

**Hepatic metastasis from colorectal cancer, seven procedures and five recurrences, when to stop? A Case report**Manar Mutlag Alharthi<sup>1</sup>, Anwar Saeed Alzahrani<sup>1</sup>, Shaikhah A-Jumaiah<sup>2</sup>, Mohammed Saad Alqahtani<sup>3</sup><sup>1</sup> College of Medicine, Imam Abdulrahman bin Faisal University, Khobar, Saudi Arabia<sup>2</sup> Faculty of Medicine, General surgery department, Imam Abdulrahman bin Faisal University, Khobar, Saudi Arabia<sup>3</sup> Consultant, Multiple Organ Transplant Center, King Fahad Specialist Hospital, Dammam, Saudi Arabia**Type of article:** Case report**Abstract****Introduction:** Colorectal cancer commonly metastasizes to the liver. Patients treated by metastasectomy gain a longer overall survival and progression-free survival than those patients treated by radiofrequency ablation.**Case presentation:** This paper reports the case of a 58-year-old male who presented with constipation, bleeding per rectum and weight loss. Colonoscopy showed rectosigmoid mass, and an MRI of the abdomen and pelvis revealed that there was a circumferential polypoidal rectal soft tissue mass involving the upper half of the rectum extending approximately 8 cm in the longitudinal length to the retro-sigmoid junction and 9 cm from the anal verge. It showed local extension to the mesorectal fat with significant invasion to the mesorectal fascia anteriorly. The lesion did not extend to the scrotum, prostate or urinary bladder. Multiple mesorectal lymph node and multiple foci lesions were seen in the liver, suggesting metastasis. The patient was staged as T3N2M1. After that, lower anterior resection with diversion ileostomy and intraoperative radiofrequency ablation of segment IVa and resection of IVb segment was done. From 2013 to 2017 the patient had multiple procedures: right hepatectomy, resection of segment II and IVA, alcohol ablation of segment II, microwave ablation through US guided for segment II and wedge resection in segment IV respectively. Six weeks later, the patient was looking well with normal liver function tests. Resection offers the greatest possibility of cure for patients with liver-isolated colorectal cancers, with 5-year survival rates of 25-58%.**Take-away lesson:** The overall clinical importance of this case report is to show how repeated liver resection improves the quality of life.**Keywords:** Colorectal cancer, Liver, Metastasis, Recurrences**Note:** This case report is prepared using the CARE Checklist (2013) of information to include when writing a case report (<https://www.care-statement.org>). The CARE guidelines for case reports help reduce bias, increase transparency, and provide early signals of what works, for which patients, and under which circumstance.**1. Introduction**

In Saudi Arabia, colorectal cancer has been the most common cancer in males and the third most common cancer in females for the last seventeen years. Twenty percent of patients have metastatic disease at the time of presentation (1). The liver is the first site for rectal metastases and is a leading cause of cancer-related morbidity and mortality. Isolated Metastatic colorectal cancers can be cured and removed surgically. Neoadjuvant chemotherapy or chemotherapy with radiotherapy could be done before or after the surgery. Resection offers the greatest possibility of cure for patients with liver-isolated colorectal cancers, with 5-year survival rates of 25-58% (2). However, studies have shown that incidence after resection is high. Furthermore, most of the recurrences (approximately up to 75%) occur in the first two years after resection (3). The treatment of the recurrence is the same as the initial colorectal

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cancer metastases (4). Repeated hepatectomy can prolong life, but with morbidity and mortality rates of 5%-7% and 20%-39%, respectively. Patients with a relapse-free gap of longer than one year have a more promising outcome from re-resection.

## **2. Case presentation**

### **2.1. Patient information**

A 58-year-old Saudi male, with no known prior medical illnesses was referred in December 2012 to the Surgery Department of King Fahd Specialist Hospital in Dammam (Kingdom of Saudi Arabia) as a case of colorectal cancer for further evaluation and management.

### **2.2. History**

The Patient had a history of constipation, per rectal bleeding, weight loss and decrease of appetite for 10 months. He sought medical advice in another medical facility and was given presumed diagnosis of anal fissure, and treated conservatively but there was no improvement. Eastern Cooperative Oncology Group Performance Status (ECOG-PS) was zero. The patient was admitted to King Fahd Specialist Hospital for further evaluation and management.

### **2.3. Clinical findings**

On examination, the abdomen was soft and lax. Per rectal examination showed palpable, mobile mass located anteriorly approximately 10 cm away from the anal verge.

