

Multivisceral resection in locally advanced colon cancer. Report of a clinical case by a university multidisciplinary team and analysis of the literature

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ABSTRACT

Multivisceral resections (MVR) in colorectal cancer are technically complex interventions. They pursue a curative aim through en bloc resection of the tumor and attached organs with free margins. They require an adequate preoperative evaluation and extensive knowledge of the anatomy and the modifications caused by the tumor and the adjuvant oncological treatments. Various surgical specialties such as digestive, urological, orthopedic, gynecological and reconstructive surgery, as well as oncology, radiotherapy, psychology and physiatry, among others, can come together in the RMV. MVR can cause considerable morbidity with anatomical and functional sequelae, so patients must be carefully selected.

We present the clinical case of a patient with left colon cancer fistulized to the iliac muscle and the abdominal wall, who was treated with a multidisciplinary approach, performing a complex en bloc MVR, with the participation of colorectal, vascular, orthopedic and plastic surgeons, physiatrists and the entire support team.

Keywords: Locally Advanced Colon Cancer; Multivisceral Resections; En bloc Resection; Multidisciplinary Team

CASE

A 53-year-old patient consulted for pain in the left iliac fossa and difficulty walking. Abdominopelvic computed tomography (CT) showed an abscess of the left iliacus muscle and thickening of the left colon.

Percutaneous drainage of the abscess was performed, obtaining little mucinous fluid. Subsequently, she developed an intestinal obstruction that required a transverse loop colostomy due to a tumor in the descending colon that extensively infiltrated the iliac vessels and the left iliopsoas muscle.

The evaluation was completed with a colonoscopy that revealed a villous lesion with abundant mucus in the descending sigmoid junction, whose biopsy showed an adenoma with high-grade dysplasia (Fig. 1).

A new staging CT showed tumor infiltration of the iliacus muscle and the left femoral nerve. The external iliac artery was in close contact with no apparent invasion. A fluid collection is observed in the abdominal wall in relation to the middle scar (fig. 2). There was no evidence of distant spread. CEA and CA 19-9 tumor markers were normal.

During this period, the patient presented suppuration

in the wound and cellulitis in the left iliac fossa (Fig. 3).

The preoperative diagnosis was left colon cancer fistulized to the left iliac muscle and abdominal wall. A multidisciplinary team was formed with oncology, general, vascular, orthopedic and reconstructive surgery services, deciding to perform an MVR with curative intent. Surgery consisted of an extended left colectomy with en bloc resection of the iliacus muscle, femoral nerve, iliac crest, and anterolateral abdominal wall (Figs. 4, 5, 6, and 7). The colorectal anastomosis was protected with the previously performed transverse colostomy.

The histopathology reported a mucinous carcinoma pT3N0 (0/14), R0 (Fig. 8).

In a second stage, the missing abdominal wall was covered with an anterolateral flap from the right thigh (Fig. 9).

The patient had an excellent evolution without major complications or serious functional sequelae, except for a limp in the left leg that was resolved with a cane. With the result of the histopathology, the oncology team decided not to perform adjuvant treatment, so she is under serial clinical, humoral and imaging control, with no recurrence 11 months after surgery.

Given the global health situation (COVID 19 pandemic), the patient is waiting for the stoma to be closed.

DISCUSSION

Locally advanced colorectal tumors with invasion of

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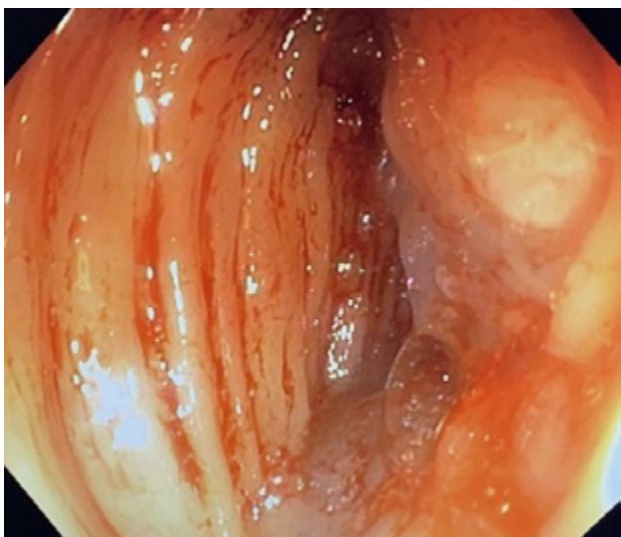


Figure 1: Abundant mucinous content of the lesion is appreciated, which makes vision difficult.

