

Case Report

Leiomyoma of the Bladder: Case Reporte and Litterrature Review

S. Ben Elhend MD¹, N. Hammoune MD¹, A. Mouhsine, MD¹, A. El Fikri MD¹¹Departement of Radiology, Avicenne Military Hospital, Marrakech, Morocco*Corresponding Author
S. Ben Elhend MD

Abstract: In the light of two observations of vesical leiomyoma and a review of the literature, we propose to present the different epidemiological, etiopathogenic, pathological and radiological aspects of this rare tumor. The role of imaging investigations, particularly of MRI, for the positive diagnosis of vesical leiomyoma, especially in the extra-vesical forms (30%) is highlighted. The role of imaging in post-therapeutic surveillance is also clarified.

Keywords: Bladder leiomyoma, ultrasonography, CT, MRI.

INTRODUCTION

Leiomyoma is the most common type of benign bladder tumor and could develop at any portion of the urinary bladder. The symptoms of this rare benign tumor depend on the size, location, or associated urinary tract infection (Roy, M. K. *et al.*, 2005). Their incidence is highest in young and adult females. Patients may complain of nonspecific urinary symptoms or pelvic pain (Erdem, H., *et al.*, 2012). Ultrasonography, MRI and cystoscopy are valuable diagnostic tools that can depict the morphology and anatomic location of leiomyomas.

CASE 1 :

A 32-year-old man without any systemic or genitourinary disease. He had suffered from lumbalgia with cystalgia and dysuria evolving for 8 months. The results of a laboratory evaluation were within the normal limits. Rectal examination shows a prostate surmounted by a firm mass, the size of an orange. An abdominal ultrasonography (**figure-1**) showed Tissue mass 70 mm long axis implanted in the trigone, regular contours and homogeneous range. An abdomen-pelvis computed tomography (**figure 2**) suggested a lesion of low vascularity, and no sign of crossing the bladder wall, without lymph node involvement. Endoscopic exploration showed the presence, at the level of the trigone, of a mass median and paramedian right measuring 70 mm long axis, the surface mucosa is of normal aspect without vegetations nor bleeding, the Histological examination of biopsies concluded the diagnosis of vesical leiomyoma. Patient underwent

open transvesical enucleation of mass lesion. Postoperative histopathology confirmed the diagnosis of leiomyoma of urinary bladder.

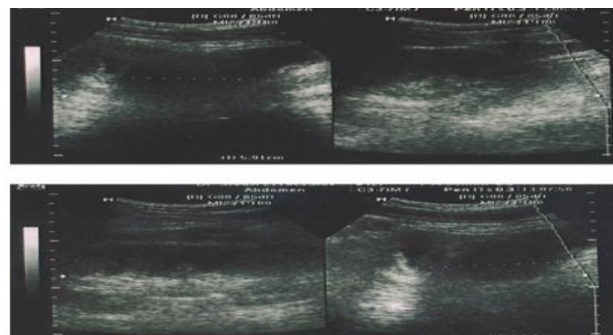


Fig.- 1 : Ultrasonography showing an homogenous Endovesical mass

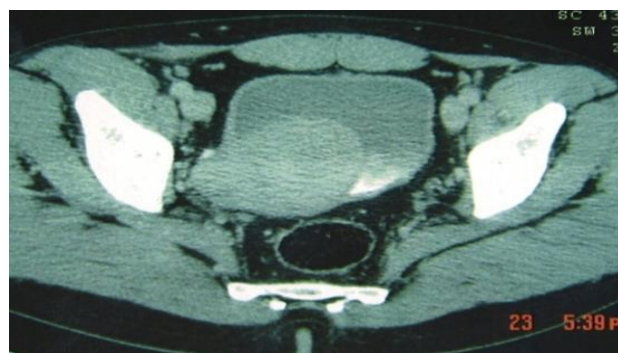


Fig.-2 : Axial CT scan : hypodense postero superior mass, with smooth border.

