a secondary operation in 20 per cent of our cases. If, on the other hand, the wound is closed too tightly around the bowel, obstructive symptoms will develop which, though not marked, may be of serious consequence to a patient already critically ill and badly in need of food.

COLECTOMY.—Of the 29 patients surviving ileostomy in the past ten years, ten have had a total or subtotal colectomy at this hospital and two elsewhere. There has been one death in our series, a patient who after a short period of improvement following ileostomy had a recurrence of symptoms, temperature and bloody discharge. A late and unsuccessful attempt was made to remove the colon in the hope of saving her life.

INDICATIONS.—The indications for colectomy are more definite than those for ileostomy and are

(1) Polyposis with or without carcinomatous degeneration.

(2) Recurring attacks of bleeding, temperature and malaise after ileostomy, frequently associated with multiple skin infections and joint symptoms.

(3) Continued anemia and failure to gain in strength and weight, without other demonstrable cause.

If possible, the interval between ileostomy and colectomy should be at least four months to permit the small bowel to assume some of the functions of the colon and to get the patient into better general condition (Table V).

TABLE V

Indications for Colectomy and Interval Between Ileostomy and Colectomy

Interval	Indication	Result
49 mos.	Attacks of bleeding.	Relieved
24 mos.	Rectal bleeding. Painful joints.	Relieved
38 mos.	Protracted relapse with fever. Bleeding. Failure to gain after 4 transfusions.	Relieved
19 mos.	Continued rectal movements. Multiple skin infections. Corneal ulcer. Toxic arthritis. Acute iritis.	Relieved

TABLE V—Continued

Interval	Indication	Result
8 mos.	Continued symptoms. Blood. Lack of strength. Frequent vomiting.	Relieved
8 mos.	Continued loss of blood. Secondary anemia.	Relieved
5 mos.	Frequent bloody rectal movements. Toxic arthritis (knees). Entered hospital with fever. Strength not regained.	Relieved
8 mos.	Attacks of bleeding. Strength not regained. No weight gain. Continued secondary anemia.	Relieved
9 mos.	Continued bleeding with fever. Deficiency symptoms.	Relieved
2 mos.	Progressive failure. Marked anemia. Low serum protein.	Died

Technical Considerations.—The technical details of total and subtotal colectomy have been well described by Rankin,⁸ and Coffey.⁹ Total colectomy is a three stage procedure: (1) ileostomy; (2) removal of colon to the lower sigmoid; (3) removal of the rectum and remaining sigmoid. To date the last stage has been necessary in only two of our patients.

Ether anesthesia is used. A long left paramedian incision is made and the colon removed either from right to left (R. H. M.) or from left to right (L. S. M.). We believe strongly in preservation of the omentum, suturing its under surface to the transverse mesocolon and to the posterior peritoneum in the splenic and hepatic regions where the posterior peritoneum is less well defined and the retroperitoneal surfaces more difficult to cover. The entire bed of the colon is carefully covered either with omentum or peritoneum (Fig. 2). If not previously done the space between the ileostomy and right abdominal wall is obliterated.

The upper end of the lower segment may in an occasional case be turned in and dropped back into the pelvis. In most cases, however, we prefer bringing it out of the lower end of the wound not only because of the saving of time but also because we believe it to be safer. In one of our earlier cases the rectal stump and failure to preserve the omentum were responsible for a fatal acute small bowel obstruction occurring three weeks after the patient left the hospital.

If continued rectal bleeding or peri-anal infection makes it desirable to remove the remaining segment of bowel, this is done by a combined abdomino-

perineal operation or, if the stump of rectum has been turned in and dropped into the pelvis, by excision from below.

SUMMARY

One hundred forty-nine cases of idiopathic ulcerative colitis admitted to the Massachusetts General Hospital during the past 20 years have been reviewed.



FIG. 2.—The sigmoid has been divided, the distal end with the clamp in place and covered with gauze is brought out through the lower end of the wound. The mesentery has been divided close to the bowel as far as midtransverse colon, the omentum being carefully separated from colon. The posterior peritoneum has been closed as the operator proceeds, the large uncovered area at the splenic flexure being covered with omentum which is then sutured to the transverse mesocolon. If the operator prefers the operation may begin by division of the terminal ileum and proceed from right to left.

The important general aspects of the disease have been considered.

The indications for, the principles of technic, and the immediate results after ileostomy, subtotal and total colectomy are discussed.