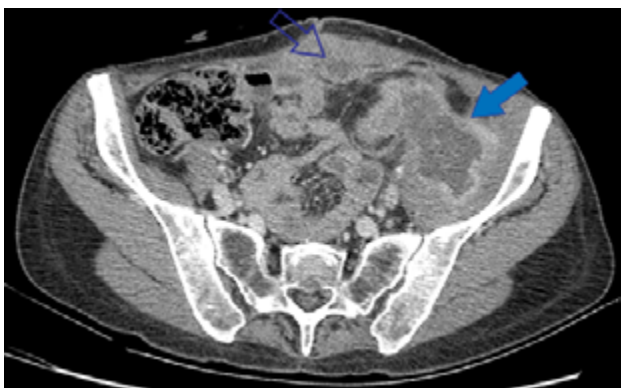


Figure 2: The thickening of the descending colon fistulized towards the left iliac muscle and with collection inside can be seen (solid arrow).b) Another small collection located below the midline (open arrow) was also included in the resection.



Figure 3: The inflammatory area corresponding to the skin involvement of the tumor (continuous arrow) and the fistulous orifice of the median incision scar (empty arrow) are observed.



Figure 4: En bloc excision phase including the area of percutaneous drainage of the abscess (cephalic region to the right of the image).



Figure 5: Resection of the left iliac crest with a Gigli saw (cephalic region on the right).

neighboring organs (T4b) are observed in 5 to 20% of patients.¹

Part of the appropriate oncological approach includes multivisceral en bloc excision of the organs and structures involved.^{2,3} This is defined as the resection of any organ or structure to which the tumor is attached. The main clinical guidelines agree that the adequate surgical management of these locally advanced tumors should include extensive MVR with curative criteria, by obtaining free

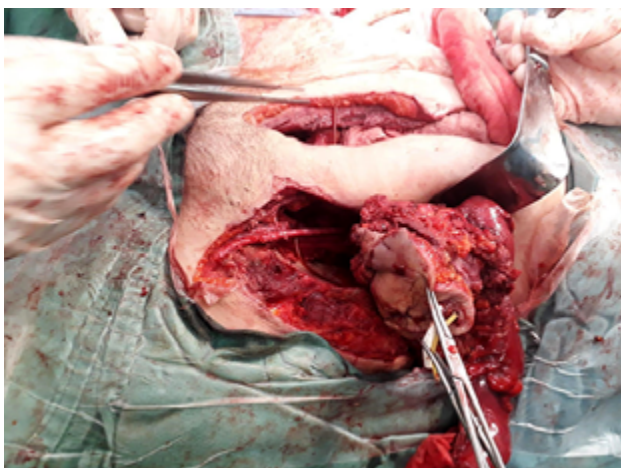


Figure 6: Extraction of the en bloc excised specimen. The completely dissected external iliac artery can be seen as it passes through the femoral arch included in the resection (cephalic region on the right).

