

## SURGICAL TREATMENT OF COMPLETE RECTAL PROLAPSE

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VARIOUS opinions have been expressed regarding the pathology, classification and particularly the surgical treatment of rectal prolapse. This is undoubtedly due to the fact that many varieties and degrees of rectal prolapse may exist. These vary from eversion of a small portion of the rectal mucous membrane to complete eversion of the entire rectum. A description of the operative procedures which have been used for the various degrees of prolapse would entail the writing of too long a paper; therefore, we shall confine our remarks chiefly to the presentation of an operative procedure which in our hands, at least, has been successful in the cure of complete rectal prolapse.

**TYPES OF PROLAPSE.**—"Prolapse of the rectum" and "prociencia recti" are terms with similar meaning and signify any condition in which part or the whole of the rectum is everted so as to protrude through the anal orifice. The condition has been classified by several authors as of first, second and third degree, or as partial and complete. Thus, the term "first degree prolapse" has been employed to denote a condition in which only the rectal mucous membrane protrudes; this condition is considered as a partial prolapse. "Second degree prolapse" and "complete prolapse" are terms used to express prolapse of all coats of the rectal wall. In this condition the prolapse may be of almost any extent and frequently is graded 1 to 4, depending on the extent of the protrusion; Grade 1 indicates minimal and Grade 4 maximal protrusion. The term "third degree prolapse" has been used to designate prolapse or intussusception of the colon into the rectum, without protrusion at the anus. This is really an intussusception of the rectosigmoid.

**Etiology.**—The cause of rectal prolapse is not clear but many interesting hypotheses have been presented. The rectum is held in position by several supports: The lower portion is supported by the pelvic fascia, the levator ani, the external sphincter muscles, the perineal fascia, the fibrous attachments to the coccyx and the prostatic or vaginal walls; the midportion, by the loose fibrous tissue which passes from the sacrum along the course of the lateral sacral arteries; and the superior portion, by the various peritoneal folds. For complete rectal prolapse to occur these supports must undergo some weakening or destruction, and some force capable of dislodging the organ from its position must be exerted. Occasionally congenital abnormalities, such as an extraordinarily long mesosigmoid and an abnormally deep cul-de-sac of Douglas or rectovesical pouch, as the case may be, are considered

to be important contributing factors. In general, if some anatomic weakness or abnormality is present, many exciting causes may initiate the prolapse. The condition is most often seen among individuals at the two extremes of life, infancy and old age, when general muscular tone is weak and patients have been subjected to a wasting disease of long standing, associated with some type of disturbance which causes excessive straining at stool.

Jeannel, in 1890, believed that prolapse of the rectum was due to a giving way of the upper attachments, while others were of the opinion that it was due to breaking down or loosening of the lower rectal supports. The etiologic view of most recent authors is that true rectal prolapse is actually a sliding, median perineal hernia through the pelvic fascia. This was first well explained and propounded in America by Moschcowitz,<sup>2</sup> in 1912. According to this view, the peritoneum at the bottom of the pelvic cul-de-sac is driven, by increased intra-abdominal pressure, downward through a natural defect in the pelvic fascia at the site where the rectum emerges from the abdominal cavity. Here the resistance offered by the perineal body prevents further downward progress of the hernia and its direction is thus diverted posteriorly onto the anterior wall of the rectum, which ultimately gives way to permit inward pouching of this wall. As the hernia proceeds, resistance is met posteriorly by the sacrum and coccyx and the course is again changed, at first in a downward and forward direction and finally backward toward the anus. According to Moschcowitz,<sup>2</sup> the prolapse in the beginning involves only the anterior rectal wall but later, as it enlarges, it draws in at first the two lateral walls and finally also the posterior wall, until further drawing in of the bowel is prevented by the firm fixation of the organ. It is not the purpose of this paper to attempt to prove that rectal prolapse cannot develop in the manner of a sliding hernia as propounded by Moschcowitz; however, it is our belief that an abnormally loosely attached rectum is the most important predisposing factor in its development and that prolapse cannot develop when the organ is firmly fixed.

