Giant Asymptomatic Endovesical Bladder Leiomyoma Laparoscopically Excised

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ABSTRACT

Bladder leiomyomatosis is a rare occurrence. It represents 0.5% of all bladder lesions. An increasing number of these tumors are detected incidentally at an early stage in young women secondary to routine pelvic ultrasonography. Laparoscopic management has been previously reported in lesions smaller than 5 cm. We report a 10-cm asymptomatic endovesical leiomyoma that was laparoscopically excised. Case and outcomes are described and discussed. This case adds to the increasing body of evidence supporting the use of laparoscopy as the preferred approach in every viable scenario.

Key Words: Bladder, Leiomyoma, Laparoscopy.

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INTRODUCTION

Mesenchymal tumors of the bladder, including granular cell myoblastoma, lymphangioma, giant cell tumor, paraganglioma, neurofibroma, and leiomyomas, are relatively rare. They represent 0.5% of all bladder lesions. The incidence of leiomyoma of the bladder is approximately three times higher in women than in men and occurs mainly in young adults. Although these tumors can be asymptomatic and detected incidentally by pelvic ultrasonography, some patients may complain of nonspecific urinary symptoms, the most common of which are voiding symptoms caused by their endovesical growth. Surgical excision has been the classic treatment option.

Many cases of laparoscopic management of this etiology have been reported previously. Nevertheless, lesion size has usually not surpassed the 5-cm limit. In this report, we present a 10-cm asymptomatic endovesical leiomyoma that was excised laparoscopically.

CASE REPORT

A 30-year-old healthy female gynecologist had an incidental bladder mass that was discovered while she underwent abdominal ultrasonography as an example in a postgraduate course (**Figure 1**). Computed tomography confirmed the finding and showed it as intravesical and measuring 10.1 × 4.29 cm (**Figures 2 and 3**). Cystoscopy under general anesthesia was performed to obtain a sample and determine the relationship with the right ureteral meatus. Pathologic evaluation confirmed a bladder leiomyoma, and immunohistochemistry analysis confirmed the data with these results: desmin, positive; smooth muscle actin, positive; muscle-specific actin, positive; and CD117, negative.

After advising the patient of the results, a laparoscopic approach was sought.

Surgical Technique

The patient was placed in a modified lithotomy position with a mild Trendelenburg placement. A rigid cystoscopy was performed and a right double-J stent catheter was placed before abdominal access. A 15-mm Hg pneumoperitoneum was achieved using the Veress needle technique. Port placement included an umbilical 12-mm port, a right flank 5-mm port, and left pararectal and wide paraumbilical 5- and 12-mm ports, respectively (**Figure 4**). By incising the anterior peritoneum at the level of the obliterated umbilical arteries, the Retzius space was entered using an ULTRACISION HARMONIC SCALPEL (Ethicon Inc., Somerville, New Jersey). The whole anterior bladder wall was taken down and the Retzius space was exposed, revealing a 4-cm solid mass protruding from the bladder. The lesion's

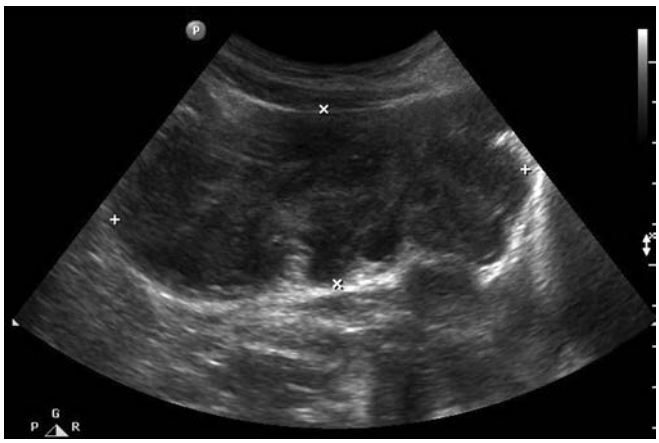

Figure 1. Bladder ultrasonogram showing an indwelling mass.

