CASE REPORT

Staged minimally invasive treatment of inflammatory abdominal aortic aneurysm and renal cell carcinoma

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PATTARAS JG, MILNER R. Staged minimally invasive treatment of inflammatory abdominal aortic aneurysm and renal cell carcinoma. The Canadian Journal of Urology. 2009;16(2):4596-4598.

Introduction: *Laparoscopic radical nephrectomy has become an international standard of care for medium to large renal tumors. Endovascular aneurysm repair (EVAR) has been accepted as a reasonable alternative to open abdominal aortic aneurysm (AAA) repair. We report a case of minimally invasive management of two potentially lethal diseases in a single hospitalization.*

Patient and methods: *The patient is a 76-year-old male who was found to have an incidental finding of an AAA and an enhancing 9 cm left central renal mass. He was deemed to be an appropriate candidate for endovascular AAA repair and laparoscopic nephrectomy based on preoperative imaging. Secondary to mild, chronic renal insufficiency, a staged approach was planned: EVAR followed by nephrectomy.*

Results: *Successful minimally invasive treatments of the AAA and renal mass were accomplished in a staged fashion within 48 hours. The patient underwent successful EVAR for his inflammatory aneurysm and was admitted after the procedure for hydration and renal function monitoring. Two days later, a successful laparoscopic radical nephrectomy was performed. The patient was discharged postnephrectomy day 3 and hospital day 5. Pathology revealed a T2NxMx conventional renal cell carcinoma (RCC). He has been continuously followed for 4 years postoperatively with no evidence of cancer recurrence and a shrinking aneurysm sac without leak.*

Conclusions: *We present a case of two potentially lethal disease processes previously handled in an open surgical fashion just a few short years ago. A combination of minimally invasive approaches in a staged fashion allowed a prompt patient recovery with no significant postoperative morbidity. To our knowledge, this represents the first case report of a staged minimally invasive treatment of synchronous vascular and renal pathology.*

Key Words: renal cancer, aortic aneurysm, minimally invasive surgery

Introduction

Laparoscopic radical nephrectomy has become an international standard of care for medium to large renal tumors in academic and urban centers. Endovascular graft placement for the qualified patient has also quickly replaced open aneurysm surgery for the management of abdominal aortic aneurysms (AAA). While previous cases of open nephrectomy and AAA surgery have been reported,[1-5] to our knowledge is the first report of combined and staged minimally invasive management of these two potentially lethal diseases in a single hospitalization.

Patient and methods

The patient is a 76-year-old male who was found to have an incidental finding of AAA on chest x-ray for a COPD work up by his pulmonologist. Further work up included a CT angiogram of the abdomen/pelvis which revealed a 7.3 cm inflammatory AAA with a right common iliac artery aneurysm and an incidental

Accepted for publication December 2008

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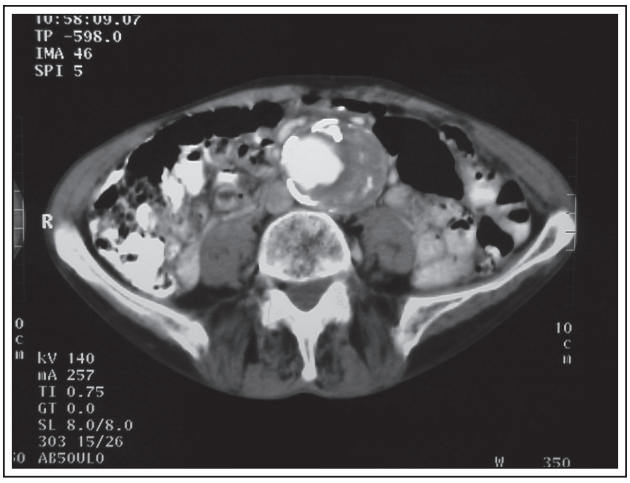

Figure 1. CT of abdomen revealing 7.3 cm infrarenal abdominal aortic aneurysm.

enhancing 9 cm left central renal mass, Figures 1 and 2. His significant past medical history included COPD, BPH with obstruction and previous open left pyelolithotomy for a renal calculus. He was deemed a candidate for endovascular AAA repair by his vascular surgeon. Urologic work up included cystoscopy and left diagnostic ureteroscopy to rule out renal pelvic urothelial carcinoma secondary to the patient's 50 pack year history of smoking. Secondary to his baseline renal insufficiency and other comorbidities, a staged approach was planned: EVAR with admission for intravenous hydration followed by laparoscopic radical nephrectomy.

The patient underwent successful placement of an aortic endograft (Zenith Flex, Cook Medical, Bloomington, IN) though bilateral femoral artery exposure under general anesthesia. Blood loss was minimal. The patient tolerated the procedure well and was admitted afterwards for intravenous hydration and subsequent nephrectomy. On hospital day 2, the patient underwent a left transperitoneal purely laparoscopic radical nephrectomy under general anesthesia. Utilizing a three port technique and small infraumbilical 5 cm muscle splitting extraction incision, the procedure was uncomplicated except for a small splenic laceration which required thrombin glue. Estimated blood loss was only 150 ml.

