

Complete Prolapse of the Rectum in the Adult

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THE OBJECT of this report is to consider the cause of complete rectal prolapse in the adult, the relation between cause and treatment and a method of treatment.

The complaint is rare—of some 13,000 new patients seen in the last 13 years, in an area where there is no unit dealing specifically with ano-rectal disease, only twelve had rectal prolapses. In the hospital for rectal diseases in London, 15 cases/year were seen between 1931–47³ and 30 cases/year between 1949–60.²⁷ No single surgeon can, therefore, have a large experience, and a review of recorded cases is of some importance.

Cause

Age. In seven series, comprising 888 cases, the peak incident of prolapse of the rectum in women was between the ages of 50 and 70, and in men, between 20 and 40. This is not, therefore, a complaint of the aged and frail, although about one third of the cases are likely to be in that category.^{1, 8, 12, 13, 26, 27, 29}

Sex. In six series, comprising 660 cases, the ratio of women to men was 3.4/1.^{1, 8, 12, 23, 26, 27}

Childbirth. Only about half the female patients have borne children.^{12, 27}

Musculature of the Pelvic Floor. Many authors state that the musculature of the pelvic floor is weak^{3, 10, 15, 22, 26}; others have found the muscles to be normal¹³ and many find the muscles sound and draw them together as a method of treatment.^{1, 11, 13}

It seems hard to believe that the state of the pelvic floor plays any part in the pro-

lapse because in the area of this hospital, where there is no special rectal unit, less than one patient per year is seen with rectal prolapse, whereas, in a Gynecological unit of equal size some 50 patients/year have a perineal repair for pelvic floor weakness.

This point is illustrated by M. F. (female, married, aged 83) who had a complete prolapse of the rectum and uterus. In May 1965, total hysterectomy and cure of the prolapsed rectum by anterior fixation (as will be described later) was done. When seen in February 1967, the rectum and its function was normal, but she had a complete prolapse of the vagina.

Bowel Habits. These are often said to be abnormal (either constipated or loose)^{6, 22, 27} but no comparison has been made with a similar group of patients without prolapse and Altemeier *et al.*¹ found no such abnormalities.

Anal Sphincter. Patients with prolapse of the rectum have a lax sphincter in most cases^{1, 11, 22} but, after a successful operation, sphincter tone returns, except in certain operations^{4, 12} which will be considered later. It would seem, therefore, that the lax sphincter is secondary to the prolapse, and, in any case, the relaxation of the sphincter at stool must allow the bowel to drop when its retaining mechanism is at fault, whatever may be the sphincter tone at other times. The sphincter cannot therefore be a factor in the causation or prevention of prolapse.

Anterior Peritoneal Pouch. Many patients with rectal prolapse have an anterior peritoneal pouch^{14, 21} and it has been generally claimed that the prolapse is in fact