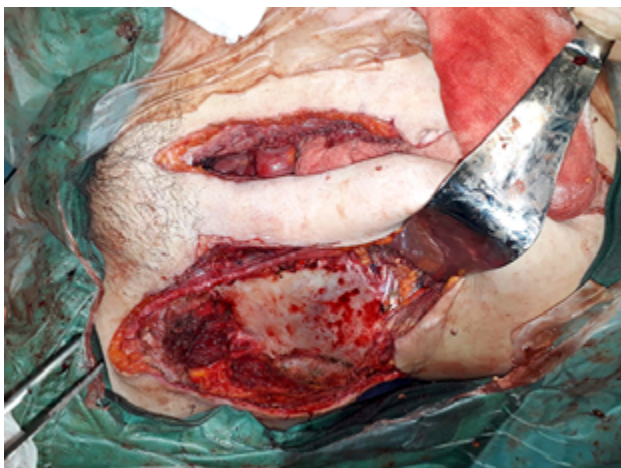


Figure 7: The sectioned iliac bone and the complete resection of the left iliac muscle are observed. The left iliac artery is completely freed (cephalic region on the right).

margins (R0).^{5,6} This is because the differentiation between inflammatory and neoplastic adhesions is not possible without pathological analysis. Tumor infiltration of neighboring tissues is found in 45 to 70% of cases, the rest corresponding to inflammatory adhesions. However, the release of macroscopically infiltrated tissue is not recommended due to the risk of perforation, tumor seeding and the possibility of leaving residual disease (R1, R2) with high recurrence rates (69 vs. 28%).⁴

The need for extended resection has been recognized as effective since Sugarbaker⁸ published the first large MVR cohort for advanced colorectal cancer in 1946, with a disease-free survival of 56%. This has been reproduced in another comparative study that reported survival rates of 55, 61 and 23% for standard colectomy, extended resection, and colectomy with release of attached organs, respectively.⁹

Campos et al.¹ showed R0 resection rates of 84.4%,

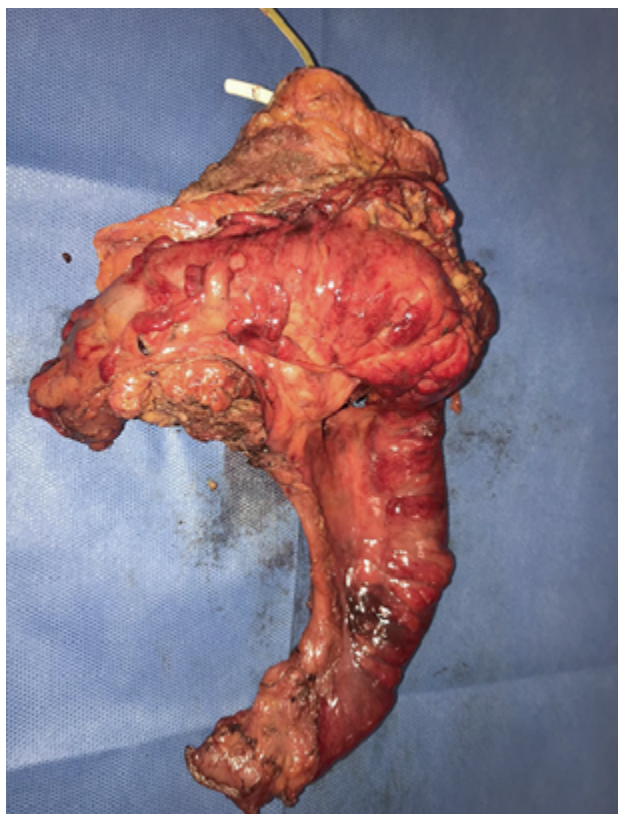


Figure 8: En bloc resection specimen of the left colon, iliac muscle and left anterolateral abdominal wall, with percutaneous drainage included to obtain an adequate oncological margin.



Figure 9: Reconstruction phase with rotation of an anterolateral flap from the right thigh.

with 5-year survival of 64% and recurrence of 32.4%. Likewise, López Cano et al.² published R0 rates of 85%, with 5-year survival rate of 48%.

All studies conclude that R0 resection is the most important prognostic factor for survival, which can be achieved in 70-90% of cases with good planning.^{6,10} Incomplete resection is the main factor for poor survival and prognosis.

