



## LAPAROSCOPIC RETROPERITONEAL RADICAL NEPHRECTOMY in a PREGNANT PATIENT

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### ABSTRACT

**Objective:** Herein, laparoscopic retroperitoneal radical nephrectomy in a pregnant woman is presented. Pathology report revealed renal cell carcinoma and patient was discharged on postoperative day-3. Postoperative follow-up was uneventful and she gave a healthy birth. Laparoscopic retroperitoneal radical nephrectomy is safe and feasible on pregnant patients.

**Key Words:** Laparoscopy, Pregnancy, Renal cell carcinoma

### INTRODUCTION

Recently, minimally invasive surgery has jumped an age and thus, laparoscopic urologic surgical procedures have become one of the most performed surgical procedures in urology clinics worldwide (1).

Laparoscopic renal approach can be applied by transperitoneal route and/or retroperitoneal route. Both procedures have unique advantages such as transperitoneal approach provides enlarged working space and retroperitoneal approach can provide rapid access directly to renal pedicle. On the other hand, retroperitoneal approach has limited working space and needs a long learning curve (2). Nevertheless, particularly due to the presence of laparoscopic vessel sealing devices, retroperitoneal laparoscopy can be performed easier (3).

Herein, we report a laparoscopic retroperitoneal radical nephrectomy on a pregnant woman.

### CASE REPORT

A 41-year old pregnant woman was referred to our clinic by her obstetrician who diagnosed a right renal

mass on ultrasound (US) during follow-up. In the past, she gave 6 births, and has had no previous illnesses and/or comorbidities. She was in 16<sup>th</sup> week of her pregnancy. Physical examination suggested a 16 weeks pregnancy and her laboratory findings were within normal limits.

A mass with 10 cm diameter was demonstrated on abdominal US in her right kidney after detailed clinical and radiological evaluations (Figure 1). Moreover, there was not any pathological finding in her posterior-anterior chest x-ray that was performed according to low dose radiation with pregnancy safe procedure.

Foetal heart rate was followed-up by our institute's obstetric clinic and the foetus was alive. Additionally, magnetic resonance imaging (MRI) showed that retrocaval renal artery on the right side (Figures 1C, D, E). After signed consent forms were obtained from patient and her husband, laparoscopic retroperitoneal radical right nephrectomy was performed. Operation time was 46 minutes and estimated blood loss was 20 cc (Figure 2). We used only 3 trocars during laparoscopic retroperitoneal procedure, but had to perform a Gibson shaped incision for extracting the

