

Temporary Protective Loop Ileostomy in Open Low Rectal Resection – An Alternative Technique

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Rezumat

Ileostoma de protecție temporară în rezecțiile rectale joase pe cale deschisă – o alternativă tehnică

Articolul descrie o metodă simplificată de realizare a ileostomei de protecție temporare rezultată din experiența noastră în 33 de cazuri de rezecții rectale joase pentru cancer. Particularitățile tehnicii sunt: incizia tegumentară este mai mică decât cea musculară, seromusculara ansei este fixată doar la nivelul pielii, delimitând o mică arie a peretelui antimezenteric, fără eversia mucoasei. Nu se suspendă ansa pe baghetă. Închiderea ileostomei necesită rezecția marginilor libere, îngroșate, și enterorafie. Aceasta implică abord direct evitând laparotomia mediană și enterectomia segmentară. Nu am întâlnit nici un caz de abces peristomal, sângerare, prolaps sau retracție a ansei după realizarea stomei. Am înregistrat patru cazuri (12,12%) de dermatită peristomală, cinci (15,62%) cu pierderi lichidiene importante și dezechilibre electrolitice secundare, unul (3,12%) dintre ele dezvoltând insuficiență renală acută. Închiderea s-a realizat, în medie, după 6 săptămâni pentru anastomozele colorectale și după 10 săptămâni pentru cele coloanale. Am numărat un caz (3,12%) de fistulă enterocutanată, ce a fost tratată conservator, și 4 cazuri (12,12%) de hernii incisionale, toate fiind rezolvate chirurgical. Mortalitatea a fost nulă atât în cazul realizării cât și în cel al închiderii stomei. Tehnica propusă este simplă și rapidă în execuție, în concordanță cu caracterul temporar al indicației sale.

Cuvinte cheie: rezecție rectală joasă, protecția anastomozei, ileostomă temporară, cancer de rect

Abstract

The paper presents a simplified method for performing a temporary protective loop ileostomy as a result of our experience in 33 cases of low rectal resections for cancer. The particularities of this technique are: the skin incision is smaller than the muscle one, the seromuscular layer of the loop is fixed at the skin level only by marking a small portion of the antimesenteric wall, with no mucosal eversion. No supporting rod is used. The reversal requires resection of the thickened free margins and enterorrhaphy. It involves a direct approach and avoids median laparotomy and segmental bowel resection. There was no case of peristomal abscess, bleeding, prolapse, retraction of the loop after the stoma was formed. Four patients (12.12%) had peristomal dermatitis. Five patients (15.62%) had high output fluid losses with electrolyte disorders, one of them (3.12%) with acute renal failure. Closure was performed after 6 weeks on average for the colorectal anastomoses and 10 weeks for the coloanal ones. We recorded a case (3.12%) of enterocutaneous fistula that was managed conservatively and 4 cases (12.12%) of incisional hernia, all of them surgically treated. No mortality was attributed to either creation or closure of the temporary loop ileostomy. It is a simple and fast technique in accordance with the temporary character of its indication.

Key words: low rectal resection, protect the anastomosis, temporary loop ileostomy, rectal cancer

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Introduction

The surgical treatment of rectal cancer went through significant changes in the last 20 years. In the case of middle and inferior rectal tumours for which a sphincter saving surgery can be done, we perform a low anterior resection with total mesorectal excision, with restoration of the digestive continuity through a low colorectal / coloanal anastomosis. The specific complication of low anastomosis is anastomotic dehiscence, which increases the postoperative morbidity and mortality through the local and general complications that it creates (1,2). By protecting the anastomosis through a proximal stoma (ileo-/colostomy), we decrease the postoperative morbidity due to a potential anastomotic leak, recent studies showing that it doesn't influence the frequency of fistula (1,2,3,4). Low anastomosis and preoperative radiotherapy / chemoradiotherapy are the most important treatment-related factors which represent an indication for performing a temporary protective stoma (1). Reversal of the ileostomy restores bowel continuity and improves the patient's overall quality of life.

Since 1940 when it was done for the first time in the treatment of ulcerative colitis, a series of technical options were described to find an alternative to protective colostomy. These possibilities are: clockwise loop rotation, the distal limb reaching a superior position; the eversion of the mucosa; transfixion of the mesentery with a glass / rubber rod, a skin bridge or a stitch ("suture bridge"), fixing the loop at the rectus sheath or not (5).

The paper presents a simplified and fast method for performing a protective ileostomy, in accordance with the temporary character of its indication, as a result of our experience in open low rectal resections.

