Complete Prolapse of the Rectum

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THE TERM complete prolapse or procidentia is used in this presentation to designate prolapse of the rectal segment containing all the layers of the bowel wall.

Current Views on Etiology and Surgical Treatment

There appear to be two main concepts of the anatomic basis for prolapse. Many authors, including Quénu and Duval,[9] Moschcowitz,[6] Graham,[3] Hulten,[5] Walldén,[11, 12, 13] and Goligher,[2] believe the depth of the cul-de-sac predisposes to intra-abdominal and small intestinal pressure upon the floor of the cul-de-sac which, in turn, produces sufficient pressure on the ventral rectal wall to extrude it through the anal canal. Others, including Pemberton and Stalker[8] and Muir,[7] believe prolapse is due to a weakening of rectal fixation which permits a telescopic protrusion of the rectum through the anal canal. In 1935 Howet[4] expressed the opinion that prolapse was due to both the depth of the cul-de-sac and a weakening of the rectal fixation.

The variety of operations proposed for treating rectal prolapse are reflected in these concepts of its etiology. Alternative surgical procedures mentioned by Goligher are: (1) Obliteration of the pelvic cul-de-sac as advocated by Moschcowitz in 1912. (2) Obliteration of the pelvic cul-de-sac and closure of the ventral hernial opening by suture of the levator muscles as advocated by Graham in 1942. (3) Fixation of the rectum in its bed, chiefly to the presacral fascia, as advocated by Pemberton and Stalker in 1939 and Muir in 1955.

In support of Howet's opinion that prolapse was due to both the depth of the cul-de-sac and a weakening of rectal fixation, Hulten in 1946 reported favorable results with obliteration of the pelvic cul-de-sac combined with fixation of the rectum by excision of the sigmoid flexure.

Author's Views on Etiology and Treatment

Results obtained by using the Graham method of operation in 12 cases of rectal prolapse were reported[10] in 1954. At that time I thought Graham's operation was eminently suited for repair of a prolapse when a deep pelvic cul-de-sac was encountered. Since 1954 I have used the Graham method on 36 additional cases. During this time it was necessary to operate upon some patients for recurrence and as a result of my observations during performance of the second operation I have made some changes in the surgical procedure in the last 18 operations. In these cases I obliterated the pelvic cul-de-sac (Moschcowitz) and performed a proctopexy (Pemberton and Stalker) in addition to the Graham procedure. Results of this operation in some of these patients were studied by a special roentgenologic technic described by Ekengren and the author in 1953.[1]

As a result of observations made at the operation for recurrence and the evidence presented by roentgenologic studies, I feel that rectal prolapse occurs principally in two different forms, namely:

1. Prolapse with a deep pelvic cul-de-sac. This form of prolapse is accompanied, particularly in older women,

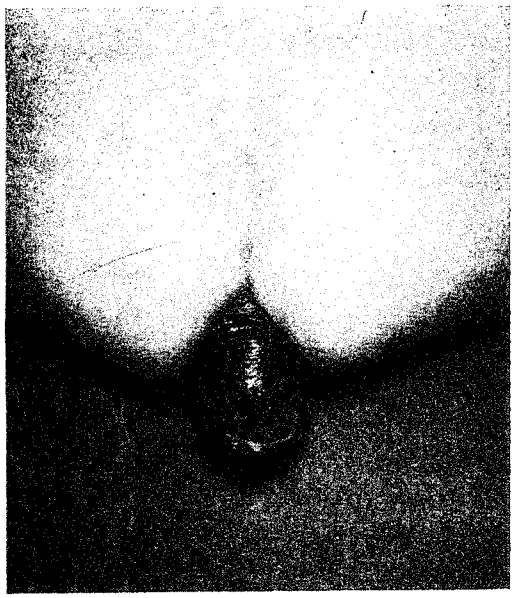

FIG. 1. Prolapse due to the depth of the pelvic cul-de-sac. The posterior wall of the rectum is shorter.

by an appreciable slackening of the supporting structures of the pelvis. The levator ani muscles are particularly affected. This is the type of prolapse discussed by Moschcowitz, Graham, and others.

