CLINCAL CASE

# LAPAROSCOPIC SURGICAL TREATMENT AFTER NEOADJUVANT THERAPY FOR LOW RECTAL NEOPLASM IN A LOW-RESOURCE SETTING: CASE REPORT

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## Abstract

*Surgical practice differs between tertiary centers and low-resource settings, with major differences in personnel training, equipment and financial resources. COVID-19 crisis deepened this rift, highlighting the problems in national health systems. We present the case report of a 76-year-old patient diagnosed with low rectal cancer, treated with laparoscopic abdominoperineal resection with neoadjuvant therapy in our center. Patient presented for investigations with rectal tenesmus, rectal bleeding and incontinence at 3 months after being treated for a stroke that left him with left side hemiparesis. Rectal examination revealed a semi-circular, vegetative, non-stenosing mass 3-4 cm inside the anal cavity, visible at colonoscopy, while abdominal exam showed nothing pathological. An abdominal-pelvic CT revealed a tumoral mass on the anterior rectal wall, largest diameter being 35 mm, associated with nodules in the mesorecta fatty tissue up to 10 mm. Pre-surgical treatment was done in another center, consisting of radiotherapy (25Gy) with good clinical tolerance. During laparoscopic abdominoperineal surgery we collected 6 anatomopathological fragments leading to a diagnosis of pT2N0Mx (AJCC stage 2) rectal adenocarcinoma. Patient initiated 8 rounds of CAPOX cytostatic therapy at 2 months post-surgery with no accidents or complications. Patient returned for follow-up at 6 months and there were no signs of recurrence of rectal cancer or any signs of metastases. This case presentation shows what can be done in one low-resource setting when local governments and practitioners get involved in allowing a small regional center to regain its importance in treating oncologic patients, allowing tertiary centers to focus on complex cases.*

**Keywords***: rectal cancer; laparoscopy; abdominoperineal resection; neoadjuvant therapy; low-resource setting*

## Introduction

Surgical practice differs from the experience seen in studies, depending on the experience of a surgical team and the resource available to assure the best possible outcome for patients. There is a difference in adherence to the latest guidelines between teaching hospital and low-resource settings (LRS), such as regional centers. There are many factors influencing the treatment options available in LRS besides economics. Literature on the matter, although scarce, cites lack of training available for surgeons, lack of training for the whole multidisciplinary team [1]

and the need to engineer tools when used one broke [2], [3]. COVID-19 crisis only deepened this rift between guidelines and surgical practice due to the lack in surgical equipment, post-surgery therapy and the high risk of infection for oncologic patients. However, these obstacles can be surpassed and optimal minimal invasive treatment can be available to patients even in smaller regional hospitals.

We present a case report of an elderly patient with multiple comorbidities, diagnosed early for low rectal cancer, treated with laparoscopic abdominoperineal resection with neoadjuvant therapy.

## Case presentation

A 76-year-old male patient is admitted to the hospital for rectal tenesmus, rectal bleeding and incontinence. Patient suffers of left side hemiparesis due to a stroke from 3 months before, for which he was admitted to another regional hospital. At admission, the patient was febrile, anemic and complained of weight loss in the last 3 months, having a hard time with feeding due to the rectal symptoms. Patient history revealed hypertension, high cholesterol and anemia for all of which he was treated with ACE inhibitors, betablockers, trimetazidine, statins and antiaggregant for stroke. Rectal examination revealed a semi-circular, vegetative, non-stenosing mass 3-4 cm inside the anal cavity, while abdominal exam showed nothing pathological.

Blood work and cardiothoracic Rx was done at admitting, confirming anemia and dysmetabolic syndrome. The rectal tumor was not visible on abdominal echography, but was visible during colonoscopy. Patient was referred to radiology and received an abdominal-pelvic computed tomography for TNM classification, which revealed a tumoral mass on the anterior rectal wall, protruding into the lumen, largest diameter being 35 mm, associated with nodules in the mesorecta fatty tissue up to 10 mm (Figure 1 and Figure 2). The only other finding were 3 cystic-angiomatoses masses in the liver with a benign aspect, requiring monitorization at 3 months with ultrasound.

Based on the clinical exam and imaging exam, the diagnosis was cT2N0Mx rectal neoplasm. We have presented the treatment options to the patient and together we opted for neoadjuvant therapy and abdominoperineal approach. Patient received radiotherapy (25Gy in 5 sessions of 5Gy) in Emergency Central Military Hospital "Dr. Carol Davila" showing good clinical tolerance.

