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## SPECTRUM OF LESIONS IN HISTOPATHOLOGICAL BIOPSIES OF THE URINARY BLADDER – A HOSPITAL BASED STUDY

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### Keywords:

Neoplasm, Urothelial, Papilloma, Prognosis

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**ABSTRACT:** Urinary bladder lesions are responsible for significant morbidity and mortality throughout the world. Majority of the bladder tumors are epithelial in origin with most of them accounting for urothelial/ transitional neoplasm. The present study was conducted to assess various types of urinary bladder lesions with regard to frequency, age and sex distribution and to describe the histopathological features of various lesions in the urinary biopsies along with grading of urothelial neoplasm. The present Hospital based cross sectional study was conducted in Assam Medical College and Hospital, Dibrugarh for a duration of 1 year (1<sup>st</sup> June 2017- 31<sup>st</sup> May 2018). Out of the 35 cases, the male: female ratio was 4:1, the Mean  $\pm$  S.D of age of presentation was  $60.31 \pm 13.42$  years. Out of 33 urothelial neoplasms, 14 (42.42%) cases were graded as high grade, 17 (51.52%) cases as low grade and one each of inverted papilloma and papillary urothelial neoplasm of low malignant potential. The early and definitive histopathological diagnosis with accurate grading and staging can aid in the management and prognosis of bladder tumors. Low grade carcinoma are associated with good prognosis as compared to high grade carcinoma.

**INTRODUCTION:** As per the International Agency for Research on Cancer (IARC) Bladder tumor is the ninth most common tumor worldwide and accounts for thirteenth most common of tumor related mortality<sup>1</sup>. As per GLOBOCAN 2022, bladder cancer accounts for the seventeenth most common cancer in India with a death rate of 1.3 %. Despite significant inroads into their origins and improved diagnostic and treatment modalities, bladder tumor continues to extract a toll in morbidity and mortality<sup>2</sup>.

Bladder cancer is generally seen in elderly at around 50-80 years of age with a male to female ratio of 3:1<sup>3</sup>. Cigarette smoking and occupational exposure are strongly associated with bladder lesions<sup>4</sup>.

Majority of the bladder tumors are epithelial in origin with most of them accounting for urothelial/ transitional neoplasm comprising 90% of all primary tumors followed by squamous cell carcinoma and primary adenocarcinoma<sup>3</sup>.

Various techniques are available for detecting tumor but direct cystoscopy and transurethral resection of the tumor leads to accurate assessment of degree of differentiation, depth of invasion which are required for the diagnosis, management and prognosis assessment of the patient<sup>4</sup>.

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<p>DOI link: <a href="https://doi.org/10.13040/IJPSR.0975-8232.16(1).274-80">https://doi.org/10.13040/IJPSR.0975-8232.16(1).274-80</a></p>	

**Aims and Objectives:** The present study was conducted in the department of Pathology, Assam Medical College & Hospital, Dibrugarh with the following aims and objectives:

1. To assess various types of urinary bladder lesions with regard to frequency, age and sex distribution.
2. To describe the histopathological features of various lesions in the urinary biopsies.
3. To categorise the neoplastic lesions according to WHO (2004)/ ISUP classification.

#### **MATERIALS AND METHODS:**

**Place of Study:** The present study was conducted in the patients of Assam Medical College and Hospital, Dibrugarh.

**Study Design:** Hospital based cross sectional study.

**Duration of Study:** 1 year (1<sup>st</sup> June 2017- 31<sup>st</sup> May 2018).

**Study Population:** Patients of urinary bladder lesion in Assam Medical College and Hospital who underwent cystoscopic biopsy / surgery. Ethical Clearance No- AMC/EC/PG/12480.

**Inclusion Criteria:** All new cases of urinary bladder lesion reported at the out-patient and in-patient department of Assam Medical College and Hospital, Dibrugarh.

