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# Schwannoma originating from the common iliac artery: a case report

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**Abstract**

Schwannomas of the large blood vessels are extremely rare, and tumors adjacent to major vessels may not be considered to originate from the vessels. There have been no previous reports of schwannomas of the common iliac artery. We report on a 57-year-old woman who presented with a mass in the left retroperitoneum. Computed tomography showed a mass abutting and adhering to the left common iliac artery. A portion of the artery was resected together with the mass and vascular reconstruction was carried out. The histological diagnosis was a schwannoma arising in the left common iliac artery. Despite its rarity, a schwannoma of a large artery should be considered as a differential diagnosis in patients with a retroperitoneal mass adjacent to a major vessel. Awareness of this entity might avoid profuse bleeding and enable surgeons to prepare for vascular interposition.

**Keywords**

Schwannoma, common iliac artery, large blood vessel, major artery, retroperitoneal mass, differential diagnosis, vascular surgery

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## Introduction

Primary tumors arising in the large blood vessels of the systemic circulation are rare. Such tumors are usually malignant mesenchymal tumors, with predominantly intraluminal growth.[1] A mass adjacent to a major vessel may therefore not be considered to originate from the vessel. We describe a rare case of a schwannoma

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arising in the adventitia of the left common iliac artery. Schwannomas are nerve sheath tumors composed entirely of differentiated neoplastic Schwann cells.[2] Most schwannomas arise from peripheral nerves, and the most common locations include the flexor surfaces of the extremities and the subcutaneous tissues of the head and neck.[3] Schwannomas have occasionally been found in the retroperitoneum, and most of these arise from the intradural extramedullary posterior spinal roots. To the best of our knowledge, there have been no previous reports of a schwannoma originating from the common iliac artery.

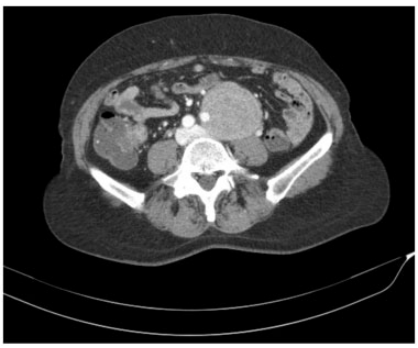

**Figure 1.** Abdominal computed tomography revealed a homogeneously-enhancing mass (arrow) in the left retroperitoneal area, abutting the distal abdominal aorta, left common iliac artery, and left psoas muscle

## Case report

A 57-year-old woman presented with a complaint of abdominal discomfort. Physical examination demonstrated a lower abdominal mass. Abdominal computed tomography revealed a homogeneously-enhancing mass, measuring approximately $6.5 \times 6.0$ cm, located in the left retroperitoneal area and abutting the distal abdominal aorta, left common iliac artery, and left psoas muscle (Figure 1). Her left femoral artery pulse was intact. Radiologically differential diagnoses included lymphoma, neurogenic tumor, and sarcoma. The origin of the mass could not be determined because of its size and position. There was no further medical history and the results of laboratory tests were unremarkable. The patient underwent scheduled surgical resection of the lesion after preoperative assessment. The lesion partially encased and adhered tightly to the left common iliac artery (Figure 2a). Because the mass could not be dissected from the arterial wall, a portion of the left common ilia artery was resected together with the mass at its point of attachment and vascular reconstruction was performed using an expanded polytetrafluoroethylene vascular prosthesis (Figure 2b). The histopathology of the mass was consistent with a schwannoma. Grossly, the mass was encapsulated within a thin fibrous capsule, except

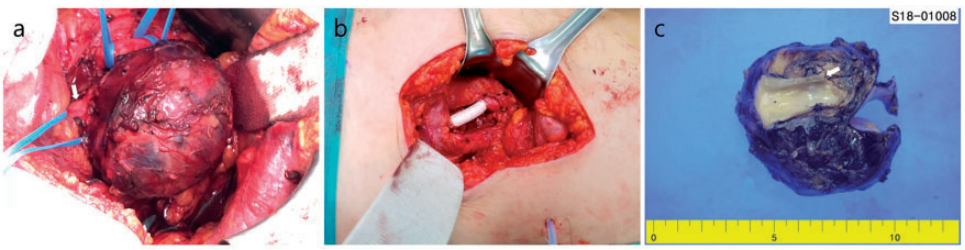


**Figure 2.** (a) The lesion partially encased the left common iliac artery (arrow) and adhered tightly to the artery. (b) Vascular reconstruction was performed using an expanded polytetrafluoroethylene vascular prosthesis. (c) Grossly, the tumor was encapsulated within a thin fibrous capsule and was adjacent to the left common iliac artery (arrow)

