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Original Research Article

Leiomyomas of the Urinary Bladder: An Analytical Study

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Conflict of interest: Nil

Abstract

Background: Benign bladder tumours especially bladder leiomyomas are unusual tumours with significant clinical overlap with malignant bladder tumours. Their diagnosis often requires trans-urethral biopsy and histopathological analysis. However, follow-up protocols for benign bladder tumours are different from those for urothelial carcinoma.

Methods: The retrospective descriptive study was conducted in a tertiary care centre, with data collected from a period between December 2017 and December 2020. All patients who were diagnosed and treated for leiomyomas and other benign tumours of the urinary bladder during the study period were reviewed retrospectively.

Results: During the 3-year study period, 15 patients had been diagnosed with benign tumours of the urinary bladder. The majority of patients presented with LUTS (80%). Haematuria was also present in a significant number of patients as well (53.3%). The most common tumour was leiomyoma of the urinary bladder, with 6 cases.

Conclusions: Distinction between benign and malignant bladder tumours is important as follow-up protocols differ between these entities. Definitive diagnosis required a transurethral biopsy from the tumour followed by histopathological analysis.

Keywords: Bladder Leiomyoma.

Introduction

Bladder tumours are usually malignant with urothelial carcinoma being the most common type. Bladder cancers are the fourth most prevalent among cancers affecting both genders, worldwide [1,2] Benign bladder tumours are unusual entities that often overlap with malignant tumours with respect to their clinical presentation with features that include but may not be limited to haematuria and irritative lower urinary tract symptoms (LUTS). They may have common risk factors for development such as chronic inflammation of the urothelium. Their diagnosis often requires trans-urethral biopsy and histopathological analysis. However, follow-up protocols for benign bladder tumours are different from those for urothelial carcinoma. Hence the distinction between benign & malignant bladder tumours assumes significance.

Objective

To study the clinical profile of patients diagnosed to have urinary bladder leiomyomas at the Department of Urology during the study period.

Inclusion Criteria:

All patients diagnosed to have urinary bladder leiomyomas and other benign bladder tumours at the Department of Urology from December 31,2017 to December 31,2020.

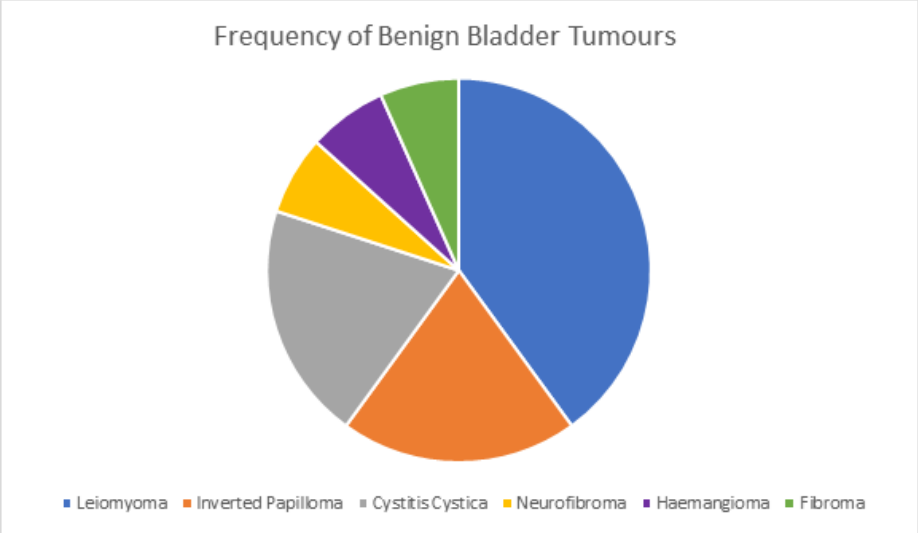
Exclusion criteria: None.

