

# Laparoscopic Partial Cystectomy for Leiomyoma of Urinary Bladder - A Case Report with Review of Literature

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## A B S T R A C T

**Introduction:** Leiomyomas of the urinary bladder are rare and benign neoplasms of the bladder. They make up just 0.43% of all bladder tumors. An indicator of their rarity is that only just over 250 cases have been reported in English literature, so far. Their symptomatic presentation depends on their size and localization. Symptoms vary vastly. Leiomyomas of urinary bladder is the most common subtype of mesenchymal tumours of urinary bladder as per the WHO classification for bladder tumors.

**Case report:** We report, herein, one such case of a 27-year old female with a urinary bladder tumor. She was incidentally diagnosed with it and successfully underwent laparoscopic partial cystectomy for it.

**Conclusion:** Leiomyoma of the urinary bladder is a rare neoplasm with female preponderance over males. The exact pathophysiology is still unknown. However, a detailed history and examination should be performed in patients with obstructive uropathy symptoms to rule out leiomyoma as it is the commonest benign mesenchymal bladder tumour.

**Keywords:** Bladder Tumor, Leiomyoma, Partial Cystectomy, Laparoscopic

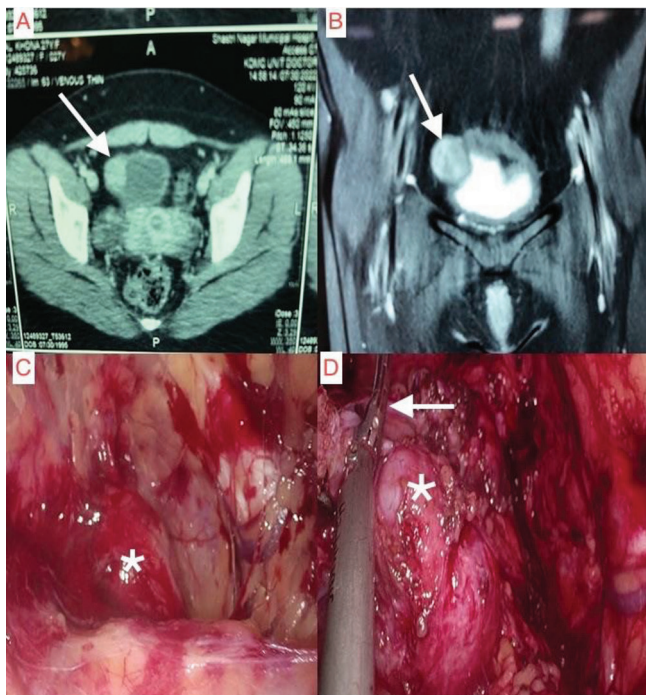
## INTRODUCTION

Leiomyoma refers to a benign tumor comprising of smooth muscle tissue. It can occur anywhere in the body where smooth muscle is present, but is commonly noted in the uterus (fibroids) or the gastrointestinal tract. Bladder leiomyoma is a rare, benign tumor with an incidence of just about 0.43% of all types of bladder tumors.<sup>1</sup> Some of the leiomyomas observed in the bladder are diagnosed incidentally, as in our case. They can present with varied symptoms such as obstructive symptoms from the lower urinary tract, irritative symptoms, hematuria, and dysuria. Surgical excision is the standard treatment, and the surgical approach depends on tumor size and location on the bladder wall. Small and easily accessible tumors can be treated with transurethral resection of the bladder tumor (TURBT). Large tumors with unfavourable sites are best managed by segmental resection (open / laparoscopic / robotic).

