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**Staff Meeting Bulletin
Hospitals of the » » »
University of Minnesota**



Ulcerative Colitis

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William A. O'Brien, M.D.

I. UNIVERSITY OF MINNESOTA MEDICAL SCHOOL
 CALENDAR OF EVENTS
 May 22 - May 27

No. 26

Visitors Welcome

Monday, May 22

- 9:00 - 10:00 Roentgenology-Medicine Conference; L. G. Rigler, C. J. Watson and Staff, Todd Amphitheater, U. H.
- 9:00 - 11:00 Obstetrics and Gynecology Conference; J. L. McKelvey and Staff, Interns Quarters, U. H.
- 12:30 - 1:30 Pathology Seminar; Pernicious Anemia in Carcinoma of Stomach; Henry S. Kaplan, 104 I. A.
- 4:00 - Preventive Medicine and Public Health Seminar; Voluntary and Compulsory Sickness Insurance; Haven Emerson; Relative Merits; Myron Weaver, 6th Floor, H. S. Lounge.

Tuesday, May 23

- 8:00 - 9:00 Surgery Journal Club; O. H. Wangensteen and Staff, Main 515 U. H.
- 9:00 - 10:00 Roentgenology-Pediatrics Conference; L. G. Rigler, I. McQuarrie and Staff, Eustis Amphitheater, U. H.
- 11:00 - 12:00 Urology Conference; C. D. Creevy and Staff, Main 515, U. H.
- 12:30 - 1:30 Pathology Conference; Autopsies, Pathology Staff, 104 I. A.
- 12:30 - 1:30 Physiology-Pharmacology Seminar; Gastric Emptying in the Human; Austin Henschel, 214 M. H.
- 4:30 - 5:30 Obstetrics and Gynecology Conference; J. L. McKelvey and Staff, Station 54, U. H.
- 4:00 - 5:00 Pediatric Grand Rounds; I. McQuarrie and Staff, W-205 U. H.
- 5:00 - 6:00 Roentgen Diagnosis Conference; A. T. Stenstrom, M-515 U. H.

Wednesday, May 24

- 9:00 - 11:00 Neuropsychiatry Seminar; J. C. McKinley and Staff, Station 60 Lounge, U. H.
- 10:30 - 12:30 Otolaryngology Case Studies; Out-Patient Ear, Nose and Throat Department; L. R. Boies and Staff.
- 11:00 - 12:00 Pathology-Medicine-Surgery Conference; Diabetes Mellitus, Cerebral Damage Due to Hypoglycemia; E. T. Bell, C. J. Watson, O. H. Wangensteen, and Staff, Todd Amphitheater, U. H.
- 12:30 - 1:30 Pharmacology Seminar; Yellow Fever; A. Cuckler, 105 M. H.
- 12:30 - 1:20 Physiological Chemistry Journal Club; Current Literature Reviews, Staff, 116 M. H.

- 4:00 - 5:00 Obstetrics and Gynecology Journal Club, J. L. McKelvey and Staff, Station 54, U. H.
- 4:30 - 5:30 Neurophysiology Seminar; The Influence of the Blood Sugar Level on the Excitability of the Brain to Various Conditions; Dr. Chalgren, 113 M. S.

Thursday, May 25

- 9:00 - 10:00 Medicine Case presentation; C. J. Watson and Staff, Todd Amphitheater, U. H.
- 10:00 - 12:00 Medicine Rounds; C. J. Watson and Staff, East 214 U. H.
- 12:30 - 1:30 Pediatrics Seminar; Lymphogenous Participation in Cutaneous Phenomena; Catherine Remington.
- 12:30 - 1:30 Physiology Chemistry Seminar; The Use of Heavy Isotopes as Tracers; H. G. Wood, 116 M. H.
- 5:00 - 6:00 Roentgenology Seminar; Reports of Recent Meetings Attended; Leo G. Rigler, M-515, U. H.

Friday, May 26

- 9:00 - 10:00 Medicine Grand Rounds; C. J. Watson and Staff; Todd Amphitheater, U.H.
- 8:30 - 10:00 Pediatrics Grand Rounds; I. McQuarrie and Staff.
- 10:00 - 12:00 Medicine Ward Rounds; C. J. Watson and Staff; East 214 U. H.
- 11:45 - 1:15 University of Minnesota Hospital General Staff Meeting; Muscle Studies; M. E. Knapp, C. C. West, Powell Hall Recreation Room.
- 1:30 - 2:30 Medicine Case Presentation; C. J. Watson and Staff, Eustis Amphitheater.
- 1:00 - 2:50 Dermatology and Syphilology; Presentation of selected cases of the week; Henry E. Michelson and Staff; W-306 U. H.
- 1:30 - 3:00 Roentgenology-Neurosurgery Conference; H. O. Peterson, W. T. Peyton, and Staff, Todd Amphitheater, U. H.