Methods

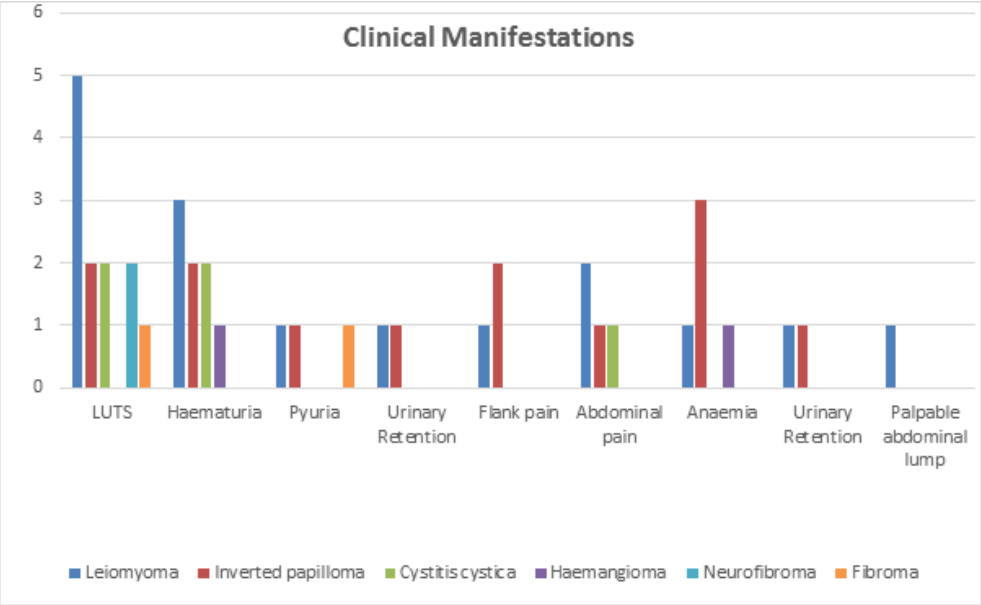
The present study is a single centre retrospective descriptive study was conducted in a tertiary care centre, with data collected from a period between December 2017 and December 2020. All patients who were diagnosed and treated for leiomyomas and other benign tumours of the urinary bladder were reviewed retrospectively. For the purpose of this case series study, data pertaining to demographic factors, clinical features, laboratory investigations, imaging & cystoscopic findings as well as treatment given were analysed from patient records.

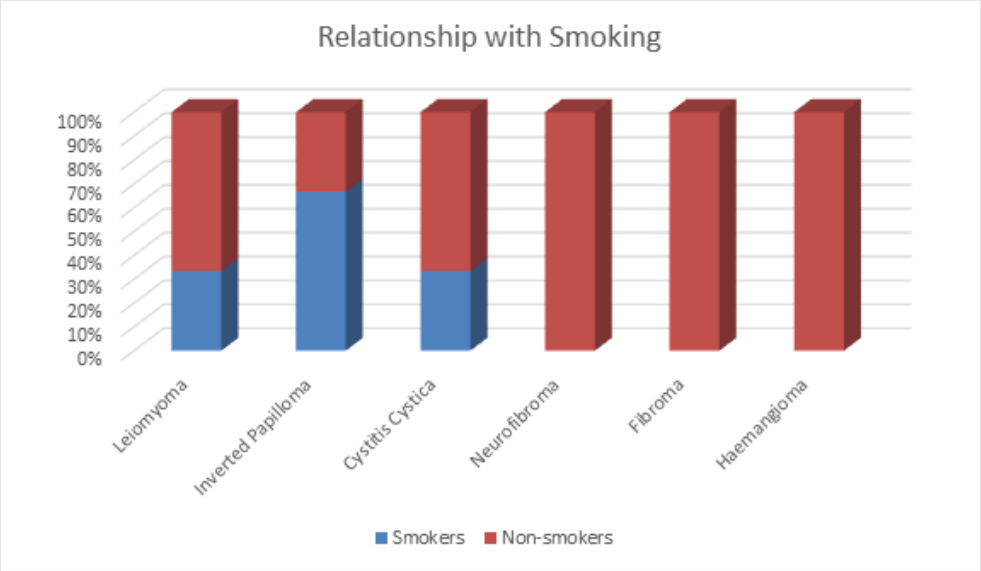
Results

During the 3-year study period, 15 patients had been diagnosed to have benign bladder tumours



The average age of the patients included was 48 years, with a range between 23 and 78 years.