## CASE REPORT

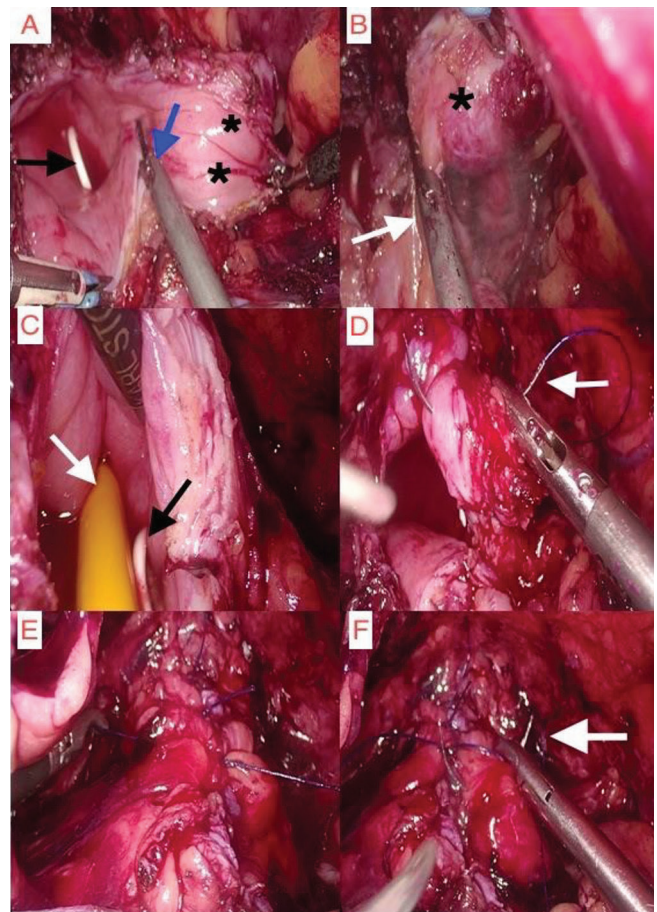
A 27 year old female presented with colicky pain radiating from the right loin to the right groin, since 3 days. The pain was associated with nausea and vomiting. She did not have any known co-morbidities. On general examination, her vital parameters were normal. On systemic examination, the abdomen was soft. She had mild tenderness in the right lumbar region. There was no palpable mass. An auscultation of her abdomen revealed normal bowel sounds. She was, then, advised to get an ultrasound scan (USG) of her

abdomen. It was suggestive of a well-defined hypoechoic lesion in right iliac fossa, closely abutting the right lateral urinary bladder wall, of size 3x2 cms. A contrast enhanced computed tomography (CECT) of the abdomen and pelvis was done that was suggestive of a contrast enhancing soft tissue lesion along the right antero-lateral wall of the urinary bladder involving adjacent fat (Fig 1A). It also revealed a right mid ureteric calculus with hydronephrosis and hydroureter. This finding explained her symptoms. Thus, the pelvic soft tissue mass was an incidental finding. A magnetic resonance imaging (MRI) scan of the abdomen and pelvis was done, thereafter. It showed a smooth, well defined, enhancing focal mass of size 3.3x2 centimeters (cms) arising from right antero-lateral wall with extravescical extension (Fig 1B). As per the MRI scan report, it was reported to likely be a Leiomyoma of the urinary bladder. She was then worked up and planned for surgery. She underwent Cystoscopy, Right Ureteroscopy, Intracorporeal lithotripsy and stone retrieval with Double-J(DJ) stenting of the right ureter. This was then followed by a laparoscopic partial cystectomy. The cystoscopy revealed an extrinsic mass of size 3x2.5 cms on the right antero-lateral wall of the urinary bladder, indenting the mucosa. The overlying mucosa of the urinary bladder appeared normal. During the surgery, an intraperitoneal access was first achieved after instituting pneumoperitoneum by the closed technique, through the Verress's needle. The peritoneal flap was then reflected to gain access and entry to the pre-peritoneal space (Fig 1C). A harmonic scalpel was used as the energy source (Fig 1D). The urinary bladder was