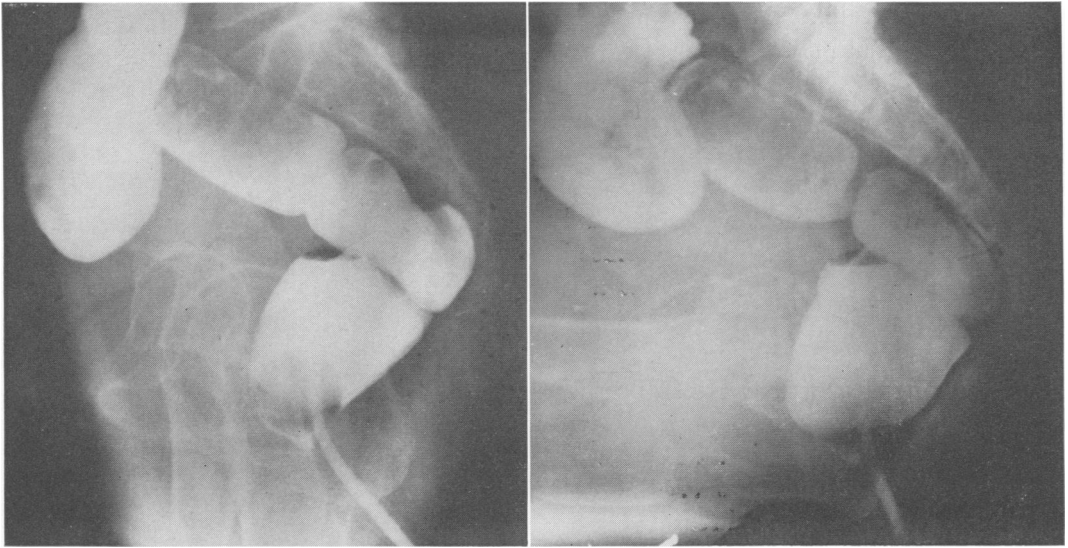


FIG. 1A (left) and B (right). Barium enema of a normal patient in the standing and sitting positions to show the relationship of the rectum to the sacrum and pubis.

a sliding hernia,^{11, 21} but Cooper⁵ showed clearly that there are two types of prolapse. The first being a direct protrusion with the orifice of the dropped bowel pointing directly down. The second being the type with an anterior sac where the orifice of the bowel points backwards, and where, as Cooper⁵ pointed out, small gut may fill the sac and even become irreducible, and where the rectum has ruptured with prolapse of small bowel. These

two types have been described and demonstrated radiologically by Snellman.²⁹ The fact that the anterior sac is not involved in the etiology of prolapse is further indicated later in this report, by the poor results of operations which simply obliterated the sac.

The Vascular Pedicle to the Rectum. That this is unusually long has been long known^{11, 28} but it is surprising that so little has been said of this, for it is the most striking and only constant feature in these

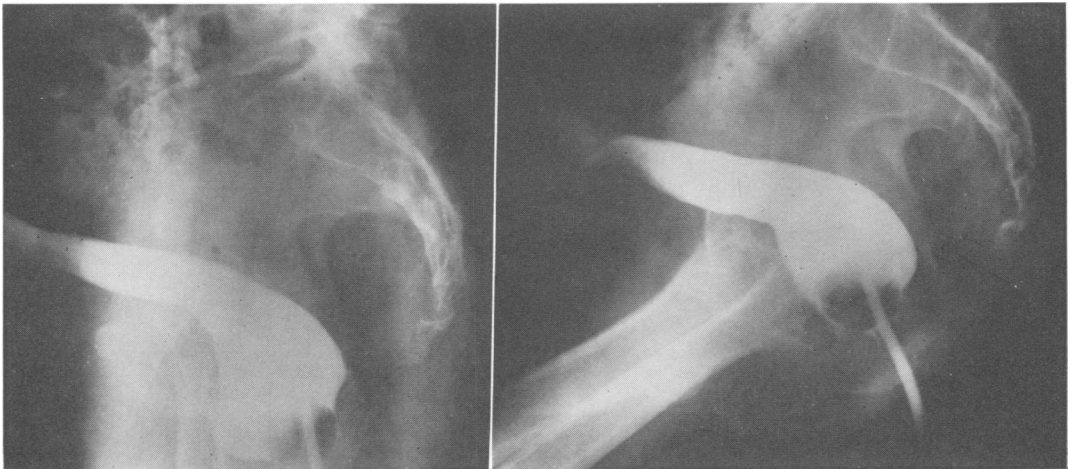


FIG. 2A (left) and B (right). Barium enema, in the standing and sitting positions, of a patient following anterior fixation of the rectum for prolapse, showing the relationship of the rectum to the sacrum and pubis.

patients. The vascular supply is so long that the vessels and the colon can be brought completely outside the abdominal wall, whereas, in the ordinary patients, the recto-sigmoid can be exteriorized only after division of the superior rectal vessels.

The Curve of the Sacrum. This is said to be flattened²⁸ but no one has produced any evidence that this is so in adults and it does not, in my experience, occur (Figs. 1, 2).

Miscellaneous Conditions. Rectal polyps, neurological conditions, genito-urinary disease occur with prolapse, but, although of importance in individual cases, are not etiological factors. Psychiatric disease was of importance in only one series¹ where it occurred in 32% of cases.

