

Nineteen Years' Experience with the One-Stage Perineal Repair of Rectal Prolapse

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NINETEEN years' experience in a series of 106 consecutive cases of rectal prolapse in patients of all age groups treated on the Surgical Service of the University of Cincinnati Medical Center has given convincing results that the one-stage perineal operation originally reported in 1952 has been both curative and safe.⁴ Although rectal prolapse has been most prevalent in elderly and debilitated patients, the one-stage perineal procedure has been unusually well tolerated,^{2, 3, 5, 6} and there has been no post-operative death among the 106 patients. Moreover, this procedure has been found to be particularly useful and successful in patients with recurrent prolapse after one to five previous and unsuccessful operations. This operation has been a modification of the first stage of the two-stage operation previously described by Dunphy.¹⁴

There has been considerable confusion and discussion both as to the essential factors characterizing true rectal prolapse and the most effective surgical operation. More than 50 different operative procedures have been devised to cure rectal prolapse since the report of Moschowitz in 1912.^{3, 8-10, 21-41} These operations have been based upon six general principles: resection of the prolapsing and redundant bowel, reduction of

the size of the anus, plastic reconstruction or reinforcement of the perineal floor, abdominal suspension or fixation of the prolapsed bowel, obliteration of the cul-de-sac, or repair of the perineal sliding hernia.

It has been generally agreed that the cure of a true rectal prolapse is difficult under any circumstance, but there has been no consensus as to the most effective operations or the results obtainable with each. Too often surgeons have failed to understand and appreciate the correct anatomic and pathophysiologic factors which are associated with rectal prolapse.

To document the immediate and long-range results obtained by us with the one-stage perineal procedure, to correct some of the misconceptions which have developed concerning it, and to emphasize some of the factors or aspects peculiar to this interesting lesion, this report of our continuing experience in a series of 106 cases has been developed.

Classification and General Considerations of Rectal Prolapse

Studies of this condition and our experience at the operating table have convinced us that there have been three major types of rectal prolapse.

Type I was a protrusion of the redundant mucosal layer of the rectum for a distance of 1 to 3 cm. It was common but representative of a *false* prolapse which was usually associated with hemorrhoids. No cases

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TABLE 1. *Sex Incidence*

	No. of Cases	Males	Females
Type II	16	6	10
Type III	90	36	54
Total	106	42	64

Ratio of Females to Males—1.5:1.0.

TABLE 2. *Age Incidence*

Decade	No. of Cases
0-9	3
10-19	3
20-29	2
30-39	2
40-49	7
50-59	7
60-69	29
70-79	30
80-89	19
90-97	4
Total	106

73% between 60-89 years.

43% between 70-89 years.

TABLE 3. *Associated or Related Diseases and Injuries*

	No. of Cases	%
Psychiatric	55	52
Neurologic disease or injury	31	29
Cardiac	33	31
Inguinal herniae	34	32
Diaphragmatic herniae	8	7.5
Enterocoele, post-hysterectomy	6	5.6
Uterine prolapse	7	6.6
Pulmonary emphysema	9	8.5
Peptic ulcer	8	7.5
Cirrhosis and ascites	3	2.8

of this type have been included in this report.

Type II was essentially an intussusception of all layers of the rectum and rectosigmoid through the rectal and anal canals without the associated cul-de-sac sliding hernia. There were 16 cases of this type which were operated upon successfully in this series.

Type III, the true or complete prolapse, was basically a sliding hernia of the cul-de-sac. Through a defect in the pelvic diaphragm, the hernia invaginated the anterior wall of the rectum to produce an intussusception within the rectal and anal canals and protrusion through the anal sphincter as a prolapse. Ninety patients had *Type III* prolapse in our series (Table 1).

Type III has been seen most frequently at the extremes of life, in children and in the aged with a reported predilection for the female. The ratio of females to males was 1.5:1.0 (Table 1).

