CASE REPORT – OPEN ACCESS

International Journal of Surgery Case Reports 24 (2016) 63–66

Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

Surgical challenges in the treatment of a giant renal cell carcinoma with atypical presentation: A case report

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ARTICLE INFO

Article history:
Received 3 February 2016
Received in revised form 2 May 2016
Accepted 3 May 2016
Available online 9 May 2016

Keywords:
Renal cell carcinoma
Case report
Retroperitoneal tumor
Intraabdominal mass
Surgical oncology
Giant

ABSTRACT

INTRODUCTION: For the management of localized renal cell carcinoma (RCC), surgical resection is the standard of care. Considerations are given to achieve good outcomes with conservative measures. When the tumor is exceedingly large the safest alternative is total nephrectomy.
PRESENTATION OF CASE: The patient is a 75 year old man with a 5 year history of increasing abdominal distension. There was no recent hematuria or any other genitourinary complaints. CT revealed a giant complex mass that occupied the majority of the abdomen likely arising from the retroperitoneum. Early in diagnosis, the mass was suspected to arise from the left kidney. The decision was made to proceed with surgery for both treatment and diagnosis. Resection of the tumor revealed a 28.0 × 25.0 × 15.0 cm encapsulated neoplasm. Histopathology determined this to be a papillary RCC. Resection of the mass resulted in en bloc partial nephrectomy immediately followed by a completion of the nephrectomy, lymphadenectomy, and abdominal wall repair. Postoperative course was excellent.
DISCUSSION: The aim of this report is to determine the surgical challenges posed by a tumor of this magnitude and the multidisciplinary approach necessary to treat it. In the often indolent course seen with RCC, surgeons are faced with the task of handling advanced disease, requiring more radical procedures for good outcomes.
CONCLUSION: The size of the tumor in this case presented several challenges in the operative setting. The sheer mass of the tumor gave no other choice than to perform exploratory laparotomy and complete nephrectomy upon resection.

1. Introduction

RCC is the most common type of malignancy affecting the kidney [1]. Metastatic disease occurs in approximately 25%–30% of patients with renal cell carcinoma [2,3]. Because of the often indolent course of RCC, patients tend to present with advanced disease. Significant gains have been made recently in producing a number of new agents and approaches to the treatment of advanced RCC [4]. Nonetheless, this is a primarily surgical disease as the 5 year survival rate of patients without resection is approximately 10% [3]. This represents a 2.5 fold increase in overall and cancer-specific mortality when compared to surgical patients [5]. Surgery offers several options for patients with RCC. For tumors without the presence of metastasis, conservative surgical resection is acceptable. For metastatic RCC there are two options. First, there exists cytoreductive nephrectomy for primary tumor resection with known metastatic burden. If cytoreductive nephrectomy is not an option or if additional debulking is desired, patients can undergo metastasectomy to remove distant foci of disease [5–9].

2. Presentation of case

This patient is a 75 year old man with a history of increasing abdominal distension (Fig. 1) that was recently accompanied by abdominal discomfort and constipation. He presented without any complaints of hematuria or other genitourinary symptoms. Physical exam showed a markedly protuberant abdomen with dullness to percussion and hyperactive bowel sounds. Computed tomography (CT) scan revealed a giant retroperitoneal mass possibly arising from the left kidney. On CT the mass measured 32.6 × 27.7 × 32.4 cm. Early in diagnosis, the differential also included a retroperitoneal sarcoma. However, the likelihood of a

Abbreviations: RCC (SPM314), renal cell carcinoma marker clone; CK7, cytokeratin 7.

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http://dx.doi.org/10.1016/j.ijscr.2016.05.010

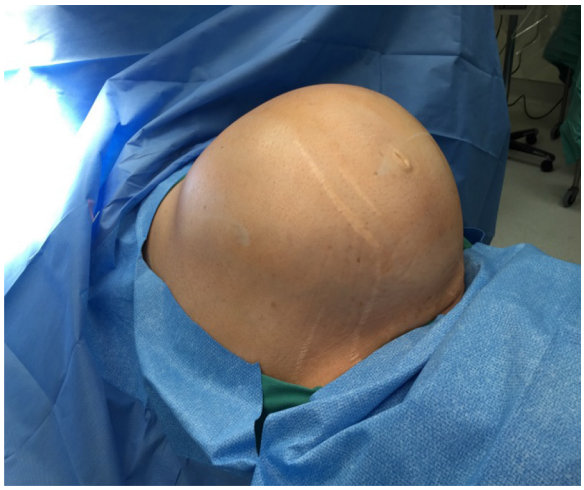

Fig. 1. Patient's abdomen prior to midline incision.

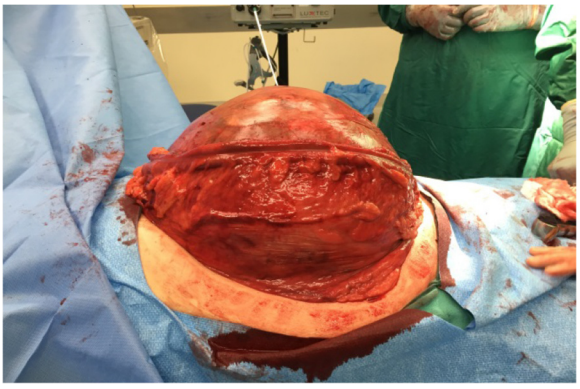

Fig. 2. Descending and sigmoid colon medialization for giant retroperitoneal tumor resection.