Material and Methods

The possibility of performing an ileostomy is reviewed with the patient in preop in order to get his/her consent. We examine the patient in both standing and sitting positions and then we mark the incision site. Skin folds, old incisions, bony eminences, umbilicus proximity are to be avoided in order to ensure a proper placing of the bag (2,6). Usually the best site is located at the right edge of the rectus abdominis, on the line that connects the anterior superior iliac spine to the umbilicus, which allows for the parastomal hernia to be avoided (6).

Performing the ileostomy is the final step of the rectal resection procedure. We identify through the median laparotomy the ileal loop before last. On the preop marked site we perform a circular incision which removes a small skin disc, of approx. 1.5 cm in diameter, together with the tissue underneath. The size of the skin incision depends on the loop diameter, and it has to be lower than the distance from the mesenteric border to the antimesenteric one of a small intestine loop. We retract the skin and the subcutaneous tissue with two Farabeuf retractors and we do a star-shaped section of the anterior rectus sheath. Then we split the muscle and section the posterior sheath and the peritoneum. This incision (guided by the hand passed

through the median laparotomy) should not be bigger than two fingers close together in order to avoid small bowel constriction. The skin incision remains smaller than the muscle defect. We also ensure that the afferent limb is located superiorly (Fig. 1A). The loop is fixed at the skin level only, with four-eight stitches using monofilament absorbable sutures (the seromuscular layer of the loop is sutured at the edges of the excised skin) by marking only a small portion of the antimesenteric wall (Fig. 1 B,C,D). We don't transfix the mesentery loop (and therefore no mesenteric defect is caused) nor do we perform mucosal eversion. At the end of the surgery, after the median laparotomy closure, we open the loop with the electrocautery through a minimal transverse enterotomy that doesn't touch the antimesenteric edge of the ileal loop (Fig. 2 A,B,C). We observed that rapid adhesions of the ileal serosa are formed at the skin and rectus sheath. Under these circumstances we consider that fixing the loop only at the skin level is sufficient.

The ileostomy facilitates gas decompression, but by maintaining the bowel continuity faeces occasionally pass into the efferent limb (usually in a low quantity). It's easy to fit the bag because there is no need for a supporting rod, the skin defect is small and the bowel is almost at skin level.

The nasogastric tube is kept in place for 24 hours and on the first postoperative day we start oral hydration. Forty-eight hours after surgery we progressively allow semisolid and solid food intake. Local care is standard and is performed by a stomatherapist.

Closure of the ileostomy

The diet is normal on the day before surgery. We can introduce paraffin oil in the efferent limb through a Foley catheter (however this step can be skipped) (2).

Through a digital rectal examination we verify the integrity of the low anastomosis (colorectal or coloanal). If there is any doubt, the continuity of the bowel distal to the ileostomy is confirmed radiologically. The operation is performed under local or spinal anesthesia. Prophylactic broad-spectrum antibiotics are administered before the intervention. The skin is incised around the stoma and 1 cm cranially and caudally, and the sero-cutaneous junction is taken down gently. The adhesions between the small bowel loop serosa, the skin and the muscle are freed using a sharp and blunt dissection until the space between the loop and the peritoneum is opened. Once in the abdominal cavity, we use a "hooked finger" to explore and free the loop from the internal surface of the abdominal wall. After a complete mobilisation is done, we excise the edematous and fibrous enterotomy margins with a dissecting scissor. The enterotomy is closed with a single layer of interrupted nonabsorbable seromuscular sutures (Fig. 2 D). We put the small bowel loop back in the abdomen and the laparotomy is closed in anatomical layers. We use monofilament absorbable sutures in order to decrease the postoperative risk of wound infection or foreign body tissue reaction.

Nasogastric tubes were not routinely inserted. On the evening of the surgery we start a clear liquid diet and allow the

Figure 1. (A) The ileostomy creation (schema): the afferent limb is located superiorly; (B,C,D) The loop is fixed at the skin level only, with four cardinal stitches