2. Prolapse with weak rectal attachments. This form of prolapse may result in abnormal mobility in relation to the surrounding structures and as a result the rectum may then protrude telescopically through the anal orifice. In this type of prolapse, which was discussed by Pemberton and Stalker and by Muir, the pelvic cul-de-sac is not necessarily a part of the prolapse.

Material

This study comprises 40 patients operated upon at St. Görans Hospital and two patients operated upon at private hospitals prior to July 1, 1958. Fourteen of the 42 patients had undergone operation earlier for rectal prolapse. Rehn-Delorme's procedure had been used in five cases, Moschcowitz in one case and Thiersch in one case. In seven cases the type of operative procedure could not be determined. Forty of the patients were women and two were men.

Symptoms and Findings

The onset of rectal prolapse occurred at various ages, but the majority of the patients became aware of it between the ages of 45 and 60 years. Most of the patients sought medical advice because they had noticed the prolapse. In four incontinence, with involuntary passage of flatus, mucus and loose stools, were the chief evidences of disability and none of these patients were aware that there was a prolapse. In many instances a "lump" was felt in the rectum and patients experienced an almost constan desire to empty the bowel for a number o years before they became aware of the pro lapse. When seated on the toilet, they could pass only a little feces and usually they felt that there was more left in the rectum Walldén in 1952 ascribed these symptoms to filling of the deep pelvic cul-de-sac with intestine and consequent pressure upon the rectum.

FIG. 2. Prolapse due to weakening of rectal supports. The prolapsed bowel is cylindrical and the rectal lumen is seen at the apex of the protrusion.

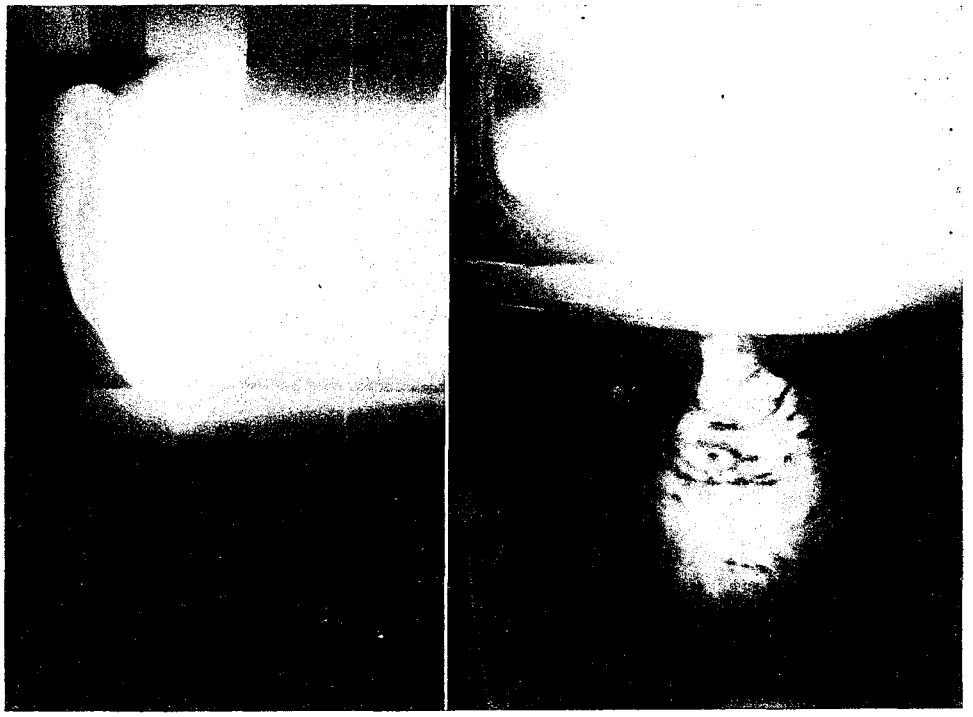

FIG. 3. Lateral roentgenographic view is taken while patient was sitting at stool. (*a*) (left) Small intestine in abnormally deep cul-de-sac. (*b*) (right) When the patient is straining, the rectum is extruded through the anal canal.