In brief, the only constant factor in all cases of prolapse of the rectum, is the long mesentery, which presumably allows the rectum to fall out of itself, just as a colostomy or ileostomy will prolapse if its mesentery is long and free; a comparison already made by Pemberton and Stalker.²⁶ It is not known what factor initiates this process.

Treatment

In considering any method, three things must be borne in mind: first, it must be applicable to the aged and frail; second, the results can only be assessed after some time, for while most recurrences appear within the first 2 years, some will occur after many years^{12, 25, 27}; third, the functional as well as the anatomical results must be assessed, for incontinence and difficulty with the bowel may follow, or persist, despite the anatomical cure.

Some 80 methods have been described¹⁵ but the many operations devised are variations of six methods:

1. Narrowing of the anal orifice or rectum.
2. Production of adhesions between the rectum and the sacrum.
3. Excision of bowel.

4. Obliteration of the anterior peritoneal pouch.

5. Restoration of the pelvic floor.

6. Suspension and fixation of the rectum.

Narrowing of the Anal Orifice or Rectum. A variety of methods have been described (e.g., excision of part of the sphincter and rectal wall,² narrowing of rectum via a post-rectal incision,¹⁶ but the only one widely used is that of Thiersch, described in 1891, and widely used on the continent).⁹ The results are bad, e.g., 68% recurrence in 114 cases²⁷ together with many local complications.

Production of adhesions between the rectum and sacrum by a perineal incision are described by Verneuil and Lockhart Mummary.^{17, 33} The results are poor (e.g., 29 recurrences in 30 patients).¹²

Excision of Bowel. This was, at first, an excision of the prolapsed rectum only^{19, 32} but was extended to include the sigmoid colon as well, either from below, with or without approximation of the levatores^{1, 20} or from above with or without repair of the pelvic floor^{15, 22} or a combined operation from below and above.⁷

Altemeier *et al.*¹ operated upon 43 patients with only two recurrences, and good functional results, but Porter²⁷ described 110 cases with 58% recurrence (and improvement in continence in only 10%) and Hughes¹² reported 108 cases with 60% recurrence and postoperative incontinence resulted in about half. The incontinence is ascribed to the loss of rectal sensation, or to damage to the nerves of the sphincter³¹ and it has been shown by balloon studies that the desire to defecate is abolished after this operation, even with pressures much above those which are effective in a normal rectum.²⁴

Obliteration of the Anterior Peritoneal Pouch.²¹ This operation is based on the assumption that the prolapse is the result of a hernia of the recto-vaginal or rectovesical pouch. The results of the opera-

tion are poor (e.g., 48% recurrence in 43 cases²⁷).

Suspension and Fixation of the Rectum by an Abdominal Approach. Suspension to the abdominal wall was described as early as 1890¹⁸ but proved to be ineffective¹² probably because the rectal prolapse was never properly reduced.²⁶ The ineffectiveness of fixation without reduction is illustrated by the following case. B. D., a mentally defective man, aged 32, suffered complete rectal prolapse. At operation it was found that the rectum was fixed to the sacrum by fibrous tissue of such thickness and strength that a knife had to be used to free the bowel. Nevertheless, this did not prevent prolapse, but after complete freeing of the rectum and anterior fixation, the patient remained well for 4 years.

The methods now used consist of freeing the rectum completely posteriorly, or posteriorly and laterally, and then fixing it in the reduced position either anteriorly or posteriorly.

The anterior method of fixation^{25, 26, 30} is simple and gives good results, e.g., 10% recurrence in 49 patients, followed for an average of 5 to 6 years. More will be said of this method later.

Posterior fixation, either by a plastic mesh²⁸ or by Ivalon Sponge,²⁴ is simple and gives good results as far as the prolapse is concerned. Ripstein²⁸ reported 30 cases with no recurrences, Calne,⁴ of 30 patients one had full prolapse, six had mucosal prolapses. Naunton Morgan²³ reported 46 patients, one had complete prolapse and two had mucosal prolapses. The functional results, however, are doubtful (e.g., Naunton Morgan,²³ 50% required regular purgation, 50% had incomplete control; 6.7% had less control postoperatively than preoperatively; Calne,⁴ 28 of 29 had poor sphincter tone. Of 25 patients who were incontinent preoperatively, 12 remained incontinent postoperatively. Eleven patients had to take regular aperients, eleven had difficulty with evacuation).