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CASE 2 :

A 37-year-old female patient presented in our department with complaints of occasional painless hematuria past 8-month complaints of dysuria and irritative symptoms with premenstruel pelvic pain. A pelvic bimanual examination, we found a firm, regular rounded mass of 6 cm in diameter, bulging in the anterior face of the vagina. On investigations, she was found to have normal biochemistry profile with normal creatinine. Pelvic ultrasound (**figure-3**) shows a heterogeneous hypoechoic mass with a central area of necrosis, it sits in the left side wall of the bladder and measures 6 cm long axis. The abdominopelvic CT (**figure- 4**) confirms the diagnosis of endo - and extra - vesical tissue lesion, poorly elevated after injection, without repercussion on the upper urinary tract, nor ganglionic extension. CT urography (**figure 5**) Left posterolateral vesical lacunary image without specificity. This radiological aspect evokes a bladder lesion of benign appearance, especially leiomyoma, but does not make it possible to definitively eliminate a genital lesion with bladder extension.

An MRI is then requested in order to attach this tumor to its original organ and to approach its etiological nature. This non invasive investigation is performed in coronal T2 weighted and sagittal T1 weighted, then after enhancement with fat saturation (**figure-6**). MRI demonstrate the bladder origin of this lesion, which presented a hypo T1 signal and heterogeneous T2 signal containing a "necrotic" central zone, the histology of trans-urethral biopsies has led to the diagnosis of vesical leiomyoma. The surgical procedure consisted of the enucleation of the tumor, and the histological study of the operative specimen confirmed the nature of this tumor.

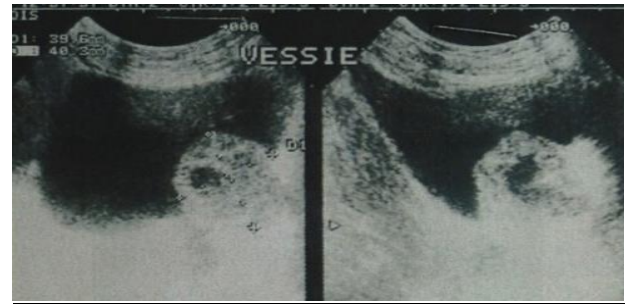


Fig.-3 : Ultrasonography showing an heterogeneous endovesical mass

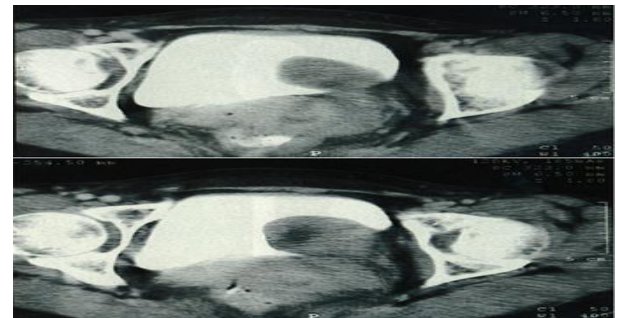


Fig.- 4: URO –CT scan : tissular processus in the trigone of bladder, with intra and extra component. développement endo et extra-vesical.



Fig.-5 : postérieur CT image : Left lateral lacunary image



A : Coronal T2 weighted MRI B : Sagittal weighted T1 MRI C : Sagittal enhanced T1 MRI and FAT SAT
Fig.- 6: pelvic Magnetic Resonance Imaging MRI : heterogeneous leiomyoma of the bladder, with necrotic zone.

DISCUSSION

Leiomyoma of the bladder is the most common mesenchymal tumor in the bladder. It was first reported by Virchow in 1931. There are about 200 cases that have been reported in the medical literature (Tavora, F., *et al.*, 2013 ; Sundaram, C. P., *et al.*, 1998). A study showed that leiomyoma of the bladder was female preponderance (76%), The age range is between 30 and 50 years which corresponds to our two observations, our patients are respectively 32 and 37 years old. Leiomyoma of the bladder can be totally asymptomatic or can present in a varied manner depending on the location of the tumor with obstructive symptoms (49%), irritative symptoms (38%), hematuria (11%), and flank pain (13%) (Fekkak, H. *et al.*, 2001).

Macroscopically, the leiomyoma is a regular, rounded, sometimes polylobed, smooth tumor that can be pediculate or sessile, the mucosa that covers it in endo-cavitary forms remains normal for a long time (Jiang, X. Z. *et al.*, 2012). Microscopically, bladder leiomyomas are composed of interlacing and whorling bundles of smooth muscle cells. The nuclei of smooth muscle cells are oval to cigar-shaped, blunt-ended, centrally located and showing no nuclear atypia or mitotic activity (Xin, J., *et al.*, 2016).