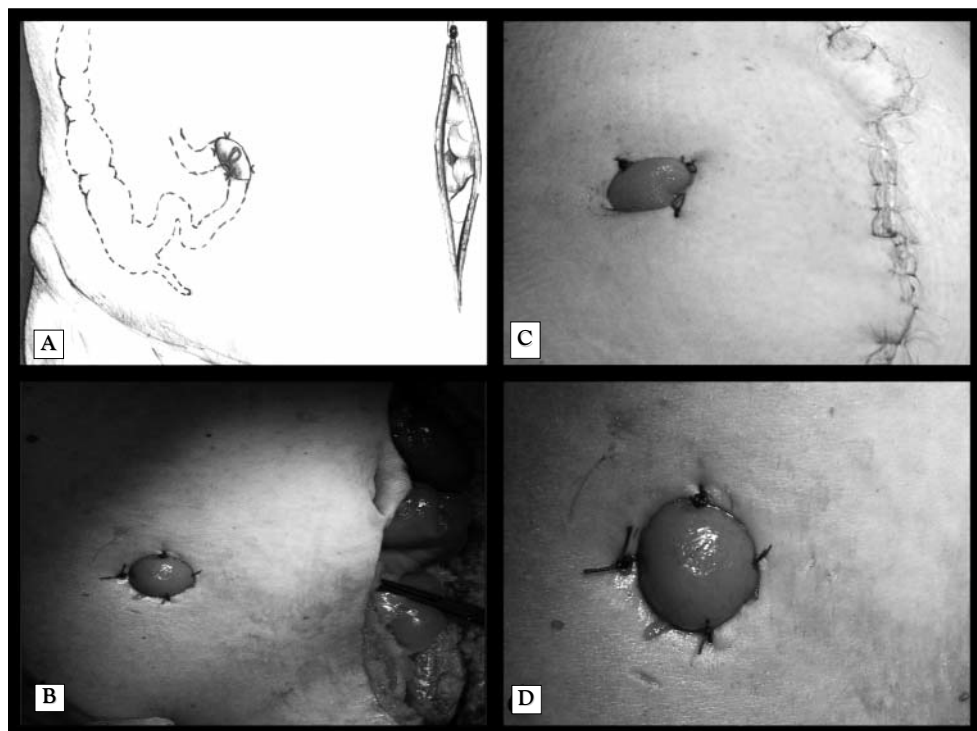
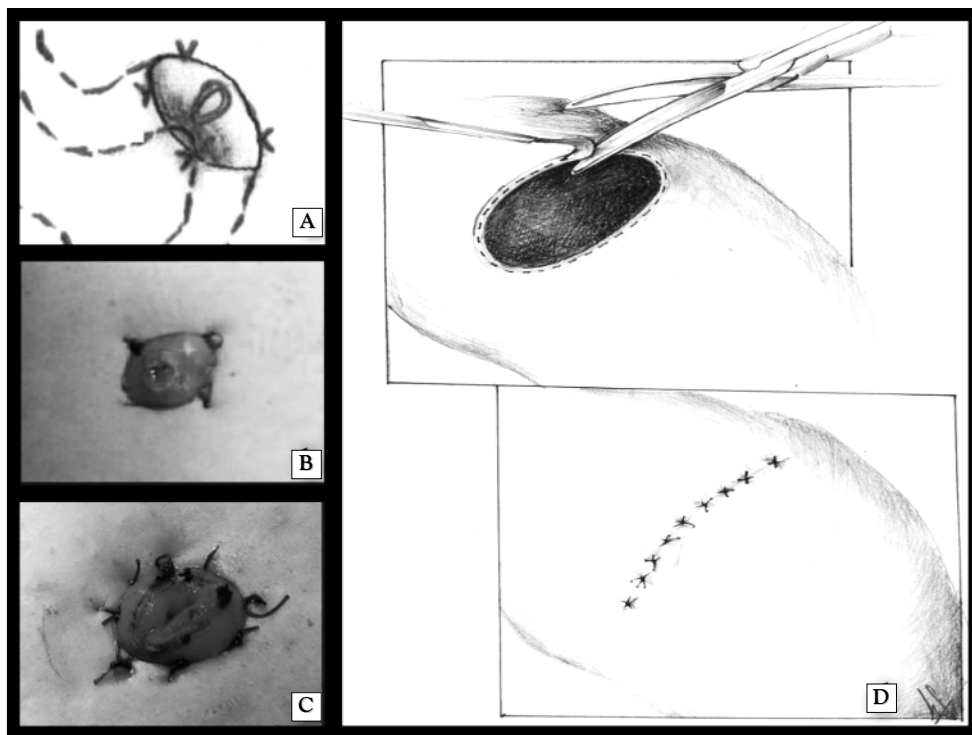


Figure 2. (A, B) The loop is minimally opened on the antimesenteric wall; (C) The loop is fixed with seven stitches; (D) Ileostomy closure (schema): excision of thickened free margins and enterorrhaphy



patient's mobilisation. For the first 2-3 weeks after the surgery, the patient slowly goes back to a regular diet by progressively adding foods with fibre back into diet. A healthy balanced diet and a good fluid intake are recommended at discharge. The patient remains under observation in hospital until bowel function returns, usually the length of postoperative hospital stay being 2-4 days.