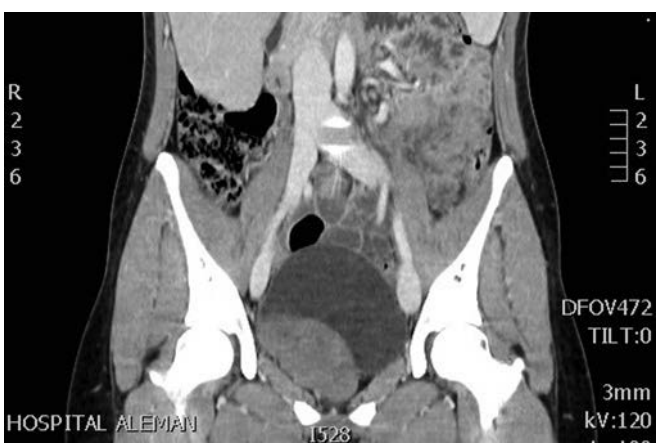

Figure 2. Coronal view on abdominal CT scan showing giant mass on the right hemi-bladder.

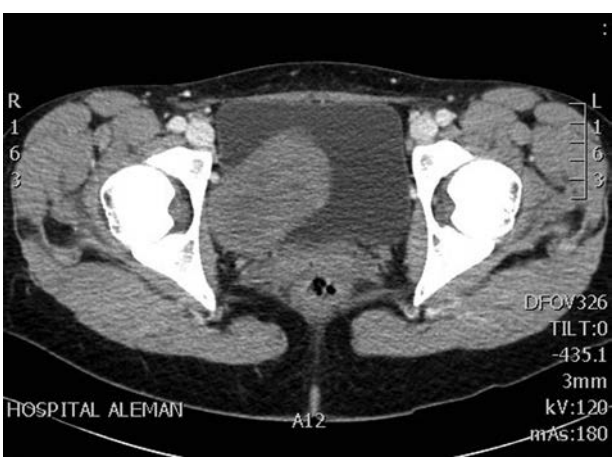

Figure 3. Axial view on abdominal CT scan showing protruding bladder mass.

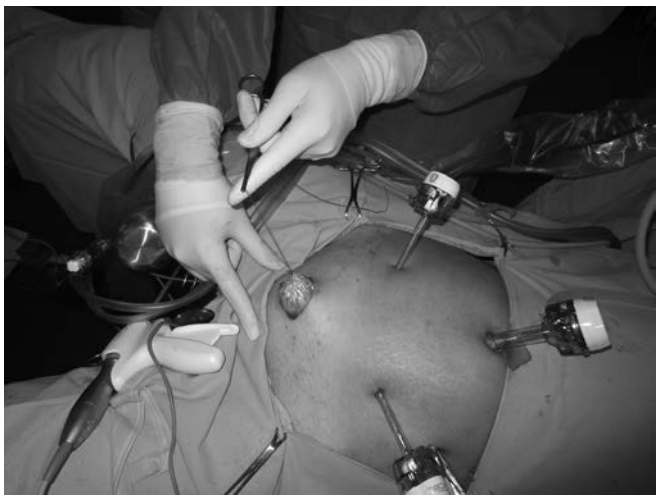

Figure 4. Port placement and extraction of the mass.

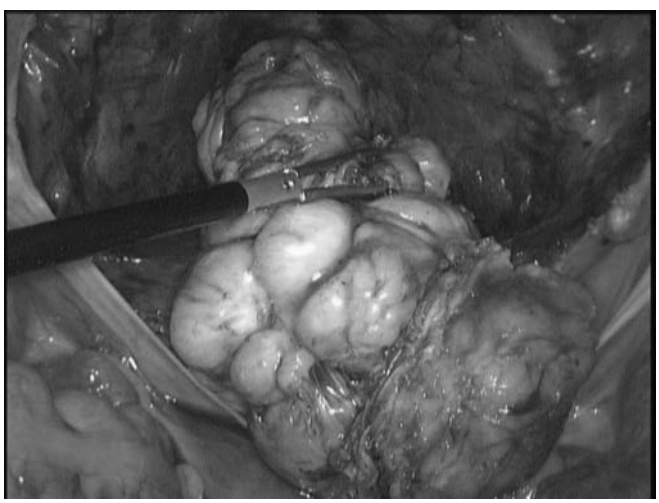

Figure 5. Laparoscopic view of the excised leiomyoma.

perimeter was dissected and a clear avascular plane was found. By performing blunt dissection along with some detrusor division, the mass was effortlessly enucleated (**Figure 5**). After the mass had been enucleated, the bladder mucosa was opened and the right ureteral meatus with the double-J stent was clearly seen. The bladder wall was closed with a 2-0 Vicryl intracorporeal running suture, avoiding meatus entrapment. A Foley catheter was placed, and suture quality was tested by filling the bladder with saline. A drain tube was left in the prevesical space.