In the presence of an abnormally loosely attached rectum, the result of a developmental defect, excessive straining at defecation over a long period, or perhaps some wasting disease, the force required to produce the eversion of the rectal walls through the anal canal is found in the propulsive movements of the rectum during the act of defecation, together with increased intra-abdominal pressure. A somewhat analogous condition occurs not infrequently at the site of colostomy when the bowel, usually the proximal limb, prolapses through the artificial stoma. This is especially likely to occur in those cases in which the segment of the colon which has been exteriorized has a long mesentery, and conversely, this complication usually does not occur if the colon just proximal to the site of colostomy is partially fixed by a short mesentery, as ordinarily prevails in the descending colon. While in the development of prolapse of the rectum there may be factors other than those at play in the production of prolapse of the colon through a colonic stoma, it is our belief that the general principles underlying the two conditions are similar.

*Treatment.*—In the main, five types of operations have been employed in the treatment of rectal prolapse: (1) That type which causes narrowing of the anus and rectum; (2) that which brings about restoration of the pelvic floor; (3) that which causes suspension or fixation of the prolapsed bowel; (4) that in which the prolapsed bowel is resected; and (5) that which is designed to obliterate the pelvic cul-de-sac.

The type of operation that should be employed will vary with the type and underlying causes of the prolapse present and with the age and general condition of the patient. All of the operations presented have been curative in a certain selected group of cases but it has been our experience that in each group there have been certain recurrences. Recurrence has been most marked among adult patients with complete rectal prolapse. The failure of many of the intra-abdominal operations employed to fix the rectum by sigmoidopexy can be explained by the fact that in some instances upward traction on the sigmoid, without first dividing the pelvic peritoneum along the line of its reflection at the sides of the lower part of the sigmoid, will not make the rectum taut. Therefore, since the operation fails to fix the rectum, benefit cannot possibly accrue from this procedure. Furthermore, in those cases in which the rectum can be made reasonably taut by traction on the sigmoid, without division of the pelvic peritoneum, recurrence is likely to follow because of the extreme difficulty in permanently fixing the sigmoid. The adhesions which bind the sigmoid to the pelvic and abdominal walls, promoted by the operative procedure of sigmoidopexy, will ultimately loosen because of the constant downward pull on the sigmoid and this, in turn, will permit the lower part of the sigmoid and the rectum to slide down along the hollow of the sacrum to occupy their original position. While the ostensible purpose of the Moschowitz operation is to repair the defect in the pelvic fascia by obliterating the pelvic cul-de-sac, fixation of the sigmoid is an important feature of the operative procedure. The failures that result from this operation are due to the same cause: inadequate fixation of the rectum.

For many years it has been the practice of one of us (Pemberton), in order to aid in exteriorization of growths that are low in the sigmoid or in the rectosigmoid, to divide the pelvic peritoneum at its point of reflection and to free the rectum from the hollow of the sacrum down to the tip of the coccyx. Normally the posterior walls of the lower part of the sigmoid and of the rectum are only loosely attached to the hollow of the sacrum by areolar tissue. This portion of the bowel, then, can be pulled up out of the hollow of the sacrum and, in many instances, the lower part of the sigmoid and the rectosigmoid can be completely exteriorized as in a Mikulicz type of operation. This procedure leaves a cavity between the hollow of the sacrum and the rectum, and it has been our observation, after examination of the rectum in many of these cases, that this cavity filled in with a ridge of scar tissue which produced firm fixation of this portion of the bowel. It was reasoned that if the pelvic colon could be pulled up until the rectum was taut and held in this position, at least temporarily, by sigmoidopexy, the rectum would become

