

# Giant retroperitoneal schwannoma removed with the laparoscopic approach: A case report

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## Abstract

Retroperitoneal tumors are extremely rare and the vast majority are malignant tumors. One of the least determined benign retroperitoneal tumors is schwannoma. We report the case of a 64-year-old male patient who had a solid mass in the left infrarenal space shown by computed tomography (CT). Percutaneous CT-guided biopsy of the mass was performed, and histopathological examination revealed a schwannoma. The mass was resected laparoscopically. Surgical resection of retroperitoneal tumors is difficult due to posterior deep location and adjacent major vessels and nerves. The laparoscopic approach for retroperitoneal tumors may allow better visualization of the surgical field, reduction of postoperative pain, and better cosmesis. Laparoscopy seems to be a safe and feasible method in the treatment of schwannomas and other retroperitoneal tumors.

**Keywords:** Schwannoma, Retroperitoneal tumors, Laparoscopy

## Introduction

Primary retroperitoneal masses constitute a heterogeneous group of lesions that are categorized as solid and cystic. Solid lesions can be divided into four groups by origin: Mesenchymal, neural, germ-cell, and lymphoproliferative. Most cases are malignant tumors, of which approximately 75% are mesenchymal in origin [1]. Schwannomas are mostly benign tumors originating from the Schwann cells in the neural sheaths of peripheral nerves. Retroperitoneal schwannomas are rare, accounting for 0.5 to 3% of all schwannomas, and 1% of all retroperitoneal neoplasia [2, 3]. Schwannomas, which are most seen in the third to fifth decade of life, usually appear as a single lesion [4]. They are visualized in the form of a massive lesion with smooth contours, and benign radiological features that cannot be clearly distinguished from nerve fibers. They usually have a capsule that originates from the epineurium surrounding the nerve sheath. Although they mostly comprise a homogeneous internal structure and are solid, they may enlarge, and a heterogeneous radiological appearance of a cystic-necrotic nature may be observed since the retroperitoneal space is wide and suitable for tumor expansion. We would like to present our case of a retroperitoneal schwannoma treated laparoscopically. This case report followed the CARE guidelines for case reports.

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## Informed Consent

The authors stated that the written consent was obtained from the patient presented with images in the study.

## Conflict of Interest

No conflict of interest was declared by the authors.

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## Case presentation

We report the case of a 63-year-old male patient who presented with left lower abdominal pain. Written informed consent was obtained from the patient for publication of this case report and accompanying images.

### Clinical findings

A 63-year-old male with left lower abdominal pain presented to our general surgery outpatient clinic. He had no history of past abdominal surgery. He had mild hypertension and diabetes mellitus (DM), and he was using medication for the latter only. There were no complaints of nausea-vomiting, diarrhea, constipation, or fever. There were no significant features in physical examination or laboratory findings.

### Diagnostic focus and assessment

A smoothly contoured iso-hypodense solid mass lesion sized 52x48x68 mm (APxTRxCC) was detected in the left retroperitoneal area at the level of L2-L3 vertebral corpora within the paravertebral-perirenal fatty plans on intravenous and oral contrast-enhanced abdominal CT examination (Figs.1a, 1b, 1c). After the contrast injection, the lesion did not show significant contrast enhancement. Nonspecific millimetric calcifications were observed within the internally homogenous lesion. The lesion showed a close relationship to the left renal vascular structures in its anterior segment, and abdominal aorta medially, but had no obvious invasion findings. In addition, the boundaries between the left kidney and the iliac muscle could be selected clearly. The lesion had no connection with intraabdominal formations but mildly extended towards the vertebral column in the anteromedial-inferior part. Neural foramen or spinal canal extension of the lesion could not be differentiated on CT in sagittal, coronal, and axial plans in multiplanar examinations. A percutaneous CT-guided biopsy of the mass was performed, and histopathological examination was consistent with a retroperitoneal schwannoma.

Figure 1: IV and oral contrasted abdominal CT examination of the patient a) On an axial section, solid mass lesion (star) with a smooth contour and millimetric calcifications is seen adjacent to the left iliac muscle and aorta in left pararenal fatty plans b) On the coronal section, the close relationship of the lobulated contoured lesion with the left kidney and renal vascular structures is observed (star) c) On the sagittal section, although the mass (star) was in the paravertebral area, its relationship with the nerve roots could not be visualized on CT.



## Therapeutic focus and assessment

The surgical procedure was carried out with a transperitoneal approach with the patient in the supine position. Three trocars were used for a transperitoneal approach. First, an 11 mm trocar was inserted under the umbilicus. A 30-degree laparoscope was introduced through this trocar. Two 5 mm trocars were inserted at the lower midline and right upper quadrant (Figure 2). The tumor, which was exposed by mobilizing the descending colon from the retroperitoneum, was in the left pararenal area and had close contact with the aorta. It was widely dissected from the left ureter and gonadal vessels using LigaSure™ (Medtronic Parkway Minneapolis, USA) (Figure 3). The resected specimen was placed in a protected bag and extracted through a small incision that was created by extending the 11-mm umbilical port. After hemostasis and saline irrigation, a closed surgical drain was placed in the surgical bed. The total operation time was 120 min, the blood loss was about 100 mL. No perioperative complications were encountered. The resected specimen was 6.5x6.5 cm in size (Figure 4). The patient was discharged on the fourth postoperative day. The tumor was diagnosed as a benign schwannoma through histopathological examination. There were no postoperative complications.

