



Oncology

Robot-Assisted Laparoscopic Resection of a Pelvic Schwannoma



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ABSTRACT

There is minimal data within the literature demonstrating the use of robotics to resect pelvic, benign schwannoma(s). Herein, we describe a case of a 46-year-old transgender male that presented with complaints of left-sided pelvic pain. Pre-operatively, the etiology was unknown. The patient underwent robotic-assisted laparoscopic excision of the pelvic mass, including a 5–6 cm resection of the obturator nerve, successfully. Final pathology found a benign schwannoma. Schwannomas are difficult to diagnose pre- and intra-operatively and are thus frequently misdiagnosed as urologic or gynecologic lesions. This report demonstrates that robotics can be used safely to resect benign, pelvic schwannoma(s).

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Introduction

Benign schwannomas arise from Schwann cells, which produce myelin sheath that covers peripheral nerves. These encapsulated, non-invasive neoplasms are slow growing and often only present when they compress neighboring structures. Pelvic schwannomas comprise approximately 1–3% of all schwannoma, and are difficult to diagnose by computed tomography (CT) and other imaging modalities due to a lack of specific radiologic features leading to misinterpretation as urologic diseases or gynecologic masses.¹ 2-Deoxy-[(18)F] fluoro-D-glucose on positron emission tomography scanning cannot reliably differentiate malignant schwannomas from benign schwannomas due to the high cellularity of the tumor. Furthermore, percutaneous biopsies have been reported to be inaccurate and sometimes misleading. Herein, we present a case of robot-assisted laparoscopic resection of an obturator mass near the left iliac vessels and ureter, which on surgical pathology was found to be a benign schwannoma.

Case presentation

A 46 year-old male with a previous surgical history of bilateral inguinal hernia repair, brachial cleft cystectomy, gender reassignment surgery to remove the male external genitalia, vaginoplasty, and labiaplasty presented with left-sided pelvic pain, which was sharp in nature and radiated down. Physical examination was significant for a palpable mass. The patient denied weight loss, fever, or loss of appetite.

Pelvic ultrasound of the mass demonstrated a complex cystic mass unclear etiology. Additional imaging demonstrated a 6.0 × 4.9 × 4.9 cm multi-loculated, cystic mass along the left lateral pelvic sidewall (Fig. 1). Previous gender reassignment surgery excluded female gynecological malignancies in this patient. Therefore, considerations were given to other soft tissue and mesenchymal pelvic neoplasms. The following tumor markers were negative: CA 125, AFP, LDH, and bHCG. The patient was counseled about all available treatment options and elected to undergo robotic excision of the pelvic mass. Because of the location, neurosurgery was consulted and made available for the procedure.

The patient first underwent cystoscopy and bilateral ureteral catheter placement. The patient then underwent an uncomplicated robot-assisted laparoscopic excision of the pelvic mass. Using a six-port configuration and with the patient placed in lithotomy in steep Trendelenburg, the procedure began by identifying the left ureter and retracting it to clearly visualize the pelvic mass. The mass was dissected until the obturator nerve was identified. Once completely dissected, the tumor was found to be arising from the obturator nerve with the obturator nerve entering and exiting the mid part of the tumor. The tumor was excised,

Abbreviation: CT, computed tomography.

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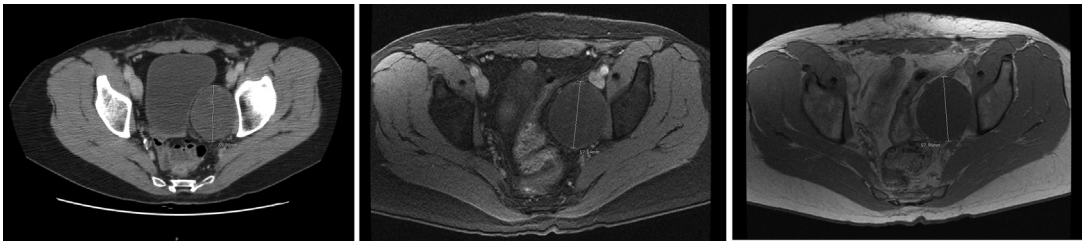


Figure 1. Pelvic lesion seen on computed tomography and magnetic resonance imaging.

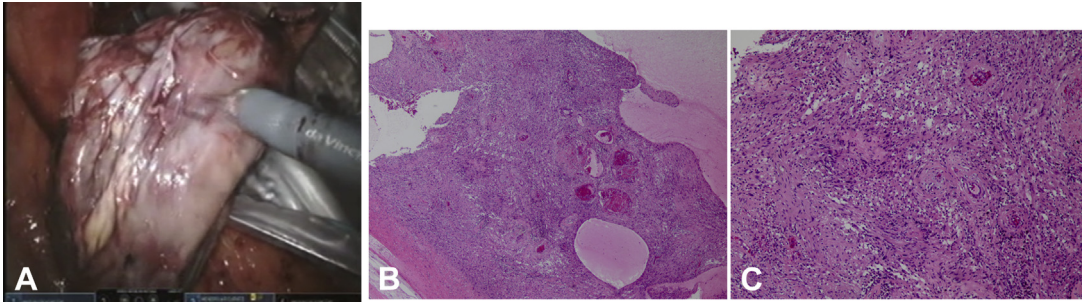


Figure 2. Pelvic mass. A) Intraoperative image of specimen. B) Histologic image of specimen at 4 \times . C) Histologic image of specimen at 10 \times .