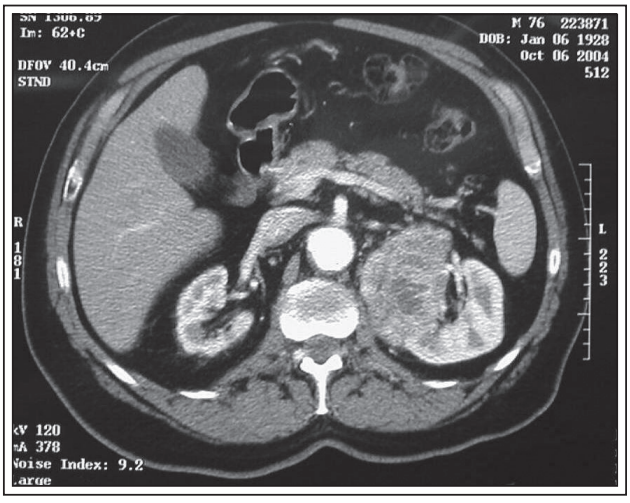

Figure 2. CT reveals synchronous 9 cm left renal mass.

Results

The patient recovered well from both procedures without complication. Pathology revealed an 8.5 cm T2N0Mx conventional renal cell carcinoma. Postnephrectomy, the patient had return to bowel function in 2 days and subsequently discharged on hospital day 5 (POD 5 from AAA and POD 3 from laparoscopic nephrectomy). All three wounds (kidney extraction and bilateral groin incisions) healed well. His renal insufficiency worsened as expected with his creatinine on discharge elevated to 2.5 from a baseline of 1.1-1.4 over the previous year. Subsequent biannual outpatient evaluation revealed prolonged renal insufficiency with minimal subsequent improvement to a nadir of 2.4. He continues to be disease free from his renal cell carcinoma with routine follow up over a 4 year period, Figure 3. His aneurysm sac has decreased to 5.9 cm in size. Imaging reveals no evidence of an endoleak and no migration of the device at 3 years out, Figure 4.

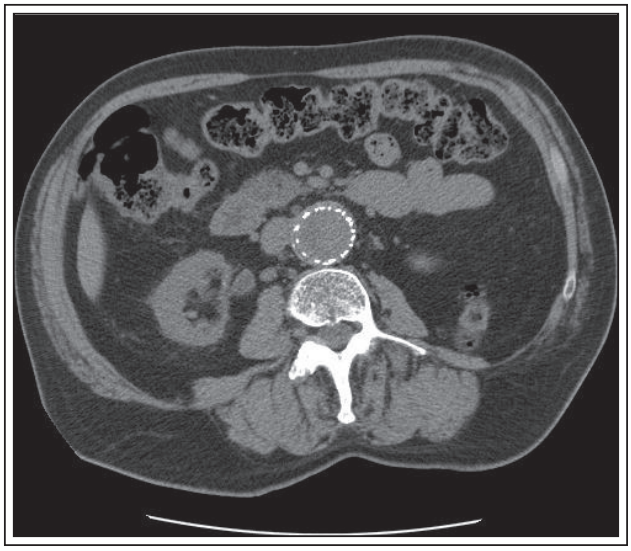

Figure 3. CT scan 36 months postoperatively shows AAA endograft in place and no disease in left renal fossa.

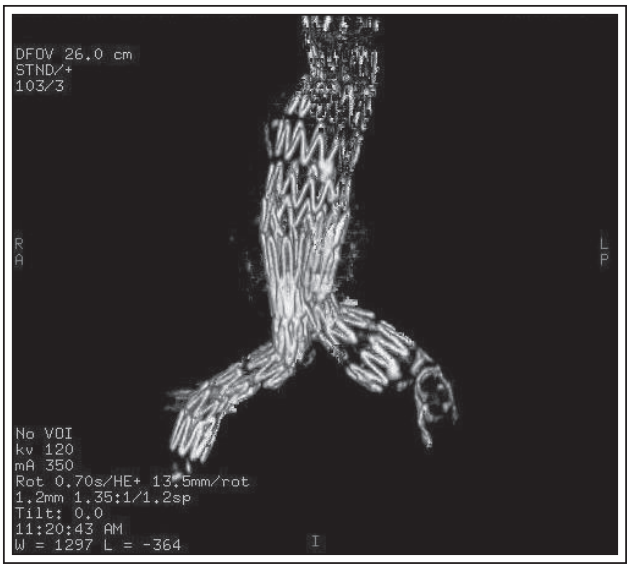

Figure 4. Three dimensional CT coronal reconstruction of endograft at 3 years.

Discussion

We present a case of concomitant abdominal aortic aneurysm and renal cell carcinoma treated successfully with staged minimally invasive methods in a single hospitalization. Both procedures resulted in a total 5 day hospital stay with no operative morbidity. This approach was especially valuable in the setting of an inflammatory AAA. After discussion, we chose a staged approach treating the vascular pathology first, secondary to the patient's baseline renal insufficiency and the required intravenous contrast load he would receive. This allowed us to make sure the endovascular procedure would be successful without the need for open surgery. We also felt that the intravenous contrast load from the EVAR would be better tolerated by both functioning kidneys hopefully decreasing damage to his remaining kidney. In addition, we eliminated the possible risk of AAA rupture in the perioperative period if the nephrectomy was performed first. Our staged minimally invasive approach allowed successful treatment of two lethal disease processes in a single 5 day hospitalization. □

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