



Case Report

Anastomotic leakage after sphincter-sparing surgery in a young woman diagnosed with low rectal cancer - case report

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Abstract

Rectal cancer is the third most common site for cancer in the world, with a high morbidity and mortality. The new techniques for the treatment of low rectal cancer have been improved recently, allowing sphincter-sparing surgery to be available for more patients, with an optimal oncological and functional outcome.

The most fundamental advance in rectal cancer surgery was the concept of total mesorectal resection (TME) introduced by Heald in 1982. Association with neoadjuvant radio-chemotherapy determines regression of the disease by “down staging” the tumors and allows for sphincter-sparing surgery to be performed, with low recurrence rate and increased overall survival.

We present the case of 48-year old woman who had low rectal resection with colorectal anastomosis for middle rectal cancer. The patient had a BMI of 29, was hypertensive, had uterine fibroids and underwent neoadjuvant radiotherapy. During the 4th postoperative day the patient developed an anastomotic leakage grade B which was spontaneously closed on the 15th postoperative day. The patient did not manifest fever or any other symptoms. Normal bowel function resumed on the 5th postoperative day. No recurrence was detected at the one-year follow-up.

Keywords: rectal cancer, anastomotic leakage, mechanic anastomosis



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Introduction

Rectal cancer is the third most common site for cancer in men and women worldwide (1). It is the second cause of mortality for men (11.6%) as well as for women (13%) (2).

Accurate preoperative staging is an important factor for the selection of the patients undergoing neoadjuvant therapy. Whenever is available, highly technological imaging (endorectal ultrasound- ERUS and high-quality computed tomography scans- CT, magnetic resonance imaging- MRI) is recommended to perform a correct and complete tumor staging. Based on this information and considering other comorbidities, age and clinical status, these patients with low rectal cancer can undergo radical surgery with or without preservation of the sphincter function. Presence of the temporary or permanent stoma has a major impact on the quality of life and long-time survival.

The potential advantages of preoperative chemoradiation come from the fact that it “downstages”, or better said “downsizes” the tumors, so the patients may undergo sphincter-sparing surgery, with decreased recurrence rates, higher survival and prognostic rates. Some patients may have a favorable tumor response, complete or partial pathologic response (3, 4), confirmed by digital rectal examinations or flexible colonoscopy. Postoperative chemotherapy should be indicated in cases with lymph nodes involvement and for the patients with long life expectancy.

The technological progress in the last twenty years has shifted the surgical management from abdominoperineal resection developed by Miles in 1908 (5) to the concept of total mesorectal resection (TME) introduced by Heald (6-8). The double stapling technique (DST) has facilitated the colo-rectal

reconstruction, especially for low rectal tumor resection. The introduction of the circular stapler allows a quicker and easier anastomosis, reduces the operation time, has good oncologic results and lowers the annual number of abdominoperineal resections (APR) compared with low anterior resection (LAR) (9).

The complications associated with radical rectal surgery include anastomotic leaks (5%-17%) (10-14), faecal incontinence (60%-80%) (15-17), urinary dysfunctions (10%-70%) (18-20), sexual dysfunctions (13%-70%) (21, 22), local recurrence (6%-29%) (23, 24).

Anastomotic leakage (AL) is associated with high morbidity, mortality, length of hospitalization, financial costs, risk of early relaparotomy, and also with low survival rate, risk of local recurrence and low quality of life. Therefore, it is essential to identify the prognostic factors that can influence the outcome of AL. Patient's characteristics such as narrow pelvis, increased visceral fat, uterine leiomyomas or other genital lesions, prostate adenoma or history of low abdominal surgery may be technical challenges. Intraoperative exposure is critical and long instruments and deep retractors are necessary to perform the correct plane dissection and not to lead to vascular accidents. The vascularization of the anastomosis has a very important role. The AL can occur on the poor vascular areas of the stapled line.

Case Report

The 48-year old woman had been referred with rectal bleeding and constipation. She was diagnosed with middle rectal cancer following flexible colonoscopy with biopsy. The endoscopy exam revealed a 3-4 cm in diameter exofitic tumor, with partial stenosis of the rectal lumen.