### **2.4. Diagnostic assessment**

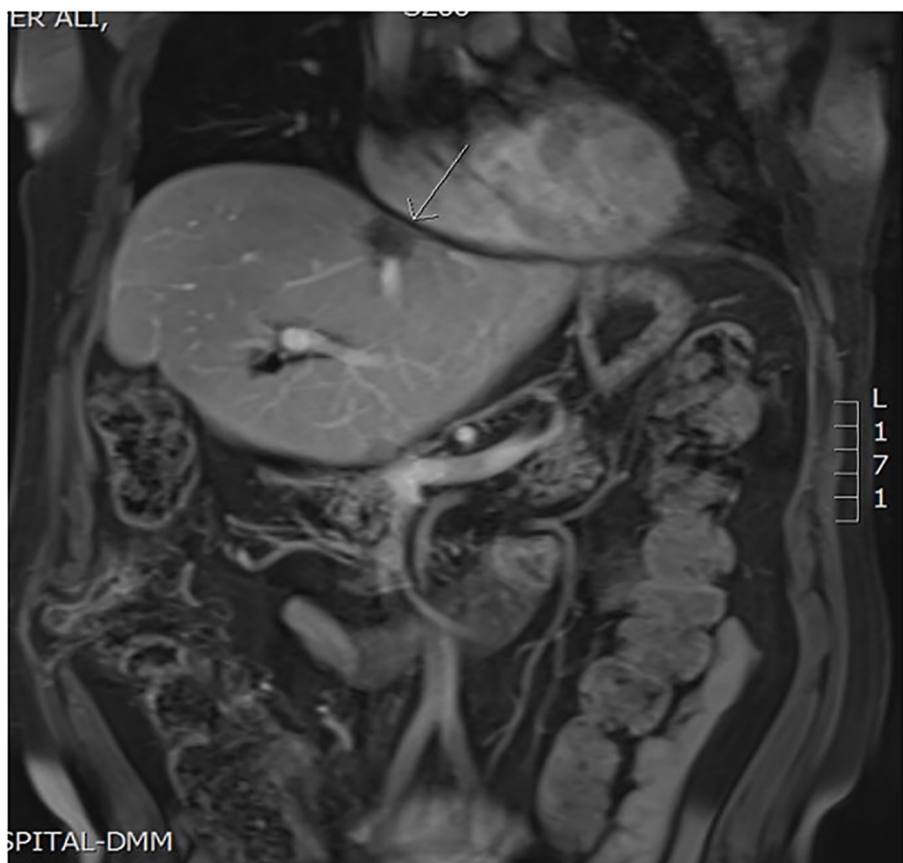
Colonoscopy was done and showed a rectosigmoid mass, 10-11 cm in size, biopsy was taken and showed adenocarcinoma type of rectosigmoid cancer. MRI of abdomen and pelvis using rectal and liver protocol revealed that there was a circumferential polypoidal rectal soft tissue mass involving the upper half of the rectum and extending approximately 8 cm in the longitudinal length to the retro-sigmoid junction and 9 cm from the anal verge. It showed local extension to the mesorectal fat with significant invasion to the mesorectal fascia anteriorly. The lesion did not extend to the scrotum, prostate or urinary bladder. Multiple mesorectal lymph nodes were seen with similar intensity to the tumor, suggesting metastasis. Multiple foci lesions were also seen in the liver suggestion metastasis. The biggest lesion was seen in segment IV measuring around 2.6 cm. Based on the clinical, pathological, and radiological findings, the patient was staged as T3N2M1.