#### **Exclusion Criteria:**

1. Paediatrics age group
2. History of trauma
3. Patients not giving consent for participation in the study.

**Informed Consent:** Details of the study were explained to the subjects in their local language and informed consent was obtained from them before conducting the study.

#### **Histopathological Examination:**

1. Date of taking biopsy
2. Description of the specimen (size, shape, gross appearance).

3. Tissue processing and staining for histopathological examination.

**Grading of Urothelial Tumors:** In the present study, the urothelial tumors were categorised according to WHO/ISUP (2004) grading system into the following:

1. Urothelial (Inverted) papilloma
2. Papillary urothelial neoplasms of low malignant potential
3. Papillary urothelial carcinoma, low grade
4. Papillary urothelial carcinoma, high grade

**RESULTS AND OBSERVATIONS:** In the present study entitled a total of 35 bladder lesion biopsies were collected from the patients admitted in Assam Medical College & Hospital, Dibrugarh.

Majority of the patients were males. Out of 35 cases, 28 (80%) were males and 7 (20%) were females with a male to female ratio accounting to 4:1. **Table 1** and **Fig. 1**.

The maximum cases were seen in 60-69 years of age group with 13 cases (37.14%) followed by 50-59 years (20%), 70-79 years (14.29%) and 40-49 years (11.43%). The least number of cases were seen in extremes of age. **Table 2** and **Fig. 2**.

Majority of the patients had lesion in the lateral wall of the bladder (48.57%) followed by posterior wall (40%), anterior wall (5.71%), base (2.86%) and trigone (2.86%) respectively. **Table 3** and **Fig. 3**.

31 (88.57%) cases were urothelial carcinoma and one case each of urothelial papilloma, papillary urothelial neoplasm of low malignant potential (PUNLMP), squamous cell carcinoma and adenocarcinoma were identified. **Table 4** and **Fig. 4**.

Out of 33 urothelial neoplasms, 14 (42.42%) cases were graded as high grade, 17 (51.52%) cases as low grade and one each of inverted papilloma and papillary urothelial neoplasm of low malignant potential. **Table 5** and **Fig. 5**.

**RESULTS:****TABLE 1: SEX DISTRIBUTION OF THE LESIONS**

Sex	Number (N)	Percentage (%)	Male: Female
Male	28	80.00	4:1
Female	7	20.00	
Total	35	100.00	

**TABLE 2: AGE DISTRIBUTION OF URINARY BLADDER LESIONS**

Age Group (In Years)	Number (N)	Percentage (%)
<30	1	2.86
30-39	2	5.71
40-49	4	11.43
50-59	7	20.00
60-69	13	37.14
70-79	5	14.29
≥ 80	3	8.57
TOTAL	35	100.00
MEAN ± S.D.	60.31 ± 13.42 Years	

**TABLE 3: LOCATION WISE DISTRIBUTION OF BLADDER LESIONS**

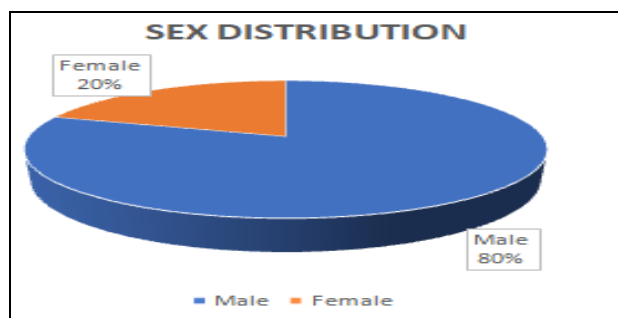
Location	Number (N)	Percentage (%)
Anterior Wall	2	5.71
Posterior Wall	14	40
Right Lateral Wall	7	20
Left Lateral Wall	10	28.57
Base	1	2.86
Neck	0	0.00
Trigone1	1	2.86
Total	35	100