In most instances the prolapsed and extruded portion of the rectum was the size of a fist and rounded. It appeared to be covered largely by the ventral wall of the rectum, and the lumen appeared to be directed almost in a straight line posteriorly. The posterior rectal wall protruded to a lesser extent (Fig. 1).

In some instances the prolapse was cylindrical and the rectal lumen appeared at the apex of the prolapse (Fig. 2). The anal sphincter muscles were flaccid in 17 of the 42 patients, while in the remaining 25, the muscle function was good.

Special Roentgenologic Examination

In 1952 Wallden published a method of roentgenologic examination of the cul-de-sac. A modification of this method, reported by Ekengren and Snellman in 1953, was used in the preoperative investigation in some of the patients included in this report. The roentgenologic examinations were performed in the Department of Roentgenology at St. Görans Hospital. The technic is as follows: The patient is given a barium meal. When the contrast medium has reached the small intestine in the pelvic cul-de-sac, a thick barium mixture is injected into the rectum for contrast. In women contrast medium is instilled into the vagina. During the examination the patient is seated on a special chair with a hole in the seat and a container on the floor below the hole. Lateral roentgenologic views are then taken before, during and after straining. Figure 3*a* demonstrates the small intestine in an abnormally deep cul-de-sac. When the patient is straining the small intestine prolapses through the anal canal (Fig. 3*b*). Figure 4*a* demonstrates the small intestine in a normally deep cul-de-sac. When the patient is straining the small

FIG. 4. Lateral view (same as Fig. 3). (*a*) (left) Note small intestine in a cul-de-sac of normal depth. (*b*) (right) When the patient is straining the small intestine does not follow the prolapse through the anal canal.

intestine does not follow the telescopic prolapse through the anal canal (Fig. 4*b*).

Since all of the patients in this series did not undergo roentgenologic examination, no conclusions can be drawn as to the incidence of the two types of rectal prolapse that may be detected and demonstrated by this method of preoperative roentgenologic study. However, three cases of the telescopic type of prolapse due to weak rectal attachments were demonstrated preoperatively, and five cases of prolapse of the deep pelvic cul-de-sac were found by this method before the operation was performed.

Surgical Technic

The following technic, similar to that published by Graham, was used in the first 31 cases of prolapse in this series.

Laparotomy is performed through a transverse or longitudinal incision below the navel. As a rule the pelvic cul-de-sac is found to be broad and deep, extending to the pelvic floor. Posteriorly in this fossa lies the rectum, frequently invested with a mesentery far distally in the pelvis. In women the uterus is often readily displaced in all directions and not infrequently it can be lifted through the incision in the anterior abdominal wall. In men the deep cul-de-sac extends down behind the prostate so that the back of that organ can be explored digitally without exposing it by dissection.

The peritoneum is divided anteriorly and downward on the anterior and lateral sides of the rectum. The lateral peritoneal margins are lifted and the fat is dissected caudolaterally and anteriorly; almost immediately the levator ani muscles covered by the endopelvic fascia are encountered. Coarse silk sutures are placed on each side of the rectum in the levator ani muscles, beginning by placing them forward and downward and finishing upward and backward. I do not place the sutures in the puborectalis muscle itself. By exerting traction on the

sutures and by digital exploration of the pelvic floor, the firmness of the attachment to the levator ani muscles is tested. In many elderly women with rectal prolapse the levator ani muscles are thin and flaccid. In a number of patients, especially men, they are fairly taut and it is not always possible wholly to approximate the uppermost and most posterior sutures. Three to four sutures tied in the midline form a strong wall in the ventral aspect of the rectum. A finger should be passed behind the wall to ensure that there is sufficient room for the rectum.

The constructed septum prevents the abdominal organs from pressing upon the distal segment of the rectum, and retains the rectum in the sacral curvature. After this step, some finer silk sutures are placed in the advanced levator ani margins and the rectal wall.