Leiomyoma may occur at any sites in the genitourinary tract. In the urinary bladder, it arises from submucosa, but can develop and grow in any layer. Thus, it can be intravesical, intramural, or extravesical. Intravesical form has been reported most frequently in the literature (63–86 %) followed by extravesical (11–30 %), while intramural type is less common accounting for 3–7 % of the cases. Intravesical tumors, first named and described as endovesical tumors by Campbell and colleagues, is a result of submucosal growth of leiomyoma (Shiu-Dong, C., 2010 ; Ghadian, A, & Hoseini, S.Y. 2013). In about 2/3 of the cases the leiomyoma sits at the level of the trigone, this is the case in our two patients (Bhushan, D., *et al.*, 2017).

Endovesical mass has been mostly recognizable due to its characteristic bulging into the bladder lumen, which induces the irritative symptoms and forces the patient to seek medical treatment. Endovesical tumors are usually pedunculated or polypoid, while intramural myomas are generally well encapsulated and surrounded by bladder wall muscle. The endovesical form usually causes irritative or obstructive symptoms or gross hematuria that results in detection. Intramural form, especially small tumor, may not produce symptoms (Shiu-Dong, C., 2010). There are many theories that have been proposed for the causation of this tumor such as a hormonal-related lesion, embryonic rests' tumor, postinflammatory myomatous metaplasia, localized infection, and "wandering" fibroid resembling a parasitic uterine leiomyoma. The female predominance at a reproductive

age suggests hormonal influence more than the other possibilities (Goktug, G. H. *et al.*, 2014).

The clinical examination is often normal, but the pelvic touches often lead to the discovery of a mass which is difficult to specify the exact seat, which was the case in our two patients. The biological assessment is often normal, except for cases of deep anemia secondary to recurrent haematuria or alterations of the renal function in case of compression of the urinary tract.

CT, MRI, and ultrasonography are regularly used to make the diagnosis of leiomyoma of the urinary bladder. Ultrasonography reveals a tissular lesion of the bladder, homogeneous, rounded, lobulated, with clear and regular contours, possibly containing "necrotic" zones (Tuchmann, R., Saussine, G. 2000).

Both CT and MRI can be used to assess the site, dimensions, and any extension of the tumor. CT can be used to assess the location of these tumors and to differentiate between a fluid-filled and a solid lesion, in addition to identifying its relation to the surrounding structures. The endo-vesical development of tumors, as is the case of our first observation, is often easy to be assisted. Problem arises with tumors with intra and extra vesical development (case of our second observation) or purely extra-vesical tumors, which can be confusing with a neighboring lesion invading the bladder secondarily. In these situations, MRI can have a higher specificity for the mesenchymal component of these tumors and will delineate their relation with the bladder wall and detrusor (Bhushan, D. *et al.*, 2017). Non-degenerative leiomyomas are usually visualized on MRI as low-intensity masses both on T1 and T2 weighted sequences with a smooth surface, while degenerative leiomyomas have a heterogeneous signal intensity (case 2). A variable pattern of enhancement is observed after the injection of gadolinium: some leiomyomas are homogeneously enhanced, while others are not. However, MRI cannot completely differentiate leiomyomas from their malignant counterparts, leiomyosarcomas, especially when the lesion is degenerated or ulcerated (Tuchmann, R., *et al.*, 2000).

The definitive diagnosis of leiomyoma of the urinary bladder and differentiation from leiomyosarcoma (irregular contours and a more heterogeneous content than the vesical leiomyoma), fibrosarcomas, or angiosarcomas, requires histopathological examination. Cystoscopy with biopsy of the mass will usually yield a definitive diagnosis. On immunohistochemistry, they will have positive staining for smooth muscle actin and negative staining for Ki-67 (Itam, S., *et al.*, 2016).

Treatment is determined primarily according to the size and anatomical location of the tumors. Surgical options include transurethral resection of the tumor and open surgical excision. Surgical excision has

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 and those with extravesical growth usually require open surgery with segmental resection or partial cystectomy. Successful laparoscopic and robotic resection of leiomyoma of the urinary bladder has also been reported (Kalathia, J., *et al.*, 2015).

CONCLUSION

Bladder leiomyoma is a rare benign tumor characterized by its clinical appearance, unclear etiology and favorable prognosis. Imaging modalities, particularly MRI, is the mainstay for diagnosis, especially in extravesical tumors. Endoscopy provides precise information on the macroscopic appearance of the tumor, and biopsy fragments for histological examination. The treatment of this tumor is surgical and remains an excellent prognosis.

Conflict of Interest: The authors declare that they have no conflict of interest.

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