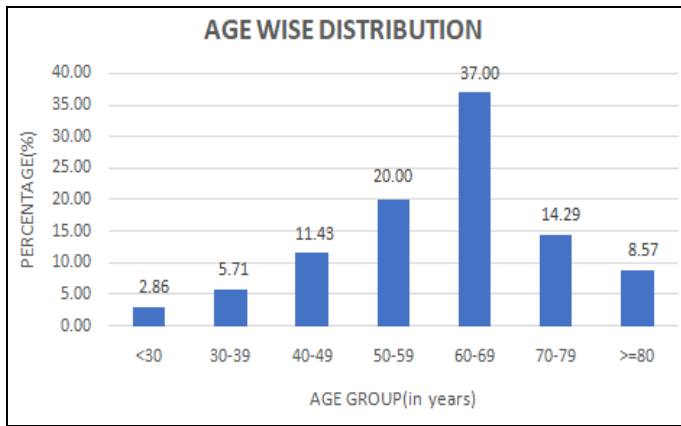
**TABLE 4: DISTRIBUTION OF URINARY BLADDER LESIONS**

Lesions	Number (N)	Percentage (%)
Urothelial Papilloma	1	2.86
Punlmp (Papillary Urothelial Neoplasm of Low Malignant Potential)	1	2.86
Urothelial Carcinoma	31	88.57
Squamous Cell Carcinoma	1	2.86
Adenocarcinoma	1	2.86
Metastatic	0	0.00
Others	0	0.00
Total	35	100

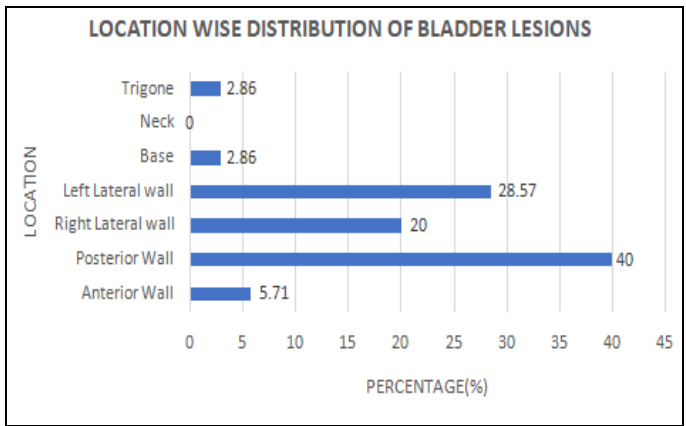
**TABLE 5: GRADING OF UROTHELIAL TUMORS (EXCLUDING SQUAMOUS CELL CARCINOMA AND ADENOCARCINOMA) ACCORDING TO WHO/ISUP (2004)**

Lesions	Number (N)	Percentage (%)
Inverted Papilloma	1	3.03
Punlmp	1	3.03
Low Grade Urothelial Carcinoma	17	51.52
High Grade Urothelial Carcinoma	14	42.42
Total	33	100

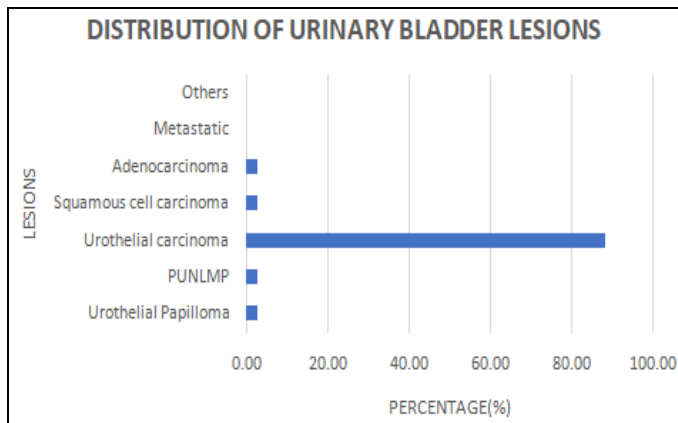
**FIG. 1: SEX DISTRIBUTION OF THE LESIONS**