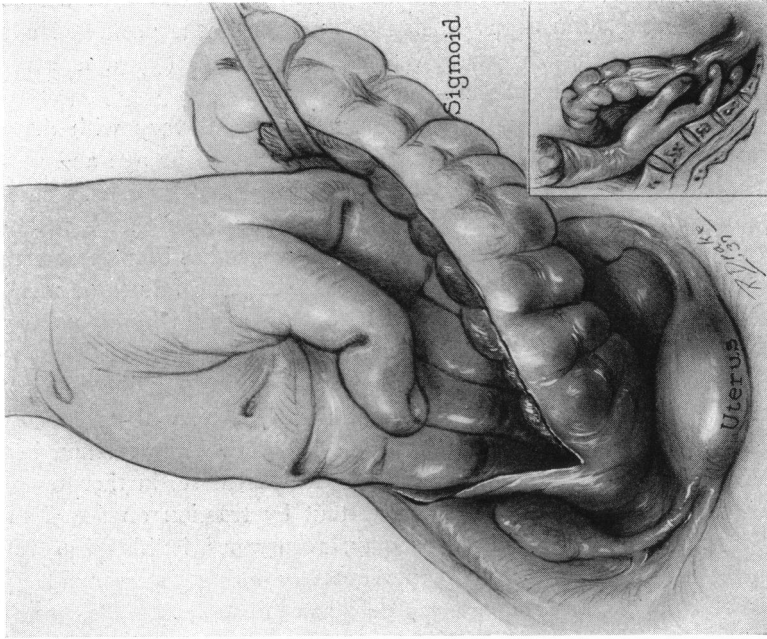


FIG. 2.—The sigmoid pulled upward and the rectum being freed from the hollow of the sacrum.

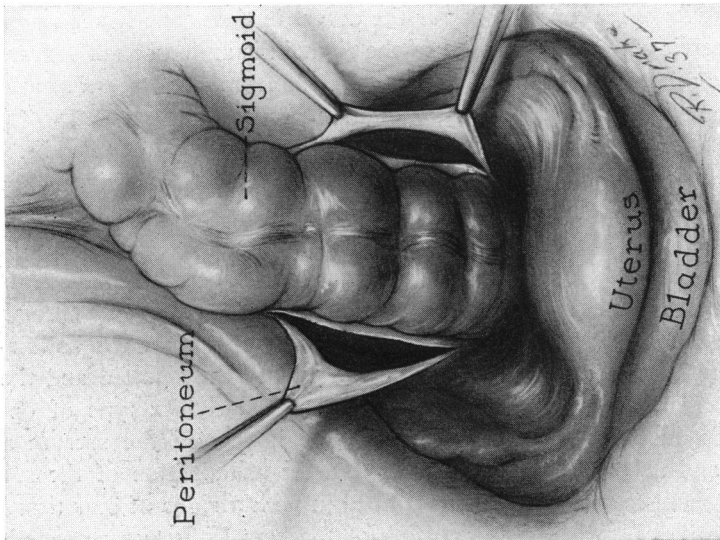


FIG. 1.—Incision of the lateral parietal peritoneum.

RECTAL PROLAPSE

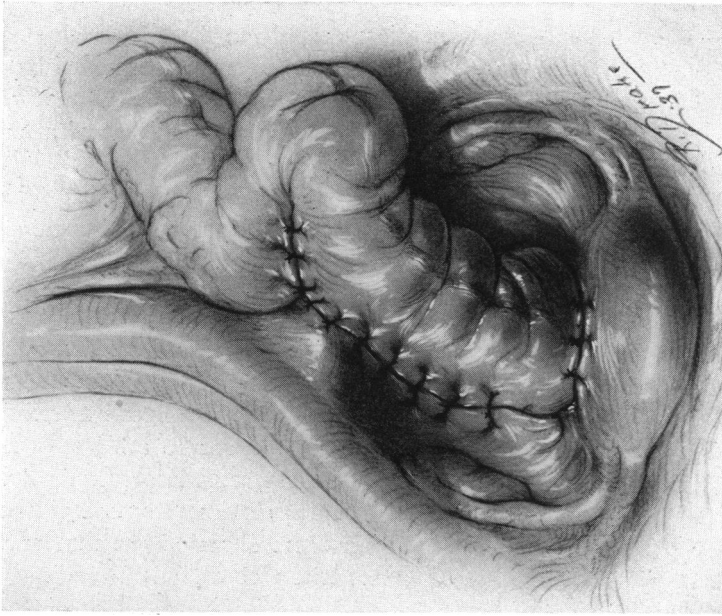


FIG. 4.—Fixation of the elevated bowel by attaching it to itself, to the uterus and to the walls of the pelvis.