### Follow-up and outcomes

There was no recurrence during the 2-year follow-up.

Figure 2: Trocar incisions. The mass was removed in the bag by the expansion of the 10 mm trocar incision

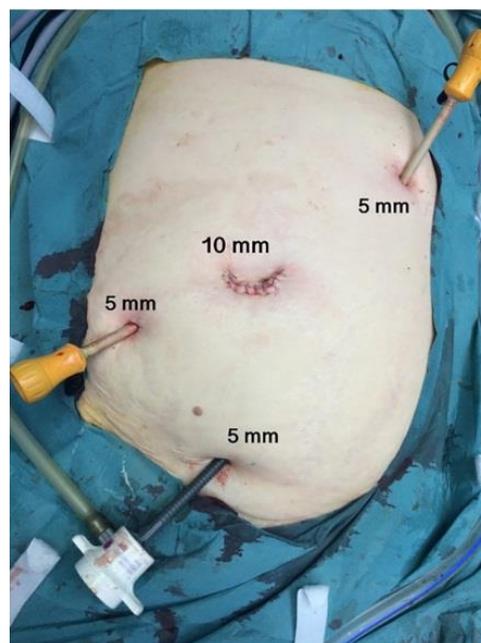


Figure 3: Preservation of ureter and gonadal vessels, which are released laterally, and the relationship of the mass with the sympathetic truncus

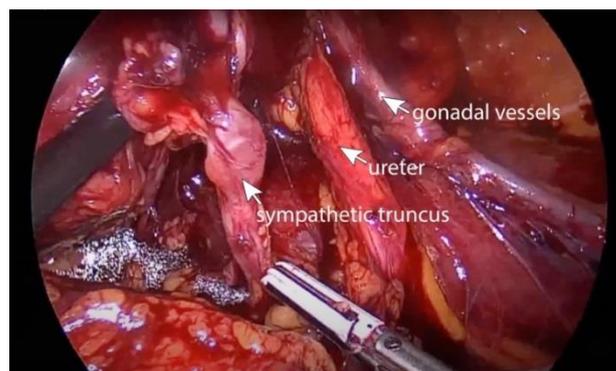


Figure 4: Benign schwannoma was 6.5x6.5 cm in size



## Discussion

Schwannomas are benign neoplasms arising from the nerve sheath mostly in the cephalocervical region (44.8%) and limbs (32.6%) and are rarely situated in the retroperitoneal space (0.7%) [5]. Retroperitoneal schwannomas are mostly asymptomatic, slow-growing tumors. Although the tumor arises from the peripheral nerve sheath, they rarely cause clinically detectable neurological deficits. In our case, the mass was found incidentally, and the patient had nonspecific abdominal pain.

Complete surgical resection of the tumor is the ideal method of treatment [6], after which recurrence is rare. Only patients who undergo partial resection are reported to have recurrence. Schwannomas have a complete envelope, which is not tightly adhered to surrounding tissues. Therefore, they can be removed completely. Hemorrhage is a serious intraoperative risk in case of injury to major vessels [7]. Despite the controversy about the best approach, laparoscopic surgery was considered appropriate for the treatment of this tumor. Laparoscopic surgery permits the magnification of the retroperitoneal space and allows the best visualization of the surgical field in addition to the well-known other advantages [5]. This type of operation requires extensive experience in laparoscopic surgery because meticulous dissection is needed to preserve important vascular structures and nerves.

There are few reports on laparoscopic resection of nonadrenal retroperitoneal tumors and the majority are case reports. Ahn et al. [8] presented the largest case series to show the feasibility and safety of laparoscopic resection of nonadrenal retroperitoneal tumors. In this study, even when the tumors were large or near the vascular structures, laparoscopic resection of the tumors was performed easily by experienced hands. Using the laparoscopic approach to treat large tumors remains debatable and there is no established correlation between tumor size and malignant transformation. Advances in radiologic techniques allow the differentiation of benign and malignant lesions. Laparoscopic resection can be viewed as a first-line treatment option for tumors that are thought to be benign, even in large retroperitoneal tumors. In our case, a 68 mm retroperitoneal

schwannoma that was adjacent to the aorta was resected without complications. However, patients with tumors larger than 10 cm are not deemed appropriate for laparoscopic resection because larger incisions would be needed to excise the specimens. Moreover, if malignancy is suspected in the preoperative radiologic studies or frozen section, laparotomy should be considered for wide dissection. Thus, there is no consensus on whether the laparoscopic approach can be used routinely for malignant lesions.

A retroperitoneal schwannoma is exceedingly rare and generally asymptomatic. Since the treatment of choice is complete excision to minimize the risk of recurrence, preoperative radiological evaluation is important. Moreover, the excision of retroperitoneal tumors is difficult and the laparoscopic approach requires extensive experience. This presented case demonstrates that laparoscopic resection of retroperitoneal tumors, even when tumors are large or adhered to adjacent vascular structures, is safe and feasible if there is no suspicion of malignancy on preoperative radiologic images.

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