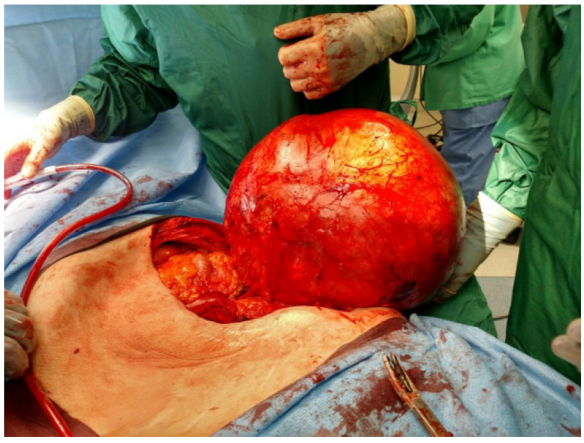

Fig. 3. Tumor just before complete resection.

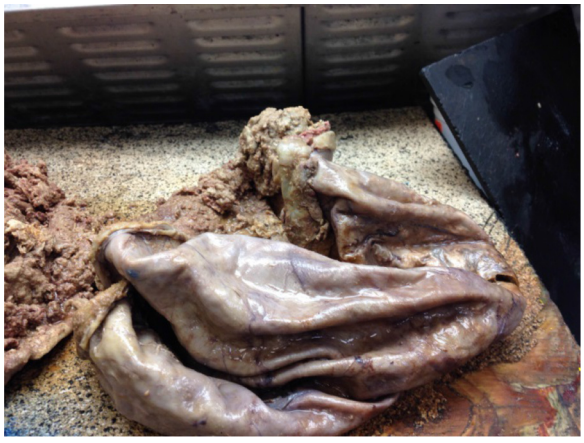

Fig. 4. Gross depiction of mass.

tumor arising from the left kidney was considered and guided early decision-making. Therefore, the decision was made to proceed with surgery for both treatment and diagnosis. Due to the size of this tumor, a multidisciplinary team was formed several weeks prior to surgery. Before laparotomy, bilateral ureteral catheters were placed by the urologist to help the surgeon identify and protect the ureters given the magnitude of this tumor. A plastic surgeon was on standby for reconstruction of the abdominal wall. A bowel prep was not given. He was kept on a liquid high protein diet three days prior to surgery. A midline incision was made and the peritoneal cavity was entered. The tumor was confirmed to be retroperitoneal. The descending colon was medialized from the rectosigmoid junction to the splenic flexure (Fig. 2). Care was taken to ensure the tumor capsule was preserved. A LigaSure electrothermal vessel sealing device (Valleylab, Boulder, CO) was used to divide the blood vessels supplying the tumor itself. The same approach was taken from the right side, mobilizing the hepatic flexure. The attachments to the tumor capsule were divided from the left side. At this point, we were made aware that as we were mobilizing the tumor, there was hypotension. Its weight caused significant compression of the inferior vena cava and decrease in preload. It took careful manipulation of the tumor to prevent persistent hypotension. Mobilization of the transverse and descending colon allowed for circumferential dissection from underlying structures and from the overlying mesentery. It was impossible to isolate the mass from the inferior pole of the left kidney, thus the kidney had to be sacrificed with an en bloc partial nephrectomy. The tumor was completely resected and handed off to pathology for frozen section (Fig. 3). Pathology confirmed the presence of renal cell carcinoma with papillary features. The urologist was called back to perform a completion of the left nephrectomy and left periaortic lymphadenectomy. After that, the retroperitoneum was irrigated and all intraabdominal organs were examined and deemed unharmed including the right kidney and ureter. Because of the extent and duration of abdominal wall distension leading to skin redundancy and rectus diastasis, it was necessary for the patient to undergo reduction abdominoplasty in the hands of a plastic and reconstructive surgeon to achieve a good cosmetic and functional result with the closure. The patient was transported to recovery in good condition.

Histopathologic examination revealed a large grossly intact mass, $28.0 \times 25.0 \times 15.0$ cm. The outer surface showed a partial peritoneal lining (Fig. 4). The tumor was opened to reveal abundant tan opaque fluid and necrotic material. Sectioning this area revealed a portion of possible ureter, 6.5 cm in length $\times$ 0.7 up to 2.5 cm in diameter. A thin rim of compressed renal parenchyma (representing the residual kidney) was confirmed microscopically.

Sections of the lesion revealed a neoplastic epithelial cell proliferation composed of pleomorphic cells in a predominantly papillary configuration (Fig. 5). There were scattered small swirled microcalcifications. While rare cells with clear cytoplasm were evident, these were a minority of the neoplasm. The grossly identified dilated ureter also appeared free of neoplastic growth. The tumor was positive for CK7 (OV-TL 12/30) and Renal Cell Carcinoma (SPM314) tumor markers. The para-aortic lymphadenectomy sections revealed multilobulated lymphoid tissue. There was an epithelial cystic lesion in one of the lymph nodes. Immunohisto-