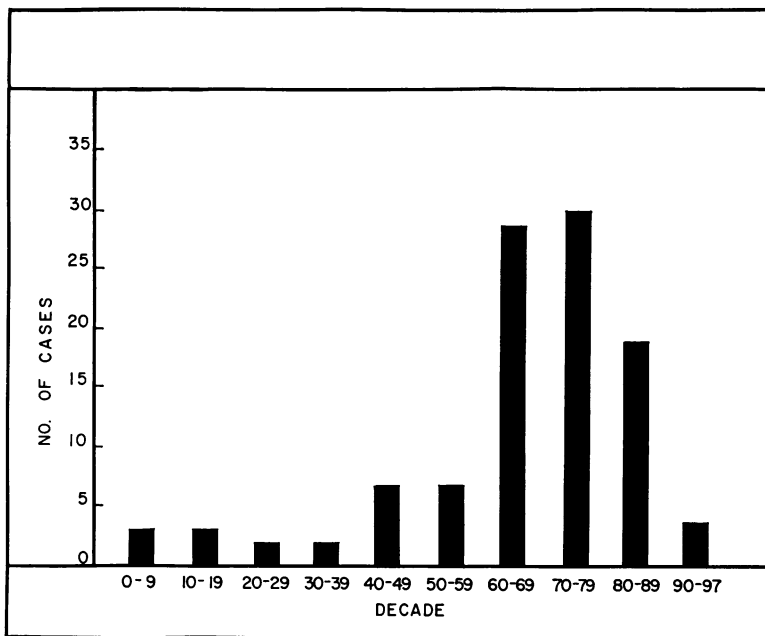
The youngest patient in our series was 2½ months of age and the oldest was 97 years, the average being 62.2 years. The mean, however, was higher as emphasized in Figure 1 and Table 2 which show that the most frequent occurrence of this condition was in elderly and debilitated patients.

The 2½ month old infant in our series had a *Type III* prolapse in association with multiple other deformities, including bilateral inguinal herniae, an umbilical hernia, multiple skeletal anomalies, and mental retardation.

Ninety-four of our patients were caucasian, and only 12 were Negro. The absence of the sacral curve and the presence of wasting diseases, diarrhea, and poor bowel habits have been described as predisposing factors to the development of prolapse. These, however, were apparently not of significance in our series. In contrast to diarrhea, severe constipation was a relatively common complaint.

Of growing interest have been a number of associated and related diseases and injuries in our group of patients (Table 3). The relationship of neurological conditions, psychiatric diseases, and degenerative arteriosclerotic diseases to prolapse of the rectum has been striking. Fifty-five patients or 52 per cent had a diagnosis of established psychiatric disease, and 31 others or 29 per cent had obvious neurological disease or injury. The neurological diseases included

FIG. 1. Bar graph depicting the age incidence by decade of Types III and II rectal prolapse.



cerebral thrombosis, chronic brain syndrome, poliomyelitis, and mental retardation. Thus 81 per cent of the patients had psychiatric or central nervous system diseases. A similar observation had previously been made in our earlier reports.^{3, 4} As our experience has grown, these factors have assumed a more significant relationship.

Other associated lesions have included serious cardiovascular diseases in 31 per cent, inguinal herniae in 32 per cent, and diaphragmatic herniae in 7.5 per cent of the patients. Posthysterectomy enterocele and uterine prolapse were seen in 5.6 per cent and 6.6 per cent, respectively.

It should be noted also that 22 of the 106 patients had been previously operated upon unsuccessfully one to five times by a variety of other operative procedures elsewhere. This would indicate that the rate of recurrence by previous operation had been 21 per cent.

The importance of the following pertinent anatomical and pathophysiological characteristics have been established.

Preoperative Preparation

Patients with protracted prolapse have benefited from a period of preoperative hospitalization of 5 to 7 days. During this time a thorough diagnostic study was conducted to detect, treat, and correct any associated diseases. In addition, a concentrated effort was made to keep the prolapse reduced and to decrease the associated edema, hyperemia, and superficial ulceration which were usually present.

