

**Review of the surgical management of urinary bladder sarcoma: National Cancer Institute experience**Mohamed Salama Mohamed<sup>1</sup>, Amr Mostafa Zahran<sup>2</sup>, Ahmed M. Raghib<sup>3</sup> and Ayman Salah Moussa<sup>3\*</sup><sup>1</sup>Department of Surgical Oncology, National Cancer Institute, Cairo University, Egypt.<sup>2</sup>Department of Urology, Faculty of Medicine, Cairo University, Egypt.<sup>3</sup>Department of Urology, Faculty of Medicine, Beni-suef University, Egypt.[m\\_salama201010@yahoo.com](mailto:m_salama201010@yahoo.com)

**Abstract: Background:** Bladder sarcomas are rare histologic subtypes that represents less than of all bladder tumors. **Objective:** to review these rare tumors as regards the clinic-pathological characteristics as well as the management with special emphasis on the surgical treatment being the most important part of the treatment. **Patients and methods:** we reviewed the medical records for all the patients diagnosed with urinary bladder sarcomas during the period from year 2007 to 2015 in the National Cancer Institute. We used simple frequencies and percentages to describe the data and overall survival was calculated using Kaplan Meyer Chart. **Results:** Total 12 patients were included in the study. 10 (83.3 %) were males and 2 (16.7 %) were females (M: F: 5:1). Mean age of the patients was 56.7 years ranging from 24 to 72 years. Leiomyosarcoma was the most common pathology 8 patients (66.7), Gross hematuria was the most common presenting symptom, 10 patients (83.3%), Surgery was the main line of treatment, most of patients (41.7%) treated with (radical cystectomy in males or anterior pelvic excentration in females), simple cystectomy in 3 patients (25%), partial cystectomy in 2 patients (16.7%) and transurethral resection in 2 patients (16.7%). Local recurrence and pulmonary metastasis had occurred in one patient (8.3%).

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**1. Introduction:**

Non urothelial urinary bladder neoplasms are rare entity that constitutes less than 5% of all bladder tumors in north America (1). The classification includes sarcoma, carcinosarcoma, melanoma, and lymphoma. Subclassification of bladder sarcoma to different types based on histologic characteristics and special immunohistochemically staining techniques (2). Leiomyosarcoma are the most common type of sarcoma in adults but it is still relatively very rare, accounting for less than 1% of all bladder malignancies (3,4) With male predominance (male to female 2:1) (5) with most patients presenting in the 6 to 8 decades. (6, 7) Painless hematuria is the commonest presentation (in 80%), less frequently, patients complain of dysuria or obstructive voiding symptoms or are noted to have an abdominal mass. (6,8) Grossly, bladder sarcomas are often large, polypoid, firm, fleshy, unencapsulated and usually exhibit full thickness involvement of the bladder wall, with hemorrhagic and/or focally necrotic areas, and often surface ulceration (3,9). Affecting any part of the bladder, but the dome followed by the lateral walls are the most common tumor sites (6). Higher-grade tumors had a worse prognosis. Most low-grade tumors have lower risk of recurrence or metastasis (3,6). The

management also is a challenge since there is no standard treatment and these tumors are mostly treated like urothelial bladder cancer despite the different behavior of each subtype. The surgical role being the first line of treatment in isolated bladder tumor but in metastatic one multimodality treatment was often preferred, with the chemotherapeutic agents doxorubicin and ifosfamide having the greatest response. (10)

**2. Patients and Methods:**

This retrospective study was done on 12 patients with urinary bladder sarcoma attending the National Cancer Institute between January 2007 and December 2015. Data was collected from the patients' medical records with follow up period up to 33 months from the date of surgery. Histopathological features were obtained from the pathology department.

Diagnosis of the patients was established clinically, by patient medical history and complete physical examination. Laboratory investigations included complete blood count, serum biochemistry, Chest X - ray, computed tomography (CT) of the chest, abdomen and pelvis, were done as well as cystoscopy & biopsy/Transurethral resection of bladder tumor (TURBT). All pathology blocks and

slides were reviewed by pathologist. Moreover, immunohistochemically studies were performed to determine the subtype of bladder sarcoma. Pathology data, surgery type, primary modality of treatment, recurrence, and survival were considered. Radical cystectomy i.e. cystectomy with bilateral pelvic lymphnode dissection up to the bifurcation of common iliac vessels, simple cystectomy i.e. cystectomy without lymphadenectomy or partial cystectomy are the main surgical procedures were done after confirmed cystoscopic biopsy of the bladder sarcoma.

### 3. Results

Total 12 patients were included in the study. 10 (83.3 %) were males and 2 (16.7 %) were females (M: F ratio 5:1). Mean age of the patients was 56.7 years ranging from 24 to 72 years.