CONCLUSIONS

(1) Surgery in carefully selected cases has an important place in the management of the intractable and more serious cases of idiopathic ulcerative colitis.

(2) Ileostomy is the operation of choice. Preceded and followed by blood transfusions and other indicated measures it is frequently a life-saving procedure.

(3) It was ultimately performed on 40 per cent of patients admitted to the wards of the Massachusetts General Hospital.

(4) Approximately 40 per cent of patients surviving ileostomy will later require removal of the diseased colon.

(5) The results after subtotal colectomy are excellent.

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DISCUSSION.—DR. RICHARD H. MILLER (Boston, Mass.).—I shall consider briefly certain technical points which we feel are of interest and importance.

The operation of ileostomy, which would at first thought seem to be simple, is, as a matter of fact, fraught with danger. The ileostomy should be made within the last 12 inches of the small intestine and the proximal loop should be lower than the distal loop. The opening in the muscle should not be larger than enough to accommodate two fingers. If it is larger than that, there is great tendency to herniation of the bowel, and if it is smaller, there will often develop obstruction at the point where the bowel emerges through the abdominal wall.

It is not uncommon to see intestinal obstruction from the simplest sort of twist or kink in the bowel. It is not definitely represented here, but we have seen instances of the typical picture of mechanical obstruction where there was nothing save the least bit of kinking where the ileum traverses the anterior abdominal wall.

At the time of doing the ileostomy, exploration should never be performed, because there is altogether too much danger of setting up a general peritonitis. The exploration and palpation of the large intestine has been compared to the situation existing in a canvas tent during a rain storm. If one stands inside the tent, the roof will be perfectly dry on the inside until one draws a finger along it and then drops of water will appear and drip down. That may occur when one rubs one's hand over the diseased colon.

We have seen instances in which papillomata develop on the exteriorized mucous membrane as a result of the constant irritation of the ileostomy bag, and have been obliged to remove them surgically.

I want to emphasize again what Doctor McKittrick said about the necessity of preservation of the great omentum in cases in which the colon is removed. We believe very strongly that its preservation results in greater protection against later intestinal obstruction. At first thought it might seem a bit difficult, but when you come to do it you will find that the transverse colon can be dissected free without the slightest trouble.

A last word about the rectum. Doctor McKittrick has usually saved the rectum and colon, whereas I have taken it out farther down and frequently turned in the stump. To my surprise there have been occasional instances where the disease has persisted in the rectum in spite of the fact that the patient's general condition has greatly improved. Again, in another case just recently, it has been necessary to remove the remaining rectum because of persistent bleeding. The removal of the existing stump is not difficult if one will simply open the rectum, insert the forefinger into its lumen, and so determine definitely where the upper end of the stump is, by doing which one avoids the risk of possibly opening the peritoneal cavity.

In all these cases which we have followed of recent years, we have seen definite improvement and we believe that ulcerative colitis is a disease in which surgery plays a very important rôle. There are a certain number of cases demanding ileostomy, and of those who are improved by ileostomy, a certain percentage, about 40, require colectomy, and colectomy is, comparatively speaking, a safe procedure.

We have a number of patients going about their business today, well satisfied with their artificial anus, able to handle it cleanly and without particular difficulty, and those are ones who, without some type of surgical intervention, such as this, would certainly have died of their disease a long time ago.

DR. VERNON C. DAVID (Chicago, Ill.).—The informative review of the surgical side of ulcerative colitis just presented by Doctors Miller and McKittrick emphasizes the seriousness of the disease and the relatively frequent necessity of the performance of ileostomy and less frequently, colectomy. In the performance of ileostomy, it has been our custom to omit exploration of the abdomen as it has frequently been found that free fluid and fibrinous exudate are present in the peritoneal cavity due to its involvement by extension from the inflamed colon.

To supplement the cases reviewed by the essayists I should like to comment on some data obtained from the care of 50 cases seen in private practice during the past ten years. The ages of the patients varied from five to 50 years and there were 31 females and 19 males in the group. The cases could be relatively easily divided into two groups of mild and severe examples of the disease. Both groups were composed, in the main, of patients who had suffered with the disease from one to 16 years. In the group of mild cases, the general health of the patients was little affected; their color and weight was practically normal; there were only a few acute exacerbations of the disease, and the ulceration was usually confined to the rectum, sigmoid and descending colon. In most of the mild cases the roentgenologic examination of the colon showed but slight narrowing of the affected bowel and lack of haustration, but no foreshortening or stricture of the colon. On the other hand the severe cases exhibited fever, loss of weight, anemia, almost constant diarrhea, involvement of practically the whole colon by the disease and

returned to pretty nearly normal life. Six months ago she began to go downhill again with discharge from the remaining sigmoid and rectum. On removal of the rectum a quite remarkable thing happened. Her ileostomy was for some reason or other a little more contracted than usual and had a very small opening. This never bothered her because her ileostomy discharge was always completely liquid.