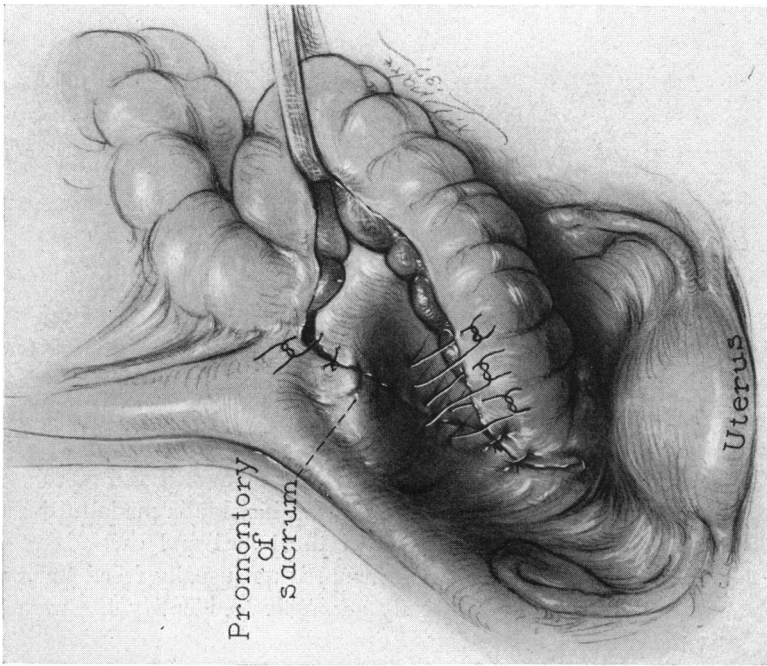


FIG. 3.—The prolapsed bowel elevated and reflected flaps of peritoneum approximated. The raw surfaces of the bowel are peritonized and the elevated bowel fixed in its elevated position.

fixed in this taut position by the formation of scar tissue in the hollow of the sacrum and complete rectal prolapse thereby could be cured.

*Authors' Technic.*—The patient is hospitalized for two or three days for preoperative preparation, during which time the bowel is emptied by administration of saline purgatives, colonic irrigations and use of a diet of which the residue is less than that of a regular diet but more than that of a nonresidue diet.

The operation usually is performed under spinal anesthesia. The patient is placed in the high Trendelenburg position and the abdomen is opened