Operative time was 90 minutes and there was no bleeding. The patient recovered uneventfully and was discharged on postoperative day 2. Final pathologic examination showed a 10-cm leiomyoma (**Figure 6**).

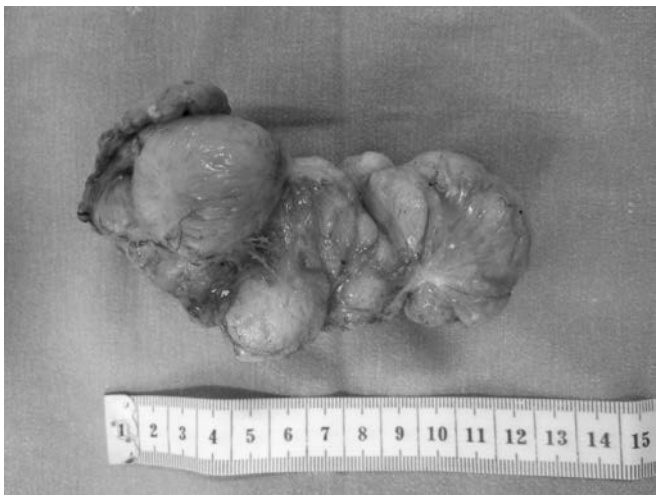

Figure 6. The surgical specimen.

DISCUSSION

Bladder leiomyomatosis is a rare occurrence, representing 0.5% of all bladder lesions. Approximately 95% of all vesical tumors arise from the urothelium. The other 5% originate from the mesenchyma, and leiomyomas are the most frequent type, accounting for 35% to 46% of cases. They can be found anywhere in the urinary tract; the kidneys and bladder are the more common sites, specially the bladder neck.[1–5]

Women are most frequently affected (76–85%) especially between the ages of 20 and 60 years.[1,2] An increasing number of these tumors are detected incidentally at an early stage secondary to routine pelvic ultrasonography in young women.[2] However, they can present with various symptoms that usually relate to their size and disposition. Presenting symptoms can be irritative in 38% to 50% of cases (eg, urgency, voiding pain, urinary frequency) or obstructive in 24% to 49% (eg, weak urinary stream up to acute urinary retention). Hematuria, abdominal mass, and back and pelvic pain can also manifest as presenting symptoms.[1,3,5] Bladder leiomyomas can be submucosal, intramural, or subserosal in 51% to 66%, 3% to 30%, or 11% to 30% of cases, respectively.[5] Tumors with voiding symptoms are usually located near the bladder neck, whereas filling symptoms are usually associated with very large masses.[1,3] Submucosal leiomyomas are usually symptomatic[2,3,5] and frequently present with voiding symptoms and pelvic pain, prompting early diagnosis. Alternatively, intramural and subserosal myomas are usually asymptomatic and can grow very large before being diagnosed incidentally.

Leiomyomas originate from smooth muscle cellular degeneration. However, their physiopathologic origin remains unclear. Based on their female predominance and postpubertal presentation, a key role has been ascribed to hormonal imbalances.[2] In addition, the degeneration of embryonal bladder remnants such as Wolff and Müllerian ducts, perivascular smooth muscle metaplasia secondary to inflammation, and detrusor chronic inflammation have been blamed for bladder leiomyomatosis.[5] Nevertheless, no single theory can completely explain its origin. Leiomyomas appear as solid homogeneous masses on ultrasonogram. This method has a very high sensibility for determining tumor limits.[5] Transvaginal ultrasonography is an excellent tool for studying posterior bladder wall tumors in women. Cystography may show a filling defect on tumors with an important endovesical component. Computed tomography scans and magnetic resonance imaging can show a heterogeneous enhancement and precisely inform on size, position, and relationship with other structures.[1,4,5] There is no specific finding that can determine or rule out malignancy. For this matter, a biopsy must always be obtained before a final treatment is proposed. There has been a single report of malignant degeneration, although that is very infrequent.[6,7]

