THE TECHNIQUE OF ABDOMINOPERINEAL RESECTION FOR CARCINOMA OF THE RECTUM*

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The primary object of any operation for cancer of the rectum or rectosigmoid must be the eradication of the disease. The pathologic observation regarding the lymphatic spread which has been so well demonstrated by Miles makes it quite apparent that the combined abdominoperineal operation fulfils this purpose better than any other type of procedure so far devised.

Spinal anesthesia is preferable in performing this operation. Then the patient should be placed in the Trendelenburg position, which makes it easy to pack the intestines well out of the pelvis. This is an essential requirement because the operation necessitates deep pelvic dissection. A midline or left rectus incision is the next step and the liver is explored for metastasis. One nodule does not contraindicate operation. Multiple nodules do. The gland-bearing area is then examined, only, however, to note the extent of malignant invasion. Even extensive involvement of the nodes does not contraindicate operation. Finally the growth is inspected if it lies above the reflection of the pelvic peritoneum. If there are multiple small nodules on the peritoneum, operation is contraindicated unless the area which contains them can be resected widely.

If all these conditions favor going ahead with the operation, the sigmoid is then examined. Occasionally it is necessary to mobilize the sigmoid by cutting its peritoneal attachments on the lateral side (Fig. 1). The location of the inferior mesenteric artery is then determined and this vessel is ligated below the first sigmoid branch (Fig. 2). The Cameron light is very useful for this procedure unless the mesocolon is too thick. In the latter case the artery is exposed by incising the peritoneum of the mesentery about an inch below the bifurcation of the aorta. Ligation of this vessel insures a bloodless field for the pelvic dissection.

The succeeding step is incision of the peritoneum on each side of the mesosigmoid down to the promontory of the sacrum. These lateral incisions are continued down until they meet anteriorly behind the base of the bladder in the male or the pouch of Douglas in the female. (Figs. 3A, B, C.)

Traction on the bowel then brings into view the areolar space between the anterior surface of the sacrum and the mesocolon.

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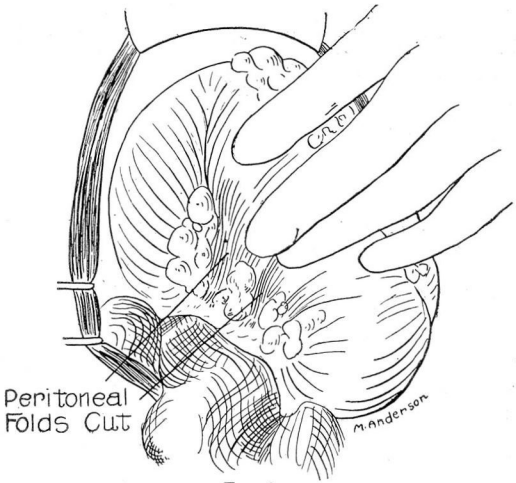

