Case Report

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Open Partial Nephrectomy in Giant Papillary Renal Cell Carcinoma: Presentation of 2 Cases

Atınç Tozsin, Müslim Doğan Değer, Muhidin Hassan İbrahim, Tevfik Aktoz

Trakya University Faculty of Medicine, Department of Urology, Edirne, Turkey

Abstract

Radical nephrectomy is still considered the standard treatment for clinical T2 (cT2) tumors, but available data mention the potential role of partial nephrectomy in large renal tumors (≥cT2) in selected cases. Because of the increased risk of complications in large masses, the decision for partial nephrectomy should be taken together with an experienced surgeon and a multidisciplinary team. We report two cases with giant renal tumor, that partially resected and final histopathological examination revealed papillary renal cell carcinoma. Considering the risk of developing kidney failure secondary to diabetes and hypertension in both our patients, partial nephrectomy was initially considered and successfully treated with nephron-sparing surgery.

Keywords: Kidney tumors, partial nephrectomy, RCC, urological neoplasms

Introduction

Current guidelines recommend partial nephrectomy for clinical T1a (cT1) renal masses and can be performed for cT1b tumors when technically possible (1). Radical nephrectomy is still considered the standard treatment for cT2 tumors, but available data mention the potential role of partial nephrectomy in large renal tumors (≥cT2) in selected cases (2). The maximum size of a tumor for which partial nephrectomy can be performed is controversial (3). Due to the increased risk of complications in large masses, the decision for partial nephrectomy should be taken together with experienced surgeons and a multidisciplinary team. In this study, we present the case report of 2 patients who underwent open partial nephrectomy for a giant renal mass in our clinic.

Case Reports

Case 1

A 74-year-old female who was being treated for acute pancreatitis had left upper quadrant pain. The patient had an abdominal magnetic resonance imaging (MRI) that showed a large tumor of 185-160-188 mm in the left retroperitoneal area, including the left kidney's upper and middle pole with 64x33 mm solid components at the level of the posterior and superior, and cystic necrotic areas in the central (Figure 1). The patient was referred to our department. Our physical examination showed a large mass in the abdomen. We performed the relevant workup including a thoracoabdominal computed tomography scan and laboratory tests. Laboratory tests were at normal values. She had diabetes and hypertension in her medical history. There was no vascular involvement of the tumor. After the patient gave informed consent, we decided to perform open surgery for exploration and resection. Because of the size of the tumor and the possibility that it could have a fixed contact with gastrointestinal organs, we planned to perform transabdominal surgery and started with the anterior subcostal incision. We successfully performed a nonischemic open left partial nephrectomy. There was a grade 2 intraoperative complication according to the European Association of Urology (EAU) intraoperative adverse incident classification (EAUiaiC), which is 750 cc of blood loss (4). The operative time was 300 min. The pathology report confirmed a papillary renal cell carcinoma (RCC) with a 22-cm tumor size located on the left middle pole. Surgical margins were negative. The tumor had no lymphatic or perineural invasion. Perinephritic fat invasion was detected and the final tumor stage was pT3. Immunohistochemical results showed that CK7, PAX, 8AND and CD68 were positive. During the postoperative follow-up, the patient did not show any complications. Preoperative and

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Address for Correspondence: Atınç Tozsin, Trakya University Faculty of Medicine, Department of Urology, Edirne, Turkey
Phone: +90 538 064 63 95 **E-mail:** atinctozsin@gmail.com **ORCID-ID:** orcid.org/0000-0002-9926-6890
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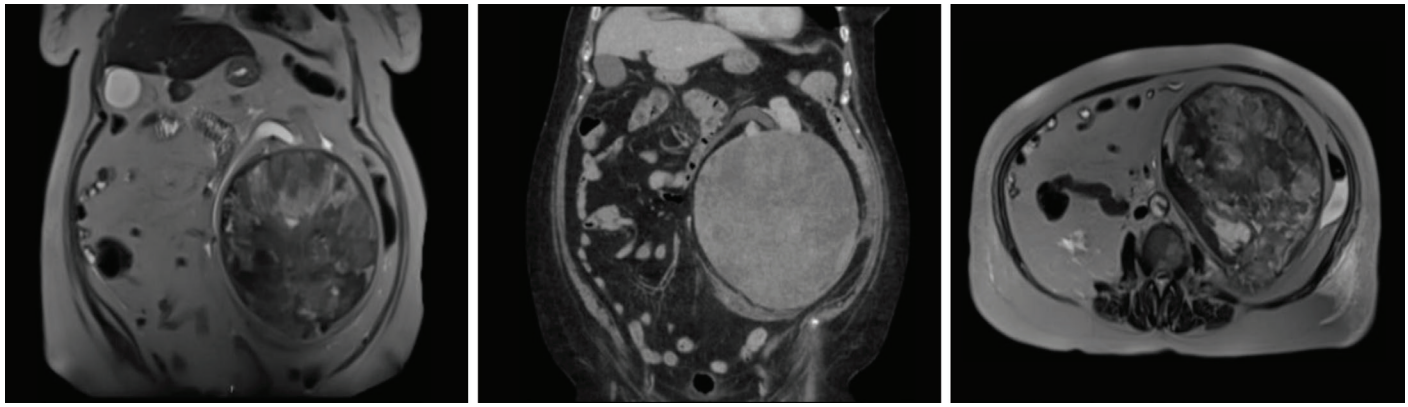

Figure 1. Imaging of the first case

postoperative third-month creatinine values of the patient were observed as 0.65/0.75 mg/dL, respectively. The total follow-up time was 9 months. No recurrence or metastasis was found in the thoracoabdominal CT scans taken during the follow-up.

