Bladder cancer commonly presents difficult treatment decisions for both the patient and the urologist. Most bladder cancers are histologically well differentiated, without invasion into the wall of the bladder (Ta), and can be successfully managed endoscopically; however, 20% to 30% of cancers demonstrate at some time invasion into the bladder wall, making conservative management unlikely to be successful. Progressive invasion of the cancer into the lamina propria (T1) or muscularis propria (T2, T3) increases the potential for incomplete transurethral resection and the risk for development of metastases. The decision to abandon endoscopic management and go on to removal of the bladder places a heavy burden on the urologist’s shoulders. Removal of the bladder early in the course of the disease might improve survival results, but a certain number of patients would lose their bladder when the loss might not have been absolutely necessary. Inaccurate staging methods, variability inherent in the biology of the cancer, inconsistency in pathologic interpretation of depth of invasion, and patient lifestyle considerations make the ‘tightrope’ that both the patient and physician must walk between bladder preservation and bladder removal particularly difficult. Cystectomy provides excellent local control for all but the largest cancers, but undeniably has a profound impact on urinary and sexual function of the patient. Improvements in methods of urinary diversion using an orthotopic neobladder to the urethra may provide maintenance of near normal bladder function for many patients, but the new bladder will not be as good as the original one. Thus, the presence of a potentially lethal bladder cancer forces a pivotal decision about a treatment strategy of bladder preservation versus bladder reconstruction. The following review will summarize current views on the options of surgical or combined therapies for invasive bladder cancers.

**Bladder preservation**

*Transurethral resection*

Transurethral resection (TUR) has been the mainstay of bladder cancer management for most of this century. Papillary cancers confined to the inner
surface epithelium of the bladder are amenable to resection, with morbidity limited to a low risk for bleeding or bladder perforation. Once a bladder cancer invades the lamina propria of the bladder wall, complete resection is less certain, analogous to pulling a weed with uncertainty about removal of all the roots. The larger the cancer and deeper the penetration, the less likely it is that the resection will eliminate the cancer. Nonetheless, some cancers that are invasive (T1, T2) can be completely resected; TUR used as the sole therapy in selected cases provides five-year survival rates of approximately 50% [1,2]. However, the patient selection required to ensure the suitability of TUR as the sole therapy may provide even better survival if a more aggressive treatment is used. If a TUR is going to be successful, the site of the cancer in the bladder must be re-resected on several occasions to be sure that no residual disease is present; intravesical treatment (such as Bacillus Calmette Guerin, BCG) provides additional therapy to diminish the formation of new tumors.

Partial cystectomy

Removal of a portion of the bladder for an invasive cancer is attractive because it allows excision of the full thickness of the bladder wall and surrounding perivesical fat yet preserves bladder function. Partial cystectomy in selected cases yields results potentially comparable to total cystectomy [3]. However, the number of patients suitable for a partial cystectomy is unfortunately quite small, comprising only 5% of individuals with invasive cancer. To obtain good results with partial cystectomy, the tumor needs to be a single lesion in space and time (solitary and the initial tumor) and in a location in the bladder amenable to partial cystectomy with a margin of normal mucosa, muscle, and surrounding tissue without compromising bladder capacity or function. Few tumors meet these requirements; poor patient selection can cause a disastrous result that requires a later total cystectomy or renders the patient incurable secondary to an extravesical pelvic recurrence. An ill-advised partial cystectomy, all too often done with older age as the primary indication, may not only fail to eliminate the cancer but also doom salvage therapies to failure. Clinical trials at Memorial Sloan-Kettering Cancer Center and in Europe used initial systemic chemotherapy combined with partial cystectomy, but there is general agreement that this approach is of uncertain benefit and remains investigational [4,5].

External radiation therapy

The introduction of cobalt 60 irradiation in the 1950s led to many reports of its use in invasive bladder cancer. Subsequently, urologists in the United States viewed radiation therapy (R.T.) results as inferior to those obtained with cystectomy, with or without preoperative R.T. However, in some countries, external R.T. — now with improved delivery using a linear accelerator and better treatment planning — remains a commonly used treatment [6–8].