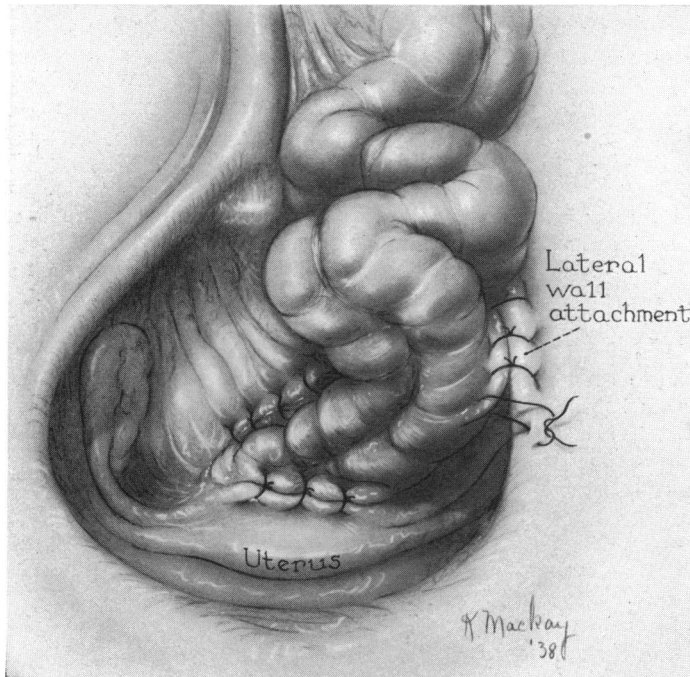


FIG. 5.—Fixation of sigmoid to lateral abdominal wall.

through a left paramedian incision which extends from the symphysis pubis to a level just above that of the umbilicus. A Balfour, self-retaining tractor is inserted, the small bowel and upper part of the abdomen are separated from the pelvis by a moist gauze pack and, if the patient is female, the uterus is retracted anteriorly.

The sigmoid, which is frequently found rather elongated and more mobile than usual, is gently pulled up until taut, and an incision is made in the peritoneum on both sides of the mesentery of the bowel and carried forward toward the bladder (Fig. 1). The peritoneum is not usually freed for a very great distance laterally, but it is usually advisable to identify the ureter on either side at the brim of the pelvis. Care also is taken not to injure the inferior mesenteric vessels and ligation of any of these branches is rarely necessary.

Next, the bowel is lifted and, with a hand behind it, in the hollow of the sacrum, the rectum is freed by blunt dissection (Fig. 2). The hand is carried downward and forward until the dissecting fingers are felt at the tip of the coccyx. This allows the prolapsed portion of the rectum to be pulled up from the hollow of the sacrum. With the rectum held taut, the reflected flaps of peritoneum are closed over this potential cavity and the raw surfaces of the bowel are peritonized (Fig. 3). It is important to fix this elevated portion of bowel in its raised position. This portion of bowel may be treated in various ways, depending on several factors: namely, its length and mobility and whether the patient is male or female. In the main, however, the bowel is fixed in its elevated position by suturing it to various portions of the abdominal wall and to the pelvic organs. Frequently it can be supported by

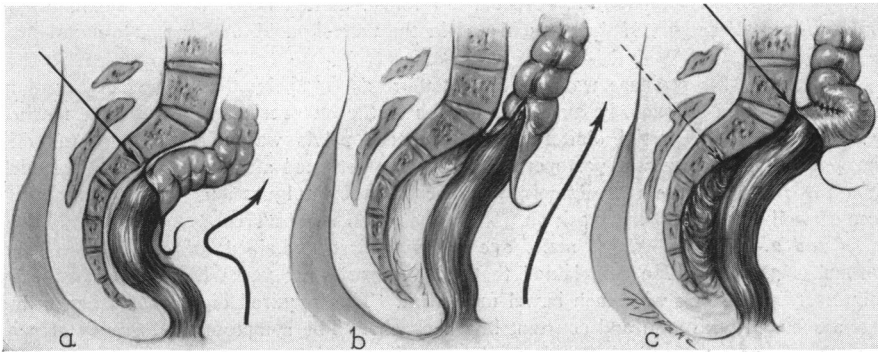


FIG. 6.—Diagrams of the operation: (a) The low level of the peritoneal reflection and the depth of the cul-de-sac of Douglas or rectovesical pouch. (b) The rectum freed from the hollow of the sacrum and elevated. (c) The peritoneal reflection and cul-de-sac of Douglas, or rectovesical pouch, have been raised and the elevated bowel has been fixed intra-abdominally. The cavity between the rectum and sacrum will fill with fibrous tissue.

suturing together a portion of the mesentery of the two loops of elevated bowel and further by attaching the bowel to the uterus (Fig. 4). In some cases the bowel is sutured to the peritoneum of the lateral walls and to the brim of the pelvis (Fig. 5); in other cases, to the anterior abdominal wall. In every instance care must be taken in placing the sutures onto the wall of the bowel lest leakage from the bowel results. Commonly the colon can be adequately anchored by suturing fat tags to the supporting tissues and, when it is necessary to suture the wall itself, the needle should pass through only the peritoneal coat. Care also must be taken not to leave an opening through which a portion of small bowel might herniate. Diagrams of the various steps in the operation are shown in Figure 6.

