

# *Laparoscopic resection of a juxta-adrenal schwannoma*

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*A seven centimeter supra-renal mass was discovered in a 62-year old patient who presented with gross hematuria*

*and a superficial bladder tumor. The supra-renal mass was resected laparoscopically and the final pathology revealed a benign schwannoma. The epidemiology, diagnostic features and treatment options for this rare peripheral nerve sheath tumor are reviewed*

**Key Words:** laparoscopic, schwannoma, tumor

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## Introduction

Schwannoma is a tumor that arises from the supporting schwann cells of peripheral nerves. Schwannomas most commonly occur in the head and neck region along cranial nerves<sup>1</sup> and are rarely found in the retroperitoneum (0.5%-5% cases<sup>2</sup>). These tumors account for less than 10% of retroperitoneal tumors. Although the majority of schwannomas are

benign, cases of malignant degeneration have been reported most commonly in association with von Recklinghausen's disease.<sup>3</sup>

## Case report

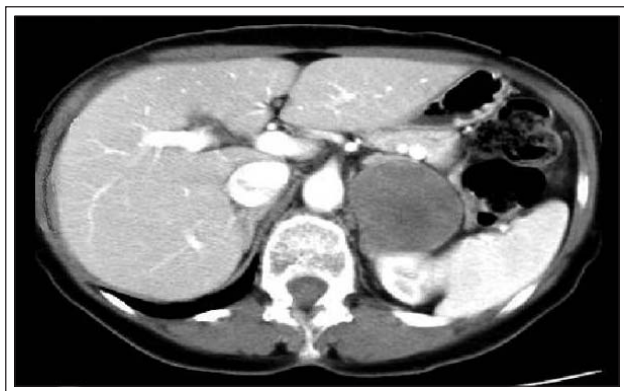
A 62-year old retired nurse was referred with a 2 month history of gross painless hematuria. There was a thirteen pack-year history of smoking. On physical exam she was normotensive and no abdominal masses were palpable. Cystoscopy revealed a papillary exophytic bladder tumor adjacent to the right ureteric orifice.

Ultrasound imaging revealed a 7.2 cm x 4.7 cm x 4.9 cm mass in the region of the upper pole of the

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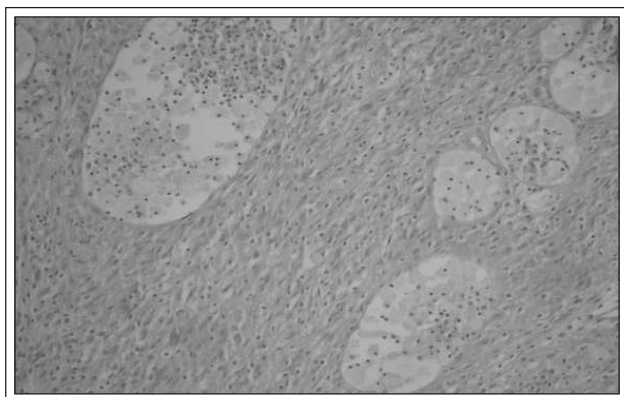
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**Figure 1.** Contrast-enhanced CT scan demonstrating low attenuating left supra renal mass.



**Figure 2.** Gross pathology cross section of juxta-adrenal schwannoma.



**Figure 3.** H&E stain of schwannoma.

left kidney. Resection of the bladder tumor revealed a non-invasive (Ta) low grade I/III papillary transitional cell carcinoma. A left retrograde pyelogram did not reveal any hydronephrosis or filling defects. CT scan demonstrated a low

attenuating mass interposed between the left adrenal gland and kidney Figure 1. Endocrinologic work-up revealed normal serum electrolytes and normal levels of urine catecholamines, cortisol and aldosterone from a 24-hour urine collection.

The patient underwent a transperitoneal laparoscopic resection of the mass with an operative time of 105 minutes and with minimal blood loss. The procedure was undertaken by a team of two laparoscopic-trained urologists with a combined previous experience of twenty-two successful laparoscopic nephrectomies, three partial nephrectomies and one pyeloplasty. The tumor was retrieved intact using a specimen retrieval bag. The patient was discharged on post-operative day one.

On gross pathological examination the tumor was encased in a surrounding capsule and compressed the normal adrenal gland Figure 2. Microscopic examination revealed fascicles of benign appearing spindle cells positive for vimentin and S100 and negative for CD34 and actin stains Figure 3. The final pathology report identified the tumor as a benign schwannoma likely arising from a retroperitoneal nerve.

## Discussion

Schwannomas are found most commonly in female patients (M:F 2:3) aged between 40-60 years. Because these tumors are slow growing they can reach a large size prior to presentation. Many of the cases in the literature present late with tumor sizes ranging from 8 cm-20 cm.<sup>2-4</sup> Due to the advanced stage of these tumors at presentation laparotomy with extensive dissection is required. Increasingly, however, these tumors are discovered incidentally and are smaller in size and a less morbid laparoscopic approach is possible.

Establishing a pre-operative diagnosis of schwannoma is very difficult. These tumors tend to present as retroperitoneal masses of unknown identity with the differential diagnosis including; leiomyoma, leiomyosarcoma, neurofibroma, malignant tumors of peripheral nerve fibres and melanoma. When arising in close proximity to the adrenal gland, endocrine tumors as well as adrenal adenocarcinoma must be considered.

As part of the work-up of a retroperitoneal mass, ultrasound and CT are quite useful in characterizing the location, size and presence of invasion into adjacent structures.<sup>5</sup> Ultrasound imaging of schwannomas usually reveals a well-circumscribed hypoechoic mass.<sup>6</sup> Many reports have described characteristic degenerative changes in schwannomas

that can be visualized as cystic changes and areas of calcification on CT scan.<sup>4,7</sup> MRI imaging has also been used to characterize the retroperitoneal soft tissue planes and origins of these retroperitoneal tumors. On MRI T<sub>1</sub>-weighted images schwannomas are isointense with muscle and hyperintense on T<sub>2</sub>-weighted images.<sup>4</sup>

Fine-needle aspiration biopsy has not been found to be helpful in establishing the diagnosis of schwannoma and is not recommended.<sup>4</sup> Definitive diagnosis is established by histopathologic examination. Palisading nuclei arranged in spindle cells which stain positive for S100 protein are the hallmark features of schwannoma.

Schwannomas are most commonly benign but they can displace and compress adjacent structures without invading them. Most authors recommend complete surgical excision with preservation of the associated nerve if possible.<sup>8</sup> Because many of these tumors are discovered at a large size, laparotomy has traditionally been the favored approach for excision.

With the increasing use of ultrasound and CT, incidental adrenal masses are being discovered in approximately 1%-2% of abdominal scans. Many of these adrenal lesions require removal due to the risk of malignancy (>5cm) or because of endocrinologic activity. The majority of these tumors are now being resected using laparoscopic techniques.

Review of the literature reveals six reports of laparoscopic resection of retroperitoneal schwannomas.<sup>1,8,9,10-12</sup> In three of these cases the tumor was located in the adrenal bed and complete laparoscopic resection was possible in two of these cases with the tumors measuring 5 cm and 3 cm in diameter. This present case illustrates the feasibility of removing larger juxta-adrenal schwannomas through a laparoscopic approach in a safe and oncological manner. □

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