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Advantage of laparoscopic resection for pelvic Schwannoma: Case report and review of the literature

Marino Di Furia[a,*], Andrea Salvatorelli[a], Andrea Della Penna[a], Vincenzo Vicentini[b], Federico Sista[a], Alessandro Chiominto[b], Stefano Guadagni[b], Marco Clementi[b]

[a] Department of Applied Clinical Science and Biotechnology, University of L'Aquila, Via Vetoio, 67100 L'Aquila, AQ, Italy
[b] Department of Life, Health and Environmental Sciences, University of L'Aquila, Piazza S. Tommasi, 67100 L'Aquila, AQ, Italy

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ABSTRACT

INTRODUCTION: Single pelvic schwannomas are rare tumor arising from the retrorectal, lateral or obturatory space. Laparoscopic approach to schwannoma located in lateral pelvic space has been previously described only in one case report. We present a case of a successful laparoscopic resection of pelvic schwannoma emphasizing the advantages of such a minimal invasive approach.
PRESENTATION OF CASE: A 54-years-old, obese, male patient was admitted to our hospital referring dysuria and strangury. Abdominal CT scan showed a lateral pelvic well-circumscribed mass with smooth regular margins. A CT-guided fine needle biopsy resulted non-diagnostic. An elective laparoscopic resection was performed. The patient had a short, uneventful post-operative course. Pathological examination revealed a benign schwannoma.
DISCUSSION: Using PubMed database, we reviewed the English language international literature using the MeSH terms "laparoscopic," "minimally invasive" and "schwannoma". We identified quite 20 previous cases of pelvic schwannomas removed by laparoscopy or robotic surgery. We found out that a preoperative diagnosis of these rare neoplasms is difficult to be obtained; in most cases, laparoscopic approach was successfully performed.
CONCLUSION: Despite it could not be proven yet, due to the rarity of this tumor, we agree with literature that laparoscopic removal of pelvic benign tumor may offer several advantages. The direct high-definition vision deeply into this narrow anatomical space, especially in obese patients, provides a detailed view that makes easier to isolate and spear the anatomical structures surrounding the tumor. Furthermore, the pneumoperitoneum may create the right plane of dissection, minimizing the risk of tumor rupture and bleeding.
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1. Introduction

Schwannomas are tumors arising from peripheral Schwann cell and are typically solitary and benign neoplasms. Multiple schwannomas are extremely rare, developing exclusively as part of inherited disorder like Neurofibromatosis and Schwannomatosis.

Solitary Schwannomas commonly develop from the nerves of the head and neck district. Pelvic location with origin from sacral and hypogastric plexus is unusual (1–3% of all schwannomas) [1].

There are no specific clinical or radiological signs for pelvic schwannomas and in most cases the surgical excision has both diagnostic and therapeutic finality. However, this surgery can be hard to perform because of the narrow working space as well as the need to preserve the vascular and nervous plexus surrounding the tumour. First laparoscopic resection of a pelvic schwannoma has been reported in 1996 by Melvin [2]. From this report, only few other laparoscopic removal of such neoplasms has been described [3–7].

We present a successful laparoscopic resection of a pelvic schwannoma, located in the lateral space in an obese man. A literature review was also performed to discuss the advantage of the laparoscopic approach.

TheworkhasbeenreportedinlinewithSCAREcriteria[16].

2. Presentation of case

A 54-years-old, Caucasian, obese (BMI 36.7) male was admitted to our hospital referring dysuria and strangury. US scan showed an oval-shaped pelvic mass behind the bladder. Contrast enhanced-CT scans confirmed an hypodense solid mass of 5,8 × 5,6 × 5,4 cm (CC × AP × LL) with sharp and regular limits in the right pelvic

* Corresponding author at: University of L'Aquila, Via Vetoio, L'Aquila, 67100, Italy.
E-mail address: marinodifuria@gmail.com (M. Di Furia).

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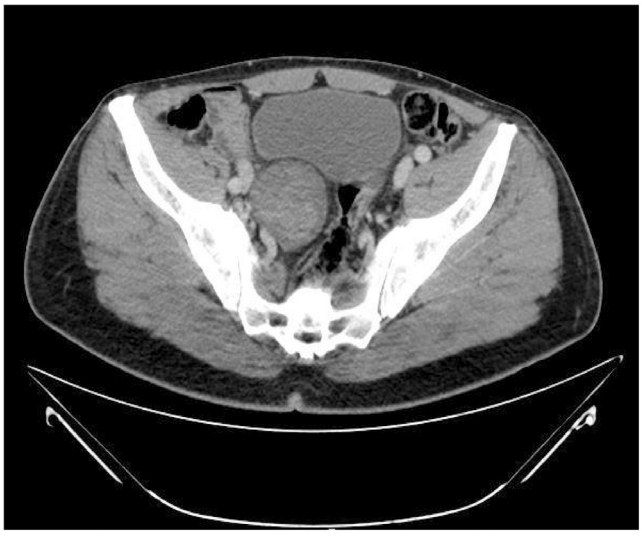

Fig. 1. CT scan shows a large mass in the pelvis in close relationship with bladder, right internal iliac vessels, sigmoid colon, ileal loops and first sacral vertebral body.

space without sign of infiltration of surrounding structures (posterior wall of the bladder, the left internal iliac vessels, rectum, the first sacral vertebral body) (Fig. 1). Pancolonscopy and cystoscopy excluded the colic or bladder origin of the tumor. A CT-guided fine needle aspiration was performed but it resulted non-diagnostic. To provide a definitive diagnosis and to achieve the control of symptoms the patient was candidated to an elective laparoscopic resection of the tumor.