FIG. 1

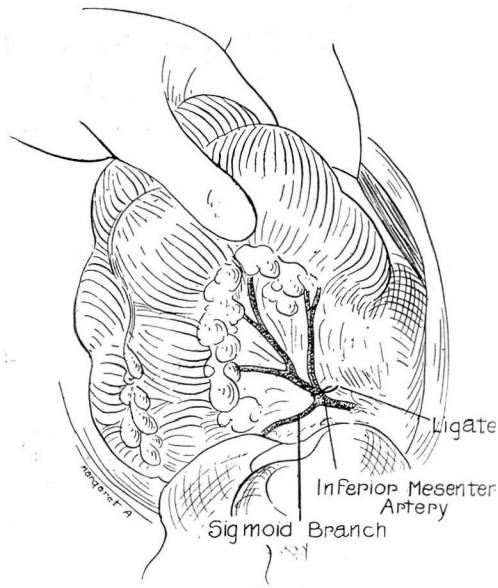

FIG. 2

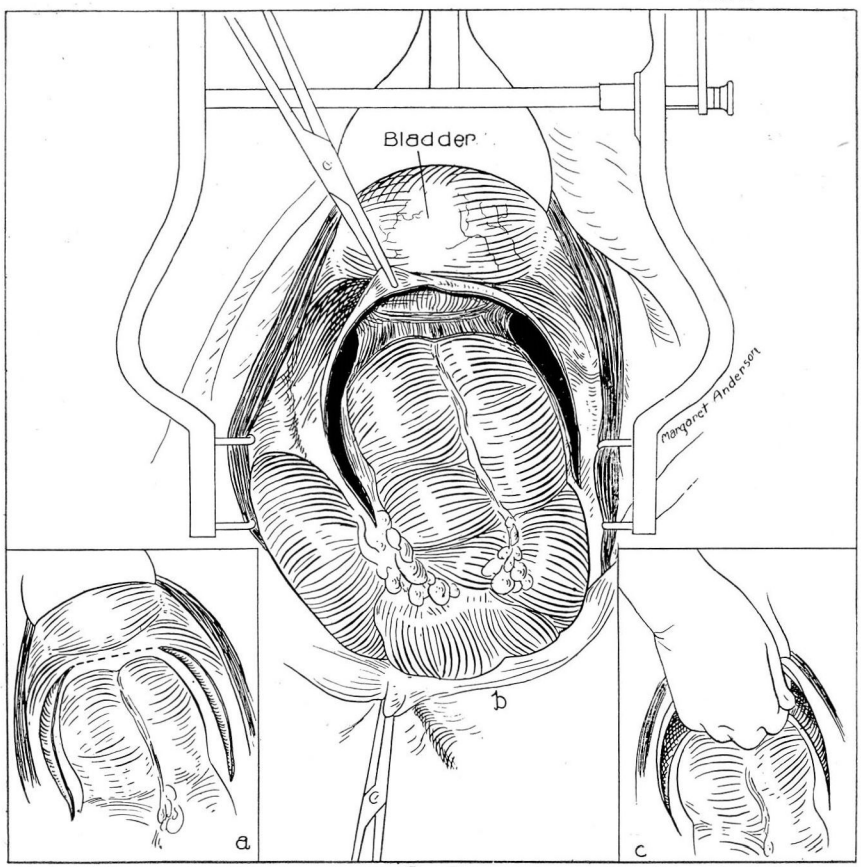

FIG. 3

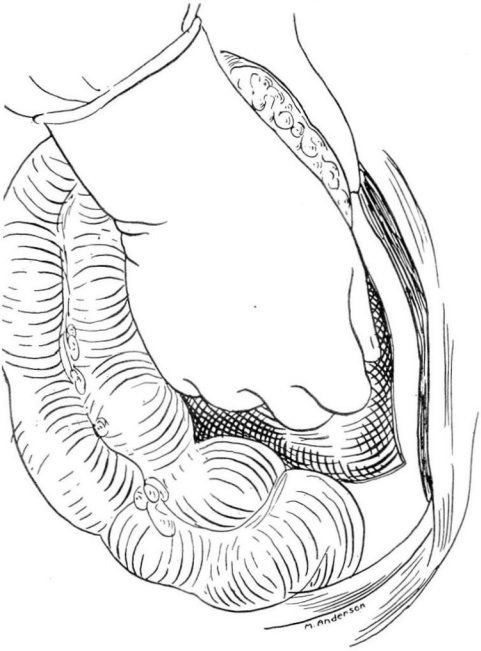

FIG. 4

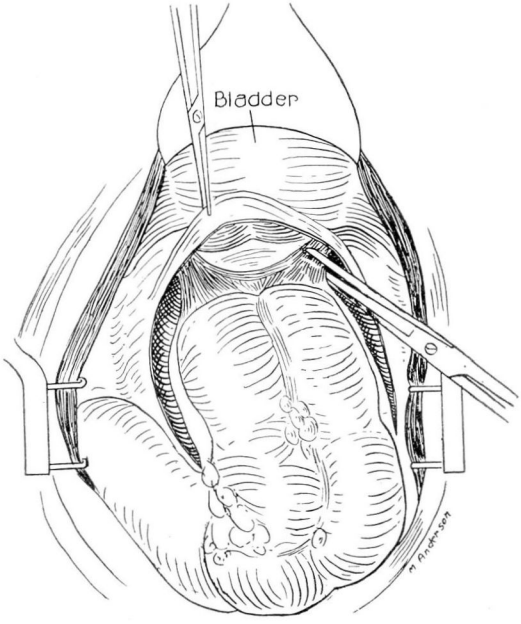

FIG. 5

The fingers and eventually the hand are placed into this space and the pelvic colon and rectum can be easily stripped and pushed forward as far as the sacrococcygeal joint (Fig. 4).