Calne⁴ suggests that this is due to interference with the presacral nerves.

Restoration of the Pelvic Floor.^{10, 11} This operation consists of completely freeing the rectum by an abdominal approach and then suturing together the levatores in front, or occasionally behind the rectum. Several authors have reported the difficulty of the procedure and Hughes and Gleadhill¹³ have used a combined perineal and abdominal approach to achieve this. The results of 43 cases are given by Friedman.⁸ Of 41 patients there were four complete recurrences (10%) and 34 patients had mucosal prolapses on straining (83%). The functional results were good, but eleven patients took purgatives regularly and 26 had minor difficulty with control of feces and flatus.

In Brief. Narrowing of the anal orifice, production of adhesions between the rectum and sacrum by a perineal approach, and obliteration of the peritoneal cul-de-sac give poor results. After excision of the bowel the prolapse recurs in 50% of the patients and the functional results are poor in the remainder. Repair of the pelvic floor gives reasonable results but the procedure is difficult to perform. Fixation of the rectum to the sacrum produces good results for prolapse but offers poor functional results. Fixation of the rectum ventrally has given reasonable results for prolapse and does not interfere in any way with the function of the rectum.

It seems evident, from a review of the literature, that two operations give acceptable anatomical and functional results, i.e., repair of the pelvic floor and anterior fixation. Repair of the pelvic floor is a difficult procedure to perform and anterior fixation has been investigated more fully.

The Relation between Cause and Treatment. Whatever causes the basic weakness which allows the rectum to prolapse, it would seem reasonable to suppose that it is intra-abdominal pressure which forces out the bowel, particularly when the patient is squatting with the anal sphincter



FIG. 3. (From Buchanan's manual of Anatomy.) Section of female pelvis to demonstrate the normal position of bladder, uterus and vagina and rectum. This Figure and Figure 4 are an anatomical mixture because the section runs through the pubis and sacrum, but the anterior abdominal wall represents the area lateral to the rectus abdominus.

relaxed; when the sphincter is atonic from repeated prolapse, the bowel simply falls out at any time.

If, therefore, the bowel can be placed in such a position that intra-abdominal pressure is directed against a solid structure, as opposed to the pelvic floor, this prolapse should not occur. This can be done by bringing the mobilized rectum directly forwards so that the pressure is directed against the pubis (Fig. 1A, B, Fig. 2A, B).

Operative Technic (Figs. 3, 4, 5, 6)

An oblique incision is made from the pubic tubercle to the ribs on the left side, in the line of the external oblique. The fibrous and muscular parts of the external oblique are split in the line of the incision and the internal oblique, transversus and peritoneum cut in the same line.

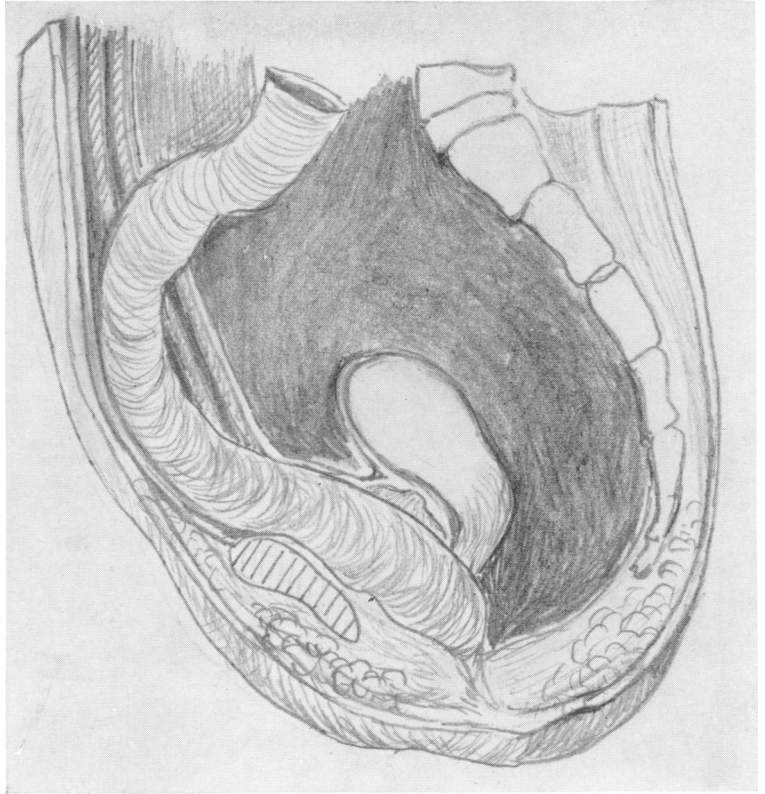
The rectum is then freed by dividing the peritoneum on each side from the brim of the pelvis to the vagina or bladder and