Five days after removing the segment of rectum which, of course, was quite distant from the ileostomy, the ileostomy contents thickened so much that on the eighth day I had to enlarge the ileostomy. There is apparently some reflex acting that is extraordinarily interesting and will warrant a lot of further study.

DR. DANIEL FISKE JONES (Boston, Mass.).—Wished that reporters might be a little more accurate in regard to what they were talking about. It is quite confusing when one man says he cures 90 per cent of these cases by vaccines or serums, when the rest of us cannot cure even 1 per cent nor $\frac{1}{2}$ of 1 per cent. We would like anybody to show a series of cases of chronic ulcerative colitis of any duration at all, that you can call chronic, that have been cured by vaccines or by anything else. There is a very definite acute ulcerative colitis which is a very serious disease and which will kill a large number of patients, whether you do an ileostomy or not. Occasionally, I think that an ileostomy will save a patient.

The case Doctor Lund spoke of, whom I saw with him in consultation, was an acute ulcerative colitis following delivery. She had very deep ulcerations entirely through the posterior wall of the rectum as well as through the vaginal wall, and perirectal abscesses. An ileostomy was done and the sphincter cut, and the colon irrigated. She recovered. One hundred per cent do not get well, and never will, but if you let them alone they will certainly die, I believe, in a little higher percentage than if you do an ileostomy.

You will be very sorry for yourself if you do an ileostomy on a large number of these cases. Doctor McKittrick said 35 per cent died following ileostomy. Let us find out what percentage die if you let them alone. I am not referring to chronic ulcerative colitis, but to acute cases.

Few men seem to state definitely whether they are talking about acute, subacute, or a chronic ulcerative colitis which can be definitely diagnosed by the history and proctoscopic examination. Let us be reasonable about this matter and try to talk about the same condition instead of going on as we are at the present time.

There is a group of men who do not believe in ileostomy. As an example, a boy nine years old had chronic ulcerative colitis, was given vaccines for a long period and by men who know how to use them. He was sent to Colorado. He went down to 50 pounds there, never went to school, and could do nothing other boys of his age did. He was prevented from having an ileostomy for ten years. That boy was operated upon recently and within two months he weighed 25 pounds more than he had ever weighed before in his life. He is going to school now and drives an automobile. I am sure you gentlemen would be a fair if a case like this were put to you and would admit that ileostomy was an excellent procedure.

Let me impress upon you that ileostomy does not cure the disease. Ileostomy "cures" your patient. A case in point is a patient who, after ileostomy, gained markedly in weight and was quite well for four and one-half years. She was tired of the ileostomy and wanted something done. I therefore sent her to those who cure 90 per cent of their cases. I was told that this was a healed colitis. She was sent back to me to close the ileostomy

as she was cured. Three months after her return she nearly died of hemorrhage, and in another three months she had another hemorrhage, and in another three months I took out her colon. It may have been the vaccine or the serum that caused the ulceration in the colon, but when I took it out there was not a piece of mucous membrane as large as the nail of your little finger in the colon. If anybody can prove to me that vaccines will cure such cases as that, I should be glad to have it shown.

I think it is too bad to go on saying that ileostomy should not be done. I am sure it is keeping a lot of patients in bed, and it is not only keeping the patients in bed, but in children it is keeping the mother from doing anything but attending the child. I think it is much better to have a "cured patient" even if the disease is not cured.

There is a perfectly definite type of chronic ulcerative colitis which is progressive and has, so far as I know, never been cured. You may be able to cure early mild cases. I do not know what the difference is, but I know that if you get a real case of chronic ulcerative colitis which you are able to call chronic, that has gone on for a year or two, very few if any cases in this country have been really cured. I am quite sure that if we could only get to talking the same language about this disease we might get somewhere, but with the nomenclature as varied as it is at the present time and with so little said about the proctoscopic and roentgenologic findings, we certainly shall never get anywhere.