The next step consists in the dissection of the anterior wall from its attachments. The peritoneum at the base of the bladder has been incised and this brings into view the seminal vesicles. These are pushed forward until the upper border of the prostate is felt. This procedure can be carried out with the fingers or under direct view with heavy blunt dissecting scissors. The cut edge of the peritoneum at the base of the bladder is now picked up and the four fingers are placed between it and the bladder. This portion of the peritoneum is pulled up gently until a good-sized flap is obtained which is to be utilized in the reconstruction of the pelvic floor (Fig. 3c). Traction on the bowel renders prominent the lateral attachments of the rectum which are divided (Fig. 5).

This completes the pelvic dissection and the colon is divided between clamps with the cautery (Fig. 6A). Both ends are tied with a heavy silk suture and a piece of rubber tissue is fastened over each end (Figs. 6B, C). This can be accomplished much more quickly than inversion of the ends and carries with it much less danger of contamination of the operative field. The Miles three-blade clamp may also be used for this procedure.

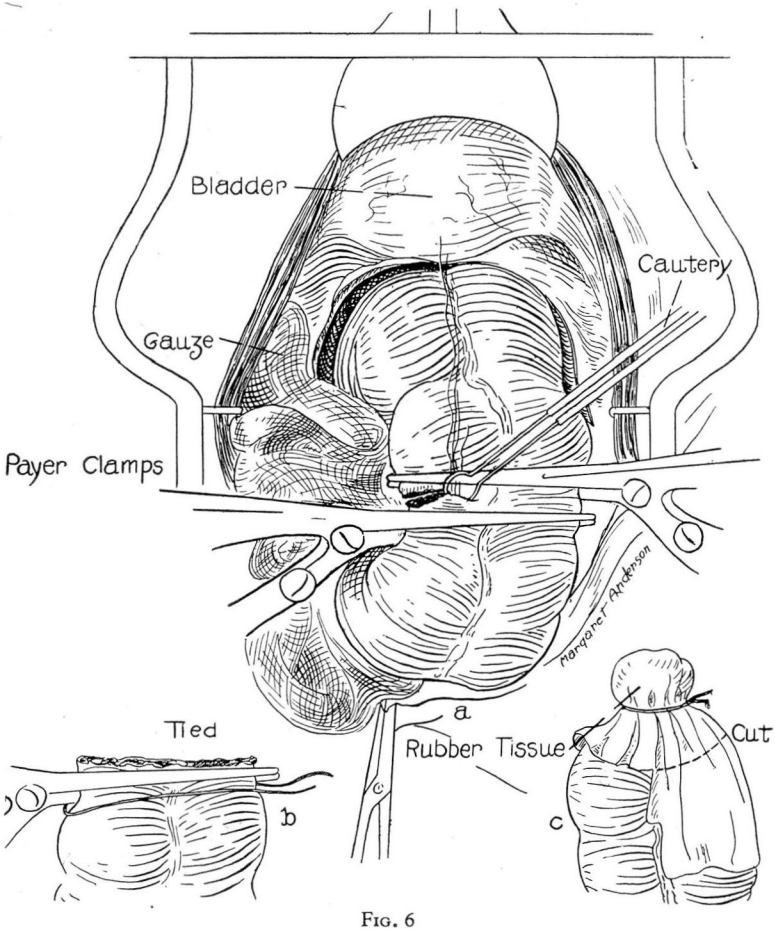

FIG. 6

The end of the distal part of the pelvic colon is then pushed downward into the presacral space where it is easily accessible when the perineal part of the operation is being performed.

The next step consists of reconstruction of the pelvic floor from flaps of peritoneum from the base of the bladder and the lateral pelvic wall (Figs. 7A, B). Under no circumstances must any tension whatsoever be applied in this procedure. In cases in which these flaps cannot be brought together without undue tension, a graft of omentum is used to fill in the defect. Under no condition should the omentum be sewed around the flaps of peritoneum, for this predisposes to obstruction. The uterus and broad ligaments can be utilized in the female in the reconstruction of the new pelvic floor.