Preoperative staging included medical history, clinical evaluation (digital rectal examination) and highly accurate magnetic resonance imaging (MRI) exams (Figure 1). Chest X-ray, abdominal ultrasound, serum carcinoembryonic antigen (CEA) and carbohydrate antigen (CA 19-9) level were normal. Haemoglobin level was low before surgery (9.7 g/dl) due to chronic rectal bleeding. No fecal incontinence was confirmed. Other comorbidities included hypertension, uterine leiomyoma (7/9 cm diameter) and BMI = 29 kg/m² (the body mass index). Preoperative tumor stage was cT₃N₀M₀.

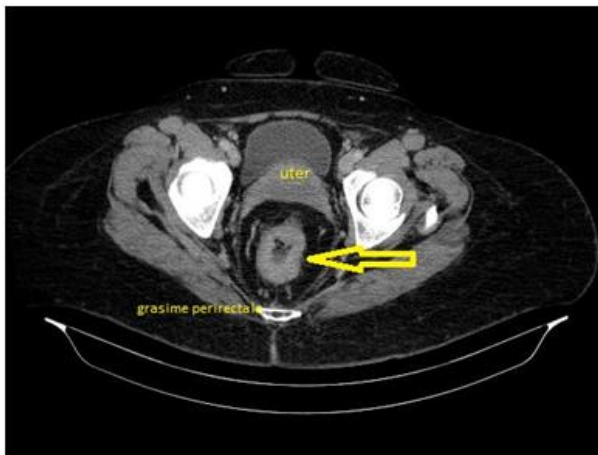


Figure 1. The MRI aspect exhibits partial tumor stenosis

The patient received external beam radiation (EBRT) using conventional fractionation and techniques: 45 Gy in 25 fractions. There was no clinical response after radiotherapy confirmed by digital rectal examination and colonoscopy, which revealed the rectal tumor in 4 cm diameter, with partial stenosis of the rectal lumen.

The patient was submitted to radical rectal surgery at 6 weeks after radiotherapy. The patient has given the consent for rectal resection with colorectal anastomosis, but not for ileostomy. Low anterior rectal resection (LAR) with total mesorectal excision (TME) was performed. The colorectal anastomosis was done by using circular double stapling technique (Figures 2, 3, 4).

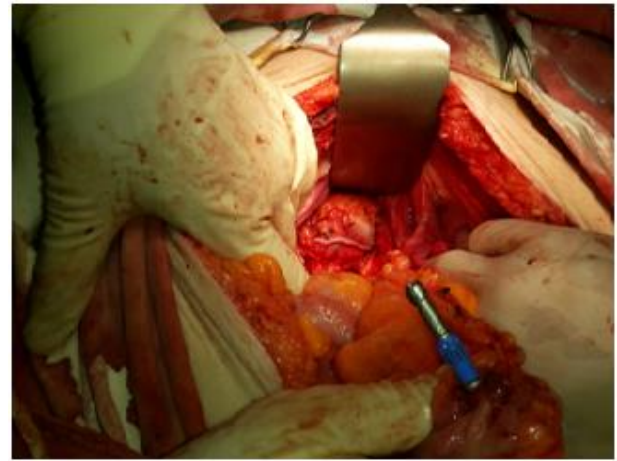


Figure 2. The rectum is resected distal to the tumor using a linear stapler; the proximal colon is prepared by inserting the circular stapling anvil



Figure 3. The proximal colon and the distal rectum is prepared for the circular stapled anastomosis; the anvil is connected to the circular stapler's spindle

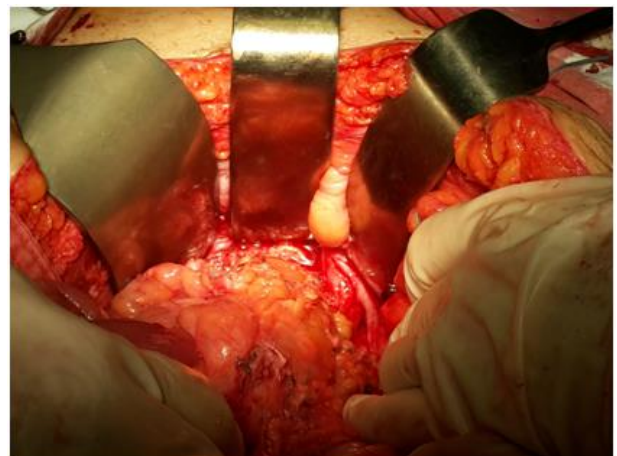


Figure 4. Image of the completed colorectal anastomosis

The integrity of the anastomosis was checked by transanal methylene blue instillation. Protective ileostomy was not performed. No metastasis was found. Because of the increased visceral fat, post radiotherapy fibrosis around the rectum and the presence of the uterine fibroids were considered factors that did not allow the surgeon to have a good

