Improved Management of the Perineal Wound after Proctectomy

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In an effort to avoid the failures of perineal wound healing that are common after proctectomy, 57 patients who had abdominoperineal resection of the rectum or total proctocolectomy for ulcerative colitis (35 patients), Crohn’s colitis (12), or carcinoma (10) had primary closure of the levator muscles and perineal tissues. No attempt was made to approximate the pelvic peritoneum. The small bowel was allowed to fill the pelvic space, which was also drained by suction catheters brought out through the lower abdominal wall. The skin and subcutaneous tissues were allowed to heal by secondary intention in seven patients who had excessive preoperative perineal sepsis from fistulas, deep fissures, and abscesses. All seven wounds healed within 2 months. Of the other 50 patients, whose wounds were closed to the skin, 48 were discharged with completely healed perineal wounds. Two patients had sterile pelvic hematomas that drained through the perineum and delayed wound healing 1 month and 2 months. There were no postoperative perineal, pelvic, or intra-abdominal abscesses. Immediate postoperative ambulation was allowed. There was no increased short-term or long-term incidence of small bowel obstruction related to this procedure, nor did perineal hernia occur after long-term observation (mean: 5.3 years). This method of accomplishing perineal wound healing is simpler, safer, more comfortable, and remarkably effective in eliminating the prolonged morbidity of an unhealed perineal wound. It is superior to any other reported method of managing the perineal wound in patients with inflammatory bowel disease and may be applicable to the treatment of cancer without compromising the chances for cure.

Complications of perineal wound healing and their long-term residuals comprise the major morbidity after excision of the rectum. Traditional methods of proctectomy either close the pelvic peritoneum and leave drains through an open perineum or close the perineum and drain the resultant dead space between the peritoneum and perineum.1-5 These methods are adequate for treatment of rectal carcinoma but fail frequently in patients having resection for inflammatory bowel disease.10-16 The incidence of persistent pelvic abscesses and perineal sinuses at 6 months is 25% to 55% and remains 10% at 3 years.8,10,11,13 Management of these sinuses (Fig. 1) requires extensive corrective operations such as marsupialization, sacrococcygectomy, and muscle flaps to obliterate the thick-walled secondary abscess cavity in the pelvic hollow.13,17-21

Various methods to prevent the persistent perineal sinus and purulent pelvic cavity have been devised; nonetheless, their failure has ranged as high as 50%.2,5,22-24 One method of primary perineal closure, described previously from this hospital, leaves the pelvic peritoneum open and closes the perineal floor including the levator muscles.25 By allowing the small bowel to obliterate the dead space of the pelvis, this technique eliminates the principal cause of failure of primary closure, the pelvic fluid collection. Of 17 earlier patients with inflammatory bowel disease treated in this fashion, 14 had primary healing of the perineal wound.25 In the last three patients of that earlier series, a modification of the technique was introduced in which transabdominal suction catheters were used to drain the pelvis and no drains were used in the perineum. We now report an expanded long-term experience with this latter technique in 57 consecutive patients, with observations on the potential problems of adhesions in the pelvis and perineal hernia, a further modification for the infected perineum, and also application to resection for rectal carcinoma.

Materials and Methods

Fifty-nine consecutive patients, the personal series of one of the authors (ALW), had a total proctocolectomy or abdominoperineal resection during the years 1973-1984. Primary perineal closure was used in 57 instances. Two patients were excluded, one with toxic megacolon who developed intraoperative bleeding requiring packing of the perineum for hemostasis, and one in whom the levator muscles could not be approximated after wide resection of recurrent rectal carcinoma. Patients with rectal
carcinoma were added to the study only during the last 5 years.

There were 47 cases of inflammatory bowel disease and 10 cases of rectal carcinoma. Among the former, the pathological diagnosis was consistent with ulcerative colitis in 35 of the patients and with Crohn's colitis in 12 patients. Seven patients with inflammatory bowel disease had extensive involvement of the perianal and perirectal region with fistulas and abscesses. Five of the patients with rectal carcinoma had therapeutic dosages of either preoperative or postoperative radiation to the perineal region.

The proctocolectomy was performed in a sequential fashion. The abdominal colon was mobilized. The rectum was divided with a stapling device. The distal rectum was covered with a rubber glove and placed in the presacral space. The pelvic peritoneum was left open and the small intestine allowed to fill the pelvis. The pelvis was drained using a transabdominal closed suction system (Hemovac® or Jackson-Pratt®). The abdominal wound was closed and the ileostomy completed. The patient was turned into the lateral Sims position for the perineal resection. The anus was sutured shut and circumscribed by an incision. The fibers of the internal sphincter were identified and the intrasphincteric plane was developed. The levator and puborectalis muscles were divided close to the rectum and the specimen was removed. After meticulous hemostasis and irrigation of the pelvic wound, the levator muscles were approximated in the midline with interrupted absorbable sutures. The subcutaneous tissue and perineal muscles were approximated with continuous absorbable sutures. The skin was closed with a running subcuticular absorbable suture.