Three or four days preoperatively, the patient was given one or two ounces of castor oil to empty and mechanically cleanse the bowel. In addition, he received a daily cleansing enema. Food intake was limited to a low residue diet which was changed to a clear liquid diet 1 day before operation. Preoperative antibiotic bowel preparation had been used on patients earlier in the series, but was discontinued and avoided since 1958.⁷ Systemic antibiotic therapy, however, has been used in all patients since 1958, administering penicillin and tetracycline intravenously. This ther-

TABLE 4. *Anatomical and Pathophysiological Factors*

1. The lesion is essentially a *sliding hernia*.
2. There is an associated large defect in the pelvic diaphragm.
3. There is elongation and redundancy of the recto-sigmoid and sigmoid colon with thickened, heavy, and distorted mesentery.
4. The prolapsed bowel is edematous, hyperemic, and often superficially ulcerated (Fig. 2).
5. Continuation of the prolapse produces stretching and paralysis of the external sphincter muscle and a wide patulous anus.
6. Patients with this condition are usually elderly, debilitated, and poor surgical risks.

apy was generally started 1 to 2 hours preoperatively, given during the operative procedure, and continued postoperatively for 3 or more days.^{1, 7, 20}

Adult patients were operated upon under low spinal anesthetic or general anesthetic, depending upon the circumstances of the patient's condition and the individual preferences of the surgeon and anesthesiologist. An indwelling Foley catheter was carefully inserted to drain the bladder throughout the operation and during the first 5 or 6 days postoperatively. To minimize the hazards of bacterial contamination and infection, the catheter was connected to a sterile drainage receptacle and not irrigated. After the induction of anesthesia, the patient was placed in the lithotomy position and the operative area was cleansed by gentle scrubbing with a suitable detergent or soap and water for 10 minutes followed by the application of an appropriate antiseptic solution and proper draping.

It has been found to be of considerable assistance to lower the head of the operating table 10 to 15 degrees throughout the operation. This position decreased significantly the oozing of venous blood and serum and facilitated hemostasis and the anatomical dissection.

Surgical Technic

After the prolapse had been exteriorized, its apex was grasped with Allis clamps and

with gentle traction on these, the mucocutaneous junction of the prolapse was carefully exposed to permit the making of a circumferential incision through all layers of the outer wall 3 mm. from the mucocutaneous line. The Bovie knife has been useful in minimizing oozing although it has been considered necessary to clamp and tie all remaining bleeding points with 000 chromic catgut.

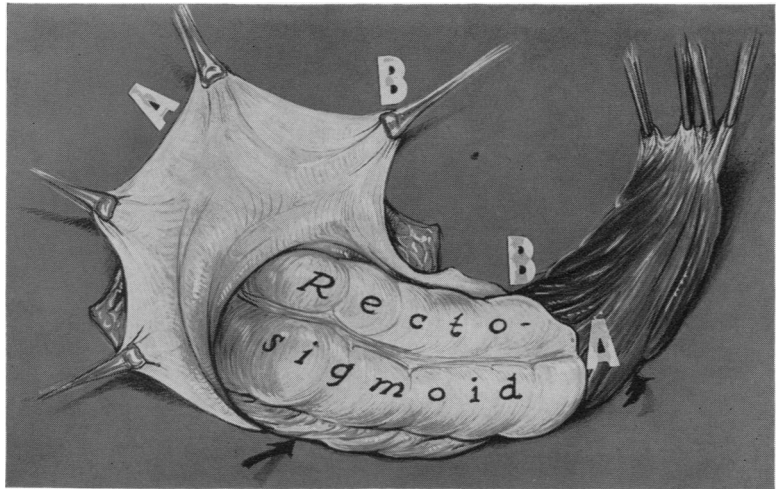
When the circumferential incision had been completed, the Allis clamps were re-applied to the distal edge of the rectum and the double loop prolapse was converted into a single loop (Fig. 3).

At this point the sliding hernial sac could be located on the anterior surface of the bowel. It was often obscured by considerable retroperitoneal fatty tissue. The sac was opened and the sliding nature of the hernia became obvious (Figs. 3 and 4).



FIG. 2. Type III prolapse of 10 years' duration with edema, hyperemia, multiple areas of mucosal ulcerations, and numerous polyps. Bleeding preoperatively was a major complaint.

FIG. 3. Drawing illustrating the sliding hernial sac present on the anterior surface of the inner loop of the Type III prolapse.



Obliteration of the hernial sac was accomplished by a continuous suture of 00 chromic catgut making an inverted Y suture line.