Patient returned to our hospital for surgery. We started with a 1 cm supraumbilical incision, introduced the Veres needle and created the pneumoperitoneum. We used two 5 mm trocars and one 10 mm trocar for the camera. As expected, there was an intense adherence syndrome in the left iliac fossa and in the pelvic region caused by radiotherapy. There were no metastases or enlarged lymph node revealed at laparoscopic exploration. We mobilized the sigmoid, ascendant colon, transverse colon and also the distal rectum. We identified the inferior mesenteric artery and vein in order to clip them. We penetrated the Waldeyer fascia to the pelvic diaphragm, then we continued laterally and we sealed the rectal wings including the inferior hemorrhoidal artery. In order to complete the total mesorectal excision, we come back to the anterior and dissect in the anterior pre-rectal fossa Dounivellier, at the limit between seminal glands fascia and pelvic diaphragm. We excluded the sigmoid colon and created a bursa for the distal colon, reduced the distal colon in the peritoneum and the proximal colon is fixated for terminal colostomy. This ends the laparoscopic time.

For the perineal approach we closed the distal colon bursa and incised elliptical around the anus. We approached the rectum laterally and posteriorly and dissected around the sclerosis of the tumor until it is excised, taking into consideration a safe margin. We collected 6 anatomopathological fragments: the rectal tumor, two mesorectal fragments, mesosigmoid, epiploic appendix and perirectal fatty tissue.

Histopathological exam was colorectal adenocarcinoma with tumor invasion including muscularis propria, peritumoral desmoplastic reaction and moderate to severe dyskaryosis of glandular cells. No lymphatic ganglia presented with tumoral invasion, thus resulting a pT2N0Mx (AJCC stage 2) rectal adenocarcinoma.

Post-surgical evolution was good, patient recovered to his initial status and was discharged in order to continue with chemotherapy from an

outpatient status, being advised to contact us and present for any issue.

Patient was investigated with an abdominal-pelvic MRI at one-month post-surgical treatment showing normal post-surgical modification and no visible metastases.

Patient initiated CAPOX cytostatic therapy at 2 months post-surgery due to the COVID-19 lockdown we experienced in April and May of 2020. Patient tolerated well the 8 rounds of chemotherapy in a time period of 5 months with no accidents.

Patient presented for the scheduled follow-up at 6 months after ending his chemotherapy. Patient received a full clinical exam, colonoscopy and helical CT. There were no signs of recurrence of rectal cancer or any signs of metastases. Patient is independent and shows good health.

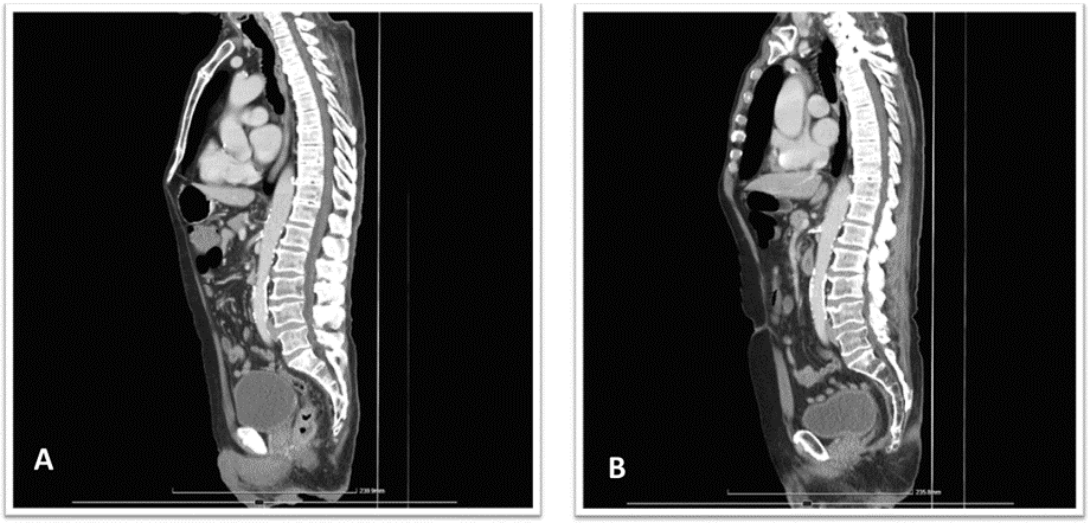


**Figure 1 – Computed Tomography at midsagittal plane. A – captured on 06.01.2020, showing a low rectal tumor obstructing the lumen and a gas-inflated colon. B – captured on 01.06.2021, showing no local recurrence of low rectal cancer at 6-months after neoadjuvant chemotherapy and abdominoperineal surgery**