The current technique for management of the pelvic space and perineal wound is depicted in Figure 2.

There were three types of exception to the above method: (1) Seven patients with Crohn's colitis and one patient with ulcerative colitis had severe involvement of the perirectal and perianal region (Fig. 3), a rectovaginal fistula, or a sinus tract into a major pararectal abscess cavity (Fig. 4). In seven of these cases, the subcutaneous tissue and skin were left open and packed loosely after approximating the levator muscles. A drain left in residual abscess cavities exited below the levators. The subcutaneous tissue and skin was allowed to heal by secondary intent. (2) The first five patients in the series had the pelvic cavity drained with a rubber drain through the perineum instead of a transabdominal suction catheter. (3) The dissection for low rectal carcinoma included the anal sphinct-

**Fig. 1.** Persistent perineal sinus and chronically draining pelvic abscess, 15 years after proctocolectomy for ulcerative colitis. The perineal wound had been managed by closure of the peritoneum and open drainage from below.

**Fig. 2.** Method of primary perineal wound closure used in this series. The peritoneum is left wide open and the perineal floor is reconstructed. The skin and subcutaneous tissues are closed unless there is preexisting perianal sepsis. Two closed-suction drains are left in the dependent portion of the pelvis and brought out through the left lower abdomen.
(95%) had uncomplicated primary healing (Fig. 5). These patients were discharged 10–14 days after surgery. The discharge date was determined principally by the ability of the patient to manage the ileostomy. One patient whose pelvic space had been drained only by a transperineal rubber drain (early in the series) erupted an uninfected hematoma through the perineal wound. This wound subsequently healed within 4 weeks and has not broken down in 11 years of follow-up. A second patient developed a pelvic hematoma as a result of failure of the closed-system suction catheter, and this sterile collection also drained through the perineum. The wound required 2 months to heal but has not reopened in the subsequent 7 years. In each of the seven patients whose skin and subcutaneous tissues were left open to heal by secondary intent, the wound completely healed within 8 weeks, and all have remained closed in follow-up of 7 months to 6 years.

All 10 patients with rectal carcinoma had successful primary healing of the perineum. With follow-up of 1 to

Fig. 3. Extensive perianal sepsis in a patient with Crohn’s colitis. In this patient, the levator muscles were approximated in the midline after re- section of the rectum, but the skin and subcutaneous tissue were left open. The wound healed secondarily with saline dressings in 6 weeks.

...ters to provide a reasonable margin around the tumor. The levator muscles could still be approximated and the perineum closed in nine cases. In one case there was no approximation of the levators, and only skin and subcutaneous tissues were closed.

All patients received parenteral antibiotics before surgery and for the first 1–3 days after the operation. Ambulation began on the first postoperative day. Drainage catheters were removed when the drainage had become minimal, usually within 5 days after surgery. If serous drainage continued, the catheters were removed at 7 days regardless of the volume. All patients have been followed to the present time, with a mean observation period of 5.3 years.

Results

Of the 40 patients with inflammatory bowel disease in whom primary closure including the skin was used, 38

Fig. 4. Sinogram showing the large pararectal abscess cavity that communicated with the anorectum just below the levator muscles. In this case, the levators could be closed above the exit from the cavity, and the cavity was drained without compromising the integrity of the new perineal floor.
5 years, there has been no local perineal recurrence of the rectal carcinoma.

There was no undue delay in resumption of intestinal function after surgery. There were no instances of small bowel obstruction in the immediate postoperative period. Four patients developed small bowel obstruction subsequently. Starch granulomatous peritonitis was the probable cause of small bowel obstruction in one patient at 1 month after proctocolectomy. Two patients developed small bowel obstruction with right upper quadrant adhesions at 7 months and 2 years. In both instances, bowel was easily delivered from the pelvis, which was found to be free of adhesions and lined by normal new pelvic peritoneum. The fourth patient developed small bowel obstruction due to metastatic carcinoma at 2 years.

With follow-up observation of up to 11 years (mean: 5.3 years), the perineum of all patients was found on examination to be firm and strong. There was no bulging or herniation.

