

## Feasibility of Laparoscopic Surgery for Extra-adrenal Retroperitoneal Tumor

**Introduction and Objective:** Nowadays, laparoscopic approach for renal and adrenal tumor has been established as standard surgical management. Among these cases, some tumors are diagnosed as extra-renal or extra-adrenal retroperitoneal tumors which adjacent to renal hilus or major abdominal vessels. Laparoscopic approach for these tumors could be challenging due to its anatomical position. We have experienced in total of five that kind of cases, and successfully treated by laparoscopic surgery. We evaluated the feasibility of laparoscopic management and tumor characteristics of these cases.

**Materials and Methods:** In total, 5 cases which were diagnosed during 2003 to 2009 have been analyzed. At operation, all patients were placed in a modified lateral decubitus position (45 to 70-degree) and operated by transperitoneal approach with 3–4 ports using standard laparoscopic devices under general anesthesia. Operative results and basic tumor character were evaluated.

**Results:** Mean age of patients at operation was 48.2 y.o. (range 33 to 67). The final pathological diagnoses of tumor were 2 cases of paraganglioma, two cases of neuroganglioma and one case of cavernous hemangioma, respectively. Mean major diameter of resected tumor was 5.2 cm (range 3.5 to 8.0). Both paraganglioma and hemangioma cases were pre-operatively treated with Doxazosine by step-wise dose escalation. Mean operative time was 228 min (range 120 to 335), and mean blood loss was 63.6 cc (range 5 to 150). Feeder vessels were detectable and safely manipulated in all cases; however, two neuroganglioma cases were eventually resected together with ipsilateral adrenal gland. No serious operative complications were documented.

**Conclusion:** As for the extra-adrenal tumor, paragangliomas and neurogenic tumors are often diagnosed in the vicinity of the renal hilus. Due to the close location to the major vessels, meticulous surgical handling is required for these tumors; however, laparoscopic approach can attain this objective. We also review the literature about imaging feature of these kinds of tumors.