

# Rectal Resection for Benign Disease:\*

## A New Technic

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THE HAZARDS of conventional proctectomy include injury to the adjacent pelvic viscera, significantly prolonged convalescence because of slow healing of the perineal wound, and late complications such as pelvic herniation, sexual impotence, and chronic infection with persistent perineal sinus. These hazards are acceptable only when cancer is the indication for surgery. Multiple polyposis and chronic ulcerative colitis are benign diseases usually confined to the mucosa and submucosa of the colon and rectum. If cancer is not the indication for surgery, colectomy is complete when the colorectal mucosa and submucosa have been removed.

Experimental studies<sup>1</sup> in the dog demonstrated the presence of a cleavage plane between the muscularis and the mucosa-submucosa of the colon and rectum. The mucosa-submucosa can be dissected from the muscularis without disrupting the pararectal tissues or everting the rectum. The remaining tube of smooth muscle is self-emptying and stenoses rapidly. Anal ileostomy, as described by Ravitch,<sup>2</sup> included excision of the rectal mucosa-submucosa with preservation of the rectal musculature. Rehbein's<sup>3</sup> approach to imperforate anus included excision of the rectal mucosa-submucosa, leaving the muscular coat *in situ*. These observations suggested a technic of rectal resection which might be useful in benign diseases and which would avoid

the hazards of conventional proctectomy. This technic and its trial in two cases are described in this report.

### Operative Technic

The operative technic is illustrated in Figure 1. The colon is divided several centimeters proximal to its pelvic peritoneal reflection, and the cleavage plane between the colorectal muscularis and submucosa is developed by circumferential blunt dissection. Traction on the submucosa is helpful; countertraction on the muscularis is avoided because of its lack of tensile strength. The tube of mucosa-submucosa is mobilized to the level of the levator ani muscle. The superior end of the seromuscular tube is approximated, thus closing the pelvic peritoneum. The abdomen is closed and the patient is placed in the lithotomy position.

Next, the tube of mucosa-submucosa is grasped from below with a ring forceps and is everted. A circumferential anal incision is made, followed by dissection in a plane superficial to the sphincters, but deep to the lining of the anal canal. This dissection is carried upward until it joins the cleavage plane previously mobilized at the level of the levator ani muscle. The entire tube of mucosa-submucosa is excised. The anal sphincters are dilated. Postoperatively, the remaining rectal muscularis stenoses rapidly.

### Report of Cases

**Case 1:** A 76-year-old Caucasian man had had chronic ulcerative colitis for 6 years. Intensive medical therapy, including administration of cor-

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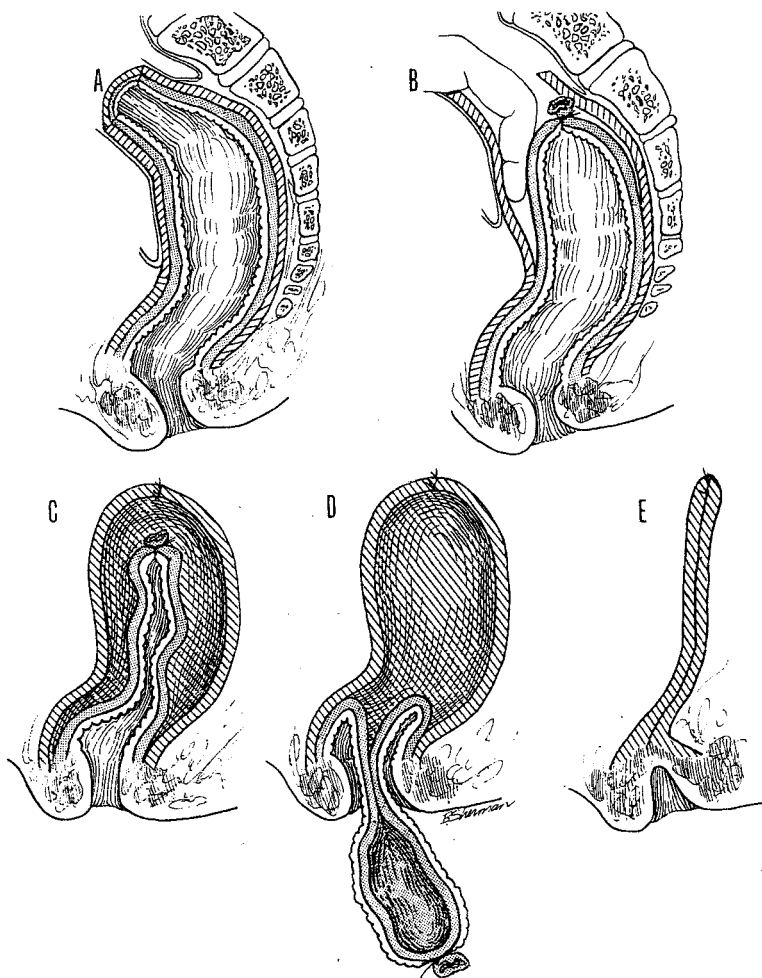