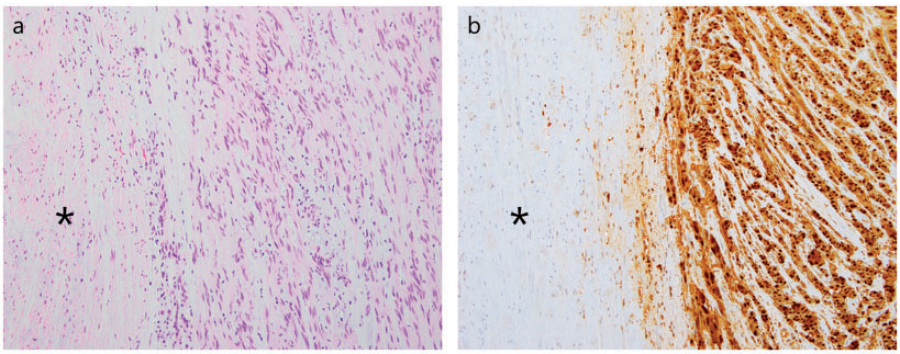


**Figure 3.** (a) Microscopically, the tumor was composed of spindle cells and arose in the adventitia (*) of the left common iliac artery. (Hematoxylin and eosin stain; magnification ×200). (b) The spindle cells showed immunoreactivity for S-100. (Magnification ×200). *Adventitia

where it contacted the vessel wall (Figure 2c). Its cut surface was a light tan color and glistening. Microscopically, the lesion was composed of spindle cells with frequent nuclear palisading and thickened hyalinized vessels. The tumor arose in the adventitia of the left common iliac artery (Figure 3a). The spindle cells were immunoreactive for S-100 (Figure 3b) but negative for smooth muscle actin, desmin, CD34, and C117. The patient's postoperative course was uneventful and she was discharged 6 days after surgery. No recurrence was observed during a 1-year follow-up period.

## Discussion

Schwannomas are benign nerve sheath tumors arising from differentiated perineural Schwann cells.[2] More than 90% of these lesions are solitary and sporadic, and show a peak incidence in the fourth to sixth decades of life. Multiple lesions are occasionally seen in patients with neurofibromatosis type 2, schwannomatosis, and Gorlin–Koutlas syndrome. Schwannomas can only be diagnosed histologically, and their microscopic features include a distinct capsule, hypercellular areas with nuclear palisading (Verocay bodies) and/or hypocellular areas, hyalinized vascular walls, and strong immunoreactivity for S-100 protein.[4] They are slow growing and do not recur if completely resected,[5] and are therefore amenable to total *en bloc* removal. In the current case, no preoperative biopsy was obtained for pathological diagnosis because of the risk of bleeding, and we did not expect the mass to originate from the artery.

Schwannomas located deep within the retroperitoneum are rare, and usually originate from the posterior spinal roots. In the present patient, the tumor was just above the pelvic cavity and located in a supra-spinal rather than a para-spinal area, encasing the left common iliac artery. Schwannomas originating from the common iliac artery are extremely rare, and the tumor in the current case presumably arose from peripheral nerve fibers present on the vascular adventitia of the arterial wall. The symptoms of these tumors are nonspecific and are usually caused by the effects of the mass on adjacent structures, and thus depend on the site and size of the tumor.[6] Most retroperitoneal schwannomas are asymptomatic and the lesions are detected incidentally, though

some cases present with abdominal distension and pain. The current patient complained of abdominal discomfort. Although computed tomography revealed that the left common iliac artery was narrowed by the mass compared with the right common iliac artery, there were no symptoms related to this vascular narrowing; however, symptoms or signs may occur if the mass grows larger and the vessel becomes more compressed. Because of the close association between the tumor and artery, careful attention was paid to the possibility of accidental bleeding and laparotomy was therefore performed. Despite efforts to dissociate the tumor from the vessel, the strong adhesion between the tumor and the artery precluded complete dissection. To avoid arterial laceration and profuse bleeding, a portion of the left common iliac artery was therefore resected together with the mass, followed by vascular reconstruction using a vascular prosthesis. The tumor was demonstrated to originate from the arterial wall by histological examination, and was presumed to have arisen from the nervi vasorum within the arterial adventitia.[7,8] Because the arterial origin of the tumor was not realized in advance, the surgeons were not fully prepared to perform vascular interposition; however, the operation was successful and the patient's subsequent course was uneventful.

This study was approved by the institutional review board (CBNUH IRB, Cheongju, No. 2019-04-017), and the patient provided written informed consent for publication of this case report.

In conclusion, we present the first report of a schwannoma originating from the common iliac artery. Retroperitoneal schwannomas are rare, but lesions adjacent to the major vessels may originate from the vascular wall. Schwannomas of a large artery should therefore be considered as a differential diagnosis in patients presenting with a retroperitoneal mass adjacent to a major vessel. In such cases, surgeons should be aware of the possibilities of vascular injury and bleeding, and of possible unusual locations, to ensure safe and complete excision.

## Declaration of conflicting interest

The authors declare that there is no conflict of interest.

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