Case 2

A 63-year-old male patient referred to our clinic with a giant abdominal mass, abdominal distention, and epigastric pain underwent an abdominal computed tomography scan. A 25-cm solid tumor with cystic lesions was found. Physical examination showed a massive palpable solid tumor in the right upper and lower abdominal quadrants. The patient attributed increased abdominal distention to weight gain and did not seek any medical assistance. The patient had no genitourinary symptoms such as hematuria or hydronephrosis. We performed a contrast-enhanced MRI and confirmed a 24-19-25 cm solid and cystic lesion originating from the right kidney (Figure 2). Preoperative laboratory tests were all at normal values. He had diabetes and hypertension in his medical history. We decided to perform an open partial nephrectomy with a high possibility of becoming a radical nephrectomy. As performed in the first case, we decided to perform surgery with the anterior subcostal incision. We successfully performed an open nonischemic partial nephrectomy (Figure 3), and a double J (DJ) stent was placed in the right ureter due to the opening of the renal pelvis. The operation time was 345 min. There was a grade 2 complication according to EAUiaiC, which is 1,300 cc blood loss and DJ stent placement (4). Final histopathological examination revealed papillary RCC with a 22.5 cm diameter. The histological types were 1 and 2, and the histological grade was ISUP 3. There was no vascular or perineural invasion. Surgical margins were negative. The pathological stage was pT2b. Immunohistochemistry has been reported as AMACR, PANKREATN, PAX 8 positive, and CD 10 was focal weak positive. There were no postoperative complications. The DJ stent was removed after six weeks of surgery. Preoperative and postoperative third-month creatinine values of the patient were observed as 1.1/1.2 mg/dL, respectively. The total follow-up time was 7 months. No recurrence or metastasis was found in the thoracoabdominal CT scans taken during the follow-up.

Informed consent was obtained.

Discussion

Papillary renal cell tumors are the second most common malignant renal cell tumors; their incidence ranges from 15-20%. In addition to standard risk factors such as smoking, hypertension, and obesity, papillary RCC is associated with renal dysfunction. It is the most frequently diagnosed RCC in patients with acquired cystic disease associated with chronic kidney disease (5). Preservation of renal functions is necessary for a better quality of life in patients with comorbidities affecting the vascular system and kidney, such as diabetes and hypertension (1).

The major difference between partial and radical nephrectomy is the preservation of kidney functions. This will result in a lower risk of chronic renal failure due to higher GFR and better cardiovascular outcomes and reflect positively on overall survival (2,3). In view of all these long-term benefits and non-oncological compromises, NSS is recommended by current guidelines, if technically possible, for patients with T2 tumors and solitary kidney or chronic kidney disease (1). Especially in large tumors, the minimally invasive approach requires longer operation and ischemia times and can be more technically challenging. In patients whose kidney function needs to be preserved and difficult reconstruction of the kidney is expected, open partial nephrectomy remains popular (6).

In 2022, Huang et al. (5) performed a laparoscopic radical nephrectomy in a 19-year-old patient with an 18-cm RCC which was revealed as papillary RCC type 2. In 2016, Oviedo et al. (7) presented a case of open radical nephrectomy in a 75-year-old patient with a 10,500 cm^3 papillary RCC. In 2020, Takeda et al. (8) performed an open radical nephrectomy in a 59-year-old male patient on a 43 cm tumor, which is the world's largest RCC, and its pathology was reported as papillary RCC type 1. These are the largest RCC that have performed radical nephrectomy published in the literature. Considering the risk of developing renal dysfunction, cardiac comorbidities, and anemia secondary to radical nephrectomy, in both of our patients presented above, partial nephrectomy was initially considered and successfully treated with nephron-sparing surgery.