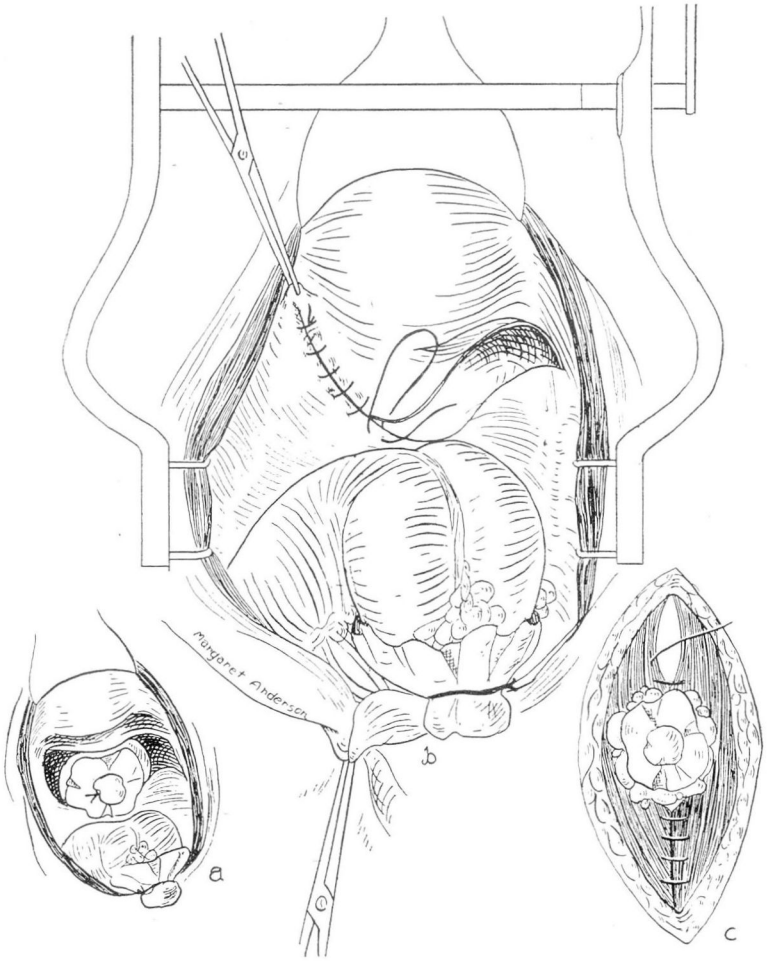

FIG. 7

The proximal end of the colon is then brought out for the construction of the permanent colostomy (Fig. 7c). If the loop is long, it is preferable to bring it out through the original abdominal incision (Fig. 8). With proper protection of the wound, infection is not to be feared. The opening in this position is more satisfactory to patients, because regardless of whether they wear a colostomy bag or other dressings, the abdomen looks symmetrical, which is not the case with an inguinal colostomy. If the sigmoid loop is short, it is brought out through a left McBurney incision.

After closure of the abdomen, the patient is placed in the Kraske position and a purse-string suture is placed about the anus.

A longitudinal incision is made in the midline to within 1½ inch of the anus and then encircling the anus to include a wide area (Fig. 9A).

The flaps on each side are then dissected back to the edge of the gluteal muscles. The coccyx is then disarticulated from the sacrum (Fig. 10) and the fascia immediately beneath it is incised. If the abdominal part of the operation has been properly executed, this permits entrance into the cavity containing the pelvic colon. The sacrococcygeal muscles are then cut on each side and the bowel is drawn out and stretched until the levator anus muscles are brought into view. These are divided as far away from the rectum as possible.