Comments

Previous reports have emphasized the difficulties in accomplishing perineal wound healing after proctectomy for inflammatory bowel disease. Persistent perineal sinuses occur in 25 to 55% at 6 months,8,10,11,13 14 to 50% at 12 months,15,26 and 25 to 37% at more than 12 months.2

Some never heal. Because the remedies for this problem, once it occurs, are so drastic, the best solution is prevention. The method proposed by Goligher utilizing catheter drainage of the closed pelvic space has been widely accepted despite a 50% failure rate.2 Our earlier report described experience with a technique combining an open peritoneum and closed perineum. The present report extends that experience and the spectrum of patients to whom we have applied the method. We have had 95% immediate success including patients with preoperative perianal sepsis. All wounds, including the two early failures secondary to pelvic hematomas, were closed by 2
months. The added benefits are increased patient comfort, clean wound healing, and immediate ambulation.

The theoretical potential complications of the method (pelvic adhesions, sepsis, perineal hernia, or local recurrence of cancer) did not occur. The incidence of late small bowel obstruction (6%) was comparable to that (6.8%) reported in a series of 370 patients undergoing abdominopereineal resection for carcinoma in whom the pelvic peritoneum was closed.27 Only two patients (4%) had small bowel obstruction resulting from fibrous adhesions, and those adhesions were in the right upper quadrant, far from the pelvis. At surgery, these patients had a new mesothelial surface on the pelvic side walls. This observation is supported by animal experiments that have demonstrated that excision of peritoneum is followed by spontaneous repertonealization with markedly fewer adhesions than when surgical repertonealization has been performed.28 Another consideration is that the potential trap resulting from dehiscence of the peritoneal closure is eliminated. Thus, patients need not be confined to bed for prolonged periods after the operation but can be allowed to be up and walking immediately without fear of breaking through the peritoneal suture line or herniating through the peritoneal floor.

In this series, sepsis was not a problem, either within the pelvis or spreading up from the pelvis into the general abdominal cavity. There were two instances in which noninfected pelvic hematomas drained through the perineal wound. One of these might have been prevented by the use of closed-suction drainage, as practiced in the later majority of the patients. We believe that the striking improved success rate in this series, that is, the absence of pelvic and perineal wound infection, is attributable to the elimination of the closed pelvic space. The potential space between the pelvic peritoneum and the perineum does not exist when the pelvic peritoneum remains open. When the pelvic peritoneum is closed, as practiced by others, the enclosed pelvic hollow is most commonly drained with suction catheters. It is hoped and intended that the descent of the pelvic peritoneum and posterior movement of the urogenital structures will obliterate the space.13 Meanwhile, serosanguinous fluid collects and provides a culture medium for infection and abscess formation. There is evidence that fluid collecting in wounds suffers a progressive loss of its ability to support opsonization of bacteria for phagocytosis and killing by neutrophils, and that the approximation of tissues may therefore be important in preventing the fluid pools that are the predecessors of abscesses.29 With primary perineal closure as described here, there is no need for descent of peritoneum. There is no race between infection and obliteration of space. Immediate filling of the space occurs with bowel loops and the antibacterial mesothelium of the serosa.

No perineal hernias have occurred during long-term observation of these patients. The reconstruction of the perineal muscular diaphragm wall endures. Intraspincteric dissection of the rectum may contribute to strength of the repair by leaving the muscle of the anal sphincters among the layers approximated, as well as by preserving local perineal and genital innervation. Dissection in this plane also leaves muscle and not fat at the wound edges for extra resistance to infection.

When the perianal tissues are infected before surgery by fissures, abscesses, and fistulas, the muscular perineal diaphragm can still be closed, and the skin and subcutaneous tissues left open to heal with dressings. If there is a major pararectal abscess cavity, a drain is left in the cavity, and the levator muscles are closed above the drainage tract. The application of the method is exemplified by the patients shown in Figures 3 and 4. The primary perineal closure worked uniformly despite the septic environment, did not give rise to intra-abdominal sepsis, and allowed rapid perineal healing within 1–2 months.

We have begun to explore the possible application of this method to rectal carcinoma. Thus far we have reserved the method for tumors that are above and clearly separate from the anal region and do not penetrate the rectal wall in the region of the levator muscles. It seems unlikely that taking substantially more levator muscle will contribute to the local cure rate. If the tumor does penetrate the rectal wall, local irradiation will nonetheless be indicated. We have used primary perineal closure in 10 patients and have seen no local recurrence in 1 to 5 years (mean: 3 years). This initial experience warrants further consideration and trial. We do not recommend this method for carcinoma of the anus.

References