clearing the recto-sacral space, dividing the middle sacral vessels on the right side, until the fascia covering the levatores is completely exposed. It is unnecessary to divide the middle sacral vessels on the left, or to free the recto-vesical or recto-vaginal space.

The rectum is then brought directly forward immediately lateral to the bladder and uterus on the left, and in women, the fallopian tube and round ligament are divided at the horn of the uterus. It is to be noted that, at this stage, the rectum and its vessels can be lifted completely outside the abdomen because of the length of the superior rectal vessels. The rectum is then sutured to the anterior pelvic wall, and, in the female, the fallopian tube and round ligament are reattached to the horn of the uterus behind the rectum and its vessels.

The position now is that the bowel comes directly outside the abdomen at the pubis and returns at about the brim of the pelvis as though the rectum and superior rectal

FIG. 4. Section of the female pelvis to demonstrate the position of the rectum at the completion of the operation, with the pelvic floor completely exposed and the rectum brought forward anteriorly superficial to the internal oblique and transversus muscles for about 4", and then returned to the abdomen.



vessels had been divided to form a left iliac colostomy, the length of the superior rectal vessels enabling this to be done with ease without division of vessels. The space between what is now a mesentery to the upper rectum and the lateral abdominal wall is closed with sutures.

The peritoneum is then sutured behind the rectum and its vessels for a distance of about 4" from the pubis upwards, stitching it to the bowel where it emerges and returns to the abdominal cavity, and continuing the closure from the site of re-entry of the bowel to the upper end of the incision.

The internal oblique and transversus muscles are then sutured together behind the rectum for about 4" leaving only enough space for the rectum to emerge comfortably behind the pubis and to return to the abdomen at the brim of the pelvis—the remainder of the cut muscles being sutured, between the site of re-entry of the bowel and the ribs, in the usual way.

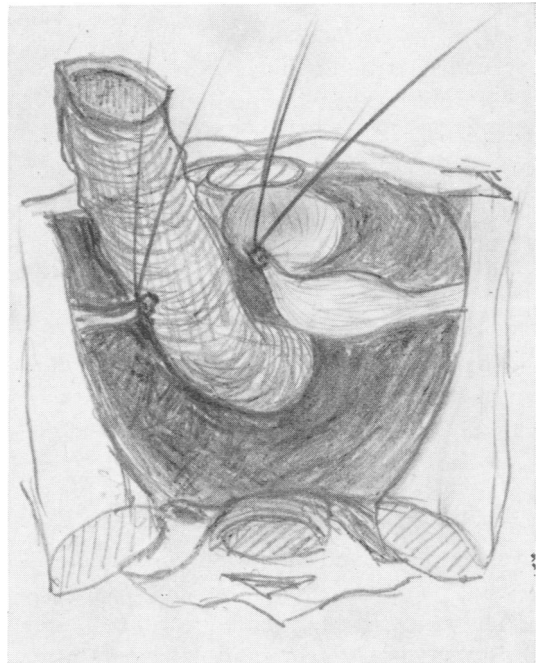


FIG. 5. Looking into the pelvis from above to demonstrate the position of the rectum at the end of the operation.

