

## Staging and Terminology of Superficial Urinary Bladder Tumors

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Ta and T1 transitional cell urinary bladder tumors are prone to recurrence in a large percentage of cases, but they uncommonly progress to invasive tumors. On the other hand, Tis bladder tumors progress to invasive tumors in a majority of cases. Even though all of these tumors are found in the superficial layers of the bladder wall, their natural histories are significantly different. In addition, new terminology has been developed for these lesions.

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Ninety-five percent of the estimated 54,300 cases of urinary bladder cancer in 2001 will be transitional cell carcinomas.<sup>1</sup> Seventy-five percent of these are considered superficial and the remaining 25% invasive. This discussion is limited to those transitional cell carcinomas considered superficial. Table 1 outlines the staging categories for the primary tumor using Tumor Node Metastasis (TNM) definitions.<sup>2</sup> T1 and lower tumors are considered superficial, and T2 and higher tumors are considered invasive (see figure). This division seems appropriate, given that the superficial tumors are all confined to the epithelium or lamina propria and would be expected to follow a favorable course. However, not all behave as favorably as their superficial designation would suggest. Thus, it is essential to understand the staging of disease as well as the terminology of these tumors and their implications for risk assessment. While staging has not changed, recently proposed terminology should be understood to assess risk.<sup>3</sup>

There are two biologic behaviors that early

stage urinary bladder cancer may manifest: recurrence and progression. Recurrence refers to the reappearance of the initial tumor after treatment or the development of additional tumors usually of the same histology and grade as the initial one. Progression refers to the development of muscle-invasive disease in an existing tumor or to the recurrence of a previously treated tumor as a muscle-invasive lesion. Ta and T1 tumors follow the recurrence pathway primarily, with multiple recurrences at the initial site or elsewhere in the bladder, but Ta tumors progress in <5% and T1 tumors in up to 30%. Tis tumors (carcinoma in situ: flat tumor), however, usually follow the progression pathway, with up to 75% developing invasive disease.<sup>4</sup> Thus, the natural history of Ta and T1 tumors is one of recurrence, often multiple times, with little risk of progression to invasive disease. In contrast, the natural history of Tis tumors is one of progression to muscle-invasive disease in a majority of cases. Hence, the prognosis and mortality consequences of these low-stage superficial bladder cancers diverge, with low

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**Table 1.** Staging of Primary Urinary Bladder Tumors<sup>1,\*</sup>

TX	Primary tumor can't be assessed
T0	No evidence of primary tumor
Ta	Noninvasive papillary carcinoma
Tis	Carcinoma in situ: flat tumor
T1	Tumor invades subepithelial connective tissue
T2	Tumor invades muscle (ed. detrusor or deep muscle layer)
T2a	Invades inner half of muscle layer
T2b	Invades outer half of muscle layer
T3	Tumor invades perivesical tissue
T3a	Microscopically
T3b	Macroscopically
T4	Tumor invades prostate, uterus, vagina, pelvic wall, or abdominal wall

\* Tumor grade may accompany each category: grade 1, grade 2, or grade 3.

risk at one end and high risk at the other. And most important, the designation "carcinoma in situ: flat tumor" for urinary bladder tumors should not be thought of in the same context of relative benignity that we consider for in situ carcinomas of most other sites.

A consensus conference of the World Health Organization (WHO) and the International Society of Urological Pathology (ISUP) in 1997 led to the development of new terminology to describe the various tumors of the urinary bladder. The major categories now briefly include flat lesions with atypia,

**Table 2.** Comparison of Superficial Bladder Cancer Nomenclature—TNM versus WHO/ISUP<sup>3,5</sup>

Old (TNM)	New (WHO/ISUP)
Carcinoma in situ: flat tumor	High-grade intraurothelial neoplasm
Ta tumor (almost always grade 1)	Papillary urothelial neoplasm of low malignant potential
T1 tumor (grades 1 and some 2)	Papillary urothelial carcinoma, low grade
T1 tumor (some grade 2 and grade 3)	Papillary urothelial carcinoma, high grade

papillary neoplasms, and invasive neoplasms. In addition, the typical 3-grade system (1, 2, and 3) has been replaced by a 2-grade system: low grade and high grade.<sup>3</sup> The new designation low grade is largely a combination of grade 1 lesions and some grade 2 lesions, while high-grade lesions are a combination of some grade 2 and grade 3 lesions.

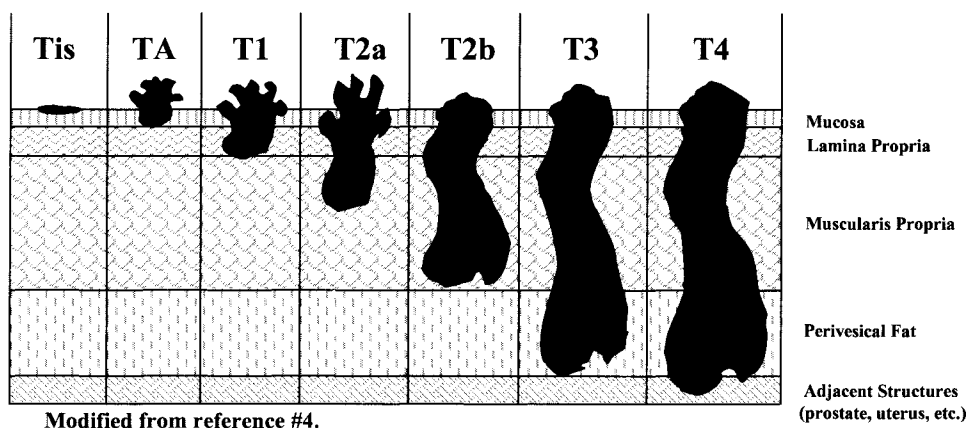
Table 2 outlines the rough translation from TNM to WHO/ISUP terminology for Tis, Ta, and T1 tumors.

While this new nomenclature has not been widely embraced, to most appropriately assess risk, medical directors must be aware of not only changing treatments and prognosis but also changing nomenclature.

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