FIG. 1A. Normal rectum in sagittal section. Muscularis is cross-hatched and submucosa stippled. B. Cleavage plane developed by blunt dissection. C. Pelvic peritoneum is closed when sercomuscular tube has been approximated. D. Mucosa-submucosa everted and excised (not shown). E. Stenosis of tube of muscularis, resulting in healed posterior wound.

ficosteroid agents, had been of limited benefit. Radiographic changes were suggestive of malignancy. Proctosigmoidoscopy revealed moderately active rectal disease with coexistent pseudopolyps and adenomatous polyps.

On January 6, 1964, he underwent total proctocolectomy and ileostomy; the technic of rectal resection described above was utilized. The lumen of the rectum was entered several times during the dissection, but wound contamination was minimal. The perineal dissection at the level of the internal anal sphincter was more difficult than anticipated. A portion of the sphincter was removed with the rectal mucosa-submucosa. Penrose drains were placed in the tube of muscularis.

Perineal wound drainage was profuse for 18 hours. On the second postoperative day the drains were removed; there had been 200 ml. of serous drainage. At the end of the first week, drainage had been only 25 ml. per day (estimated from the

dressings) and sterile digital examination revealed no loculations. Two weeks postoperatively, the wound would not accept the examining finger, and, at 3 weeks, there was 1 cm. of granulation tissue at the anus. Figure 2 (top) shows the anal area 3 months postoperatively.

**Case 2:** A 57-year-old Caucasian man had had chronic ulcerative colitis for 3 years. He had lost a third of his body weight and passed as many as 20 stools per day. Proctosigmoidoscopy revealed a thickened rectum, active colitis with ulceration, and a sanguinopurulent discharge. On November 5, 1964, the patient underwent subtotal colectomy and ileostomy. The rectosigmoid was turned in several inches proximal to the pelvic peritoneal reflection. An uncomplicated convalescence followed, including a weight gain of 40 pounds.

Three months later the patient was re-admitted and resection of the mucosa-submucosa of the rec-

tum was performed. Extensive disease had partially obliterated the cleavage plane and sharp dissection was necessary during a part of the procedure. The perineal phase of the operation was similar to that of the patient in Case 1. A portion of the internal anal sphincter was excised. Penrose drains were inserted into the tube of muscularis.

Drainage was profuse for 24 hours, but diminished markedly during the next 3 days. The Penrose drains were removed on the second postoperative day. Digital examination on the fourth day disrupted an area of loculation with the release of several hundred milliliters of serous fluid. On the seventeenth postoperative day, the wound would accept only the tip of the index finger and the patient was discharged. Figure 2 (bottom) shows the anal area 2 months after the operation. Currently this man is well and has no impairment of sexual function.

### Discussion

When rectal resection is confined to the cleavage plane between the muscularis and submucosa of the rectum, most of the hazards of conventional proctectomy may be avoided. Dissection within the muscularis without mobilization or eversion of the rectum avoids the hazards of injury to the vagina, urinary tract, or pelvic nerve plexuses, and sexual function should be unimpaired. The rapid, uncomplicated convalescence of both patients confirms the experimental observation that the sero-muscular tube stenoses promptly. Pelvic peritoneal closure was accomplished with ease in both patients.