The pelvic cul-de-sac is then obliterated with "tobacco bag" sutures in the peritoneum, which are passed through the rectal wall and the perirectal tissues. In the female this shortens the uterosacral ligaments and causes an appreciable restriction in the mobility of the uterus. In most female patients I have also shortened and reinforced the round ligaments of the uterus.

In the last 31 cases in this series the Graham type of surgical procedure was combined with Pemberton's method of opening the peritoneum on the lateral aspect of the rectum at the level of the sacral promontory. Dissection is continued behind the rectum which is freed with the hand from the sacrum down to the coccygeal tip. The rectum is then drawn upwards and the perirectal tissues are fixed with silk sutures to the presacral fascia.

Results

Forty-two patients operated upon prior to July 1, 1958, have been followed from three months to ten years. All are well clinically with the exception of the recurrences.

Recurrences: Prolapse of the rectum through the anal canal has recurred in four cases and mucosal prolapse has occurred in one. This last case was treated by excision of the protruding portion of the mucous membrane by Milligan's ligature method. At the same time laparotomy was performed and it was found that the levator suture and cul-de-sac obliteration was intact. In two cases reoperation revealed that the deep pelvic cul-de-sac had not reformed, but the recurrence consisted in a telescopic advance of the rectum behind the septum constructed by the Graham method. In these two cases a Pemberton type of proctopexy was performed at the second operation. In one case initially treated by the combined Graham-Pemberton type of procedure, the second operation showed that the deep cul-de-sac had reformed but the levator ani muscles were intact. This recurrence consisted of a telescopic advance of the rectum behind the ventral portion of the repair of the levator ani muscles done at the first operation. A nutritional debility due to multiple carcinoids of the small intestine contributed to the failure of surgical treatment in this case. Another case treated initially by the Graham-Pemberton type of operation has recurred and this patient refuses to have a roentgenologic examination or another operation. Therefore, I am unable to determine the nature of the recurrence.

During the followup studies the sphincter was found to be flaccid in eight of the 42 patients, sphincter function had been restored in nine patients in whom it had been feeble preoperatively.

Discussion

Graham's operation for prolapse of the rectum has been the subject of increasing interest during the past few years. Its objective is to effectively narrow or close the ventral gap between the levator muscles to prevent prolapse of the ventral rectal wall and small intestine through the anal canal. Goligher's modification of the Graham oper-

ation consists of freeing the entire rectum on all sides and suturing the levator ani muscles with silk, ventral and sometimes posterior, to the rectum. This modification may be effective but it is considerably more extensive than a combination of Graham's and Pemberton's methods.

In this series Graham's operation was not sufficient to prevent recurrence. In one case a mucosal prolapse occurred and in three cases the recurrence was identified at the second operation as a telescopic prolapse, dorsal to the Graham fixation, presumably due to a weakness of rectal fixation. These recurrences have led to the conclusion that rectal prolapse is not due solely to the depth of the cul-de-sac, but in a number of instances is caused by a weakening of the structures supporting the rectum.

Roentgenologic examination of patients with contrast media in the small intestine and rectum while they are straining at stool is a good method of demonstrating the two types of prolapse under discussion. Without the preoperative roentgenologic study outlined, it is not always possible to determine which type is present. Mixed forms may occur. The presence of a deep pelvic cul-de-sac does not exclude the possibility that the prolapse may be due to a weakening of rectal fixation as I observed in 1959. It is therefore of importance that the operative technic be directed to both causative factors by combining the Graham and Pemberton technic, although this combination does not always prevent recurrence.

Summary

Forty-two cases of prolapse of the rectum are reported which were operated upon from 1949 to 1958. Thirty-one patients underwent Graham's operation, and 11 a combination of Graham's procedure and Pemberton's proctopexy.

Roentgenologic examination and observation made at laparotomy have demonstrated that rectal prolapse may be caused either by depth of the pelvic cul-de-sac or by weakening of the rectal fixation. Possibly the two types may be combined. Five recurrences were recorded. In four the recurrence was due to weakening of the rectal fixation in patients treated by closure of the pelvic cul-de-sac according to Graham. Since the type of the prolapse cannot always be determined, Graham's procedure should be combined with Pemberton's proctopexy.

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