Surgical procedure was performed in general anesthesia using a 3-port configuration (umbilicus for the optical system and two 10 mm operative ports on either side 10 cm laterally) with the patient placed in supine anti-Trendelemburg position. The pelvic exploration confirmed the presence of a retroperitoneal mass located between the rectum, the bladder and the right common iliac vessels (Fig. 2). The peritoneum between the mass and the rectum was widely incised. With the aid of high flow pneumoperitoneum a cleavage plan between the tumour capsule and surrounding structures was found. The dissection, using both sharp and blunt maneuvers, extended posteriorly and laterally both from the ureter and the right iliac vessels, paying attention to preserve the integrity of the capsule and ensuring meticulous hemostasis at all time by means of the harmonic scalpel (Fig. 3). This dissection revealed the tumor origin from the pelvic hypogastric plexus. Using a gentle blunt dissection all nervous structures were macroscopically preserved. Finally, the mass was also separated medially from the rectum and then was extracted "*en bloc*" using an Endo-bag ® through the umbilical port site. A drain was put into the Douglas' space.

Total operative time was 148 min with an estimated blood loss of 150 mL. Post-operative progress was uneventful. The patency of the intestinal tract was obtained in 1 p.o. day. The drain was removed in 2 p.o. day. The patient was discharged in 3 p.o. day.

Surgical specimen consisted of a roundish, encapsulated mass, measuring 5 cm in largest diameter, with an external grey and yellow surface.

Histologically the lesion was a spindle cell neoplasm with nuclear palisading and focal cystic spaces, without mitotic activity and with strong S-100 protein immunostaining positivity (Fig. 4). Smooth muscle actin, desmin, calponin, caldesmon, CD117, DOG-1, HMB-45, and AE1/AE3 cytokeratins immunostaining was negative. These findings are coherent with the histological diagnosis of shwannoma.

In absence of literature guidelines, a CT scan after one and two years excluded a recurrence. Two years after surgery the patient didn't refer neurological symptoms with complete resolution of urinary symptoms.

3. Discussion

Pelvic schwannomas are rare and often asymptomatic neoplasms. If symptomatic, they may cause pain and obstructive or compressive symptoms, according to their size and location. These types of tumors are very difficult to diagnose preoperatively because neither the clinical symptoms nor the radiological characteristics are typical. Ultrasound (US), CT scans and MRI can visualize a well-defined solid mass lesion, but this modality didn't provide definitive specific characteristics for diagnose a schwannoma [8]. Percutaneous fine-needle cytology has been proposed to achieve preoperative diagnosis. However, FNA of soft-tissue lesions in the retroperitoneum or pelvis can result technically difficult and often be unsuccessful especially for large and mixed lesions [9].

Also in our case, the tumor didn't shown typical radiological characteristics and percutaneous CT-guided FNAB resulted

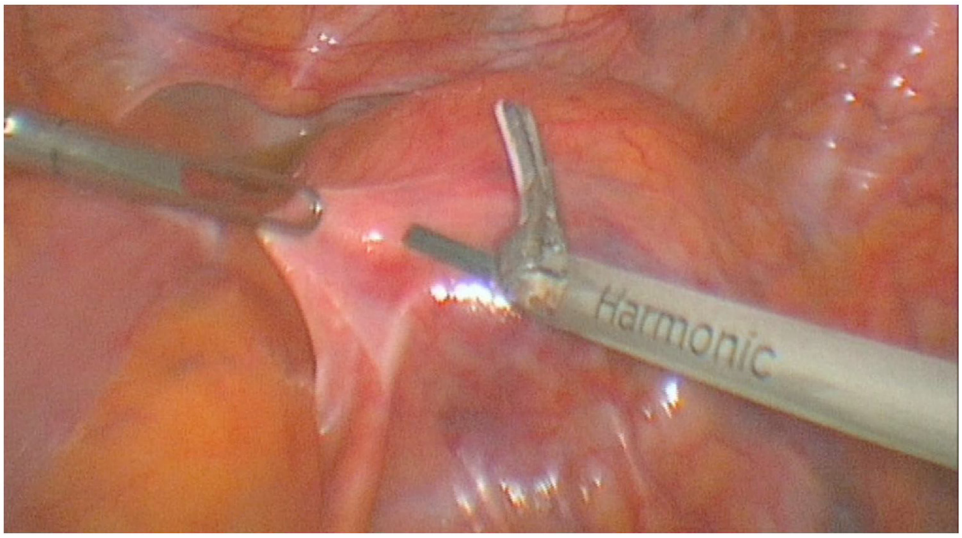

Fig. 2. Laparoscopic exploration revealed a subperitoneal mass sited between the rectum, the bladder and the right common iliac vessels.

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