Saturday, May 27

- 9:00 - 10:00 Medicine Case Presentation, C. J. Watson and Staff, Main 515 U. H.
- 9:15 - 11:30 Surgery-Roentgenology Conference; O. H. Wangensteen, L. G. Rigler, and Staff, Todd Amphitheater, U. H.
- 10:00 - 12:00 Medicine Ward Rounds; C. J. Watson and Staff, E-214 U. H.
- 11:30 - 12:30 Anatomy Seminar; The Normal and Abnormal Development of Human Vaginal Epithelium; Robert Meyer, I. A. 226.

II. SURGICAL MANAGEMENT OF ULCERATIVE COLITIS

Clarence Dennis

Incidence of Ulcerative Colitis

Chronic ulcerative colitis is not a common disease, but because the occasional case is so dramatic in its rapid progression to a fatal outcome or so impressive in its obstinacy and the duration of the debility produced, the disease has attracted more attention than the number of cases merits. Cave states that in 1939 1454 people died of cancer of the colon in New York City, 804 of cancer of the rectum, but only 59 of ulcerative colitis.

Etiology

The cause of the disease is open to debate, much of it acrimonious. Barger divides ulcerative colitis into 9 different categories and states that over half are due to a diplostreptococcus, but this is not generally accepted because the organism is found also in other conditions. Dragstedt has also isolated an organism from colic lesions in the active stage of the disease. It is present with greater consistency than Barger's coccus.

Most authors are inclined to doubt the presence of any specific bacterial initiating agent, but favor the thesis that the disease results from the combined action of many factors. That there is a large functional or neurogenic factor in about half the patients is generally agreed.¹¹ Lium has suggested, with good experimental evidence, that spasm of the colic musculature compresses the perforating vessels so that local ischemia or congestion leads to necrosis and sloughing of the mucosa.

R. A. Jensen of our Psychiatric Clinic for Children has studied 8 cases in children rather carefully from the psychiatric angle. He found that those children all had a rigid personality and unyielding character, set exact standards for themselves, were not free and spontaneous in type and usually were more intelligent than the average. He felt that

in each of these cases the onset of diarrhea has been related to some unusual circumstance in their family relationship. As a rule no consideration had been given to the psychiatric aspects of these cases until the patient came here. Jensen was able to find special circumstances in the individual experiences of the children underlying each exacerbation of the disease, and in each case there had been smouldering suppressed resentment against the family. He felt that in any case of diarrhea in a child in whom no specific diagnosis can be made in 2 to 3 weeks, the psychiatric aspects of the problem should be considered. In many of the adult cases coming to the surgical service, some of us have felt that far too little attention has been paid to these considerations.

The importance of allergic reactions to a variety of foodstuffs has been stressed by numerous writers. Andresen is particularly impressed by the frequency of sensitivity to milk. Rowe has reported a small series of cases in which exacerbations of the disease were conclusively traced to inhalants such as ragweed and thistle pollen.

Various vitamin deficiencies have been incriminated, particularly those of the B-complex. Studies have been undertaken to determine the importance of variations in activity of the various digestive enzymes.

It is apparent that no single cause has been positively established, and it seems likely that in each case a multiplicity of factors is at work.

Pathology

The congested mucosa early becomes inflamed, bleeds easily on contact, and small hemorrhagic areas appear. Tiny abscesses form in these areas, and coalesce to form ulcers varying in size from pin-point to 2 or 3 cm. in diameter, with shaggy, undermined edges. As the process advances, more mucosa is destroyed, until in some cases only islands of mucosa remain, leaving a pseudopolyposis. All the layers of the bowel become involved in the inflammatory pro-

cess, with marked thickening and fibrosis. The walls of the colon become thickened and rigid, and as the lumen becomes smaller, actual obstruction occasionally occurs. Perforation with abscess formation or peritonitis is an important cause of death while hemorrhage from vascular erosion is the second important cause of death. Fistulae and abscesses about the anal canal are frequently seen. When pseudopolyposis is present, malignant degeneration not infrequently occurs; pseudopolyposis is therefore regarded as a strong indication for colectomy.

The pathology of the disease may vary considerably from case to case. At the Cleveland Clinic, Jones reported, 93% of the cases started with disease in the rectum, and then spread to upper segments with successive attacks. Others report a higher incidence of this type, and give the impression that widespread involvement, even to the cecum, or occasionally into the terminal ileum, is an early result of the disease. Localized segmental involvement occurs in about 5% of the cases.

Symptoms and Course

Ulcerative colitis may be ushered in as an overwhelming disease characterized by profuse stools of blood, mucus, and pus passed 15-30 times a day, with high or spiking fever, prostration, abdominal cramps and pain plus signs of peritoneal irritation. It may subside in the course of a few days or weeks or it may progress to a rapidly fatal outcome on the basis of inanition, sepsis, peritonitis, or massive hemorrhage.

