



Dr. Jayanth Reddy



SHORT COMMUNICATION

## Recent advances in the management of bladder cancer

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### Abstract

Bladder cancer is the commonest malignancy of the urinary tract. Various alternatives have been investigated, either to reduce the frequency of cystoscopy, or improve its sensitivity for detection of tumors. These include urine-based markers, Narrow-band imaging and photodynamic diagnosis/blue-light cystoscopy. Recent developments in post-resection intravesical regimens for non-muscle-invasive bladder cancer are discussed. For patients with muscle-invasive bladder cancer, both laparoscopic radical cystectomy and robot-assisted radical cystectomy have been shown to reduce peri-operative morbidity, while being oncologically equivalent to open radical cystectomy. Bladder-preserving strategies entail resection and chemoradiation, and in selected patients give equivalent results to surgery. These newer approaches are also discussed

**Keywords:** bladder cancer; urine-based markers; Narrow-band imaging; photodynamic diagnosis

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### Introduction

Bladder cancer is the commonest malignancy of the urinary tract, with the incidence being four times higher in men than in women [1]. Much has changed in the diagnosis and management of bladder cancer over the past 5 to 10 years.

### Classification

The WHO grading of bladder cancer has changed, with the 2004 grading system incorporating a range of histological descriptions such as urothelial papilloma (completely benign lesion), papillary urothelial neoplasm of low malignant potential (PUNLMP), and low-grade and high-grade cancer, rather than the previous three grades of well (G1), moderately (G2) or poorly differentiated (G3) papillary urothelial carcinoma [2]. The TNM (tumor, node, and metastasis) classification has generally remained the same.

### Diagnosis

Cystoscopy and urine cytology are the most

important tools in the diagnosis and follow-up of bladder cancer.

### **Newer modalities**

**Urinary markers:** Several urinary biomarkers {NMP-22, BTA Immunoassay etc.} are available and are FDA approved, but no single marker has sufficient sensitivity and specificity to replace cystoscopy [3].

**Point-of-care tests:** Narrow-band imaging [4] and photodynamic diagnosis/blue-light cystoscopy [5] have shown promise in improving detection and reducing recurrence of bladder tumors, by improving the completion of bladder resection when compared with standard resection in white light. Fluorescence in situ hybridization (FISH) can be used to detect urinary cells that have chromosomal abnormalities consistent with a diagnosis of bladder cancer [6].

### **Treatment**

At presentation, 75–80 % of patients are diagnosed with non-muscle-invasive Tumours (NMIBC: stages Ta, T1 and Tcis), while 20 to 25 % are diagnosed with muscle-invasive bladder cancer (MIBC, stages T2–4).

### **Non-muscle invasive bladder cancer**

Transurethral resection of bladder tumour (TURBT) is the first-line treatment for patients with NMIBC. Unfortunately, the high rate of recurrence and progression after TURBT necessitates the use of adjuvant treatments [7]. A single dose of intravesical chemotherapy given after TURBT on the same day significantly reduced the odds of tumor recurrence by 39% in patients with tumors with a low risk of recurrence and progression [8]. Intravesical BCG is the standard treatment for high-grade NMIBC and CIS, and should be given as a maintenance schedule [9].

Intravesical BCG followed by electromotive drug administration of mitomycin C (EMDA-MMC) given to patients with high-risk superficial bladder led to higher disease-free interval, lower recurrence and progression rates, and improved overall survival (OS) and disease-specific survival (DFS) rates, compared with BCG alone [10].

### **Muscle invasive bladder cancer**

Minimally invasive techniques in radical cystectomy

[11, 12]: Open radical cystectomy (ORC) is the current gold-standard treatment for MIBC and for high-risk recurrent NMIBC. Ideally, all patients with MIBC should receive platinum-based neo-adjuvant chemotherapy [13, 14]. Open radical cystectomy has a peri-operative complication rate of 25 to 62% [15]. Therefore, minimally invasive techniques like laparoscopic radical cystectomy and robot assisted radical cystectomy have been explored.

The advantages of laparoscopic radical cystectomy (LRC) & robot assisted radical cystectomy (RARC) include decreased blood loss, reduced postoperative pain, early return of bowel function, and shorter hospital stay [16]. Most urologists performing LRC or RARC advocate performing the cystectomy and LN dissection intracorporeally, with subsequent extracorporeal urinary diversion via a lower midline incision. Increasing experience has enabled intracorporeal reconstruction of urinary diversion, whether this is by ileal conduit or orthotopic neobladder formation [17].

### **Bladder preservation [18]**

Combined multi-modal therapy in the form of concurrent cisplatin-based chemotherapy and radiotherapy after maximal TURBT achieves complete response and preserves the native bladder in more than 70% of patients, while offering long-term survival rates comparable with contemporary cystectomy series [19]. This approach could be a good alternative to radical surgery in selected patients with muscle-invasive disease.

### **Conclusions**

Technological advances have enabled enhanced cystoscopy, with BLC increasing detection of bladder tumors and improving quality of tumor resection. Although many types of urinary markers have been explored, as yet none exists with sufficient specificity or sensitivity to replace regular cystoscopic surveillance of NMIBC. Various intravesical therapies for NMIBC have been investigated, including MMC-HT (Hyperthermic mitomycin C), BCG in combination with EMDA-MMC. Minimally invasive radical cystectomy has been increasing in popularity over the past 10 years. For patients who prefer bladder preservation, TURBT with combination chemotherapy and radiotherapy regimens has shown similar outcomes to radical surgery.

## Conflict of Interest

The authors wish to express that they have no conflict of interest.

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