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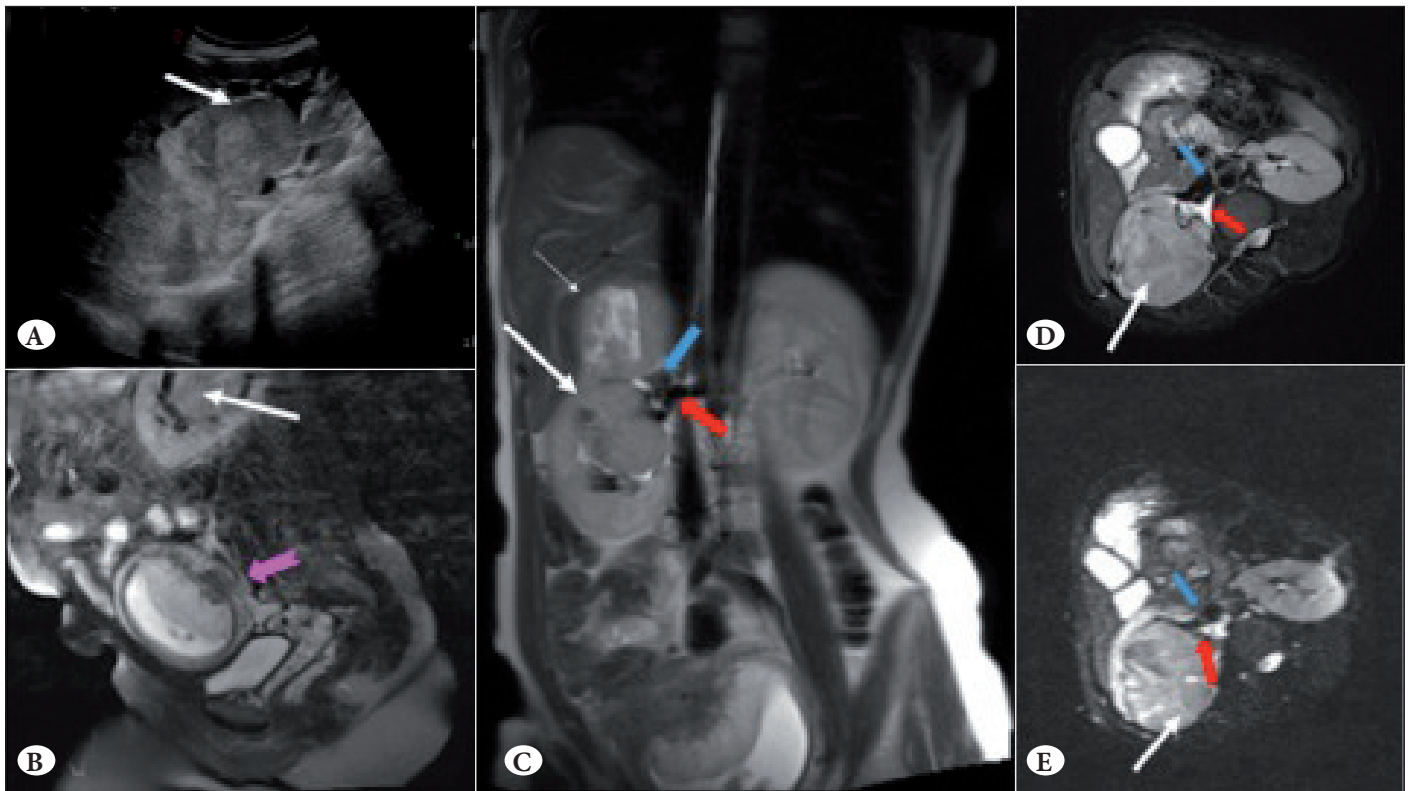
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**Figure 1:** Ultrasonography and magnetic resonance imaging of tumour and foetal sac **(A)** Ultrasonography image, there was a solid, isoechoic mass with obscured posterior margin at the upper pole and middle part of right kidney (Arrow). **(B)** Sagittal T2 weighted pelvic magnetic resonance imaging, foetus and foetal sac were seen in endometrial cavity (Pink arrow). **(C)** Sagittal T2 weighted abdominal magnetic resonance imaging, right renal mass was detected as bilobulated. There was an increased signal at the upper pole component of the due to necrosis (Thin arrow). The mass component was solid at the middle part of kidney (Thick arrow). The cortex of lower pole was preserved. There was a variation of right renal artery. Right renal artery (Red arrow) was running under vena cava inferior (Blue arrow). Right renal artery was retrocaval. **(D)** Axial fat saturated T2 magnetic resonance image, isointense right renal mass (White arrow), retrocaval (Blue arrow) right renal artery (Red arrow) were seen. **(E)** Diffusion-weighted magnetic resonance image, white arrow showed the tumour, and retrocaval (Blue arrow) right renal artery (Red arrow) was seen.

specimen (Figure 2E). Foetal heart rate was monitored after operation as well as during follow-up.