On the other hand, it may begin in an insidious fashion, with mild cramps or diarrhea, later presenting mucus in the stools. As the process advances and ulceration develops, the stools may become frequent, purulent, and bloody. At may remain a mild disease which responds to medical management. Apparently a more common course, however, is a prolonged one characterized by exacerbations and remissions. Usually the patient never becomes entirely well, but gets along well enough to continue work except during the exacerbations.

Between the fulminating cases on the one hand, and the mild ones on the other, the majority of patients with ulcerative colitis will fall. The disease is constantly severe enough or marked by exacerbations of sufficient severity to prevent continuance at work or even restricted activity. Chronic bleeding and loss of plasma, as demonstrated by Welch, leads to marked or moderate inanition and anemia, and these patients are difficult to handle because of loss of strength, impaired resistance to surgical procedures, and lack of ability to take an adequate diet without increasing the diarrhea.

The degree of weight loss in patients in the severe phases of the disease is greater than that seen in any other group of surgical patients at the University of Minnesota Hospitals. We have had several who have lost 35% of the body weight, and one lost almost 50%.

The complications of perforation, hemorrhage, and sinus formation have already been mentioned. Polyposis occurs only in the chronic cases, and carcinoma is a complication in this group. Arthritis, thrombophlebitis, achlorhydric gastritis, endocarditis, iritis, and other lesions seem to be late complications.

Diagnosis

Diagnosis of ulcerative colitis is not usually difficult to establish, but to differentiate the chronic non-specific type from other types is less simple. The patient usually looks chronically ill, underweight, and apprehensive. The abdomen is moderately to markedly tender to palpation. The chief complaint is usually of diarrhea, but may be of ischio rectal abscess, fistula, or other complication. The diagnosis of colitis is largely settled by examination of the stool for pus, blood, and mucus, proctoscopy, and barium enema x-ray examination.

The proctoscopic appearance is one of a swollen, congested mucosa with a granular appearance, which bleeds

easily on contact, usually with myriads of small ulcers, and sometimes larger ones. There are usually no areas which look entirely normal.

Barium enema x-ray examination is usually fairly typical. Early in the disease there may be a fine feather-like irregularity of the mucosal pattern. Later the haustrations are partly lost; they are totally lost still later in the disease. Because of spasm and scarring, the lumen is decreased markedly and the bowel is shortened. The caliber is fairly uniform. All these changes give rise to the "lead pipe" appearance considered so typical of the disease in the x-ray. Ladd and Gross feel the wide distribution of these changes is characteristic, and that it serves to differentiate non-specific from amebic colitis, which usually involves chiefly or solely the right colon.

Mention of the important conditions which must be differentiated is necessary. Tuberculous enteritis may be recognized by careful general study of the patient and ileac barium injection through a Miller-Abbott tube. The bacillary dysenteries should be excluded by blood agglutination studies. Amebiasis can usually be recognized by repeated examinations of the fresh stool, but it is customary to give a diagnostic trial of emetine nevertheless.

Medical therapy

The number of different measures employed in the medical management of ulcerative colitis is testimony of the lack of specificity of any form of therapy. Certain measures are generally accepted as of definite value. Strict bed rest and a low residue or bland diet are usually effective measures for tiding over exacerbations. The use of the vitamine B complex, especially thiamine, and of liver extract, seems to be widely accepted.⁹ Brewer's yeast, cevitamic acid, and a host of other vitamine preparations have been added to the pot. Mackie has summarized present medical management and favors in addition to the measures already mentioned use of hydrochloric acid by mouth in those with achlorhydria, mild sedation, as with phenobarbital,

and adequate mineral intake, bearing in mind that the involved colon is normally the site of absorption of most minerals. Andresen has called particular attention to the importance of allergic reactions to the development and perpetuation of ulcerative colitis, and favors elimination diets and a thorough allergic study on each patient.

As already indicated, more attention should be paid to the psychiatric study of these patients than has been the custom here in the past.

The advent of the sulfonamides brought new hope. Some are enthusiastic but the general consensus of opinion seems to be that, although the bacterial count of the feces may be decreased by such drugs as sulfanylguanidine and succinyl sulfathiazole, yet no change in the course of the disease has been demonstrated consistently to occur.^{10,22,26,30,28}

Various other procedures, popular some years ago, such as irrigation of the colon with Dakin's solution, have been abandoned.

Medical versus Surgical Management

An extremely wide difference of opinion exists about the part which surgical intervention should play in the management of patients with non-specific ulcerative colitis. Most of the publications up to a few years ago indicated the internist's horror of the plight of the patient left with a permanent ileostomy. It has been appreciated that this is a disease in which more or less prolonged remissions are the rule, and therefore the temptation has constantly been to delay active treatment in the sicker patients in the hope that such a remission might occur.