### **2.5. Therapeutic Intervention**

The case was discussed in the tumor board. The patient started with neoadjuvant chemotherapy leucovorin, fluorouracil, oxaliplatin and Cetuximab (FOLFOX). After that, the patient underwent uncomplicated lower anterior resection with diversion ileostomy, right portal vein ligation, and intraoperative radiofrequency ablation of segment IVa and resection of segment IVb through Medline laparotomy incision. Post-operatively, ECOG-PS was one. It was then followed by adjuvant chemotherapy. In January 2013, CT chest, abdomen and pelvis with contrast was done and showed lesion at segment VIII measuring 2.5x 1.6, which was likely to be a metastatic lesion (Figure 1). A month after, the patient underwent a successful right hepatectomy, and at that time, ECOG-PS was one. Four months later, the patient had closure of ileostomy. In February 2014, MRI of abdomen and pelvis with contrast showed focal liver lesions affecting segment IVa and II of the liver, measuring 0.6 and 1.3 cm in diameter respectively. In March 2014, resection of segment II sub capsular + segment IVa was done followed by adjuvant chemotherapy. Post-operatively, ECOG-PS was one. In October 2016, MRI abdomen with contrast revealed liver lesion in segment II measuring 19.8 mm (Figure 2). Alcohol ablation of segment II was done through right subcostal skin incision, ECOG-PS was one. This was followed by a few cycles of chemotherapy. In March 2017, a follow up study of MRI revealed lobulated liver lesion in segment II that measured approximately 22 mm. An application of microwave ablation through US guided needle to the lesion through subcostal incision was done smoothly with no intraoperative complications, ECOG-PS was one. In October 2017, an MRI of the liver showed progression in the size of previously seen lesions noted with PET/CT that were done in August at segment II as well as in segment IV measuring 25 mm. Microwave ablation of segment II and wedge resection of segment IV was done successfully without intra- or post-operative complications ECOG-PS was 1. To recap, the patient had undergone 7 procedures and 54 cycles of chemotherapy from 2012-2017.



**Figure 1.** CT of the liver with contrast showing two lesions in segment VIII (white arrows).



**Figure 2.** MRI of the liver showing a lesion in segment II (white arrow).

### **2.6. Follow-up and Outcomes**

On follow up after six weeks, the patient was experiencing no complaint and was looking well with normal liver function tests. Alanine transaminase (ALT) 37 IU/L, Aspartate aminotransferase (AST) 33 IU/L, Alkaline phosphatase test (ALP) 126 IU/L, Gamma-Glutamyl Transferase (GTT) 59 IU/L, Albumin: 39 g/L, Total bilirubin: 15 umol/L. The patient returned to his usual performance status before surgery the ECOG-PS was zero.

### **2.7. Ethics of case report**

In conformity with the ethics of publishing case reports, a signed consent form was taken from the patient to write this case report.

### **3. Discussion**

In Saudi Arabia, colorectal cancer has been the most common cancer in males and the third most common cancer in females for the last seventeen years. The median age at presentation was shown to be different between males and females approximately 60 years and 55 years respectively. Around 28.4% of patients initially presented with distant metastasis and for those patients rectal cancer was diagnosed in about 41% of them in 2010. Our patient had initially presented to the clinic with colorectal cancer metastasizes to the liver as confirmed by MRI and was staged as T3N2M1 at time of presentation.

The mechanism by which colorectal cancer arises is not completely understood, but it is believed to be multifactorial and involves a multistep process. Chromosomal changes such as chromosome 5q, 18q, and 17p have been implicated in the disease process, affecting genes such as APC, TP53 and DCC/MADH2/MADH4, as well as mutations of the KRAS oncogene (5). An estimated 75% of patients with colorectal cancer have sporadic disease; the remaining 25% have a family history of the disease (6). Genetic, environmental, and lifestyle factors increase the risk of malignancy (5-9).

In its early stage, colorectal cancer is usually asymptomatic (7, 10). As the disease progresses, a change in bowel habits 80 % and bleeding 60% often occur, and that can explain the late presentation in our case. Signs and symptoms of colorectal cancer may also vary by the location of the lesions (5). The most commonly affected sites are the rectum 38%, sigmoid colon 20% and descending colon 10%, followed by the cecum and hepatic flexure 8% each, transverse colon 6%, rectosigmoid junction 7%, ascending colon 3%, and splenic flexure 2% (5). Left-sided malignancies generally feature abdominal pain and a change in bowel habits 60%, the presence of a mass 40%, bleeding and obstruction 20% each, weight loss 15 % and vomiting 10% (5). Common features of right sided lesions are vague abdominal pain 80% and the presence of a mass 70%, followed by weight loss 50%, change in bowel habits with diarrhea 40%, vomiting 30%, rectal bleeding 20%, and obstruction 5% (5). In this case, the patient experienced a left sided lesion in the form of a mass, which caused constipation, bleeding per rectum and eventually weight loss. Compared to right sided lesions the left sided lesions presented earlier, because cecum is large and wide in structure, so the bowel symptoms that are typically seen in left sided lesions such as change in bowel habit and bleeding per rectum do not occur until an extensive mass has formed, sometimes over many years.