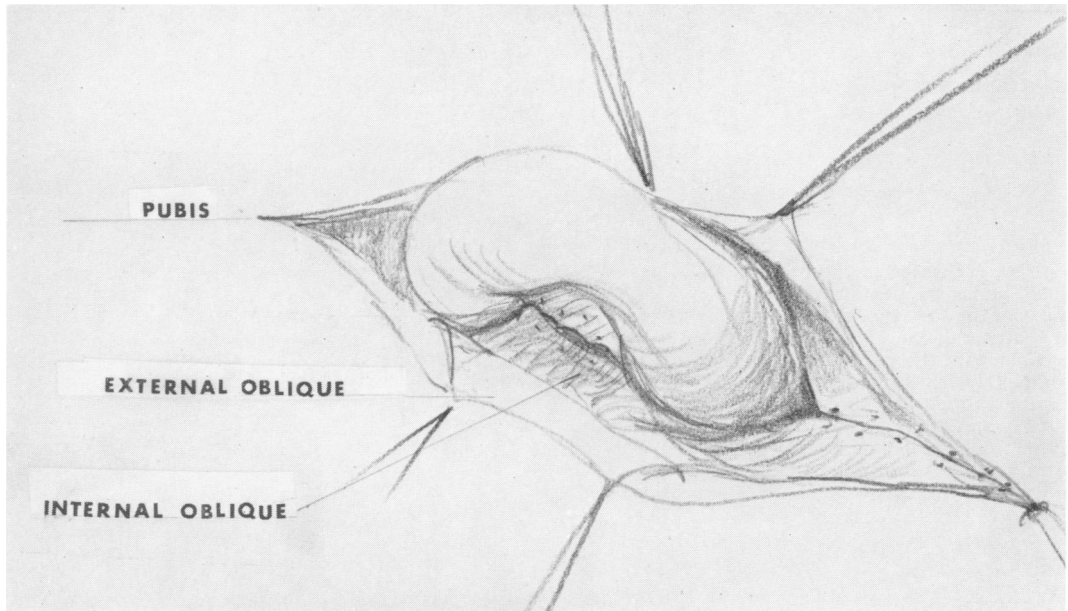


FIG. 6. This illustrates the suture of the internal oblique and transversus abdominis behind the lower end of the rectum. The split external oblique is held apart.

The external oblique muscle and its aponeurosis is then closed over the bowel, as is the fat and skin.

Results

Twelve patients have been treated, of whom eleven were women aged 55, 67, 68, 70, 74, 76, 79, 81, 81, 89, 89, and one man of 32. One woman aged 55 and the one man were mentally subnormal and another of the women patients had complete procidentia as well as complete rectal prolapse.

A. Anatomical

There was one recurrence (F. 76) at 3 years in a patient who died soon after of carcinoma of the pancreas (this patient had been operated upon elsewhere 10 years before for prolapse of the rectum with no improvement) and one (F. 85) at 4 years, in whom a second operation was done and is well one year after operation.

The remaining ten patients are well after 6, 5½, 5, 4½, 2½, 2, and 1½ years after operation, and three are well after 6 months. One of these patients (aged 83) whose complete procidentia was treated by

total hysterectomy at the same time as prolapse of the rectum, had a vaginal prolapse but an intact rectum after 4 years.

B. Functional

The recovery of sphincter tone in the ten living patients is significant. Control of feces and flatus appears normal in the eight mentally normal patients. The two subnormal patients have no soiling and are presumably normal, although it is difficult to communicate with them. Only one patient takes aperients.

Conclusions

Conclusions must be made with considerable reserve as only 12 patients have been treated, but it can be reported that:

1. The operation is easy to perform and safe for any patient.
2. The anatomical results compare favorably with other methods.
3. The functional results are good.
4. The sphincter shows remarkable recovery.
5. Should the prolapse recur, a second operation presents no difficulties.

Summary

The possible causes of prolapse are considered. The only constant factor is abnormal length and mobility of the superior rectal vessels.

Two types of prolapse have been demonstrated: a. A direct drop of the rectum; b. An anterior sliding hernial type.

The various operations for prolapse are considered. None will cure all patients. Some operations result not only in recurrence but in functional disorders without recurrence. The reasons why adequate anterior fixation should result in a cure are discussed. The operation of anterior fixation and the results obtained in twelve cases are described.

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