History of smoking in 9 patients (75%) and bilharziasis was pathologically documented in 50% of patients. Gross hematuria was the most common presenting symptom, 10 patients (83.3%) followed by dysuria in 2 patients (16.7%). Leiomyosarcoma was the most common pathology 8 patients (66.7) followed by carcinosarcoma 2 patients (16.7%), synovial sarcoma 1 patient (8.3%) and unclassified sarcoma 1 patient (8.3%). Preoperative staging revealed that most patients (66.6%) had (clinical stage T2). Only 1 patient (8.3%) had bilateral hydronephrosis. All patients at the time of diagnosis were free of metastasis.

Surgery was the main line of treatment, most of patients (41.7%) treated with (radical cystectomy in males or anterior pelvic excentration in females), simple cystectomy in 3 patients (25%), partial cystectomy in 2 patients (16.7%) and transurethral resection in 2 patients (16.7%).

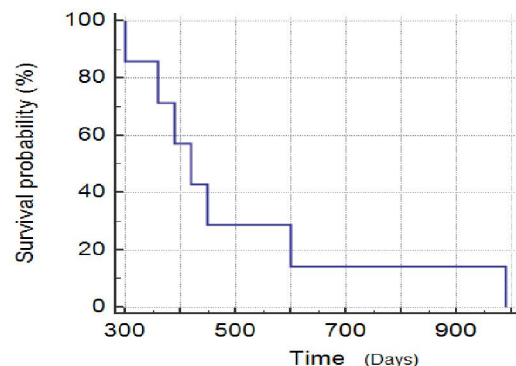
Ileal conduit was the main type of urinary diversion 6 patients (50%), either due to old aged patients, locally advanced tumor or to obtain more negative safety margin. Ileocystoplasty, Y pouch, Sigma pouch, and Cysto-urethral anastomosis all were done each of them for one patient, the last 2 patients only subjected to transurethral resection. Pathological analysis of data of the patients revealed that polypoidal lesion present in all patients, affecting the dome of the bladder in 50%, grade 2 was the most common grade 9 patients (75%). Tumor size up to 5cm was in 7 patients (58.3%), Close margin only in one patient (0.3cm) otherwise all with negative margins, positive peri vesical invasion in 6 patients (50%), lymphadenectomy was done in 5 patients (41.7%) all were negative for metastasis.

The overall complication rate of surgical treatment was (25%) in the form of wound infection (1), deep venous thrombosis (1), rectal tear (1). local recurrence and pulmonary metastasis had

occurred in one patient (8.3%). Figure one shows Kaplan Meyer Chart for overall survival.

**Table 1 Patient characteristics**

	No. (%)
<b>Gender</b>	
Men	10(83.3)
Women	2 (16.7)
<b>Age at diagnosis (yrs)</b>	
Mean	56.7
Median	60
<b>Smoking history</b>	
Yes	9 (75)
No	3 (25)
<b>Bilharziasis</b>	
Yes	6(50)
No	5(41.7)
Unknown	1(8.3)
<b>Pathological subtype</b>	
Leiomyosarcoma	8 (66.7)
Carcinosarcoma	2 (16.7)
Synovial	1 (8.3)
Unclassified	1(8.3)
<b>Clinical presentation</b>	
Gross hematuria	10 (83.3)
Dysuria	2 (16.7)
<b>Clinical stage</b>	
cT1	2 (16.7)
cT2	8 (66.6)
cT3	2(16.7)
<b>Upper tract status</b>	
Normal	11 (91.7)
Hydronephrosis	1 (8.3)



**Figure 1: Kaplan Meyer Chart for overall survival.**

**Table 2 Treatment characteristics and disease-related outcomes**

	No. (%)
<b>Type of surgery</b>	
Partial cystectomy	2(16.7)
Radical cystectomy	3(25)
Anterior pelvic exenteration	2 (16.7)
Simple cystectomy	3 (25)
Transurethral resection	2(16.7)
<b>Type of urinary diversion</b>	
Ileal conduit	6 (50)
Ileocystoplasty	1 (8.33)
Y pouch	1(8.33)
Sigma pouch	1(8.33)
Cysto-urethral anastomosis	1(8.33)
Not known	2(16.7)
<b>Pathologic grade</b>	
grade 1	1 (8.3)
grade 2	9 (75)
grade 3	2 (16.7)
<b>Shape</b>	
Polypoidal lesion	12(100%)
<b>Tumor size</b>	
Up to 5cm	7(58.3)
5-10cm	1(8.3)
More than10cm	2(16.7)
NK	2(16.7)
<b>Surgical margins</b>	
Negative	9 (75)
Positive	0 (0)
Close (.3cm)	1 (8.3)
<b>lymphadenectomy</b>	
no	5(41.7)
yes	5 (41.7)
Negative	5(100)
Positive	0 (0)
<b>Tumor site</b>	
Dome	6 (50)
Lateral wall	4 (33.3)
Anterior	2(16.7)
Posterior(base)	1 (8.3)
<b>Perivascular invasion</b>	
Positive	6(50)
Negative	4 (33.3)
<b>Local recurrence</b>	
Yes	1(8.3)
No	11(91.7)
<b>Metastasis</b>	
Yes (lung)	1(8.3)
No	11(91.7)

#### 4. Discussion:

Bladder tumors commonly arise from the urothelium. However, non-urothelial tumors are uncommon 5% but significantly aggressive. Sarcoma

constitutes the most common mesenchymal malignancy of the urinary bladder, Sub-classification of sarcomas involves the use of histologic and special immunohistochemical staining techniques [11].