Table 1

Literature review of studies on surgical resection of benign pelvic schwannomas

Study	Age/Sex	Presentation	Operative Technique	Mass Dimensions	Hospital Stay (Days)	Follow Up (Months)	Post-Operative Neurological Deficit
J Laparoendosc Adv Surg Tech A. 2007 Dec; 17(6):769–773	44/F	Asymptomatic	Laparoscopic	1.9 cm \times 1.8 cm \times 1.8 cm	4	NA	None
Surg Laparosc Endosc Percutan Tech. 2012 Apr; 22(2):143–147	47.5 ^a (32–65); 50% F	50%: incidental 33%: abdominal/ pelvic pain 17%: pelvic pressure	Laparoscopic	32.5 ^a cm ² (3.6 cm ² –108 cm ²)	NA	NA	33% permanent; 33% temporary
ANZ J Surg. 2012 Nov; 82(11):853–854	58/M	Asymptomatic ^b	Open radical prostatectomy with lymph node dissection	7.5 cm \times 8.5 cm \times 10.0 cm	NA	NA	Mild weakness in thigh adduction
Asian J Endosc Surg. 2016 Nov; 9(4):307–310	69/F	Lower abdominal pain	Laparoscopic	3.5 cm \times 3.0 cm \times 2.3 cm	4	16	Temporary adductor muscle weakness
J Clin Ultrasound. 2008 Jun; 36(5):318–320	65/F	Lower abdominal pain	Laparoscopic	9.0 cm \times 7.0 cm \times 7.0 cm	NA	2	Temporary motor weakness and sensory deficit
Current study	46/M	Pelvic pain	Robotic	6.0 cm \times 4.9 cm \times 4.9 cm	2	9	Temporary sensory deficit

F, female; M, male.

^a Case series of six patients, reporting as median (range) when applicable.

^b Patient was found to have prostate cancer on biopsy, differential diagnosis included metastatic lymph node.

which included a 5–6 cm resection of the obturator nerve. Frozen section biopsies were taken from the distal and proximal cuts of the nerve, which were negative for cancer. Neurosurgery was consulted intraoperatively, who did not recommend interpositional nerve graft due to the long defect. As such, a 6-0 Prolene[®] suture was used to tag both the proximal and distal ends of the nerve. Total operative time was 240 min with an estimated blood loss of 100 mL.

On final pathology, the specimen consisted of benign peripheral nerve with perineural soft tissue and a benign schwannoma exhibiting myxoid/edematous and cystic features (Fig. 2). Immunohistochemical stains were positive for S-100. The hospital stay was uneventful, and she was discharged on post-operative day 2.

At the 2-week follow-up clinic visit, the patient reported to be doing well and was in physical rehabilitation. Nine months after

surgery, the patient reports to be doing well without any motor or sensory deficit complaints.

Discussion

Schwannomas may arise in any peripheral, cranial, or visceral nerve at any anatomic site throughout the human body. These neoplasms commonly arise from the cranial nerves as acoustic neuromas and are rarely observed in the pelvis and the retroperitoneal area. Schwannomas are usually solitary, well-circumscribed, firm, smooth-surfaced tumors. Most schwannomas are benign but malignant degeneration can occur. Most schwannomas tend to occur primarily in men in the third to fifth decade of life.

There are few reports in the literature reporting on benign, pelvic schwannomas, as this anatomic location comprises less than

5% of all schwannomas. Ningshu and colleagues report on their experience of laparoscopic excision of benign obturator schwannomas.¹ In this report, none of the 6 patients were diagnosed pre-operatively correctly as having a schwannoma mass. This team demonstrated that a laparoscopic approach can safely be utilized to treat this condition. Table 1 provides a review of resection of benign pelvic schwannomas invading the obturator nerve.^{1–5}

Damaging the obturator nerve can result in hip external rotation, adduction, and sensory loss confined to the innermost aspect of the thigh.³ During our procedure, the mass encompassed the obturator nerve and thus we had to excise a portion of the obturator nerve. Should deficits to the obturator nerve occur during excision of the schwannoma, it is recommended that a neurosurgical consultation be obtained, as successful surgical repair with return of function is possible. However, an injury does not necessarily result in a significant neurological deficit.² Due to the primarily motor function nature of the nerve, if the nerve is transected, an epineurial repair is rapid and effective. In our experience, we consulted neurosurgery intraoperatively who did not recommend a graft. Because the patient had presented with neural deficits, it was understood that a mass effect may be occurring. Post-operative, the patient reported no neural deficits.

Conclusion

Benign, pelvic schwannomas are rare and often difficult to diagnose pre-operatively. Herein, we report on robotic excision of a benign schwannoma surrounding the obturator nerve. Robotic

surgery is a safe and feasible method for resecting benign schwannomas in the obturator fossa.

Consent

The appropriate informed consent was collected for reporting of this study.

Conflicts of interest

All authors report no conflicts of interest relevant to the material presented in the report.

Acknowledgements

None.

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