The length of the redundant bowel was noted and the level of its resection was selected. The length of the redundant bowel varied from 14 cm. to 31 cm. The thickened and elongated mesosigmoid was then carefully doubly clamped, cut, and transfixed with 0 chromic catgut sutures to obtain effective hemostasis (Fig. 5).

Depressing the bowel posteriorly in the operative wound, the thick levator ani muscles were exposed bilaterally and grasped with Allis clamps. The edges of these muscles and their enveloping fasciae were interposed anterior to the bowel and approximated in the midline by three to five interrupted sutures of 0 chromic catgut to eliminate the large defect in the pelvic diaphragm.

The redundant bowel was then divided into two lateral halves by anterior and posterior incisions carried to the point of proposed resection.

After securing the anterior and posterior angles of this incision to the mucocutaneous line with two 000 chromic catgut sutures, the bowel was transected obliquely and progressively in quadrants, completing the anastomosis of the bowel wall to the

anal ring in each quadrant (Fig. 4). Careful apposition of the tissues with 000 chromic catgut sutures and meticulous hemostasis have been carefully practiced.

Drainage of the perirectal space or the perineum has not been necessary and has not been used except in the first case. A vaseline gauze wick has been inserted into the anal canal to allow early detection of any possible intraluminal bleeding.

Postoperative Management

Postoperatively the patient has been placed on a regimen including nothing by mouth for 1 to 4 days following which a clear liquid diet and subsequently a low residue diet were allowed. The administration of one ounce of liquid petrolatum twice daily after the third day has been used to soften the stool, ease defecation, and avoid constipation or impaction near the suture line.

Antibiotic therapy has been continued regularly for 3 or more days postoperatively administering 1,000,000 units of penicillin G and 250 mg. of tetracycline or another appropriate broad spectrum antibiotic with each 1,000 cc. of intravenous fluid for 48 hours. Thereafter, penicillin V and tetracycline or another appropriate broad spectrum antibiotic were given orally in doses of 250 mg. every 4 to 6 hours.

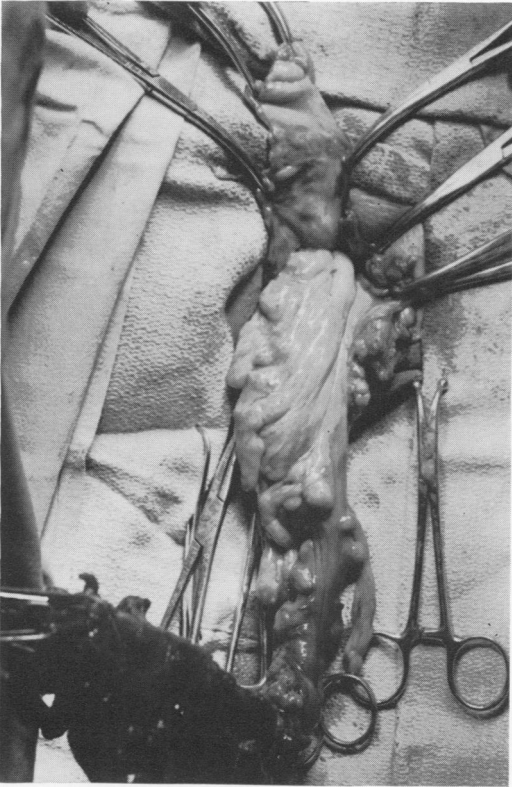


FIG. 4. Operative photograph showing the extent of the redundant and elongated colon in one case of Type III prolapse. The length of redundant bowel resected varied, from 14 cm. to 31 cm. in this series.

Ambulation has been encouraged beginning on the first or second days postoperatively.

Rectal examination, insertion of rectal thermometers or other similar procedures have not been permitted for the first 10-14 days.

Active exercises of the sphincter muscles have been prescribed after 14 days, but their value has been questionable.

Supportive therapy has frequently been necessary and important, particularly in the debilitated and elderly group of patients.

Results

During the past 19 years, 106 patients have been operated upon with the one-stage perineal procedure as described. Of the 106, 16 were of the Type II and 90 of the Type III variety. Twenty-two had had

one to five previous operations elsewhere which had been unsuccessful.