After the operation, in order to avoid gaseous tension in the rectum, a rubber tube is passed through the anus and is left in place for four or five days. During this period the bowels are kept constipated and a nonresidue diet is prescribed. Following this period the constipation is relieved by administration of oil enemata and of mineral oil by mouth. The diet is gradually increased and the stools are kept soft by frequent administration of oil. The

patient should remain in bed for two weeks following the operation and then should be cautioned to avoid strenuous efforts for three to six months.

During the past two years we have performed this type of operative procedure upon six adult patients with complete rectal prolapse; appended are brief reports of the cases.

#### CASE REPORTS

**Case 1.**—The patient, a male, age 44, was first examined at the Mayo Clinic, September 24, 1936. He had had a rectal prolapse since infancy and, in 1926, partial excision of the prolapsed organ had been performed elsewhere. There had been a recurrence after four years. At the time of his examination the bowel would gradually become prolapsed if the patient stood for any considerable length of time. There was some fecal incontinence and mucus discharge from the rectum.

The patient was thin, weighing 105 pounds (47.6 Kg.), and had very poor musculature. Proctoscopic examination revealed a relaxed, dilated anus; several small, sessile polypi in the lower part of the sigmoid and in the rectosigmoid, and complete rectal prolapse, Grade 4.

Repair for the prolapse was made, September 28, 1936, by the method described in this paper and, in addition, because of the depth of the rectovesical pouch and the marked degree of prolapse, partial obliteration of the true pelvis was effected. He was discharged on the twenty-first postoperative day. He returned after two months, at which time the polypi in the rectosigmoid were removed by fulguration. The rectum then seemed well fixed in normal position. There has been no recurrence.

**Case 2.**—The patient, a male, age 22, was first examined at the Mayo Clinic, December 30, 1936. He complained that for the past four years his rectum had been completely prolapsing with each bowel movement. This required digital replacement and was associated with pain and constant low backache. The symptoms and degree of prolapse were progressively increasing. The patient weighed 147 pounds (66.7 Kg.). Roentgenologic examination of the colon gave negative results but a rather marked angulation of the sacrum was revealed. Proctoscopic examination disclosed a small, pedunculated polyp on the right wall of the rectum at a distance of 14 cm. from the anus. This was removed by fulguration. On straining, the patient was able to produce complete prolapse of the rectum.

January 4, 1937: Intra-abdominal fixation of the rectum, as has been described, was performed. The patient was dismissed from the clinic on the eighteenth day after operation. There has been no recurrence.

**Case 3.**—The patient, a single woman, age 53, was first examined at the Mayo Clinic, August 26, 1937. She had been partially incapacitated for the past six years with almost constant rectal pain, which was most marked when she was on her feet. Frequently, when straining at stool, her rectum would become prolapsed to form a mass larger than her fist.

Physical examination revealed a rather psychopathic individual, weighing 125 lbs. (56.7 Kg.), but in good general condition. Proctoscopic examination revealed a relaxed anus, Grade 3, a polyp on the left wall of the rectum at a distance of 6 cm. from the anus and complete prolapse, which formed a mass 8 cm. long and 2.5 cm. in diameter.

August 26, 1937: Intra-abdominal fixation of the rectum was performed as has been described. The woman was dismissed on the nineteenth day after operation. There has been no recurrence.

