



Platinum Priority – Editorial

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Technical Advances in Bladder Cancer Patient Care: Progress or Promise?

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The radical resection of the bladder and perivesical tissues and regional pelvic lymph node dissection (PLND) have emerged as the most effective local-regional therapy for invasive bladder cancer (BCa). The techniques for radical cystectomy (RC) and the associated PLND have been refined over many decades, taking into account the recognized pathways for progression of invasive BCa. RC and PLND alone will cure the majority of patients with localized invasive disease as well as a significant minority of patients with regionally metastatic disease. Following removal of the native bladder, all patients undergoing RC will also require some form of simultaneous reconstruction of the urinary tract, adding to the technical challenges of the procedure and to patient recovery.

BCa is a disease of the elderly, with approximately two-thirds of all cases occurring in patients aged >65. Additionally, transitional cell cancer of the bladder is a smoking-related tumor typically arising after many years of tobacco exposure. The procedure is unquestionably a formidable undertaking for patients, many of whom are now pretreated with systemic chemotherapy prior to surgery. The combination of advanced age at diagnosis and significant prior smoking exposure contributes to the extensive list of comorbidities exhibited by most BCa patients presenting in need of RC.

Performing extensive pelvic surgery with reconstruction of the urinary tract in an older, sicker population of patients largely explains the observed perioperative morbidity and mortality. Although RC and urinary diversion can be performed safely in the vast majority of patients, 2–2.5% perioperative mortality has been reported [1,2]. Overall morbidity associated with open RC, PLND, and urinary diversion ranges from 28% to 64%, depending

on the method of reporting, the definition of complications, and the extent of the postoperative time period evaluated [1,3].

In a series of 1142 patients undergoing open RC, PLND, and urinary diversion at Memorial Sloan-Kettering Cancer Center, an aggressive prospective effort to record all complications out to 90 d after surgery revealed that 64% of patients experienced some degree of morbidity [1]. The system for collecting complications included the use of an established five-grade modification of the original Clavien system with further subclassification into 11 different categories. High-grade complications (defined as grade 3–5) were experienced by 8.3% of patients. Overall, 87% of all complications were considered grade 1–2, and the 90-d mortality observed was 2.7%. Gastrointestinal-related complications (most commonly ileus) were most prevalent, followed by infectious and wound-related issues, all of which contributed to the 9-d median length of stay for this series. The well-documented morbidity and mortality in the open RC literature has firmly established our current perioperative outcomes in the BCa patient population.

Fueled by great expectations and many recent technological advances, minimally invasive surgery (MIS) has rapidly been incorporated into the care of the oncology patient. Most tumor sites now have MIS techniques described for their management. The acceptance of this technology rests on the expectations of clinicians and patients that “less invasive” surgery will reduce perioperative complications and improve patient recovery while maintaining the same level of oncologic efficacy established with open techniques. MIS techniques for performing RC were initiated with the desire to reduce the level of morbidity associated with the open procedure. The initial

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techniques for minimally invasive RC were laparoscopic for the extirpative portion of the procedure, followed by a urinary diversion completed via an open approach. Soon, attempts to complete the entire procedure intracorporeally were reported. The expectations were that a completely minimally invasive approach would decrease morbidity and improve postoperative recovery.

As experience with complete intracorporeal laparoscopic procedures was reported, an unanticipated high rate of severe complications, particularly a 29% reoperative rate, was observed [4]. This led many to abandon complete laparoscopic procedures and return to a hybrid technique in which the reconstruction was completed open. More recently, however, robotic techniques to complete the entire procedure intracorporeally have been explored.

In this issue of *European Urology*, the City of Hope Cancer Center's experience with robotic RC, PLND, and open urinary diversion is reported [5]. This represents the largest single-institution series of BCa patients treated with this technique. The authors used a rigorous five-grade Clavien complications system and included all events out to 90 d after surgery. The authors report that, of the 196 patients included, 156 patients (80%) experienced some type of complication. Overall, 35% experienced a major (grade 3–5) complication, 44% received a blood transfusion, and 90-d mortality was 4.1%. The median length for in-hospital stay was 9 d. Although this series did not have a comparative open control arm for evaluation, based on the average patient age and reported practice patterns at City of Hope, this series likely represents a less selected group of BCa patients than other reported robotic series. A large percentage of the complications appear closely related to the reconstructive rather than the exenterative portion of the procedure. Whether incorporation of intracorporeal diversion will decrease or increase major complications, such as bowel obstruction or urinary leaks, that are associated with this reconstruction remains purely speculative, particularly given prior laparoscopic reports [4].

What can be concluded from this carefully collected and analyzed series of robotic RC patients is that we may not yet have achieved our goals of significantly reducing the morbidity and mortality associated with this difficult procedure in this highly comorbid patient population.

Yuh and colleagues should be applauded for reporting their experience using the rigorous methodology needed to fully understand the morbidity experienced by their patients [5].

As surgeons, we should continue to strive to decrease the morbidity associated with the procedures we perform while ensuring the highest degree of oncologic efficacy. New technologies should be thoughtfully incorporated following a critical analysis of our outcomes. As treating physicians, we must rely on data when possible rather than on our perceptions that a novel treatment will provide improvements. It is incumbent on us as surgeons and oncologists to demand that the incorporation of any change in treatment is supported whenever possible by high-level data. Ultimately, randomized comparisons should be used to eliminate the selection bias inherent in early experiences. Providing unrealistic expectations of a new technology or tool will serve neither patients nor clinicians. It remains critically important, however, that we continue to strive for surgical innovation. This will allow us to achieve the advances in treatment necessary to improve the care of our patients. Innovative techniques should be trialed in a similar fashion to other changes in therapy. It is only through a rigorous evaluation process that we will be able to best evaluate when and how to incorporate new tools and technologies as true advances in patient care.

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