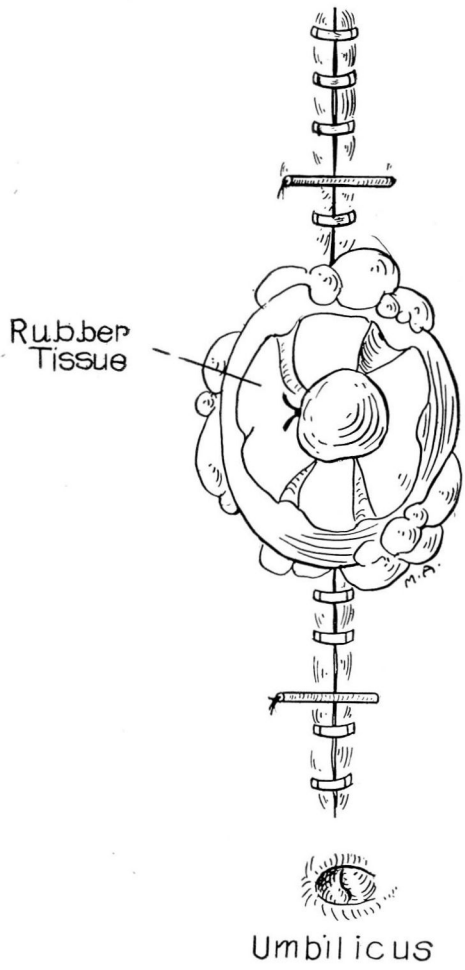

FIG. 8

The anterior wall of the rectum is then separated from the prostate and the dissection is carried down anteriorly until the operation is complete (Fig. 11). A catheter in the bladder is always useful as a guide so that the membranous portion of the urethra may not be injured.

There now remains a large cavity which obviously must heal in by granulation and this requires from eight to twelve weeks. According to Miles' suggestion, a large thin rubber sheet is placed in this cavity into which gauze is packed. By using the rubber sheet, the gauze does not become adherent to the delicate pelvic floor which may tear away (Fig. 12). This method of packing supports the new pelvic floor and also prevents oozing from the large raw surface. Half of the gauze is removed on the third day after operation and the remainder of the packing, including the rubber sheet, on the fourth day.

The cavity then is irrigated with 1:8000 bichloride of mercury solution, boric acid or permanganate solution.

The colostomy is opened on the second or third day depending upon the amount of abdominal distention. Liquids are allowed from the second postoperative day, if the patient does not complain of nausea.

General Considerations

The success of the operation is dependent on several factors. First among these and of the utmost importance is the preoperative care. In a majority of these cases, chronic intestinal obstruction has existed for weeks or months and the contents of the colon are infected, but if enough time is allowed and a careful regimen is instituted, the intestines can be decompressed.

The patient is kept in bed, but is allowed to get up to go to the toilet. Saline laxatives have proved most effective. One ounce of magnesium sulphate is placed in 8 ounces of water and the patient takes one ounce of the solution every half hour until it is consumed. This is continued for five, six or seven days. In addition, the patient receives a plain water enema daily. A high calorie non-residue diet is taken and in addition the patient receives 500 or 1000 c.c. of a 10 per cent solution of glucose daily. During his stay in the hospital the kidney function is checked and the blood groupings are determined for transfusion, which is a routine procedure either just before or after operation.

On the day before operation all purgatives and enemas are discontinued and three or four drachms of paregoric are administered during the day. If the hemoglobin has been below 70 per cent, a transfusion is given the patient immediately before operation. During the operation, the ratio of the pulse rate and blood pressure is watched carefully and whenever the indications call for it, 10 minims of adrenalin are given hypodermically. To avoid unnecessary handling, the bed is brought to the operating room.

After operation, the patients, particularly the obese, barrel-chested type, may be placed in an oxygen tent for the first twenty-four hours. No food or liquid is allowed by mouth the first day; after that, water is permitted if there is no nausea. Sodium chloride solution by the subcutaneous route or glucose solutions intravenously are administered daily until sufficient fluid can be taken by mouth. The colostomy may be opened any time, depending on the degree of abdominal distention or the discomfort of the patient. If it has to be done during the first forty-eight hours after operation, a catheter may be placed in the colostomy and the bowel can be tied around it to prevent too much soiling.