**Case 4.**—The patient, a male, age 55, was first examined at the Mayo Clinic, February 15, 1938. Prolapse of the rectum had been present for 15 years. This had been aggravated during the course of pneumonia in 1936. A drugless healer had given several injection treatments for some associated hemorrhoids during June, 1937. Thereafter the rectal difficulty had been greatly aggravated. The prolapsing of the bowel, as well as its



reduction, was associated with considerable pain. Lower abdominal, cramp-like pain, associated with "gas" and occasionally with nausea, was brought on when the patient remained on his feet for any considerable time and was relieved when he lay down. Each bowel movement was associated with passage of varying amounts of bright red blood and, on two or three occasions, there had been a rather profuse hemorrhage from the rectum.

The patient weighed 180 lbs (81.6 Kg.), having lost 40 lbs. (18.1 Kg.) during the past year. Hemoglobin, 7.3 Gm. per 100 cc.; erythrocyte count, 3,660,000. Proctoscopic examination revealed localized proctitis, several large external hemorrhoids and a complete rectal prolapse, that could be produced by straining and that formed a mass measuring 8x8 cm. Roentgenologic examination of the colon gave negative results, as did all other examinations of the colon.

The patient was given a transfusion of blood and, on February 25, 1938, repair of the rectal prolapse was effected by the method that has been described. He was dismissed from the clinic on the 22nd day after operation. At that time the rectum was in normal position and there has been no recurrence.

**Case 5.**—The patient, a male, age 25, came to the Clinic, July 27, 1938, because of prolapse of the rectum. This had been of gradual onset, beginning 10 years previously; with each bowel movement the size of the prolapsed portion would increase. There had been no pain and no bleeding. In August, 1937, he had been operated upon elsewhere, at which time some redundant mucous membrane had been removed and a hemorrhoidectomy performed. Following the operation there had been some improvement, but shortly before the patient's visit to the clinic the prolapse had become progressively worse.

Examination revealed that a prolapse was produced on straining at stool. All coats of the bowel were involved and the prolapsed portion was about the size of an orange.

August 1, 1938: An internal fixation operation, according to the method that has been described, was performed. The patient's convalescence was uneventful and he was dismissed from the Clinic, August 23, 1938. The rectum was in normal position at that time.

**Case 6.**—The patient, a female, age 54, registered at the Clinic, November 2, 1938. She complained of "hemorrhoids" of three years' duration and of prolapse of the rectum when on her feet. She was able to reduce the prolapse by deep inspiration. Occasionally, when she was on her feet and the prolapse was present, her bowels would move involuntarily. She had noticed bleeding from the rectum only once.

The woman was obese and had a cystocele and a rectocele. Laboratory findings were essentially negative. Roentgenologic examination revealed that the gallbladder was functioning poorly. Proctoscopic examination disclosed rectal prolapse; the prolapsed portion measured 6x6x5 cm.; the anus was patulous.

November 7, 1938: An intra-abdominal fixation operation was performed for repair of the rectal prolapse. The rectum was loosened from the hollow of the sacrum and traction was made on the lower part of the sigmoid so as to lengthen the distal limb of bowel. After the openings in the peritoneum had been resutured, the rectum and sigmoid were sutured to the right lateral pelvic and abdominal walls and also to the posterior surface of the uterus, which was found prolapsed with the prolapse of the rectum.

The patient made an uneventful recovery and was dismissed from the Clinic, November 28, 1938. Her general condition was excellent and the rectum was in normal position.

#### COMMENT

We realize that the success or failure of an operation cannot properly be evaluated until a large group of patients have been studied over a long period. Neither have we had a large group of patients, nor have we had the opportunity to study our postoperative results over a long period. However, in view

of the many poor results that have been obtained in advanced cases of complete rectal prolapse when other operations have been employed, and because of the theoretic soundness of this operation, and the excellent immediate results that we have obtained with it in six cases, we were encouraged to present it for consideration.

## REFERENCES

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- <sup>2</sup> Moschcowitz, A. V.: The Pathogenesis, Anatomy and Cure of Prolapse of the Rectum. *Surg., Gynec. and Obstet.*, **15**, 7-21, July, 1912.