visualization of the dissection plane, he decided to perform a subtotal hysterectomy. With the pelvis wide open, he could now resect the rectum following the Heald's "Holy Plane". The extracted specimen was a cylindrical shaped tube, with intact mesorectal fascia (Figures 5-7). Two drain tubes were placed in pelvis and near the anastomosis. After the circular stapled anastomosis is complete, the proximal and distal specimens (the "donuts") are examined by the surgeon to check for macroscopic residual tumor (Figures 8, 9, 10).



Figure 5. Macroscopic aspect- specimen after resection

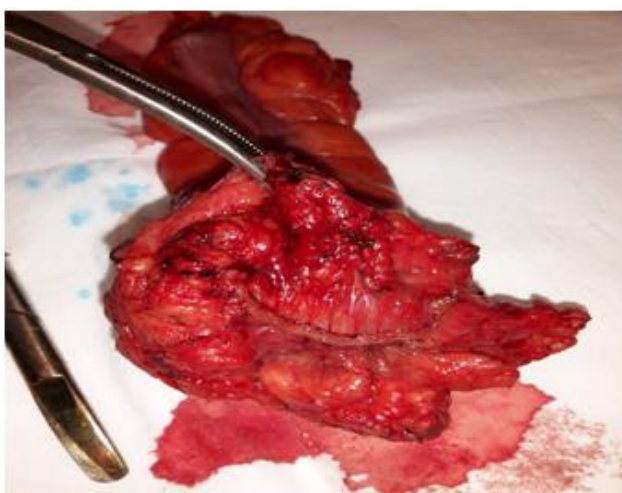


Figure 6. Macroscopic aspect- rectum stapled line

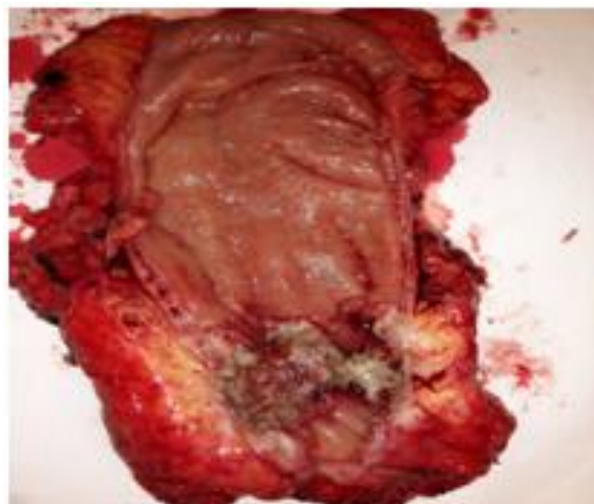


Figure 7. Macroscopic aspect- rectum with the tumor



Figure 8. The proximal and the distal donuts



Figure 9. The proximal (colonic) donut



Figure 10. The distal (rectal) donut

The specimen was examined by the pathologist. The histology included moderately- differentiated (G2) adenocarcinoma, with no radial or distal infiltration and no lymphovascular or perineural invasion (Figure 11). The number of lymph nodes identified was 22 and none contained metastases (N₀). The pathology stage was pT₃N₀M₀.