Palliative MVR is not an ideal option given the morbidity associated with the procedure. It can be considered for metastatic or recurrent disease on a case-by-case basis and in the absence of other alternative therapeutic options.³

Regarding complications of MVR, they range from 20 to 50% and mortality from 1,7 to 13%.³ The GIII morbidity rate (according to Clavien Dindo classification) is similar to that of standard resection, with somewhat higher incidence of minor complications (GI) in the first group.¹¹ Rizkallah et al.⁷ reported an overall morbidity of 37% but only 10% of patients required reoperation or interventional techniques to treat these complications.

Despite the demonstrated benefits in survival, the rate of MVR is low. Between 10 and 30% of patients with locally advanced tumors undergo these procedures, as shown by Govindarajan et al.,⁶ who reported a MVR rate of only 33%.

The choice of a more limited resection instead of a MVR may be due to several factors related to the surgeon and the patient. The insufficient preoperative study of the patients, the lack of recognition of the invasion of neighboring structures in the preoperative period or the distrust in performing a MVR (due to lack of experience or perioperative support), can lead to insufficient management of a patient with potentially curable disease.³ For example, faced with a total pelvic exenteration involving the creation of two definitive stomas, patients and clinicians may be reluctant to accept the morbidity and functional sequelae with lifestyle modifications.³

Younger patients are more likely to be candidates for radical resections, reflecting the reluctance of surgeons to perform large resections in older patients with significant comorbidities. However, age is not a contraindication per se if patients are properly selected.⁶

There is a predominance of MVR in women, probably because genitourinary resections and subsequent reconstruction are more complex procedures in men.⁶

Tumor topography also influences the decision to perform MVR. Tumors close to the splenic flexure are less likely to be resected than those more distal (left colon, rectosigmoid junction tumors). Extended resections of the liver, bile duct, and pancreas require greater technical skill to obtain an adequate resection margin.²

On the other hand, the variability in the percentages of MVR also depends on the characteristics of the care centers, increasing in specialized places and where there are multidisciplinary teams that offer multimodal therapies.⁶ To perform these technically demanding procedures, increase the number of excised tumors and improve oncological and functional results, it is necessary to have precise anatomical knowledge in all areas, which may (or should) require the participation of other specialties such as vascular surgery, orthopedics, plastic surgery, urology and gynecology, in addition to colorectal surgery as it was in this case.

Functional sequelae can be minimized through treatment involving stoma therapists, psychologists, physiatrists and nursing staff with experience in the rehabilitation and care of patients operated on for complex tumours.

These patients should always be evaluated in a multidisciplinary context, and a comprehensive preoperative evaluation is essential to rule out contraindications for resection, assess the general condition of the patient, allow the organization of the multidisciplinary team and the planning of different intraoperative strategies, and predict intraoperative and postoperative complications. Although surgical experience is considered to influence the success of these procedures, MVR is rarely performed, so the formation of a multidisciplinary team seems more relevant than the individual experience of a surgeon.

This was what happened with this clinical case. A team of specialists in the different areas was formed and a staged treatment was proposed, achieving a MVR R0, without postoperative complications and with an excellent functional result.

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COMMENT

Patients with locally advanced colorectal tumors constitute a challenge for the treating team, since the most important chance of cure depends on a complete resection with free margins. Adhesions to adjacent structures do not necessarily imply tumor infiltration, but different studies show better survival if extensive resections are performed, so lysis of adhesions is discouraged in these cases because it increases the risk of recurrence. As a consequence, prior study of patients and planning in conjunction with the rest of the specialties is essential. When these cases presents as an intraoperative finding, the chances of achieving a complete resection decrease due to not having the full multidisciplinary team.

In the case presented, it is noteworthy that the treating surgeons acted cautiously and judiciously. An emergency resection at the first consultation would hardly have ended in a satisfactory procedure. Having thought about percutaneous drainage and then about transverse colostomy allowed the case to be studied correctly and the surgery to be planned successfully. Another aspect to highlight is teamwork, since having the different specialties has a greater impact than the suitability of a single surgeon.

The decision not to perform adjuvant treatment is noteworthy as it was a mucinous carcinoma that required a previous ostomy due to lumen occlusion.

In summary, a complex case has been presented that was resolved satisfactorily, for the benefit of the patient.

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