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## Robot-assisted laparoscopic retroperitoneal partial adrenalectomy: the first case in the literature

Mutlu Ates<sup>1</sup>, Sahin Kilic<sup>2</sup>, Cagatay Ozsoy<sup>1</sup>, Kayhan Yilmaz<sup>1</sup>, Mahmut Taha Olcucu<sup>1</sup>

<sup>1</sup>Antalya Training and Research Hospital, Department of Urology, Antalya, Turkey

<sup>2</sup>Fethiye State Hospital, Department of Urology, Fethiye, Mugla, Turkey

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Adrenal tumors that are more than 4 cm in size, hormonally indeterminate, or suspected to be malignant are treated with adrenalectomy. Total adrenalectomy has been the standard treatment for adrenal masses for years. Adrenal adenomas which appear benign on imaging, measure less than 4 cm in size, and are hormonally active on biochemical testing are also treated with adrenalectomy. There is a definitive trend towards the use of partial adrenalectomy in the treatment of benign small adrenal masses. Partial adrenalectomy can be performed with open surgery, laparoscopic transperitoneal or retroperitoneal and robot-assisted laparoscopic transperitoneal or retroperitoneal methods. We present a case of pheochromocytoma managed with robot-assisted laparoscopic retroperitoneal partial adrenalectomy.

In a 46-year-old woman with history of urinary stone disease and hypertension, a 40 HU 24x24 mm in size non-adenoma mass was noted in the left adrenal gland. In the 24-hour urine analysis, the level of metanephrine was 367.5  $\mu\text{g}$  (30–180), normetanephrine level was 1182.5  $\mu\text{g}$  (119–451), and free cortisol was 20  $\mu\text{g}$  (4.3–176). The patient was diagnosed with pheochromocytoma and after 2 weeks of phenoxybenzamine treatment, underwent robot-assisted laparoscopic retroperitoneal left partial adrenalectomy.

After sterile covering in the left flank position, open (Hasson) technique was used for obtaining initial access. A 1.5 cm incision was made in the lumbar (Petit's) triangle below the 12<sup>th</sup> rib at the lateral border of the paraspinalis muscles. The muscle fibres were carefully separated and entry was gained into the retroperitoneum by gently piercing the thoracolumbar fascia with the tip of forceps. The retroperitoneal fat tissue was removed from the front of the psoas muscle by palpating with the index finger. The peritoneum was felt and medialized. Finger dissection was performed until the kidney lower pole was felt. A balloon dilator was then inserted into the opening and an adequate working space for retroperitoneoscopic surgery within that area created. Subsequently, an 8 mm robotic port was placed just under the left 12<sup>th</sup> rib by palpation. A 12 mm port was inserted from the first incision and entered with a camera and peritoneal medialization was continued. The other two 8 mm robotic ports were placed in the form of a half moon, leaving approximately 4 fingers wide distances caudally under direct vision. Back side of the left kidney was separated via the psoas muscle and the renal hilus was reached. The adrenal mass was observed and dissected from surrounding tissues. It was observed that arterial blood

pressure (BP) increased up to 220/100 mmHg during dissection. The vein of the adrenal mass was found and ligated. Subsequently, the adrenal gland and adrenal vein were preserved and the mass was excised. No complications developed during and after the surgery. On the second postoperative day, the patient, whose vitals were stable (BP: 105/65 mmHg), was discharged. Operation time was 160 minutes, console time was 115 minutes, and a blood loss of 40 cc was observed. The pathology result was re-

ported as pheochromocytoma. On the postoperative 3<sup>rd</sup> week control visit, the patient did not report any pheochromocytoma symptom.

**CONFLICTS OF INTEREST**

The authors declare no conflicts of interest.

**Corresponding author**

Mutlu Ates  
drmutluates@gmail.com