Examples of the diversity of opinion on the choice of procedure are illustrated by the following. Mackie advises a thorough trial of conservative management for several months preferably, and avoids surgical measures to divert the fecal stream from

the colon until proctoscopic examination and barium enema study show that irreversible changes are occurring. Willard and associates are almost bitterly opposed to surgery in this disease, basing their contentions on the finding of a high death rate in those referred for surgery late in the disease. The general consensus of opinion among the surgical authors, however, seems to be that the high mortality following surgical intervention has occurred in patients who have reached a terminal status before reference by the internist.^{7,16,18} Certain of them champion the performance of ileostomy in the first few weeks of the disease, for a fair portion of these recover and can successfully have the ileostomy closed.^{8,17,18,29}

A fair comparison of figures has been presented by Elsom and Ferguson, internist and surgeon, respectively, of the Hospital of the University of Pennsylvania.

They state, "Two groups of patients have been selected from ward and private patients. One group, 23 in number, consists of those treated by medical measures only; the other group of 27 were first treated by the usual medical measures and subsequently by one of various surgical procedures. Only the more severely ill patients, with protracted diarrhea, melena, fever and anemia are included in the medical group, while those with milder forms of the disease which are known to improve spontaneously, are excluded from the study. This was done in an effort to make the two groups as comparable as possible. Even so, those treated surgically taken as a whole, were more seriously ill, for surgery usually was employed only as a last resort." Patients were followed for 1 to 12 years after dismissal from the hospital. The results are presented in Table I.

Table I

Figure from Elsom and Ferguson, 1941.
"Comparative data on the present status of the medically versus the surgically treated patients."

MORTALITY	Medical	32%		
	Surgical	29%		
PRESENT HEALTH	Medical	In-Valid	Fair	Good
	Surgical	Fair	Good	
WEIGHT GAIN ABOVE MINIMUM	Medical	28 Pounds		
	Surgical	38.5 Pounds		
ABILITY TO WORK	Medical	Former Occupation	Light Work	Unable to Work
	Surgical			

Surgical Therapy

Ileostomy - Indications

The indications for surgical intervention are as diverse as the opinions of the value of surgery. Those listed recently in the surgical literature are fairly uniform, and include the following indications:

1. Emergency indications:
 - a. Uncontrollable hemorrhage
 - b. Acute ulcerative colitis with profound toxemia (fulminating cases)
 - c. Impending perforation
 - d. Obstruction
 - e. Polyposis including those cases with possible malignancy

2. Elective indications:
 - a. Chronic ulcerative colitis resisting all forms of medical treatment
 - b. Segmental ulcerative colitis
 - c. Very early ulcerative colitis

An impression of the variation in indications is gathered from the fact that at the Mayo Clinic the proportion of cases treated surgically has progressively declined from 20% in the period from 1919 to 1923 to 1.4% in the period from 1932 to 1936,⁵ while in the same period at the Massachusetts General Hospital 65% of cases were treated surgically.²¹ In a discussion published with McKittrick's report of these figures, Dr. Daniel Jones of Boston questioned whether the classification of cases as ulcerative colitis was uniform in all clinics, also the criteria of cure.

Prior to about 1930, surgical treatment consisted of appendicostomy, cecostomy, and occasionally colostomy. Garlock states, "The purpose of these procedures was to permit irrigation of the diseased bowel with medicated solutions in the hope of restoring the mucosa to normal. Experience in recent years has shown that this therapy was based upon fallacious reasoning. It is important to emphasize that the first requisite of successful surgical treatment is complete diversion of the fecal stream from the diseased

bowel segment." This can be accomplished only by terminal ileostomy.

The general indications for major surgical intervention aside from drainage of abscesses, have been discussed. The procedure to be done in any of these circumstances is ileostomy. Attempts to close perforations have all been reported unsuccessful. Attempts to do primary large or small resections with primary anastomosis have all proved too risky save in a few cases of segmental disease in which the process was too quiescent to reveal the true nature of the ailment until examination of the specimen by the pathologist. In short, any patient with severe enough ulcerative colitis to require surgery needs an ileostomy first, and a period of months or even years should pass before further procedures are undertaken.

Technique of ileostomy

The manner of performance of ileostomy has received too little attention. It is probably true that most patients with ileostomy will heal the operative wound satisfactorily without special precaution, but it is virtually impossible to tell which of the patients seen will have more than usually irritating ileac drainage and will therefore develop breakdown of the wound. The procedures recommended in the literature uniformly involve bringing a single barrel or a double barrel ileostomy out through the wound, and closure of the wound about the bowel.