In the dog, the cleavage plane between the rectal muscularis and submucosa may be developed from either the lateral or ventral aspect of the rectum because the dog has a single dorsal mesentery (Fig. 3A). Man has lateral rectal mesenteries (Fig. 3B) and, therefore, a cleavage plane is most easily developed on the dorsal or ventral aspect of the rectum. The vessels which traverse the muscularis to enter the submucosa do so at the lateral aspect of the cleavage plane. These vessels may be managed easily as they can be exposed, via a midline to lateral dissection. Hemostasis has not been a problem. Most of the vessels are small and are occluded by the con-

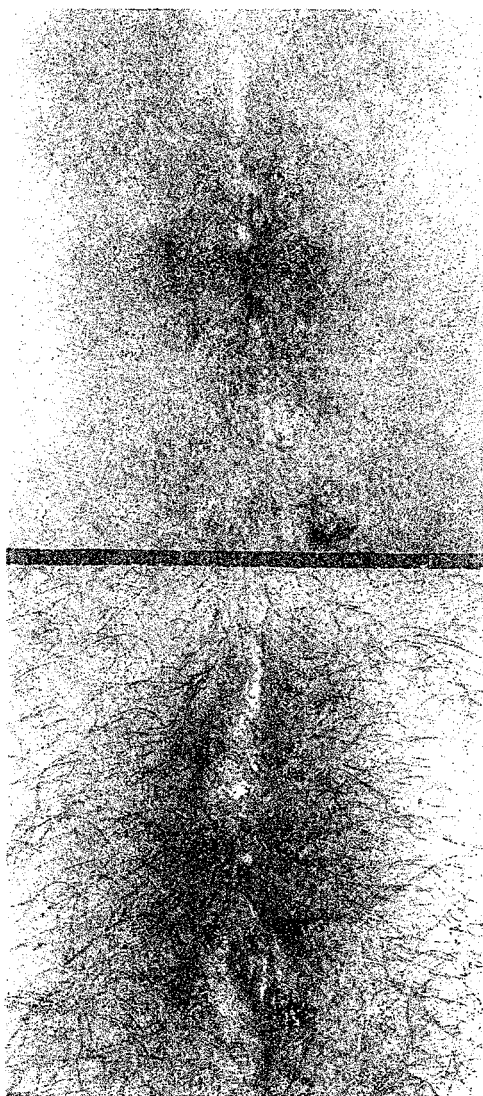


FIG. 2 (Case 1). *Top.* Anal area 3 months postoperatively. (Case 2) *Bottom.* Anal area 2 months postoperatively.

traction of the rectal musculature. Occasional ligation or electrocoagulation may be necessary.

Some difficulty was encountered during the perineal phase in both cases. The internal anal sphincter was partially excised. This may be related to obliteration of the cleavage plane or to limited operative experience. This technic of rectal resection

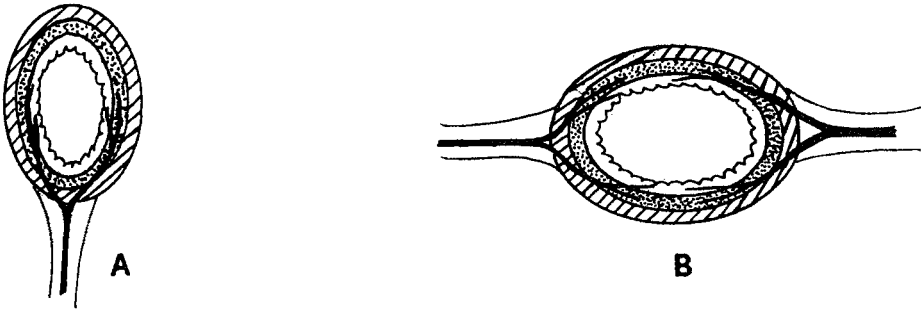


FIG. 3A. Diagram of cross section of rectum of dog, showing single dorsal mesentery.  
 B. Diagram of cross section of rectum of man, showing lateral mesenteries.

requires the presence of a cleavage plane between muscularis and submucosa. If extensive ulcerative colitis has obliterated the plane, it may be necessary to proceed with conventional proctectomy. In multiple polyposis the disease does not extend beyond the sumucosa, and extramucosal rectal dissection should have universal application.

#### Summary

A technic of rectal resection for benign diseases has been described, in which the cleavage plane between the rectal submucosa and muscularis is used. Dissection within the muscularis without mobilization or eversion of the rectum protects pararectal viscera. Pelvic peritoneal closure is

facilitated and sexual function in the male is not impaired. This operative technic has been used successfully in two male patients. These encouraging results suggest further clinical trial when proctectomy for benign disease is indicated.

#### References

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#### New Group

Colon and rectal surgeons of Buffalo, N. Y. on April 20, 1966, established a new group under the name of "Frontier Society of Colon and Rectal Surgeons." The officers:

- J. Edwin Alford, M.D., *President*  
 Clarence A. Straubinger, M.D., *Treasurer*  
 Carl F. Geigle, M.D., *Secretary*