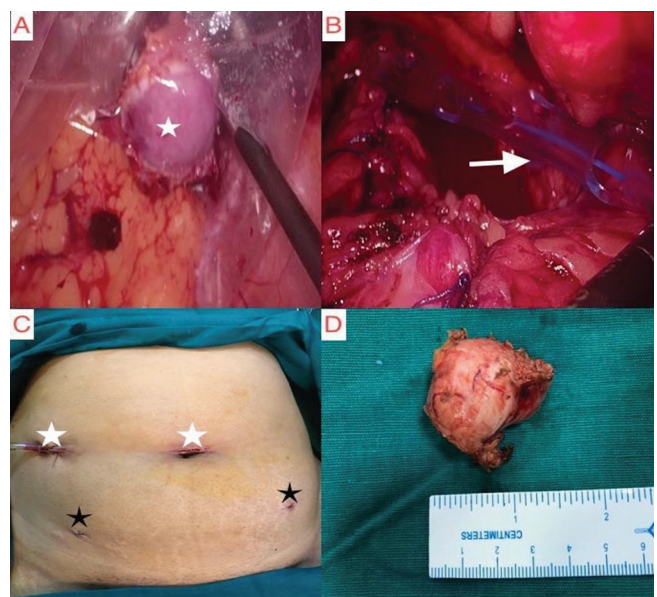


**Figure-1 :** Imaging & Op. pics. A)CECT pelvis axial view shows the enhancing bladder wall tumor (white arrow), B)MRI abdo shows the well circumscribed bladder wall tumor arising from the right antero-lateral aspect, C)shows developed extraperitoneal space with urinary bladder (white asterisk), D)Dissection around the tumor (white asterisk) using the harmonic scalpel (white arrow)

then identified and dissection carried out around its right antero-lateral wall. The mass was then identified by tactile feedback and a thin cuff of bladder wall bared around it. The mass along with the cuff of bladder wall was then excised (Fig 2A,B). While doing this, the initial incision on the bladder wall provided entry into the luminal aspect of the urinary bladder, wherein, the Foley's catheter and the DJ stent were identified (Fig 2C). The DJ stent provided, in real time, a continuous visualization of the right uretero-vesical junction (Fig 2A,C). This helped to safeguard it and stay away from it, while the excision was in progress. The resultant defect in the urinary bladder wall, caused by the resection, was suture closed with 3-0 Polydioxanone(PDS) by continuous interlocking sutures. The inner continuous PDS suture line was, then, oversewn by an outer second layer of 3-0 Vicryl simple interrupted sutures, using the peri-vesical fat (Fig 2D,E,F). A local toilet was given using normal saline. The specimen was extracted in a plastic bag through the widened right lateral 10mm trocar site (Fig 3A). A 32 French tube drain was placed in the retropubic space through the right lateral 10mm port site (Fig 3B). The postoperative course was uneventful. The drain was removed on post operative day (POD) 3. The patient was discharged on POD 5 with Foley's catheter in situ. The Foley's catheter was removed after 2 weeks. On her POD 10 out patient department visit, all her wounds had healed well. The histopathology report confirmed a leiomyoma of the urinary bladder. Figures 3C and 3D show the trocar sites and the extracted specimen, respectively.



**Figure-2:** Op. pics. A)Tumor (black asterisks) being excised with harmonics scalpel (blue arrow), also seen is the right D-J stent in situ (black arrow, B)Tumor (black asterisk) almost completely excised(white arrow), C)Bladder defect after tumor excision with Foley's(white arrow) & D-J stent (black arrow) in situ, D)Initiation of defect closure (white arrow), E)Completed suture line, F)Perivesical fat being sutured over the 1st layer (white arrow)



**Figure-3:** A)Specimen being 'bagged', B) Tube drain left in situ (white arrow), C)Trocar sites - two 10mm (white asterisks) & two 5mm (black asterisks), D) The specimen



## DISCUSSION

The World Health Organization (WHO) has classified bladder tumors into infiltrating urothelial tumor, squamous neoplasms, neuroendocrine tumors, melanocytic tumor, glandular neoplasms, mesenchymal tumors and lymphoid tumors, depending on histology. It has also divided tumors into low grade (grade 1 and 2) and high grade (grade 3).