Garlock, Lahey, Cave and Thompson, and others like to cut the ileum across in the last few inches of small bowel, bringing the distal segment out through a separate stab wound, thus making 2 single-barrel ileostomies. They regard preservation of an open distal segment as of value in dealing with present or future obstruction due to the process in the colon, and certain authors use it for irrigating the colon. Rankin favors, as do we, closing the distal cut end of ileum and drops it back into the abdomen.

When ileostomy is done as a life-saving measure, as McKittrick points out,

one cannot do more than the minimum of manipulation, and the simplest procedure is to elevate the terminal ileum through a very short right lower rectus incision, pass a glass rod through the mesentery and leave the bowel thus supported, suturing the mesentery and perhaps the bowel to the peritoneum. This loop of ileum is cut open with the cautery 2 or 3 days after surgery, though a catheter may be inserted at operation to prevent flow of material into the cecum. A double barrel ileostomy is thus formed. It has the disadvantage that some material is certain to spill over into the distal segment and keep the colic condition more active than it would otherwise be.

These patients are regularly in extremely poor condition, and shock is easily induced. McKittrick's conclusions are in agreement with our own, that spinal anesthesia certainly should not be used for ileostomy, and general anesthesia also is better avoided. He favors the use of local anesthesia insofar as possible, a choice we also have adopted.

Response to ileostomy

Following performance of ileostomy, all are agreed that the majority of patients improve rapidly. The temperature frequently returns to normal in 1 or 2 days, the appetite returns, the rectal discharges diminish quickly, and thereafter the weight gain is marked and fast. One of our patients gained 56 pounds in 2 months after ileostomy. Those for whom the ileostomy is done as an emergency for bleeding have generally been observed to cease to suffer hemorrhage within a few days.

Complications of ileostomy and prophylaxis against them

The most trying complication of ileostomy is digestion of the wound and skin by the unspent ferments of the ileac secretions. If the wound is not carefully protected early, the line of closure in the wound adjacent to the ileostomy is likely to break down and suppurate. Healing of such defects is slow and painful, for the wound is constantly soaked with intestinal discharge, and the ultimate

results are not satisfactory. A wound so healed is ever subject to fresh digestion and can make the patient miserable for indefinite intervals. Most satisfactory elimination of this problem has been accomplished by bringing the ileum out through a stab wound apart from the main incision. The bowel heals to the skin readily, and this process seems seldom to be delayed by secretions.

Digestion of the skin about the ileostomy is equally trying. Apparently somewhat more than half of these patients have little difficulty regardless of the care given, but the others suffer from obstinate erosion of the skin. There are repeated references in the literature to the belief that this erosion subsides as soon as the involved colon has been removed. This has not been our experience here.

Various methods have been proposed to treat this skin erosion, but all are agreed that prevention of it in the first place is far simpler than management after it has developed. Most authors say little of this trouble, but careful reading of their reports indicates that the patients must have been made miserable by this complication. Numerous pastes and ointments have had their day. Ladd and Gross recommend a combination of zinc oxide ointment, castor oil, and aristol, made up into a thick paste. Others favor yeast paste or aluminum paste. Presman suggests use of a vinylite resin preparation which can be coated onto the skin, but we have found that this layer is quickly freed from the skin by the ileac secretions and therefore gives little protection.

Dragstedt devised a type of ileostomy in which the ileum projects several inches from the abdominal wall and is covered with a dermatome graft, the aim being that the end of the ileum may hang down into dressings so that discharges do not come into contact with the abdominal wall. This arrangement seems not to be satisfactory because of the frequent development of strictures.

John R. Paine called our attention here to the use of the Koenig ileostomy

bag, a description of which was published by Baker.* This bag has a rubber facing which is cemented with rubber cement to the skin about the ileostomy stoma; the bag facing has an opening made to order to fit about 2 mm. around the slightly projecting bowel. In our experience, the use of rubber cement and rubber dam to protect the skin in the first few post-operative days, until a bag can be fitted, offers the best means of prevention of ulcerations and erosions. This bag in our opinion offers the only satisfactory way to care for the ileostomies in these patients.

Certain further difficulties arise when ileostomy is performed by the uninitiated. As Garlock and Lahey have both observed, prolapse of the bowel is a likely complication. Some surgeons have tried to prevent this by closing the wound snugly around the ileostomy, but the danger of obstruction where the ileum meets the abdominal wall is very real when this is done. Garlock sutures the mesentery of the divided ileum into the wound in the hope this will anchor the ileum as a prophylactic measure. No measure is entirely satisfactory, but it has seemed here that careful suture of the ileum to the parietal peritoneum and transversalis fascia with fine silk sutures has prevented this complication. It is more important as prophylaxis against formation of hernia beside the ileostomy, a very frequent complication of omission of such sutures.