DR. HOWARD L. BEYE (Iowa City, Iowa).—Our experience at the University Hospital consists of 39 cases which have been operated upon. Fifty-one operations have been performed. Our results in respect to ileostomy have been very discouraging. There have been 12 cases. Of these there was an immediate or hospital operative mortality of 50 per cent (six cases). Of the six cases that survived, two of them subsequently died of the disease and two of them were so dissatisfied and discouraged with the ileostomy that they sought elsewhere a reestablishment of the continuity of the bowel and died following that.

One of our patients did fairly well. The bowel seemed to be improving and because the ileostomy was so discouraging to this patient, a young girl, I reestablished continuity. She survived, but did not do well. I subsequently did a compromise colostomy and she is getting along fairly well. She will come subsequently to partial colectomy.

We have had only one case, therefore, in which there has been an adequately functioning ileostomy who led a relatively normal life with this handicap. He has subsequently had a total colectomy. So, as a compromise to this very discouraging condition which develops from ileostomy, we have gone back to appendicostomy and cecostomy to give it a trial. We have been doing this now about four years and have 21 cases that have been treated in this way, realizing that it is purely a compromise.

We have found that frequently a very striking degree of improvement will follow this. The improvement, however, takes place in its completeness in the first year. Beyond that time the patient will not improve further, in our experience. In some cases the improvement has been very striking. We introduce a very small tube, about an eighth or ten French catheter in the appendicostomy opening. Irrigation is carried out once or twice each 24 hours, using 1,000 cc. of tap water. Our results have been as follows:

There have been five deaths, two of which were in the hospital and three subsequently from the disease (24 per cent). There has been one complete cure by the strictest standard that one can erect. This has been a clinical cure. There has been no cure as far as the condition of the bowel is con-

cerned, as shown by barium enema. This patient, an adult, had 15 or 20 stools per day, lost 85 pounds in weight. He is now doing heavy farm work, has one stool a day, and is perfectly strong. This has been three years ago. His tube has been removed and the appendicostomy opening which failed to heal has been closed by operation. We have had another case not quite so marked, but the improvement has been very striking, a gain of 20 pounds in weight, has two stools a day, does heavy farm work, but still wears his tube. We have had eight cases showing slight to considerable improvement. One case did not improve at all. I think he was made worse. Of the entire group, there have been five patients who have subsequently had either colostomy or colectomy.

We have learned, when we utilize this method of treating these cases that we must anticipate, except in the very exceptional case in which we might get a clinical cure (we do not expect that), that the tube must be worn permanently. If the patient pulls the tube out, or it becomes dislodged during the first year, or if the patient ceases to carry out irrigation treatment, there will be a return to the former condition.

As a compromise between ileostomy and appendicostomy, we have carried out colostomy in 11 cases. This is relatively simple and easy to determine upon if one is dealing with a regional colitis involving, say, the left half of the bowel or sigmoid, as it sometimes will. However, in four cases I have compromised to the extent that I have performed a colostomy through the midtransverse colon in bowel that was diseased, but relatively less diseased than on the left. I have made this compromise because of our discouraging experience with ileostomy. One patient died and three patients have gotten along very well, much better in fact as far as their social life is concerned than those with an ileostomy.

In our small group we have had one total colectomy, five partial, and three others in our series are candidates because of the continued symptoms which they have following colostomy or appendicostomy. There have been no fatalities in our series of colectomies.

DR. LELAND S. MCKITTRICK (Boston, Mass.).—In reply to Doctor Beye, we went over our records quite carefully relative to the appendicostomies which were quite popular in the early part of the series, and found nothing which could convince us that appendicostomy had any effect, whatsoever, on the disease. We believe quite firmly that medical treatment as now carried out at the Massachusetts General Hospital accomplishes as much as appendicostomy accomplished in the past, and are convinced that if operation becomes necessary external diversion of the fecal stream is essential.

We should dislike very much to leave the impression that we underestimate the inconvenience of an ileostomy or that we overestimate its value. It may be that our New England patients are somewhat euphoric, and are less disturbed by the ileostomy than those elsewhere. But when you have a young man tell you that he swam two miles last summer, feels fine and is happy with his ileostomy, it cannot be as bad as some would have us believe.

However, the patient who has an ileostomy must know what the disease means and have been very uncomfortable. It must either have saved his life or restored him from a state of invalidism to one of relatively good health. Moreover the patient must want to live.

We believe ileostomy to be permanent. It should be done under novocaine without exploration and without removal of the appendix. The mortality should not exceed 15 to 20 per cent, and that approximately 50 per cent of the survivals should be able to carry on a reasonable life, and that the other 50 per cent will eventually come to colectomy.