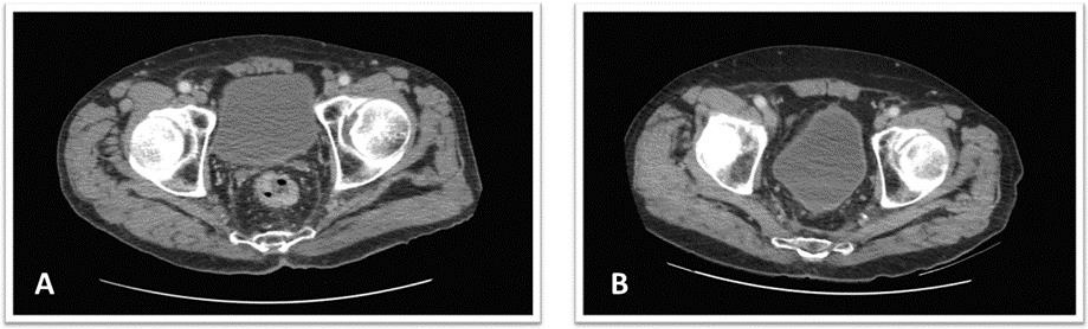


**Figure 2 – Computed Tomography axial slice of the pelvis. A – captured on 06.01.2020, showing a low rectal tumor obstructing the lumen. B – captured on 01.06.2021, showing no local recurrence of low rectal cancer at 6-months after neoadjuvant chemotherapy and abdominoperineal surgery**

## Discussions

Surgeons in low-resource settings find themselves having to take difficult decisions each day. There is a constant struggle whether to refer a patient to a tertiary center or try to treat it by themselves. Patient compliance is a key to success for treating oncologic patients. Many times, those that present to their regional center, do not have the resources or the will to find and get a consult at a tertiary center, often hundreds of kilometers away. This leads to patients presenting later, often, too late for treatment, when all that is left is palliation. Those that suffer

the most are elderly patients, from low-income backgrounds, living in villages, with no caretakers to attend for their everyday needs. This is the reality that surgeons face in their daily practice, trying to find balance between the two options.

COVID-19 crisis only deepened this rift in the national health systems, many regional centers being dedicated to COVID-19 patients, leaving few places where oncologic patients can find treatment, leading to long queues, hurting patients suffering from any form of cancer.

This case presentation highlights what can be done in a low-resource center with minimum investment, even in time of crisis. Being able to perform helical CTs, colonoscopies and endoscopies and having a team with training in laparoscopy enables us to diagnose and treat oncologic patients in our center, making it easier for them to seek treatment and follow-up. Unfortunately, our center does not have a dedicated department of radiotherapy and an oncology department, having to refer our patients.

Despite this, through collaborations and communication with other centers, we are able to offer a multidisciplinary treatment to our patients, as this case of laparoscopic abdominoperineal resection with neoadjuvant therapy shows.

Previous reviews studies [1], [4] investigating issues with implementing guidelines in low-resource centers cited lack of trained personnel and equipment combined with limited availability of diagnostic imaging methods as the main challenges that those working in LRS face.

One factor that is taken into consideration often in LRS is the economic impact of treating a patient. This issue can be observed from two angles. On the one hand, it is cheaper for the hospital to offer laparoscopic surgery or other low-cost minimally invasive surgery as shown by [5] – [7] and it leads to a shorter bed occupation [8] which is important in LRS. On the other hand, minimally invasive techniques allow patients and their caretakers to resume daily life faster, allowing them to return to their work on which they depend [9], [10].

This literature reviews show clear benefits for patients, such as: smaller wounds leading to lower rates of site infection, fewer long-term complications, early discharge and low use of medication post-surgery.

Returning to rectal cancer management, there is evidence in the literature to support different guidelines for elderly patients [11], [12] leading to the question if there should be different guidelines for LRS offering clinicians the chance to treat patient based on the resource available.

Local governments, hospitals and leaders should collaborate to access funds for organizing training courses, buying equipment and hiring skilled personnel in LRS in order to offer better local treatment for simple oncologic patient, allowing only difficult and complicated cases to be referred to tertiary centers.

## Conclusion

In conclusion, our case presentation shows what can be done in one LRS, where cooperation between surgeons and local leaders gave a chance to a small regional center to regain its importance in treating oncologic patients, allowing tertiary centers to focus on complex cases.

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