A further complication results from the use of any but the finest silk sutures for ligation of vessels in the mesentery adjacent to the abdominal wall or for attachment of the bowel to the parietal peritoneum and fascia. Heavy silk sutures at this site have repeatedly been seen to serve as the foreign body or nidus of infection which keeps sinus tracts open beside the ileostomy. Use of catgut sutures leads to insecurity of closure, and several deaths have been reported in the literature from retraction of such ileostomies into the abdomen.

*This is now obtained from H. W. Rutzen, 1819 Irving Park Road, Chicago.

Further surgical management.

In general, the opinion of those dealing with this disease is that colectomy should be done if 2 bouts of acute colitis occur after ileostomy. It should also be done if pronounced drainage continues for more than a few months after ileostomy. Pseudopolyposis is precancerous and should dictate both ileostomy and colectomy, but the last 12 cm. of rectum, which can be watched with the proctoscope, may be saved in the hope that later healing will permit ileoproctostomy.

In performing colectomies, McKittrick, Lahey, and Cave have recommended staged operations, utilizing as many as 4 procedures to complete removal of colon and rectum, and they all suggest the upper end of the segment left after each operation be brought through the abdominal wall as a mucous fistula, for secure closure cannot be assured in the involved colon. In the experience here this procedure has proved nearly disastrous, and we feel that if the entire colon is to come out, it should be removed with the rectum, in one stage, for this has given excellent results. The leaving of a mucous fistula has led in at least one instance to marked persistent pyoderma and deterioration of the patient, compromising subsequent management.

Rankin recommends removal of the colon to a point below the peritoneal reflection with inversion of the end and closure of the peritoneum above the closure. The rectum can then be observed at intervals, and, if sufficient healing occurs, ileoproctostomy may subsequently be done. Adequate inversion has been difficult to obtain, for the walls are thickened and infected, and the lumen is small; pelvic abscess is a frequent complication. This is nevertheless the procedure of choice, particularly in males, in whom impotence is the usual sequel of proctectomy.

A final type of procedure should be mentioned, namely reconstitution of the normal fecal pathway, either by simple closure of the ileostomy or by anas-

tomosis, at some time after ileostomy, of the end of the ileum to the lower sigmoid or upper rectum with removal of the intervening bowel. Either of these procedures is predicated on prior complete healing of the bowel from the proposed anastomosis to the anus.

Stone, Ladd and Gross, and Cattell have all reported series of cases of successfully closed ileostomies. They all stress that ileostomy must be done early in the disease if subsequent closure is to be tolerated without recurrence of symptoms of colitis.

EXPERIENCE WITH CHRONIC
ULCERATIVE COLITIS AT
UNIVERSITY OF MINNESOTA
HOSPITALS, 1934 to 1944.

In the 10 years from Jan. 1, 1934 to Jan. 1, 1944, 82 patients with chronic or acute non-specific ulcerative colitis have been seen at the University of Minnesota Hospitals. 57 of these have been treated solely by non-operative means as far as the ulcerative colitis is concerned, although some of them had drainage of perineal abscesses or other incidental surgery performed. 3 cases are included in this group who were treated by conservative means until death was inevitable, and

then were subjected to surgery. (2 of these went to surgery with perforation, massive pneumoperitoneum, peritonitis, and marked inanition. The other went to surgery after having been septic and comatose for several days). It should be emphasized that comparison of results achieved by conservative as opposed to operative management is not to be construed as a comparison of the relative merits of one department in the hospital as against another, but rather as a comparison of methods of therapy. Many of those managed conservatively early in the period of this study were treated on the surgical service. We are fortunate here in that the cooperation between the medical service and the surgical service has been excellent, at least throughout the period when I observed it.

Twenty-five cases were treated surgically for ulcerative colitis. These cases have excited the interest of various members of the surgical staff and have therefore been carefully followed, while there has been no one particularly interested in those treated conservatively, and the follow-up is in a large proportion of the cases non-existent or only of a few weeks.

A comparison of the overall mortality figures of conservative as against surgical management is offered in Table II.

Table II

Gross Mortality Figures of Conservative Versus
Surgical Management of Ulcerative Colitis

	1934 to 1944			University of Minnesota Hospitals		
	No. of Cases	Died under Therapy No.	%	Died Later	Total Mortality No.	%
Conservative	57	16	28	0	16	28
Surgical	<u>25</u>	<u>2</u>	<u>8</u>	<u>1</u>	<u>3</u>	<u>12</u>
Total	82	18	22	1	19	23.2

The medical therapy is not the subject of this review. An analysis of the causes of death in the conservative group is given in Table III. It should be borne in mind that the follow-up was poor and that many of those listed as surviving have probably since died.