Colorectal cancer has multiple risk factors including age older than 50 years, past medical history of type 2 diabetes, colon cancer, history of inflammatory bowel disease (i.e. ulcerative colitis or Crohn's disease), and previous ureterosigmoidostomy. Also included in this list are family history of hereditary intestinal diseases either polyposis or non-polyposis coli, social history of tobacco smoking, sedentary life style, heavy alcohol drinking, and obesity. Also, *Streptococcus bovis* showed to increase the risk. Moreover, certain types of diet that have high animal fat are also included (7, 11). Our patient was 58 years old, medically free with no personal or family history of colorectal cancer and a non-smoker, however he was on a diet high in animal fat.

Polyps are protrusions from the mucosal surface of gastrointestinal tract lumen (11). There are three types of polyps that could be encountered during colonoscopy, which are hamartomatous polyp also known as junior polyp, hyperplastic polyp, and adenomatous polyp with the adenomatous polyp carrying a risk of malignant transformation in the middle-aged population (around 30%) and it can increase up to 50% in the elderly population. Adenomatous polyps can be further sub classified into tubular, villous, and tubulovillous. Nevertheless, histologic features, size, and appearance of the polyp are known factors affecting the malignant transformation (11). For example, sessile adenomatous polyps more than 2.5 cm carry a risk five times greater than polyps less than 1.5 cm.

The aim of screening is to visualize polyps and to take a sample as a secondary prevention to detect these cases before malignant changes occur (7). Flexible sigmoidoscopy, colonoscopy, double-contrast barium enema, CT scan of colon, fecal occult blood test, and fecal immunochemical test are all examples of screening tests used in colon cancer (7). Unfortunately, as revealed by colonoscopy, our patient presented late with rectosigmoidal mass, 10-11 cm in size, biopsy was taken and showed adenocarcinoma type of rectosigmoid. Further, classification that involves the tumor-node-metastasis (TNM) method was T3N2M1.

Different modalities of treatment are there to treat colorectal cancer including surgery, radiation, and chemotherapy. In treating patients with colorectal cancer, we depend on the stage of the tumor, for example, size, location, adjacent structure involvement and also the patient's factors. The role of radiation in managing patients with colorectal cancer is to reduce the size of the tumor to make respectability easier, and also to reduce recurrence in the pelvic area (12). Chemotherapy is used post-surgery to clear the body from any remaining micrometastasis, for instance, combination of fluorouracil and leucovorin. Moreover, capecitabine, irinotecan, oxaliplatin, and biological agents such as cetuximab, panitumumab, and bevacizumab are examples of chemotherapy which can be used (5, 11). In this case, the patient had seven procedures with no intraoperative or postoperative complications and 54 cycles of chemotherapy. However, after six weeks, the patient experienced no complaint and labs are within normal range.

Based on a review of 13 articles, repeated hepatectomy can prolong life, but with morbidity and mortality rates of 5%-7% and 20%-39%, respectively. Patients with a relapse-free gap of longer than one year have a more promising outcome from re-resection. Patients treated by liver resection gained a longer overall survival and progression-free survival than those patients treated by radiofrequency ablation. Resection surgeries were shown to be superior to other modalities of treatment. On the other hand, radiofrequency ablation, with or without resection does not affect survival (8). However, patients in the radiofrequency ablation group had lower morbidity rates than those patients in the liver resection group and also, it is used to clear the disease effectively (9). Bilobar lesions in the liver is considered to be an extensive disease, and the recurrence encountered in those patients is high, indeed, resection was shown to have long-term survival rates with aggressive postoperative chemotherapy (6).

## 5. Conclusions

Our case showed how repeated liver resection increased the quality of life in the patient, who now has no complaint and is looking well with normal LFT and ECOG-PS of 0. Resection offers the greatest possibility of cure for patients with liver-isolated colorectal cancer. Radiofrequency ablation alone or in combination with resection for unrespectable patients does not provide survival comparable to resection. The incidence of recurrence for hepatic metastasis is very high. The treatment of recurrences is the same as the initial colorectal cancer metastasis. We recommended more research to determine the efficacy and utility of radiofrequency ablation to increase disease-free survival as well as overall survival for patients with colorectal cancer and liver metastasis.

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## Conflict of Interest:

There is no conflict of interest to be declared.

## Authors' contributions:

All authors contributed to this project and article equally. All authors read and approved the final manuscript.

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