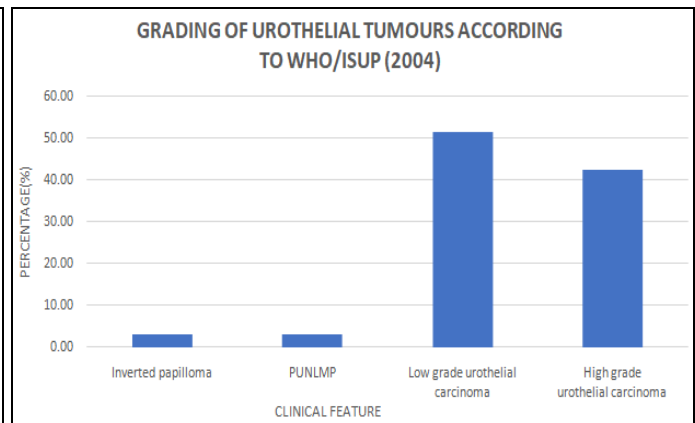
**FIG. 2: AGE DISTRIBUTION OF URINARY BLADDER LESIONS**



**FIG. 3: LOCATION WISE DISTRIBUTION OF BLADDER LESIONS**

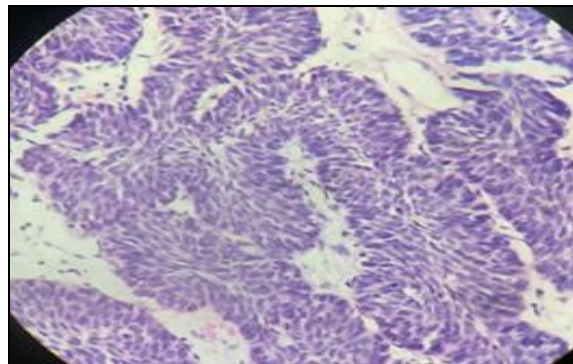


**FIG. 4: DISTRIBUTION OF URINARY BLADDER LESIONS**

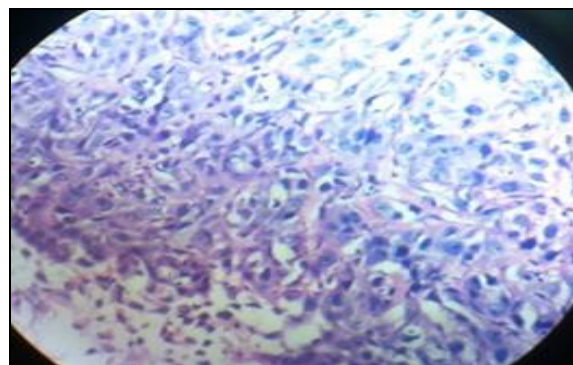


**FIG. 5: GRADING OF UROTHELIAL TUMORS**

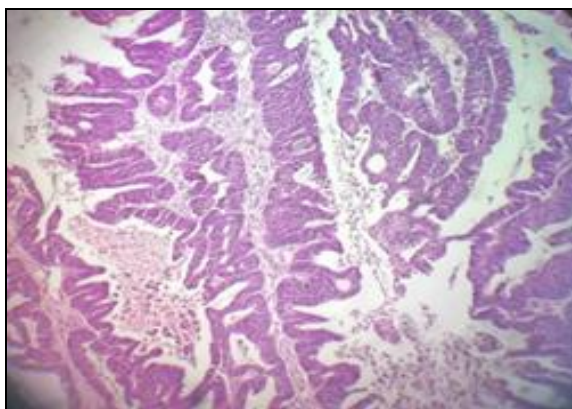
**Pictomicrograph:**



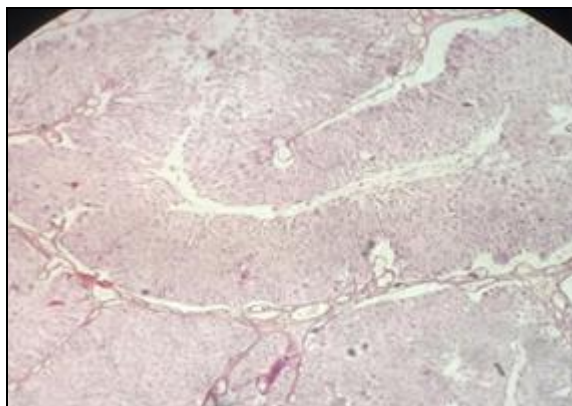
**FIG. 6: THE ABOVE IMAGE SHOWS FEATURES OF INVERTED PAPILLOMA (H&E 40X)**



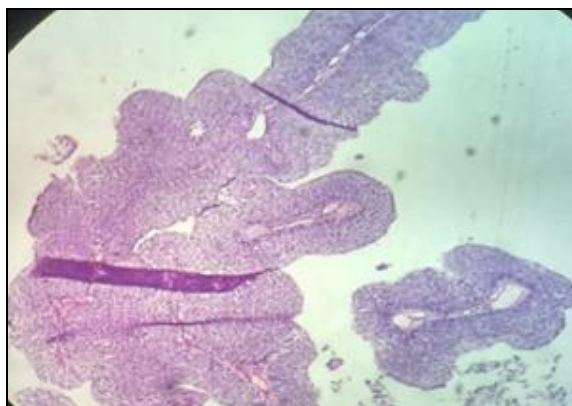
**FIG. 7: THE ABOVE IMAGE SHOWS FEATURES OF SQUAMOUS CELL CARCINOMA (MODERATELY DIFFERENTIATED CARCINOMA) OF URINARY BLADDER (H&E 40X)**



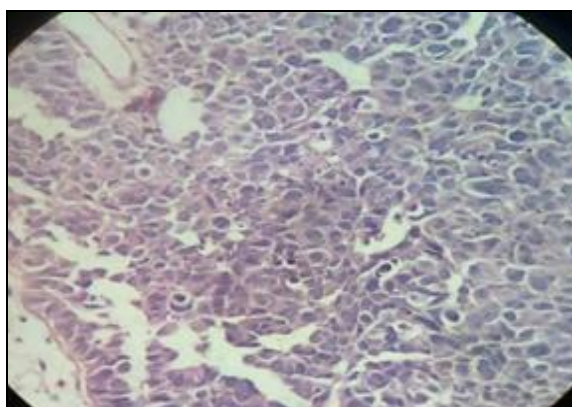