Because of low number of cases, the scientific literature describing bladder sarcomas as case series and reports so, there is no agreement about optimal treatment and prognosis of these tumors. Most of the previous studies on bladder sarcoma have emphasized the poor prognosis associated with these tumors [12].

Leiomyosarcoma is the most common malignant mesenchymal tumor of the urinary bladder in adults accounting for less than 1% of all bladder malignancies[3]. which agree with our study. We found that most patients were older men with gross hematuria, which is consistent with previous researches that documented male predominance in the 6 to 8 decades with painless hematuria as the commonest presentation [6,8].

Smoking and Bilharziasis were observed in most of our cases which may share in pathogenesis of bladder sarcoma. The pathogenesis of non-urothelial bladder tumors is incompletely understood. presence of chronic infection is believed to be an important factor in tumorigenesis [13].

Because of very low incidence, there is no universal consensus on the treatment of patients affected. All patients at the time of diagnosis were free of metastasis. Surgery was the main line of treatment (radical cystectomy in males or anterior pelvic exenteration in females), with ileal conduit as the commonest way of urinary diversion in our study. either due to old aged patients, locally advanced tumor or to obtain more negative safety margin. Simple cystectomy was done in 3 patients and were reconstructed by ileal conduit, sigma pouch and Y pouch. Partial cystectomy was done in 2 patients one of them with close margin and was reconstructed with ileocystoplasty, the other one was reconstructed by cysto-urethral anastomosis and transurethral resection in 2 patients (16.7%), the last 2 patients were subjected only to transurethral resection.

Lymphadenectomy was done in 41.7% and all were negative for metastasis and not done in the rest of patients, only one patient of them suffered from external iliac lymph node recurrence who developed also central pelvic recurrence and pulmonary metastasis. Lymphadenectomy was not done in these patients provided that negative pelvic lymph nodes radiologically and intraoperatively which based on lower incidence of lymph node metastasis in sarcoma (about 2.5%) compared to hematogenous spread to the lung (about 30%) [14].

In our study, nearly half of patients were subjected to radical surgery, the other half were subjected to local treatment in the form of simple

cystectomy, partial cystectomy and trans urethral resection with no difference in survival between the two groups. Previous series have reported that non-radical surgery will inevitably lead to a local recurrence; nevertheless, radical resection does not warrant the avoidance of local recurrence [15]. The management of bladder sarcoma is a challenge since they are rare and no consensus on the optimal management is present. Treatment by radical cystectomy doesn't result in a better outcome since these histologic subtypes are known by their aggressive behavior and poor outcome after proper treatment. [16].

Only one patient (Grade 3 tumor) had developed local recurrence (pelvic recurrence) and pulmonary metastasis. Local and distant recurrence of soft tissue sarcomas are linked events. The concept of a causal relation between local recurrence and distant disease has been abandoned. Nowadays, metastasizing of soft tissue sarcomas is considered an epiphenomenon independent from local recurrence. In this view, both local and distant failure independently result from an intrinsic, aggressive biological behavior of the primary tumor. Consequently, one might consider high-grade STSs as a manifestation of systemic disease, even when only the primary tumor is detected. While developments in local treatment have reduced local failure rate, distant failure remains unaffected [17-18]. Local recurrences should be treated by systemic chemotherapy and/or external pelvic radiotherapy, salvage surgery showed to be ineffective, with a median survival of 20 months after surgery [19].

Most patients in our study had advanced pathologic stage, 50% of our patients having stage T3. This finding is consistent with previous studies on bladder sarcoma. Identifying the disease at an earlier stage and applying effective therapy could significantly improve outcome. [20-21].

All patients had negative surgical margin except one (close margin 0.3 cm) who still alive up to almost (3 years' survival), Which come against the importance of the adequacy of surgical resection in all soft tissue sarcomas. In previous studies, positive surgical margins adversely affected disease-specific and overall survival so, the best prognostic factor seems to be the presence of free margins [22-23]. With positive margins after surgery, adjuvant radiotherapy should be advocated for the patient [24].

## 5. Conclusion

The management of bladder sarcoma is a challenge since they are rare and no consensus on the optimal management is present. Surgery is the main line of treatment of urinary bladder sarcoma. Treatment by radical cystectomy doesn't result in a better outcome since these histologic subtypes are

known by their aggressive behavior and poor outcome after proper treatment. Simple cystectomy and partial cystectomy have a good role in management provided that no radiologic or palpable pelvic lymph node and we can resect the tumor with a good safety margin not less than 2-3cm. Adjuvant radiotherapy should be advocated for the patient with positive margins after surgery.

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