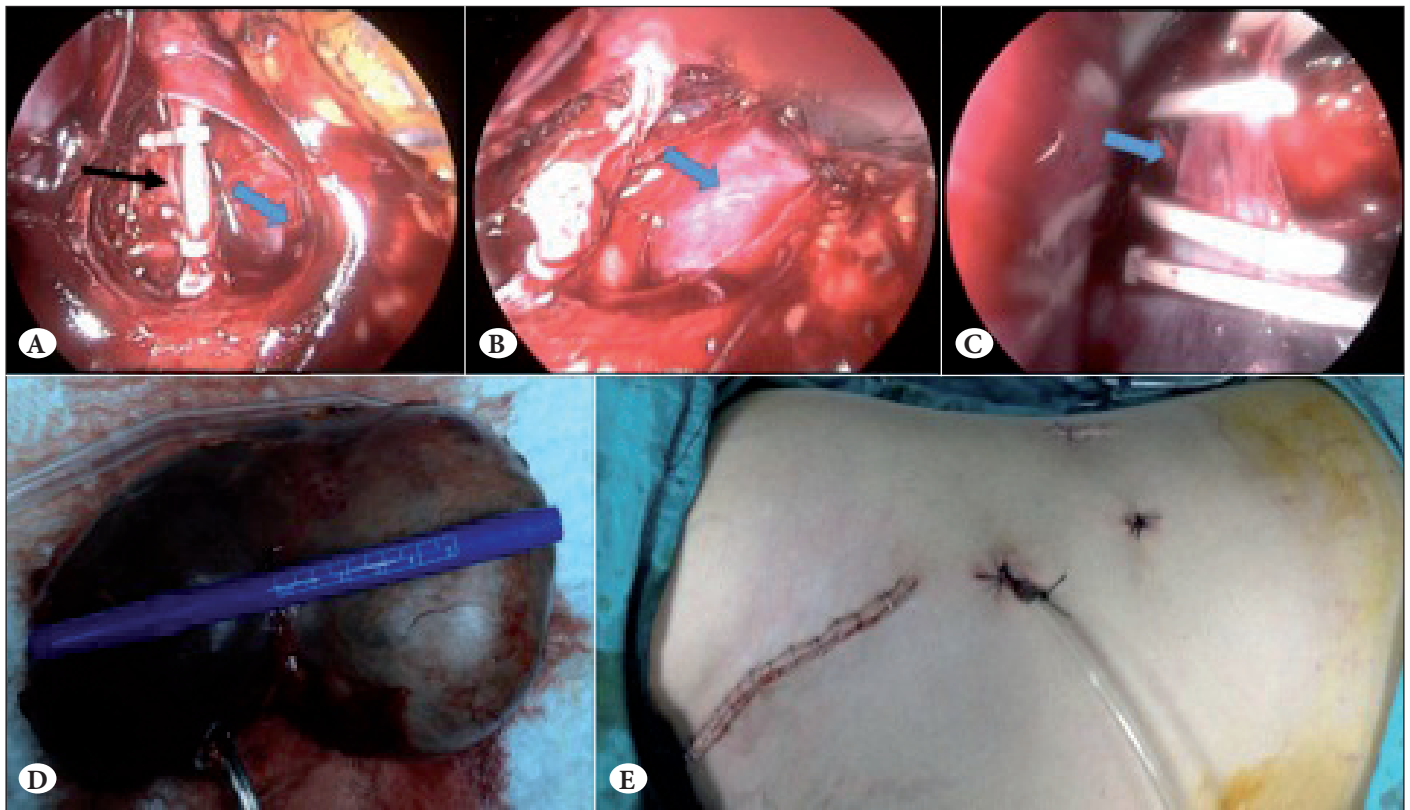
Pathology reported renal cell carcinoma with Fuhrman grade II. There was no complication during follow-up and the patient gave a healthy birth.

## DISCUSSION

Renal cell carcinoma is extremely rare in pregnant women. However, this is one of the most reported urological tumours during pregnancy (4). If the renal tumour would be diagnosed in the first trimester, the pregnancy could be ended. On the other hand, if the renal mass would be diagnosed in third trimester, the operation can be performed after giving birth. However, even experienced laparoscopic urologic surgeons may not decide between two conditions whether to perform open or laparoscopic procedure, in a case of pregnant patients. Surgeons should consider foetus as well as usual physiology

of pregnancy. Currently, laparoscopic urological surgical modalities are performed with increasing numbers even during pregnancy. Our patient was on her second trimester and we performed laparoscopic retroperitoneal radical nephrectomy.

The MRI and US are used for diagnosis of tumour, in terms of avoiding x-ray exposure, during pregnancy (5). Surgical treatment options are dependent of surgeons' experience. However, laparoscopic even retroperitoneal laparoscopic fashion should be used for pregnant considering the well-known benefits of laparoscopic surgery including requirement of less analgesic. O'Connor et al reported the first laparoscopic radical nephrectomy in a pregnant woman, in the published literature (6). Additionally, Stroup et al initially reported retroperitoneal laparoscopic radical nephrectomy in the literature (7). Recently, Domján et al reported hand assisted laparoscopic radical nephrectomy in pregnancy (8). Nonetheless, developing minimally invasive surgery has provided us to improve our



**Figure 2:** Images from operation and at the end of the operation. **(A)** Black arrow shows clipped renal artery which was running below vena cava inferior (Blue arrow). **(B)** Blue arrow shows vena cava inferior under divided renal artery. **(C)** Blue arrow shows clipped vena cava inferior. **(D)** Tumour was on the upper pole and diameter was also 10 cm. **(E)** Right kidney was taken out from Gibson incision and a drainage catheter was placed.

surgical techniques. There was also a vascular abnormality in our patient, a retrocaval renal artery, in operated kidney site. Thus, patients with vascular anomalies could be able to be undergone laparoscopic urologic surgery. To the of our knowledge, this is the first case of laparoscopic retroperitoneal radical nephrectomy with retrocaval renal artery anomaly performed during pregnancy.

Laparoscopic urologic surgery should be preferred in pregnancy considering its well-known benefits. Laparoscopic retroperitoneal radical nephrectomy can be performed safely in case of retrocaval renal artery, during pregnancy.

### TAKE HOME MESSAGES

1. Kidney cancer is extremely rare in pregnancy.
2. Laparoscopic retroperitoneal radical nephrectomy should be considered among the surgical options in pregnant patients with kidney mass suggesting kidney cancer during second trimester.

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