- - -
Table III

Causes of Death in Cases of Ulcerative Colitis
Treated Conservatively

1934 to 1944	University of Minnesota Hospitals
Died solely of disease	10 ¹
Died of complications of chronic ulcerative colitis	4 ²
Died of other disease plus chronic ulcerative colitis	<u>2³</u>
Total	16 (28%)

- 1) One was admitted terminally and died in 3 hours. Three went through surgery on the way to the morgue: one had sepsis and coma for days, 2 perforations.
- 2) One of sepsis, one of thrombophlebitis, 2 bronchopneumonia.
- 3) One obstructive jaundice and cerebral hemorrhage, one myxedema.

- - -

The status of those surviving on conservative management is given in Table IV.

Table IV

Status of Patients with Ulcerative Colitis
When Last Seen, Treated Conservatively

1934 to 1944	University of Minnesota Hospitals
Improved	19
Unimproved	18
Worse	4 ¹

- 1) Two of these refused ileostomy and left.

Complications: Large psychiatric component 12
Polyposis 4
Others 3

- - -

The indications under which surgery was indicated in Table V. undertaken and the results thereof are

Table V

Indications for Surgery in Ulcerative Colitis1934 to 1944 - University of Minnesota
Hospitals

	<u>Fulminating Disease</u>	<u>Hemorrhage</u>	<u>Progress. Disease</u>	<u>Sealed Perfor- ation</u>	<u>Polyps</u>	<u>Total</u>
Ileostomy	7	1	10 ¹	1	1	20
Colostomy	1 ²					1
Segmental resection			1			1
Primary colectomy and ileoproctostomy			2			2
Primary total colectomy and "pull-thru"			<u>1</u>			<u>1</u>
Total	8	1	14	1	1	25

- 1) One death due to improper surgery.
2) Patient died.

- - -

As has already been stated, a great deal of trouble was encountered in the healing of ileostomy wounds until the adoption of the method of ileostomy de-

scribed above. The results with ileostomy are indicated in Table VI.

Table VI

Incidence of Wound Breakdown in
Ileostomies1934 to 1944 University of
Minnesota Hospitals

	<u>Primary Healing</u>	<u>Disruption of Wound</u>	<u>Late Hernia or Prolapse</u>	<u>Late Stenosis</u>
Ileostomy made in incision	14	7 ¹	3	1
Ileostomy made as described	6	0	1	0

- 1) Three healed after 1 to 12 months.
Three were re-done after 6 mo. to 3 years.
One died from massive wound breakdown and skin excoriation.

Total ileostomies 27
Total ileostomy patients 22

Evaluation of the factors contributing to erosion of the skin is impossible because there are inadequate notes in the charts concerning care of the skin, but in several of the earlier cases in which the measures outlined were not used, extreme erosion occurred. One case required transplantation of the ileostomy because of erosion alone, and another died of erosion and wound breakdown. In the cases in the past $1\frac{1}{2}$ years, which is the time in which the ileostomy has been made as described and in addition carefully protected by rubber dam and

cement, there has been none but the most insignificant erosion.

Fourteen patients have been subjected to colectomy of one type or another, and there have been no deaths in association with these operations, all patients being alive at the end of the study period. The present status of these patients as well as that of those not yet colectomized is indicated in Table VII.

Table VII

Present Status (Jan. 1, 1944) of Patients Submitting to Surgery for Chronic Ulcerative Colitis.

Status	University of Minnesota Hospitals				
	1934 to 1944	Good	Fair	Poor	Dead
Ileostomy only		3 ¹	3 ²	2 ³	2 ⁴
Ileostomy, later colectomy including rectum		4	1 ⁵	1 ⁶	0
Ileostomy, later colectomy leaving rectum		2	0	0	0
Ileostomy, later colectomy and anastomosis to sigmoid or rectum		1	1 ⁷	0	0
Primary colectomy and "pull-thru"-subsequent ileostomy		1 ⁸	0	0	0
Primary colectomy and ileo-proctostomy		0	1	1	0
Segmental colectomy		0	1	0	0
Colostomy		0	0	0	1
Total:		11 (45.8%)	7 (29.2%)	4 (16.7%)	3 (8.3%)

- 1) One of these is now seriously ill, May, '44, after effort at resection and anastomosis to involved rectum.
- 2) One still has some rectal discharge, one has Simmond's Disease, and one had skin erosion when last seen, 1941.
- 3) One refused colectomy for polyps and has carcinomatosis now. One has cancer, presumably.
- 4) One died of cancer of rectum; one of improperly done ileostomy.
- 5) Had only mucosa of rectum removed - still drains.
- 6) Has ventral hernia and poor healing of perineal wound.
- 7) Has small (3 cm.) ventral hernia.
- 8) Very poor control after first operation; erosion of skin of perineum and buttocks, weight loss, pain. Later had ileostomy improperly done, later properly revised, now well. N.B. 4 cases of polyposis. 2 developed cancer, possibly a third.

