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Intersphincteric Resection for Rectal Cancer with Pull Through Delayed Anastomosis. An Alternative to Coloanal Anastomosis with Covering Ileostomy

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Abstract

Standard surgical treatment for low rectal cancer below 5 cm from the anal verge used to be abdominoperineal resection (APR). In recent years sphincter saving techniques, like intersphincteric resection (ISR) proved to be an ongologically accepted alternative. Operations for ultra low rectal cancer are challenging and coloanal anastomosis is probably the source of most postoperative complications. We present ISR with pull-through delayed anastomosis (PTDA) as a surgical option for the management of elective cases, when standard coloanal anastomosis (CAA) is at greater risk of dehiscence or a covering stoma is refused or dangerous.

Key words: *Rectal cancer; intersphincteric resection (ISR); pull-through delayed anastomosis (PTDA); anastomotic salvage*

Introduction

Rectal cancer accounts for one third (28%) of colon cancer incidence. When dealing with a patient diagnosed with rectal cancer there are three goals to be achieved; treatment under strict oncological principles, optimal functional outcome and no permanent stoma.

The establishment of total mesorectal excision [1] in combination with preoperative radio-chemotherapy [2] (RT/CHT) improved local control and survival for patients with rectal cancer. For lower third rectal cancer, located less than 5 cm from the anal verge (AV) or less than 2 cm from the dentate line (DL), abdominoperineal resection (APR) was considered the standard surgical procedure. Patients undergoing APR usually have problems with their quality of life due to the permanent colostomy [3,4].

Low anterior resection (LAR) with stapling techniques [5] and intersphincteric resection (ISR) [6] with sutured coloanal anastomosis (CAA) proved equal to APR in terms of oncological results [7-9], with better functional outcomes.

In ISR the use of a diverting ileostomy is mandatory to minimize the risk of anastomotic leak or dehiscence, still total complication rate is 7.3 to 17%. In these cases, the reintervention to salvage the anastomosis may be extremely difficult and often a permanent colostomy is necessitated.

We use a modified ISR with pull-through delayed anastomosis (ISR-PTDA), with or without diverting ileostomy, to minimize the risk of dehiscence in elective cases.

Technique

The technique of ISR-PTDA open or laparoscopic follows the same principles as standard ISR. Standard ISR, [10,11] as described by other authors, is executed and the mobilized colon and rectum is retrieved through the anus without dividing it. During the abdominal phase, division of the inferior mesenteric vessels and mobilization of the splenic flexure is mandatory. In the perineal phase a Lone Starr retractor is placed and partial or total removal of the internal sphincter at the intersphincteric plane is carried out, starting 1-2 cm below the tumor.

Division of the exteriorized colon is done 7-10 cm from the anal verge and the specimen is examined for completeness of resection, before sent to the pathologist (Figure 1).

The remaining colonic stump is checked for sufficient vascularization and is anchored to the anal verge with 3-4 absorbable stitches. We take care to avoid placing stitches at the mesocolon, so as not to disrupt blood supply to the stump. Most patients start having bowel movements on the 3rd-4th PO day and they are dismissed from hospital the day after. They are advised to avoid sitting on hard surfaces and to clean the protruding colon with warm water only. Inspection of the stump is done weekly and 3-4 weeks later they are reoperated for removal of the colon extension (Figure 2A, 2B).

The second operation is done as a "day surgery". The colon stump that has already attached to the anal sphinc-

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Figure 1. Laproscopic ISR with PTDA.

ter is cut with electrocautery and a few hemostatic stiches are placed as necessary. Patient is dismissed the same day and reviewed a month later for possible stenosis or other problems. Follow-up is similar to the common CAA and functional results are also analogous (Figure 3A, 3B).

We operated 20 patients with ultra low rectal cancer during the last 3 years, 14 with standard ISR and 6 with ISR-PTDA. They all had received neoadjuvant chemoradiotherapy. Results, both oncological and functional, were analogous to straight CAA during the follow-up period.

Benefits for the patient from the ISR-PTDA technique originate from the absence of stoma. There is no delay for stump resection, in case of adjuvant chemotherapy, stump removal is an easier 2nd operation than revision of ileostomy, less morbidity, no expenses for ileostomy materials and normal route of defecation is not disrupted. Possible future complications from an additional intra-abdominal anastomosis are prevented.