Mesenchymal tumors make up 1-5% of all urinary bladder tumors.<sup>2</sup> Leiomyoma comprises 35% of all mesenchymal bladder tumors.<sup>2</sup> It is the commonest benign mesenchymal tumor of the bladder.<sup>2,3</sup> It was first described by Kretschmer et al in 1931. The incidence of bladder leiomyoma in women is twice as high as that in men.<sup>1</sup> Leiomyomas of the bladder occur between third to the sixth decades, with the mean age being 44 years.<sup>3</sup> Furthermore, middle-aged patients of approximately 50 years old present with the most significant adverse symptoms among all age groups.<sup>1</sup>

The cause of leiomyomas is still unknown. Many theories have been propounded to explain their origin. According to Blum's irritative theory, there is presence of chronic inflammatory stimuli over the bladder wall and the detrusor smooth muscle. Some theorize that leiomyoma may arise from perivascular inflammation or chromosomal changes. Lips-Chutz's theory proposes that the leiomyoma occurs secondary to an endocrine disorder, with estrogen and progesterone having a primary role. This theory is supported by two facts: the peak incidence is in females when fertile, and the presence of steroidal ovarian receptors on these tumors.<sup>1</sup>

Leiomyoma can develop at any site in the genitourinary tract. In the urinary bladder, it arises from submucosa, but can develop and grow in any layer. Imaging modalities that help visualise it include USG, CT and MRI. Pelvic ultrasound can detect a hypoechoic or mildly hyperechoic homogeneous mass in the bladder and provide information on its relationship with the uterus and vagina. A pathological assessment done by taking biopsy with a resectoscope, is the gold standard for diagnosis, based on the fact that bladder leiomyoma is composed of fascicles of muscle fibers separated by connective tissue. Invasion of the detrusor muscle is the most significant histopathological sign differentiating leiomyomas from leiomyosarcomas.<sup>1</sup> The management is determined primarily according to the size and anatomical location of the tumors. Leiomyomas can be endovesical (63 - 86%), intramural (3 - 7%) or ectovesical (11 - 30%).<sup>1</sup> Few patients with bladder leiomyomas are asymptomatic, but a majority of them present with obstructive symptoms (49%), irritative symptoms (38%) and hematuria (11%).<sup>1</sup> Rarely, some patients present with dyspareunia.<sup>3,4</sup> Symptoms depend on size and location of the tumor. A comparatively small sized tumor in the trigone area or at the bladder outlet can potentially cause severe symptoms, as against a larger tumor located in the bladder wall. Endovesical tumours cause more symptoms of obstructive uropathy and patient seeks medical help. Small endovesical leiomyomas can be managed with trans-urethral resection. Surgical excision has an excellent prognosis and should always be offered. Moreover, transurethral resection is a safe and effective initial choice for patients with relatively smaller tumors. Larger tumors,

intramural tumors and those with extravesical growth usually require trans-abdominal surgery (open / laparoscopic / robotic) with segmental resection or partial cystectomy. Recurrence after surgical removal is extremely rare, and recurrent cases can be managed with repeat enucleation or transurethral resection.<sup>5</sup>

## CONCLUSION

Though leiomyoma is a very rare entity, high end imaging investigations like CECT and MRI make the diagnosis relatively easily, especially given the fact that this disease is incidentally found with minimal obstructive or no symptoms. Depending on the size of the tumour mass the treatment modalities may vary from trans-urethral resection of bladder tumour to partial cystectomy. As seen in this report, laparoscopic resection of leiomyoma of the urinary bladder is feasible and safe. Indeed, it is the preferred approach for large leiomyomas and ecto-vesical leiomyomas.

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