Comment:

One rightly concludes from Tables V and VII that we have ample evidence in our own series of cases that when operation is necessary in the management of ulcerative colitis, the procedure should be ileostomy and nothing else, for no other procedure has left us with a good result without subsequent operation. In other words, "shortcut" operations made in an effort to spare the patient one operation and the inconvenience, even if temporary, of an ileostomy have not been successful.

It is my impression, therefore, that the colon should be put at rest for a period of months or years and until complete subsidence of the inflammatory process in the rectum or lower sigmoid before attempts are made to colectomize these patients and anastomose the ileum to the pelvic colon.

In the majority of patients with advanced disease, this re-anastomosis will never become feasible. In those given ileostomy very early it may become the rule.

Conclusions

1. Careful surgical management seems to offer patients with non-specific ulcerative colitis better hope of survival and good health than the medical therapy employed today.
2. Heavier emphasis should probably be placed on the psychiatric aspects early in the disease. It is possible that combination of this and early ileostomy will offer more effective therapy than we have had in the past.
3. When surgery is necessary, ileostomy is the procedure of choice. If it is done properly, as described, the artificial anus causes most patients little difficulty.
4. Colectomy is indicated for polyposis, recurrent bouts after ileostomy, or hopelessly damaged colons. It should be done in one stage.

5. Very early ileostomy should be contemplated in a series of cases to test the promising suggestion that closure with good results will later be possible.

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III. LETTERS

"I would like first of all in this short note to acknowledge the receipt of my first batch of Staff Bulletins posted on February 22nd. so that you would know that they are reaching their destination safely and might therefore be able to inform the good lady who looks after the packing of that fact also.

It's now nearly two and a half months since I arrived back home, having made the journey via Chicago, Washington, D.C., and New York where we had to spend three weeks waiting for the best boat. As you may imagine though, we had a pretty good time in New York over Christmas and the New Year, seeing shows, going to parties and so forth.

We did not neglect the attractions of the great medical schools we passed on the way back. In Chicago we went visiting the University of Illinois and Chicago University, and of course had a good look around the Chicago hospitals. In New York we were pressed into the use of a room on the 23rd floor of the Cornell Medical School's hospital which gave us an amazing view down East River and across the whole of Manhattan Island practically. In such a situation we couldn't resist the opportunity of seeing the famous Rockefeller Institute and the New York Memorial Cancer Hospital and the New York University--and very fine places they are too, though the latter seems somewhat antiquated beside the other two!

We were both sorry and glad to be back here in England again. Sorry to have left such a wonderful country with such great possibilities in medical research--and glad because of our return to proximity to the war zone. One cannot help feeling that before long great things will be happening in Western Europe when the big push begins and there's no doubt that it will be really BIG if the number of Americans now in this country has anything to do with it.

People told me I had become very Americanized during my 18 months in the U. S. and I had to busy myself polishing

up my English (it's funny how people on both sides of the Atlantic are constantly trying to improve my poor enunciation!--but there won't be much chance of losing my accent so long as I continue to meet U. S. army doctors.

We now have quite a number of these cheery fellows going around the clinics in the Manchester Royal Infirmary. In the last few weeks I've had the pleasure of knowing a Captain Bouning, in Obstetrics and Gynecology from California, and his comrade, Captain Mood, from Texas. In addition, I have met about a dozen other medics, two of whom were at the Mayo Clinic in August and September of 1943 doing a course in Anesthesia.

At present I'm finishing off a few courses which have to be added to what I have already done at Minnesota before taking my final qualifying exams in June--two months hence.

You may be interested to hear that of those, one is a course in (forensic medicine--the doctor's position in legal matters of every sort and description, and the other a course in the actual administration of anesthesia in which we have to administer a minimum of 20 anesthetics both general and spinal, after a period of instruction).

The period of internship here varies according to circumstances but seems to average about 3 months, though almost anything might happen when the invasion begins for the big civilian hospitals are all being held in readiness to take casualties should the necessity arise--let's hope it doesn't!

Well, I guess that's all I have to say for the moment. I hope some of this will prove of interest to you.

All of us who have been over to the good old U. S. on these Rockefeller Studentships have been agreed on the wonderful generosity, kindness and good-fellowship, not to mention the industry of all we encountered in medical schools--and elsewhere!

Will you convey all concerned my very best wishes--and if any may happen to find themselves in the north of England, we at the Manchester University Medical School and the Manchester Royal Infirmary will be very pleased to make you welcome.

Yours very sincerely,

(Signed) Percy Jewsbury"

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"University Hospital Southeast
Minneapolis, Minnesota

I wish to thank you very much for the report on patient J.M., forwarded from the Department of Pathology, and signed by Dr. P. V. Heise.

This complete report, which you sent me, was so informative that I thank you most sincerely. This type of report makes me proud that I was one of the first group of internes when the University Hospital was first opened in 1912.

WGw:dh (Signed) Warner G. Workman, MD"

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