In a large series reported by Epstein and colleagues and Erdem et al, the pathologic features of 51 patients with smooth muscle neoplasms of the bladder were analyzed. Of 31 leiomyomas, they found hyalinization (22%), degenerative atypia (22%), necrosis (13%), myxoid changes (6%), and focal fatty metaplasia (3%). In leiomyosarcomas (20 cases), they reported epithelioid morphology (25%), tumor cell necrosis (55%), and mucosal ulceration (35%). They divided the leiomyosarcomas in low and high grade based on mitotic count.[8,9]

In this case, immunohistochemistry results were positive for smooth muscle actin, confirming the origin of this tissue, and they were negative for CD117, ruling out sarcomas, which are positive for this marker.[9]

Transurethral resection or biopsy with a Tru-Cut needle (CareFusion Corp, San Diego, California) are the best options for obtaining a sample. Fine-needle aspiration biopsy or cold-knife biopsy are not recommended for their lack in sensitivity. Bladder leiomyomas may vary in size from less than a centimeter up to 30 cm.[2] Most cases reported have been treated endoscopically or with open surgery. Although reported in isolated cases, laparoscopic experience in this setting is scarce. To our knowledge we report the largest bladder leiomyoma excised by laparoscopy. Not only was the mass extraordinarily large, it was diagnosed incidentally. Another viable option proposed by some authors is to follow the lesions until symptoms appear.[1,2] In addition, benign histology is mandatory and any doubt in this matter should prompt immediate surgery. However, differing treatment may jeopardize the opportunity for minimally invasive surgery because such a large mass is difficult to manage laparoscopically.

Multiple surgical approaches have been reported: endoscopic, transvaginal, partial, and radical cystectomies both open or laparoscopically have been described.[1–3,5–7,10–12]

The advantages of the laparoscopic approach have been well established. Laparoscopic partial cystectomy has been previously described and is easily reproduced. Most reports are of relatively small and accessible lesions.[5,10–12] Feasibility is associated with lesion size and closeness to the ureteric meatus. Large masses require difficult intracorporeal manipulation. In cases in which ureteral meatus is compromised, ureteral reimplantation may be warranted. In this case, cystoscopy showed that the right ureter was closed to the base of the lesion. For this reason, a double-J stent was placed before surgery, facilitating ureteral visualization and reimplantation if it was deemed necessary. Posterior leiomyomas may warrant an open approach. However, in experienced hands, they may be attempted laparoscopically. Laparoscopic partial cystectomy can be performed either with a preperitoneal or transperitoneal approach. In our case, because of the lesion's large size, a transperitoneal approach was preferred to facilitate mass manipulation. During surgery, the mass was first seen protruding from the anterior bladder wall. The lesion's perimeter was dissected, and a clear avascular plane was followed, enabling complete and effortless tumor enucleation and leaving a very small bladder defect. Bladder capacity was preserved and there was no need for ureteral reimplantation. However, if necessary, ureteral reimplantation can be safely performed intracorporeally without the need for conversion. Furthermore, we believe that a laparoscopic approach should not be excluded when ureteral compromise is detected preoperatively.

Taking into account that bladder leiomyomas are usually diagnosed in middle-aged women, cosmesis and convalescence play a key role in treatment preference. Laparoscopy delivers both excellent cosmetics and rapid return to normal activity, making it a first option when treatment is necessary. Further experience and the use of robotic assistance may broaden even more the ability to manage bladder leiomyomas. Transvaginal extraction of the mass is always a possibility in women. However, in our case, this was not an option because of the size of the mass and the fact that the patient had never given birth.

There is no consensus on follow-up. Recurrence is very rare, and it is almost impossible to determine whether a new lesion is a recurrence or a secondary tumor. We propose following patients with vesical ultrasonography every 6 months for the first 2 years and also performing a computed tomography scan or magnetic resonance imaging if necessary.

This case adds to the increasing body of evidence supporting the use of laparoscopy as the preferred approach in every viable scenario. In a high-volume practice, a minimally invasive approach should be sought in every case. This allows for technical refinement and standardization of infrequent procedures.

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