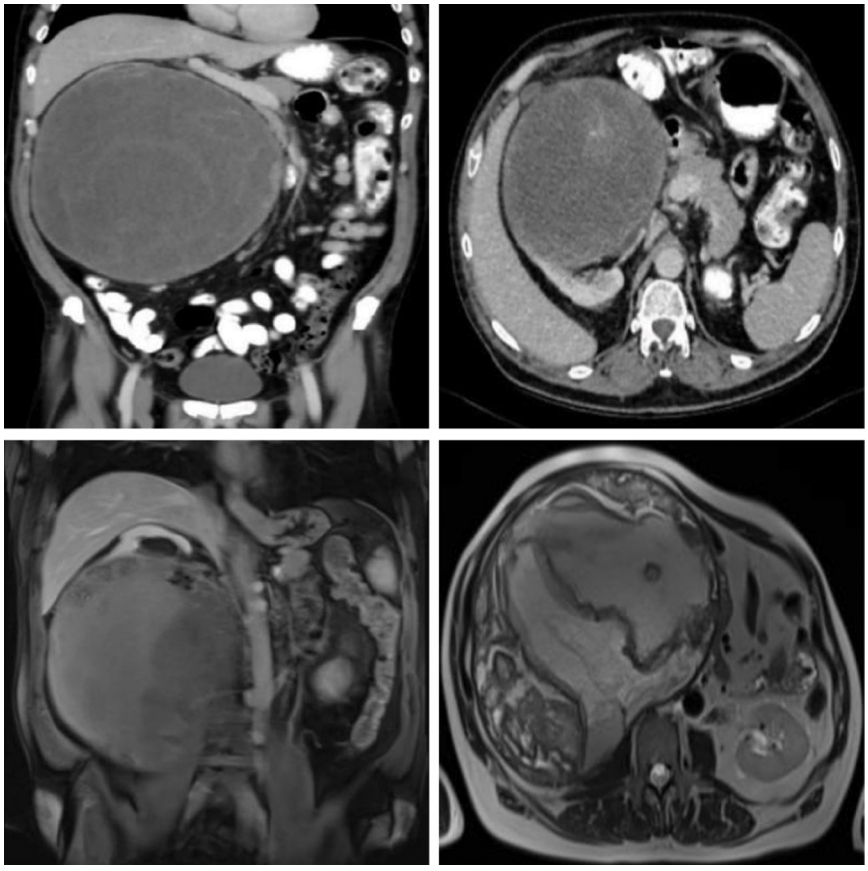

Figure 2. Imaging of the second case

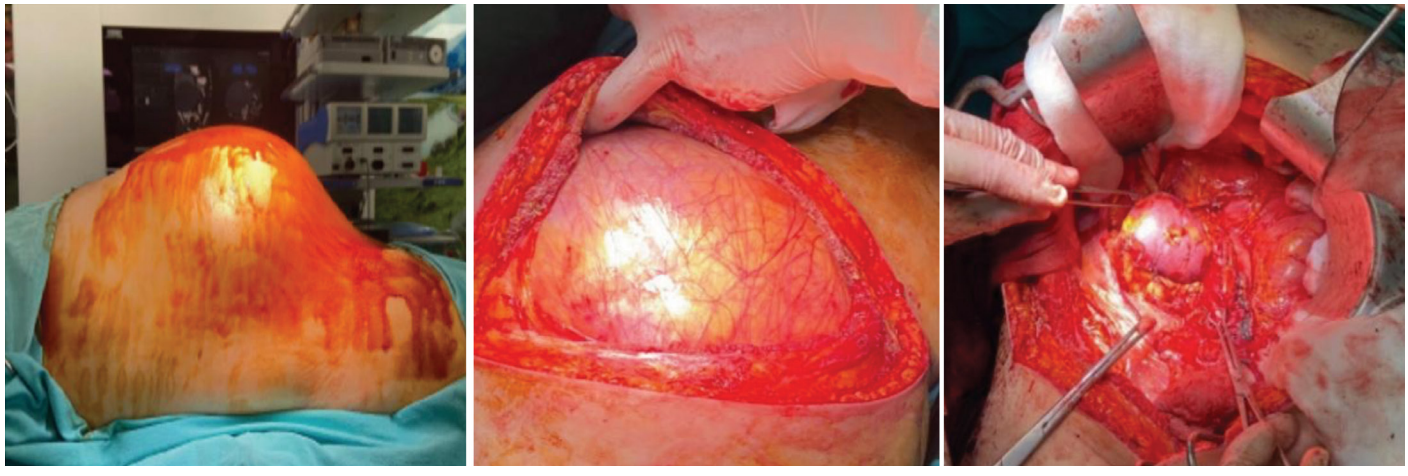

Figure 3. Intraoperative pictures of the second case. The last picture shows the kidney after partial nephrectomy

Conclusion

In addition to its potential benefits, the decision of partial nephrectomy for large tumors should be considered as an alternative to radical surgery in experienced and high-volume centers and selected cases due to its technical complexity and high risk of intra/perioperative complications.

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Ethics

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Authorship Contributions

Surgical and Medical Practices: A.T., M.D.D., M.H.İ., T.A., Concept: A.T., M.D.D., T.A., Design: A.T., M.D.D., T.A., Data Collection or Processing: A.T., M.D.D., M.H.İ., T.A., Analysis or Interpretation: A.T., M.D.D., M.H.İ., T.A., Literature Search: A.T., M.D.D., M.H.İ., T.A., Writing: A.T., M.D.D., M.H.İ., T.A.

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