Although most of these patients were elderly with serious associated diseases, the operation was exceptionally well tolerated. There were no deaths postoperatively.

The complications noted during the postoperative period were relatively infrequent, everything being considered. They were of two general types, early and late.

There were four local abscesses resulting from a breakdown of the suture line. All were relatively minor responding to local drainage and appropriate antibiotic therapy. Other complications consisted of cystitis in eight cases, pyelonephritis in three, atelectasis in three, cardiac decomposition in four, pneumonitis in two, and ascites in two (Table 5).

The late complications observed after 1 year were also of interest. Pelvic abscesses were noted in three patients, two after rupture of the transplanted sigmoid colon caused by over distention from a balloon during a barium enema and one after an attack of diverticulitis. A rectal stricture de-

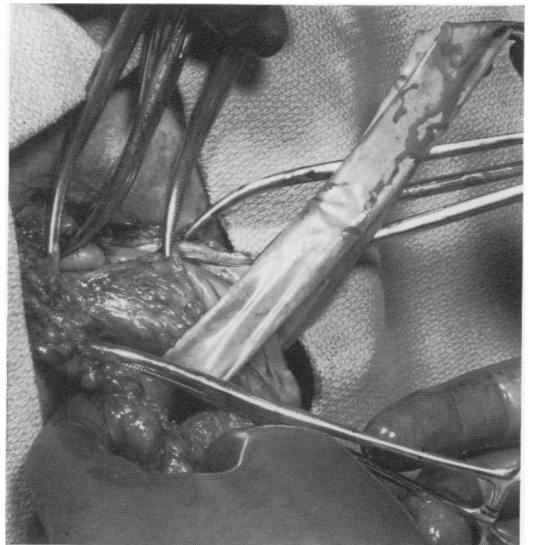
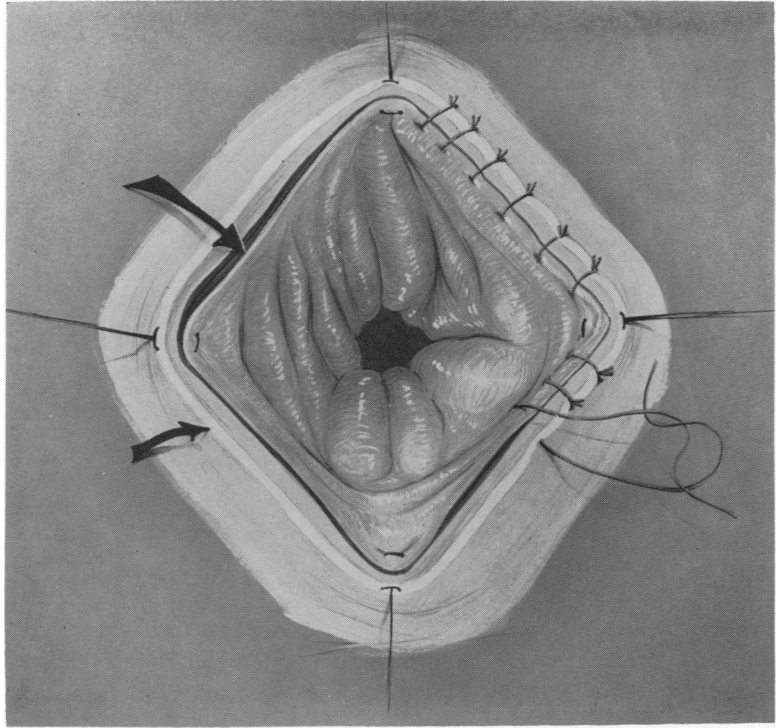


FIG. 5. Operative photograph illustrating transection and transfixion of the thickened and indurated mesentery at the level selected for resection. (Reproduced from *AMA Arch. Surg.*, 89:6-16, 1964.) The rectosigmoid is being held to the side by a rubber drain to facilitate the dissection.

FIG. 6. Drawing depicting the technic used in obtaining accurate apposition of the bowel wall and the mucocutaneous line at the anus using interrupted sutures of 000 chromic catgut.



veloped in two patients, one of which responded to repeated dilatation. The other, however, required surgical excision of the responsible fibrous ring.