Case reports

First case

Female patient 58 years old, she had an uneventful recovery from ISR for rectal cancer 2 cm from the DL. She was dismissed from hospital on the forth postoperative (PO) day. Reexamination 1 week later showed both ileostomy and CAA in excellent condition. On 18th PO day she complained for pain at the anus with mild rise in WBC count and CRP. Anastomosis was checked with endoscopy and partial dehiscence with ischemia at the last 8 cm of the colon were observed.

She was reoperated with ISR-PTDA procedure instead of redoing CAA, because inflammation increases the risk for anastomotic dehiscence. The defunctioning ileostomy was left in position. The ischemic section was removed and the rest of the colon was further mobilized up to the hepatic flexure and was pulled through the anus (anal sphincter was maintained from the first operation).

One month later she underwent ileostomy reversal and removal of the exteriorized colon without further complications

Second case

Male patient 76 years old, with a past history of R-Y

Figure 2. Colon stump at 3-4 weeks.

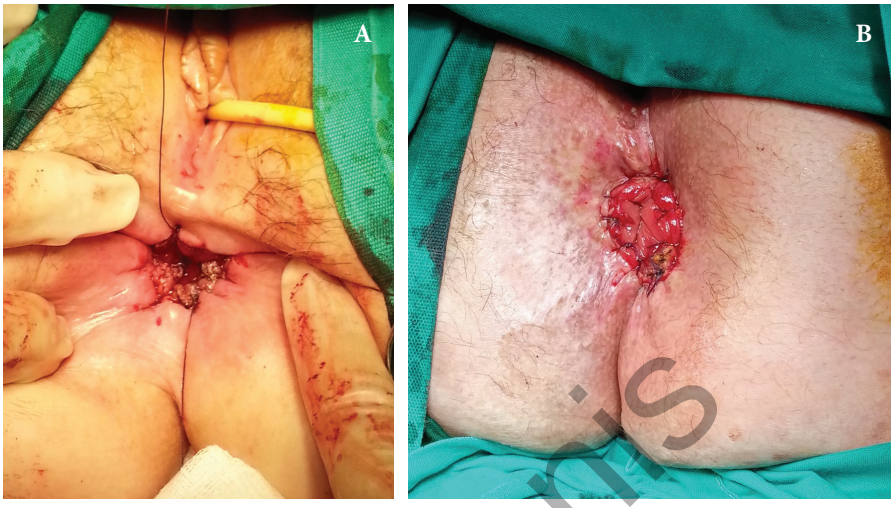

Figure 3. Resection of colon stump and view of anastomosis.

total gastrectomy due to gastric tumor underwent standard ISR for rectal cancer 1cm from the DL. The patient was released from hospital at fifth PO day. Ten days later he was readmitted because of dehydration and electrolytic disorders. Although they were corrected by IV replacement, it was difficult for us to maintain them by oral intake, due to excessive loss from ileostomy. To overcome this problem, we decided the immediate closure of ileostomy and proceeded to ISR-PTDA, as the CAA showed signs of mild ischemia, with potential risk of anastomotic leak. He recovered uneventfully and 2 months later the colonic stump was surgically resected.

Third case

Male patient 65 years old, with rectal cancer 1 cm from DL, underwent ISR-PTDA procedure, because he refused covering stoma. The patient had a very narrow pelvis and the colon was exteriorised with difficulty. On the forth PO day he had his first bowel movement and during the fifth PO day, clinical inspection revealed color changes of the stump, without signs of systemic inflammation. Twenty days later he had a bloody bowel movement and presentation of fever and pain. He was prescribed with antibiotics and was programmed for endoscopic evaluation. Rectal stump was necrosed and a 2-3 cm ischemic segment cephalad to the anal verge was observed. He had revision with a second ISR-PTDA. No further problems occurred and one month later the new colonic stump was resected.

Forth case

Male 69 years old, with rectal cancer located 1,5 cm from the DL underwent ISR-PTDA procedure due to comorbidities that increased the risk of anastomosis dehiscence and ileostomy complications.

Fifth case

Female patient 58 years old with rheumatoid arthritis, tumor was at the level of the DL, she was operated by ISR-PTDA because she was on prednisolone for rheumatoid arthritis for over 30 years. She had a smooth recovery with no complications.

Sixth case

Female 54 years old, with tumor 1,5 cm from the DL, she was operated laparoscopicaly by ISR-PTDA, since she refused a temporary stoma. A few days after the operation she started having symptoms of mild colonic ischemia of the last 15 cm that was treated conservatively. She has developed a mild stenosis that was also treated conservatively by dilatation.