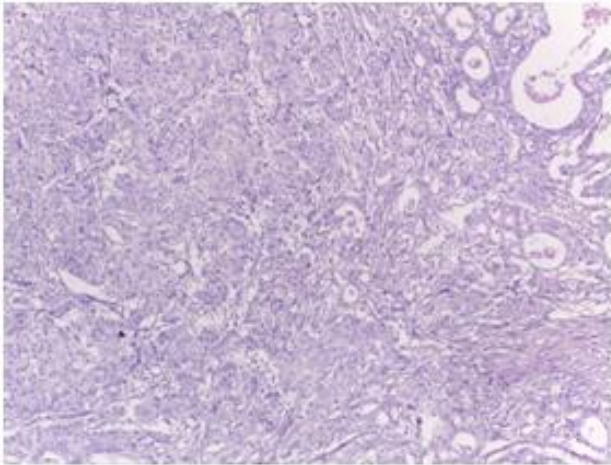


Figure 11. Moderate-differentiated (G2) adenocarcinoma, ob 10x, col HE

The patient developed anastomotic leakage during the 4th postoperative day, with an intestinal liquid flow of 10 ml per day. According to the International Study Group of Rectal Cancer (ISGRC) we considered the AL as grade B. The bowel function was normal starting with the 5th postoperative day. The blood test was normal. Pelvic ultrasound revealed a minimum amount of liquid in Douglas's pouch which was resorbed progressively. The patient did not develop fever or other clinical symptoms.

The systemic treatment included antibiotics, anticoagulants, antalgics and anti-inflammatory drugs. The drainage flow was low, up to 10-15 ml per day, and it spontaneous stopped in the 15th postoperative day.

The postoperative follow up after discharge from the hospital revealed no other complication, with normal serum CEA and CA 19-9 levels, normal daily bowel function, and normal urinary and sexual function. No local recurrence was found at 1-year follow-up.

The factors that can be involved in this particular case of anastomotic leakage included the tumor characteristics (stage T₃, moderate differentiated grade adenocarcinoma), patients related factors (BMI=29, hypertension), neoadjuvant radiotherapy and intraoperative local conditions (increased pelvic fat, uterine fibroids, post radiotherapy fibrosis).

Discussions

The standard treatment for distal rectal cancer is abdominoperineal resection (APR), low anterior resection (LAR) with colorectal anastomosis or ultralow anterior rectal resection (ULAR) with coloanal anastomosis, transanal local resection.

Surgical dissection in the embryologic avascular the "Holy Plane" consists in anatomically removing rectal cancers within the intact mesorectal compartment between the parietal pelvic fascia and the visceral mesorectal fascia (25).

The total mesorectal resection (TME) is now the gold-standard of the rectal cancer surgery.

Local excision is indicated for small, very early stage tumors or for patients with significant comorbid conditions that make a more radical surgical unacceptable (26).

Neoadjuvant radio-chemotherapy has been proven in reducing the rate of local recurrence, comparing with the postoperative treatment (18, 19). It also may reduce the size of the tumor and therefore allow sphincter sparing surgery.

Despite the surgical and technological advances, anastomotic leakage (AL) is one of the most important complication after low rectal cancer surgery, with higher morbidity and mortality rates (20). The presence of AL raises the re-laparotomy rate up to 5.4% (21). The studies have reported that AL rate ranges from 3% to 19% (27).

The International Study Group of Rectal Cancer (ISGRC) [21] defined anastomotic leakage (AL) as the defect in the anastomotic site integrity, creating a communication between the intra- and extraluminal

compartments. The group suggested three grades of AL severity. Grade A leakage is asymptomatic/radiologic leakage and it requires no change in therapeutic management. Grade B leakage requires non-surgical therapeutic intervention like antibiotics, transanal, endoscopic drainage but no relaparotomy. Grade C requires relaparotomy.

Some reports have shown that overall complication rate including anastomotic leakage is not increased after neoadjuvant therapy (25, 26). Other studies have shown that the neoadjuvant radiochemotherapy is an independent risk factor for symptomatic anastomotic leakage (27). Studies have showed that the complication rates after stapled anastomosis are similar or even lower with the hand-sewed anastomosis (28, 29).

The presence of AL remains a real challenge in rectal cancer surgical management. There are preoperative factors, intraoperative factors and postoperative factors that can influence the postoperative evolution and the prognosis of the patients with distal rectal cancer. The continuous progress of technology, the good knowledge of the anatomy and embryology of the rectum will lead to better functional and oncological outcome and will provide good quality of life and increased overall survival (30).

Conclusions

The patient with low rectal cancer, once almost constrained to abdominoperineal resection with permanent colostomy, now has the benefit of anal sphincter preservation, with normal defecation function, increased quality of life and improved survival.

The role of multimodality treatment is to improve local control rates and to allow better functional outcomes in highly selected patients with low rectal cancer

The functional outcome is influenced by multiple factors, including the patient, the histopathological

characteristics of the tumor, the neoadjuvant therapy and the surgical technique.

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