**FIG. 8: THE ABOVE IMAGE SHOWS FEATURES OF ADENOCARCINOMA OF URINARY BLADDER (H&E 10X)**



**FIG. 9: THE ABOVE IMAGE SHOWS FEATURES OF PAPILLARY UROTHELIAL NEOPLASM OF LOW MALIGNANT POTENTIAL (H&E 10X)**



**FIG. 10: THE ABOVE IMAGE SHOWS FEATURES OF LOW-GRADE UROTHELIAL CARCINOMA (H&E 4X)**



**FIG. 11: THE ABOVE IMAGE SHOWS FEATURES OF HIGH-GRADE UROTHELIAL CARCINOMA (H&E 40X)**

**DISCUSSION:** In the present study the incidence of urothelial cancer was (88.57%) of total bladder lesions which nearly correlates with the studies of Thapa R *et al*<sup>5</sup> (96.55%), Goyal *et al*<sup>6</sup> (96.87%), Deepika *et al*<sup>3</sup> (98%) **Table 6.**

**TABLE 6: INCIDENCE OF UROTHELIAL CARCINOMA IN VARIOUS STUDIES**

Series	Urothelial Carcinoma
Thapa R <i>et al</i> <sup>5</sup>	96.55%
Goyal <i>et al</i> <sup>6</sup>	96.87%
Deepika <i>et al</i> <sup>3</sup>	98%
Present Study	88.57%

From the above study it is evident that bladder tumors are more common in males than females.