Results

A total of 33 patients underwent temporary loop ileostomy following low rectal resections in open surgery in the last 4 years. All the cases were treated by a single surgeon. Four patients (12.12%) had parietal infections (peristomal dermatitis, cellulitis) managed conservatively with antibiotics

and local care. There was no case of peristomal abscess, bleeding, prolapse, retraction of the loop or intestinal mechanical obstruction after the stoma was formed. Five patients (15.62%) had high output fluid losses with electrolyte disorders, one (3.12%) of them with acute renal failure with complete recovery after rehydration.

Closure was performed after 6 weeks on average for the colorectal anastomoses and 10 weeks for the coloanal ones. The ileostomy reversal takes approximately 30-45 minutes. First bowel movement was observed after an average time of 3 days after ileostomy reversal and patients went home at that moment. At the time of the ileostomy reversal, due to strong adhesions, in 2 cases (6.06%) it was more difficult for the bowel to be freed so we performed a segmentary enterectomy with end to end anastomosis. In these two cases the stoma was reversed later (16 weeks) in order to protect a leak of the coloanal anastomosis (without pelvic sepsis). After the ileostomy closure we recorded a case (3.12%) of low output enterocutaneous fistula, isolated from the abdominal cavity. This complication was managed conservatively with spontaneous closure of the fistula in the context of maintaining natural bowel movements. A long term complication was the stoma site incisional hernia upon which we came across in 4 cases (12.12%), all of them surgically treated. No mortality was attributed to either formation or closure of the temporary loop ileostomy.

Discussion

In low rectal surgery for cancer, protective temporary loop ileostomy represents a feasible method made with the purpose of diminishing the morbidity due to anastomotic leakage. The authors consider that the protection of the low anastomosis is attenuating the consequences of the anastomosis leak, therefore decreasing the number of potential reinterventions (4,5,7). Anastomotic fistula has a frequency of 4-18% (2). It is associated with a decrease in the quality of life, local and general complications and a higher mortality, given the fact that in most of the cases we are dealing with older patients with a malignant condition. The advantages of ileostomy as compared to the colostomy are: it is technically easier to form and to close it, it is less fowl-smelling, the complications are less frequent (prolapse, retraction, incisional hernia etc.) (2,3,8). Bowel movements are reinstated faster and the length of hospital-stay is shorter than in the case of colostomy (2,7,8,9). On the other hand output fluid losses and mechanical obstruction are more frequent (2,3,8,9).

Our technique decreases the duration of the surgery both to create and to close the stoma, tissue damages being minimal. At the same time, if an anastomotic fistula occurs, the loop ileostomy can be changed into a terminal one. By keeping the afferent and the efferent limb in continuity during the bowel diversion, there is no incongruence between the two at the time of ileostomy reversal. We do not create a mesentery defect by transfixing it therefore there is no risk to damage the loop vascularization. At the time of the ileostomy reversal, usually it is enough to excise only the fibrous margins

followed by a minimal enterorrhaphy (transversally done, to prevent the stenosis). The use of the supporting rod can cause discomfort for the patient, harden the stoma bag attachment and erode the small bowel loop. In most cases the supporting rod is removed after 5-8 days, when the stoma is healed, but the retraction can occur even after this period (3). Some studies have shown that by not fixing the stoma at the rectus sheath or by not supporting it, the frequency of the loop retraction wouldn't necessarily increase (3,5,10,11). If a loop ileostomy is properly constructed, the retraction is rare and the use of a bridge is unnecessary (11).

Mucosal eversion is recommended to prevent faecal leakage into the abdominal wall and subsequently wound infection (5). We have not noted a higher frequency of this complication in the non-eversion cases, as the adhesions between the serosa of the loop and the skin were rapidly built and the serosa-skin junction becomes watertight (3,5).

The ileostomy reversal is performed through a direct approach avoiding the median laparotomy which should be more traumatic. The enterorrhaphy is minimal and the small bowel resection is avoided, therefore the postoperative morbidity decreases.

The closure technique doesn't imply any mechanical suturing devices reducing the total cost of the procedure. The reversal of the loop ileostomy can be performed under local or spinal anaesthesia with less systemic drugs-effects than general anaesthesia.

Early closure at 6-10 weeks (as we have also done) results into fewer postoperative complications (2,10,12). Performing the reversal at a later time, we can face solid adhesions between the loop and the abdominal wall which make the dissection to be more difficult. Consequently we can come across the need for a small bowel resection. In this case, the indication of the resection is given by the difficulty of its freeing, secondary to solid adhesions, and not by the lack of vascularization.

Our technique is well tolerated by the patient, safe and rapid, and can represent a suitable solution to temporary protect the anastomosis in low rectal resections.

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