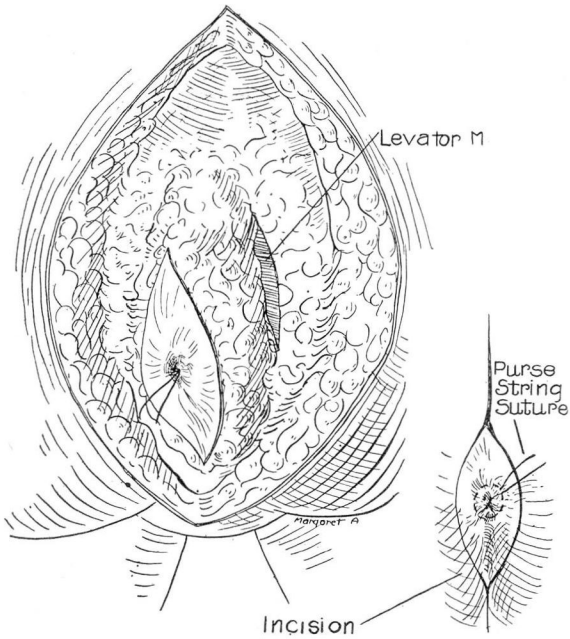

FIG. 9

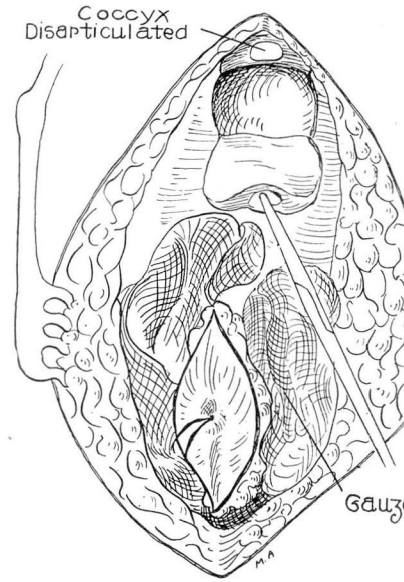

FIG. 10

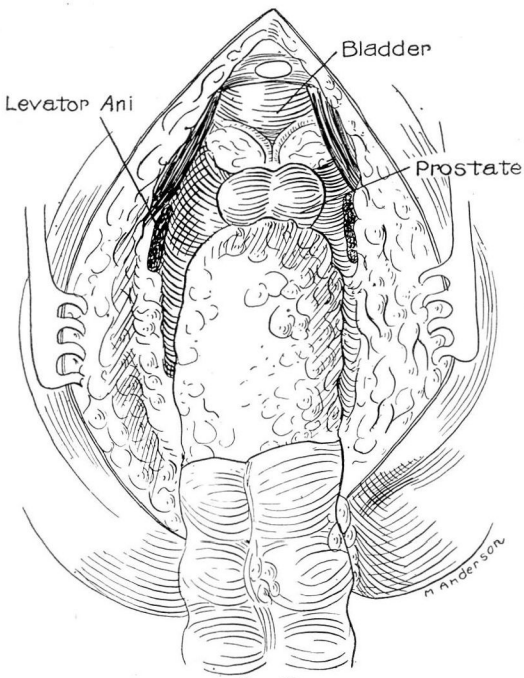

FIG. 11

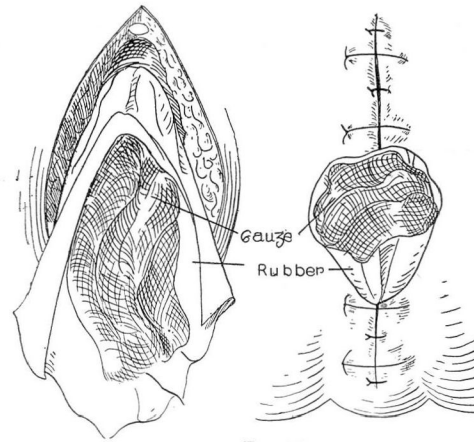

FIG. 12

If the wound has been covered with collodion, there is no appreciable danger of serious infection of the wound. About the tenth postoperative day, any excess bowel outside of the abdomen is cauterized away down to about ¼ to ½ inch above the skin. This prevents any retraction when healing takes place.

The catheter is left in the bladder for about four days and if the patient is unable to void after that, he is catheterized two or three times a day so that there will be no overdistention. The patient is encouraged to get out of bed on the fourteenth day. Assumption of the upright position allows the new pelvic floor to sag little by little, which aids in the early filling of the posterior cavity. The average stay in the hospital after operation has been twenty-four days.

On account of the necessity for frequent dressings which are required for some weeks, usually some member of the patient's family is taught the proper technique so that it is necessary that a physician see him only once a week. As soon as the colostomy is well healed, the patient is taught to irrigate the colon every two days and if a thorough evacuation is possible, in many cases there is no soiling until the next irrigation is made. Under this condition, only a small dressing is necessary underneath an abdominal binder. Where this can not be so satisfactorily regulated, a colostomy bag is worn.

In a series of 127 cases in my experience there have been 14 deaths, a mortality of 11 per cent. In 52 per cent there has been immunity from recurrence for five years or more; in 63 per cent the patients have been free from cancer from three to five years; and in 70 per cent there has been no demonstrable recurrence under three years.