The male to female ratio (4:1) of the present study correlates with the studies of Thapa R *et al*<sup>5</sup> (3.8:1), Shruthi *et al*<sup>7</sup> (3.64:1), Goyal *et al*<sup>6</sup> (5.25:1) **Table 7.**

**TABLE 7: SEX DISTRIBUTION IN VARIOUS STUDIES**

Series	Ratio (Male: Female)
Thapa R <i>et al</i> <sup>5</sup>	3.8:1
Shruthi <i>et al</i> <sup>7</sup>	3.64:1
Goyal <i>et al</i> <sup>6</sup>	5.25:1
Present Study	4:1

The most common age group in our study was 60-69 years with 37.14% which correlates with the studies of Deepika *et al*<sup>3</sup> (mean age group being 62 years), Thapa R *et al*<sup>5</sup>. (peak incidence between 61-70 years of age) **Table 8.**

**TABLE 10: PREVALANCE OF DIFFERENT HISTOLOGICAL GRADE OF BLADDER NEOPLASMS IN VARIOUS STUDIES**

Grading	B Goyal <i>et al.</i> <sup>8</sup>	Thapa <i>et al.</i> <sup>5</sup>	Deepika <i>et al</i> <sup>3</sup>	Present Study
Urothelial Papilloma	4.8%	8.93%	–	3.03%,
PUNLMP	10.7%	10.71%	–	3.03%,
Low grade urothelial carcinoma	40.5%	50%	34.7%	51.52%
High grade urothelial carcinoma	34.5%	30.36%	65.3%	42.42%

**CONCLUSION:** Urinary bladder biopsy is one of the most common biopsies in urology practice. Bladder tumor is a disease of the elderly people, affecting males more than females.

Papillary urothelial carcinoma is the most common histomorphological type in this region. Painless haematuria was the most common presenting complaint in our study and most of the patients had a history of smoking. Increased public awareness regarding smoking as a causative and early symptoms of bladder cancer can reduce the disease burden and help in detection and management.

**TABLE 8: PEAK AGE INCIDENCE OF BLADDER TUMORS IN VARIOUS STUDIES**

Series	Peak Age Group (in years)
Deepika <i>et al</i> <sup>3</sup>	62 years
Thapa R <i>et al</i> <sup>5</sup>	61-70 years
Present Study	60-69 years

In the present study the most common involved site is the lateral wall of the bladder (48.57 %) which is in accordance with the study by Raghuvver CV *et al.*<sup>2</sup> where lateral wall accounted for 64% of the lesions **Table 9.**

**TABLE 9: INVOLVEMENT OF LATERAL WALL OF THE BLADDER LESION IN VARIOUS STUDIES**

Series	Commonest site of involvement (lateral wall)
Raghuvver CV <i>et al.</i> <sup>2</sup>	64%
Present Study	48.57 %

The prevalence of urothelial papilloma, Papillary urothelial neoplasm of low malignant potential, low grade and high-grade urothelial neoplasm are 3.03%, 3.03%, 51.52%, 42.42% respectively in our study which correlates with the study of B Goyal *et al.*<sup>8</sup> where it was 4.8%, 10.7%, 40.5%, 34.5% respectively and by Thapa *et al.*<sup>5</sup> it was 8.93%, 10.71%, 50%, 30.36% respectively. However, in a study by Deepika *et al*<sup>3</sup> majority were high grade urothelial carcinoma (65.3%) followed by cases of low grade urothelial carcinoma (34.7%). No cases of Papilloma and PUNLMP was seen in this study. **Table 10.**

The early and definitive histopathological diagnosis with accurate grading and staging can aid in the management and prognosis of bladder tumors. The present study was only conducted in a very small number of patients and follow up of the cases in such a restricted time period was outside the preview of the present study. So further studies are required for better evaluation of the prevalence and histomorphological patterns of bladder tumor in this region and its related morbid and co-morbid conditions.

**ACKNOWLEDGEMENT:** Nil

**CONFLICTS OF INTEREST: Nil**

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