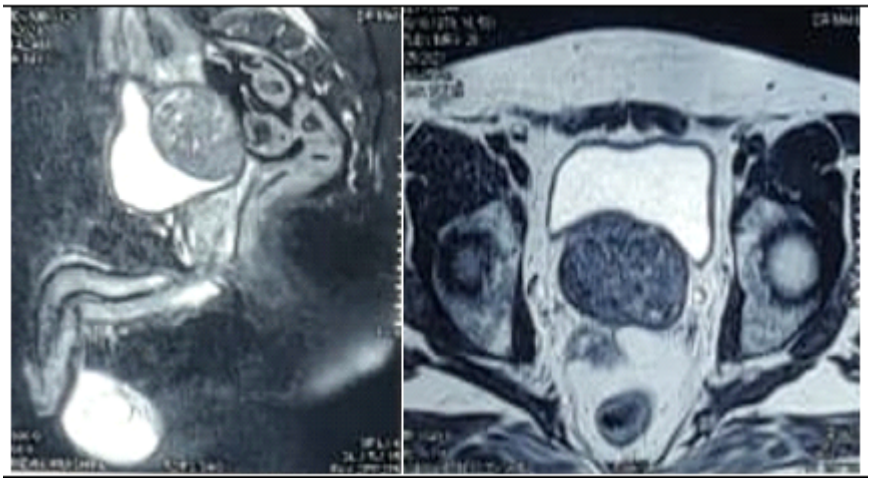
Patients with prior history of urolithiasis	
Inverted papilloma	1
Cystitis cystica	2

Three patients had prior history of urolithiasis.

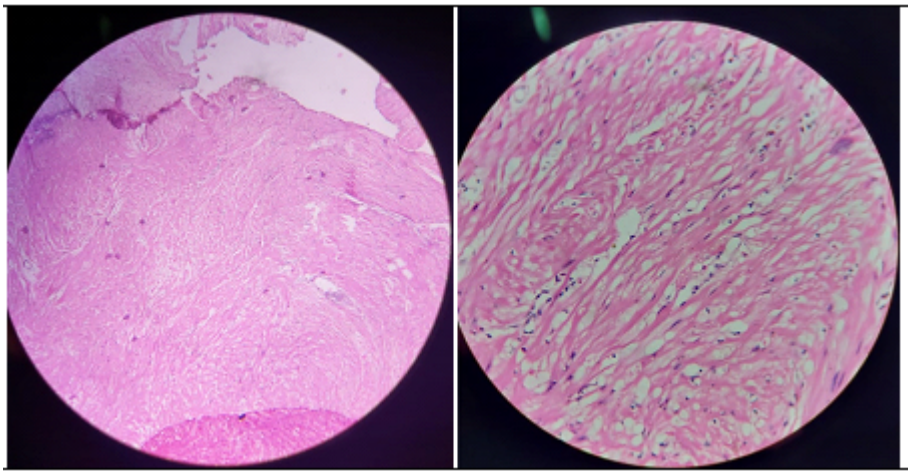
Diagnosis	Treatment	Number of patients
Leiomyoma	TURBT Open Enucleation	5 1
Inverted Papilloma	TURBT	3
Cystitis Cystica and Cystitis Glandularis	TURBT	3
Bladder Haemangioma	Transurethral Fulguration	1
Submucosal Neurofibroma	TURBT	1
Bladder Fibroma	TURBT	1