Of particular interest has been the fact that only three of the 106 patients developed a recurrence of their prolapse.

All of the patients have been most appreciative and their follow-up has been remarkably easy for this reason. Many have been physicians or members of physicians' families brought to Cincinnati for the benefits of this operation.

Discussion

The one-stage perineal operation used in this series has been based upon the concept that a true prolapse of the rectum is essentially a sliding hernia of the cul-de-sac which invaginates the anterior rectal wall and descends through the anal canal as an intussusception pushing part of the rectum ahead of it.

Good surgical practice has seemed to demand total obliteration of the peritoneal sac and reconstructive repair of the large defect of the pelvic diaphragm through which the hernia passes. Some of the advantages of this operation which we have noted include the following.

1. It is a one-stage procedure.

2. Its perineal approach permits ready visualization to the anatomic abnormalities, an accurate diagnosis of the type of hernia, and appropriate surgical repair of the structures. The visibility has been more direct and the surgeon's accessibility to the structures involved has been considerably easier with the perineal approach than with trans-abdominal operation in our experience.

3. It has been surprisingly well tolerated by elderly, aged, and poor risk patients. Its perineal approach has required less extensive anesthesia, and the associated operative trauma has been minimal. For these and other reasons, the postoperative management has been easier and the complications relatively few.

TABLE 5. *Postoperative Complications*

Early	
Perineal abscess	4
Cystitis	8
Pyelonephritis	3
Atelectasis	3
Cardiac decompensation	4
Pneumonitis	2
Ascites	2
Late	
Pelvic abscess	3
Rectal stricture	2
Recurrence of prolapse	3

4. Thus far there has been no operative or postoperative mortality in our series.

5. The procedure is definitive and it effectively eliminates the sliding hernia, repairs the hernial defect, and removes the redundant bowel.

6. The rate of recurrence is low, only three having developed over a period of 19 years.

7. The operation does not depend upon the implantation of prosthetic materials or excessive scarification of the perirectal tissues. Rather, its success is dependent upon normal per primam wound healing and the development of only minimal scar tissue.

The question of fecal incontinence has been a matter of considerable study and discussion. It has been difficult to evaluate for many reasons. To start with, practically all of these patients have been incontinent for a long period of time preoperatively. In fact, the anal orifice has been a large patulous opening of fist size as a result of the paralyzed external sphincter and the prolonged dilatation by the prolapse. In addition many of these patients have neurological deficits which may persist. Our patients have been closely followed and postoperative fecal incontinence has been regularly noted for 21–30 days following which most of the patients began to acquire control. At the end of 3 to 5 months many of those without persistent neurological deficits have become continent and

have developed a new sensation of the need for defecation. The sphincter action apparently has been taken over by the transposed and encircling levator ani muscles. In approximately one-half of the cases there has also been a return of function of the external sphincter muscles within 6 months to 1 year in those patients without permanent related neurological deficits.

The cure by this procedure of the 22 recurrent cases of prolapse after previous unsuccessful operations has been particularly significant and gratifying to us. Another interesting observation has been the number of patients who are doctors or members of doctors' families.

Perhaps one of the most significant measures of the efficacy of this operation has been the many expressions of personal relief and deep gratitude received from all of the patients and many of the people responsible for their care. The cure of the prolapse has eliminated the threat of rectal protrusion with each bowel movement, cough, or abdominal straining, and the continuing problem of soiling due to rectal discharges and disagreeable odors which previously had made the patients social outcasts or recluses.

Summary

The experience of the past 19 years with the one-stage operation for prolapse of the rectum as described and performed in 106 consecutive cases has shown this procedure to be curative, safe, and well tolerated even by high risk aged patients. The mortality has been zero and the morbidity has been remarkably low.

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DISCUSSION

DR. ALTON OCHSNER (New Orleans). Dr. Beall's report illustrates a fact that I brought out last year when I spoke on pulmonary embolism, that we are living in an age of violence. Dr. Beall and his associates reported two series of cases, the

latter one in which the incidence of major gunshot injuries was six to one, as compared to two to one in the previous series.

Our interest in this started about 1949, when we reported from the Charity Hospital a small series of 55 cases over a 3-year period of time.