Discussion

Current practice for rectal carcinomas lying closer than 5 cm from the anal verge is APR with permanent colostomy. In such cases LAR cannot achieve an oncological resection. The introduction of ISR [12,13] is ensuring a complete microscopic resection, without removal of the external anal sphincter with curative results analogous to APR. Most studies regarding ISR have shown very good oncological results and a better quality of life than APR [3,14,15]. The criteria for a patient to be a candidate for ISR are the absence of infiltration of the external anal sphincter and no previous history of incontinence [16]. However, the main reason why ISR is not widely adopted is its technical difficulty.

The main complications after ISR are colonic ischemia

and anastomosis dehiscence, rendering diverting ileostomy almost mandatory. Ileostomy may decrease clinical outcome of anastomotic leak, but does not considerably influence anastomotic complication rate, which rises significantly for more distally sited anastomoses [17].

Our effort to improve ISR, decrease complications and avoid diverting ileostomy [18,19] leads us to introduce the pull-through delayed anastomotic technique in our clinical practice. Pull-through technique [20,21] was introduced in the 50s and was widely used until the 70s, due to the lack of mechanical stapling devices. Later, during the 80s, mechanical staplers and better understanding of the anatomy and functionality of anus and rectum, gave rise to new surgical techniques, like low anterior resection and double stapling anastomosis, and PTDA was almost abandoned.

We reestablished PTDA in our clinical practice for elective cases, when standard coloanal anastomosis is at increased risk of dehiscence or a covering stoma is refused or dangerous.

The concept of the ISR-PTDA anastomosis is to pull the colon through the anal sphincter, instead of doing an end to end handsewn anastomosis. In this way, the quality of the colon that would adhere to the anal sphincter is improved, the extra colon length would absorb any tension to the anastomosis and we can easily monitor colon for ischemia. Furthermore, the continuity of the intestine is preserved since there is no need for a diverting stoma.

The colonic stump is 7-10 cm long, we check adequate circulation by the bleeding of the stump and we use 3-4 stitches to anchor it to the perianal skin. The colonic stump is inspected weekly and four weeks later it is surgically removed. We use electrocautery to cut the protruding colon and we place a few absorbable stiches just to prevent bleeding. Patient is released on the same or next day.

The pull-through delayed anastomosis [22] (PTDA) can be used instead of the standard anastomosis (CAA) to avoid ileostomy but also to repair anastomotic complications [23,24].

With ISR-PTDA, diverting ileostomy is not necessary and patients have their first normal bowel movement on the third or forth day. Patient satisfaction is better than those with temporary ileostomy. They can have a more free diet because there is no intra-abdominal anastomosis, as after ileostomy reversal. In case there is ischemia of the colon, it can be easily identified, and revision of the operation is no delayed. The colonic stump is easily tolerated by the patients and no special treatment is needed, we only advice them to avoid prolonged sitting on hard surfaces and to keep a good hygiene of the area by washing it with warm water. They have to use diapers since there is some soiling. Control of bowel movements is sometimes difficult, but it is restored after the amputation of the stump.

This method can be also used to salvage a low rectal anastomotic dehiscence [18,25,26] or to treat other complex conditions of the area, like fistulas [21] or ischemia after colorectal operations.

We are still investigating some options and technical details to further improve outcome, but we believe that this procedure can be beneficial for the patient and also greatly lower the cost of such operations, because there is no need for ileostomy products or ileostomy operation.

Replacing ileostomy with an exteriorized colonic stump facilitates the second operation (reversion of ileostomy vs removal of colonic stump). We avoid an intra-abdominal anastomosis with all its complications, operative time is 10-15 minutes, hospital stay is just a few hours, cost to the health system is minimum (no need for ileostomy products), danger of a future obstructive ileus is diminished and patient satisfaction is better. Resection of the stump can be done under sedation and local anesthesia, adjuvant chemotherapy is not a contraindication and there are no further restrictions.

Some key points of the ISR-PTDA procedure are: a) splenic flexure should be always mobilised because we need the extra length for the colonic stump, b) narrow pelvis and anal canal increase the risk of strangulation of the colon stump, c) excellent blood supply is necessary to feed the extra colon length, d) length of the protruding colon should be 7-10 cm.

The technique of ISR greatly changed the way we treated very low rectal cancer, and perhaps the addition of ISR-PDTA will further improve some of the disadvantages of the ISR but there is still way to go.

Ethical Approval – Informed Consent: *The authors declare that the study has been approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki. Also all patients gave their written informed consent prior to their inclusion to the study.*

Conflict of interest: *The authors declare that there is no conflict of interest.*

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