The majority of patients presented with LUTS (80%). Haematuria was also present in a significant number of patients as well (53.3%). The most common tumour was leiomyoma of the urinary bladder, with 6 cases. All patients were symptomatic, with an average age of 47 years. Five out of these six patients were women & they were treated by TURBT. One patient required a second sitting of TURBT in view of recurrence of the tumour. The only male patient with leiomyoma had a large tumour for which trans-urethral biopsy was done to confirm the diagnosis, followed by Open Cystotomy & tumour enucleation. All of these patients had undergone preoperative contrast-enhanced CT scans, which were suggestive of the diagnosis. Two patients were diagnosed to have cystitis glandular is with intestinal metaplasia, both of whom were male & symptomatic. The CT Urogram findings for both patients were suggestive of malignancy. Two male patients who presented with haematuria & CT urogram findings suggestive of urothelial carcinoma were diagnosed to have inverted papilloma. Other cases included were a case of bladder fibroma, a case of neurofibroma of the urinary bladder and a case of bladder haemangioma & a case of cystitis cystica. All cases could be treated by TURBT, except for a single patient with leiomyoma who underwent open surgery. The post-operative period was uneventful in all patients. One patient with leiomyoma presented with recurrence,

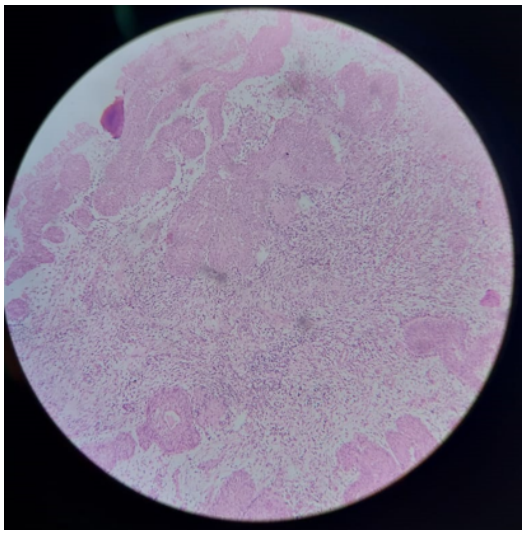
6 months after TURBT and was subjected to a second TURBT, following which she remained symptom-free.



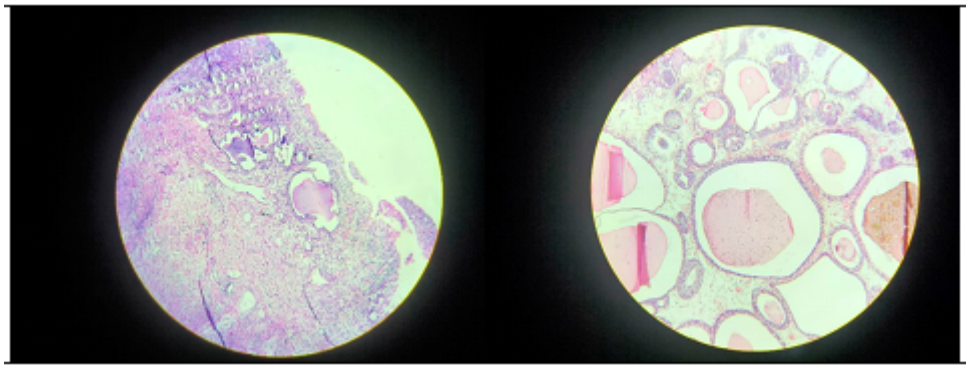
Bladder Leiomyoma – MRI images



Leiomyoma – Histopathological Images:



Inverted Papilloma:



Cystitis Cystica:

Discussion

Benign bladder tumours are unusual entities that resemble urothelial carcinoma with respect to their clinical features. The imaging modalities that are routinely used in patients with bladder tumours include Ultrasound of the abdomen and pelvis, contrast-enhanced CT of the abdomen and pelvis with CT- Urogram, and MRI of the pelvis in selected cases. Leiomyomas are among the most common benign bladder tumours, comprising less than 0.5% of all bladder tumours. Their incidence is similar in both genders [3], however a slight female preponderance has been noted in some studies [4]. This has been attributed to the greater use of pelvic ultrasound in women [5]. These are mesenchymal tumours & various causes that have been postulated include hormonal alterations, persistent bladder inflammation & chromosomal alterations [6]. Four theories have been proposed to explain the origin of bladder leiomyomas (a) hormonal disturbances (b) dysontogenesis in the form of embryonal tissue rests that transform into leiomyomas (c) inflammatory changes in perivascular tissue with resultant transformation (d)infection and inflammation of bladder wall musculature with leiomyoma formation [7] Leiomyomas may be asymptomatic; however patients may present with obstructive & irritative LUTS as well as haematuria [8]. They are classified into 3 types based on their location relative to the bladder wall – Endovesical, Intramural & Extravesical types. Most bladder leiomyomas are endo vesical, appearing as polypoidal or pedunculated lesions on cystoscopy. These lesions are usually symptomatic with irritative LUTS, obstructive symptoms & haematuria, whereas the intramural & extravesical types are less likely to produce symptoms. Obstructive symptoms are more common than irritative LUTS & haematuria [6]. Diagnostic options include ultrasonography, Computed Tomography & Magnetic Resonance Imaging. Ultrasonography usually reveals a smooth homogenous lesion with a hyperechoic periphery [8,9]. CT scans can better delineate the relationship between a leiomyoma and the surrounding structures. MRI can define the relationship of the lesion with the bladder wall & can identify the mesenchymal component within the lesion [10]. The lesion shows intermediate signal intensity on T1 weighted imaging. T2 weighted imaging reveals high and low signal intensity areas simultaneously Leiomyomas show variable enhancement with gadolinium contrast [11,12]. Bladder leiomyomas appear as round greyish white nodules with microscopy revealing spirally arranged smooth muscle fibres separated by fibrous tissue with less than two mitotic figures per high power field [3]. Treatment depends on the size & anatomical location [13]. Options include TURBT, Simple enucleation, Partial Cystectomy & Cystoprostatectomy. There are case reports of transvaginal excision of bladder

leiomyomas as well [14]. Multiple case series & reports have noted that leiomyomas of the bladder have relatively low re-operation rates, with almost no recurrence if completely excised, irrespective of the mode of primary excision. The mode of treatment is usually determined by the proximity of the lesion with the ureteric orifices & the sphincter as well as by the size & extent of the lesion [15]. Inverted papillomas make up less than 1% of all bladders urothelial tumours. Most patients are in their fifth or sixth decade of life. A male-to-female ratio of 5.8 to 1 has been observed [16]. Possible causes include inflammation, chronic infection, smoking, obstruction, or exposure to carcinogens [17]. On cystoscopy these lesions appear as pedunculated/papillary masses. Histopathological examination reveals an endophytic growth pattern with a layer of urothelium covering most of the tumour. Spindle cells are observed in trabeculae & cords with palisades of basaloid cells. Squamous metaplasia may be present. Immunohistochemistry is especially useful in distinguishing between inverted papilloma and urothelial carcinoma, with inverted papillomas being negative for cytokeratin 20 [18]. However, the distinction is difficult on histopathology because upto 25% of urothelial cancers may have an inverted growth pattern leading to diagnostic errors which may significantly affect patient management [18]. TURBT is adequate for treating these lesions however they have a high recurrence rate which has been attributed to incomplete resection [19]. Cystitis cystica & glandularis are usually seen in association with chronic inflammation or obstruction. They occur as cystic nests lined by columnar or cuboidal cells with proliferation of Von Brunn nests [20]. Chronic irritation from infection, calculi or tumours result in metaplasia of the urothelium which undergoes proliferation so as to form buds that grow deep below the lamina propria. In cystitis cystica these buds form cystic deposits, whereas they transform into goblet cells in cystitis glandularis [21]. These two conditions often co-exist with each other. Cystitis glandularis has low risk for transformation into adenocarcinoma. This is especially believed to occur with the intestinal subtype of cystitis glandularis [22,25]. Hence regular endoscopic surveillance is advisable. However, some authors believe that cystitis glandularis is a purely quiescent lesion with no malignant potential [26,27].

Conclusion:

Benign bladder tumours have considerable clinical overlap with malignant bladder tumours. However, follow-up for these tumours is less stringent. Hence a proper distinction between the two types becomes important. Confirmation of the diagnosis requires transurethral biopsy. Treatment becomes necessary in the presence of symptoms. Due to the fact that these tumours are unusual, most of these will inevitably be subjected to TURBT which allows for histopathology and confirmation of the diagnosis.

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