

Cutting complications before cutting corners: the need for long-term outcome parameters in an ever-changing landscape of intracorporeal neobladder technique

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Robot assisted radical cystectomy (RARC) and totally intracorporeal neobladder (ICNB) reconstruction remains a challenge. Despite the potential advantages of RARC, which include decreased blood loss, quicker return to bowel function, reduced analgesic requirements and decreased wound complications (1); ICNB reconstruction is not without its shortcomings.

The prospect of prolonged operation times and steep learning curves for similar length of stay and higher costs (2) necessitate that these procedures be performed in centers of excellence with highly specialized robotic skills to facilitate superior outcomes.

Whilst a plethora of ICNB reconstruction techniques have been described in an attempt to simplify and standardize the procedure (including the modified Studer pouch and The University of Southern California Technique) (3,4), complications related to laparoscopic bowel handling remain a common theme and current literature still lacks in comparable functional, quality of life and long-term outcomes of intracorporeal diversion techniques.

When describing new ICNB techniques, many attempt to maintain the key principles of orthotopic bladder substitution, which include construction of an adequate volume low-pressure system, achieving reliable continence and prevention of ureteric reflux or stenosis (5). Some argue the need for a spherical shaped bladder, avoidance

of a funnel shaped outlet and use of absorbable suture material are also critical (6). However, simplifying the technique may come at an expense of one or more of these principles.

Simone *et al.* present a clear video account of the intracorporeal Padua ileal bladder and report perioperative in addition to 2-year oncological and functional outcomes (7). They review 45 consecutive patients with high-grade urothelial carcinoma who underwent RARC and complete ICNB. The key principles of the Padua ICNB include the use of a detubularised ileal segment for neobladder configuration incorporating two layers of folding and suturing of the posterior plate with subsequent closure of the anterior neobladder wall to create a spherical anatomical bladder. Of note, configuration of the funnel like neobladder neck was performed with motorized titanium staples to reduce operative time.

RARC with ICNB was successfully completed in all 45 patients without open conversion. The median operative time was 305 minutes, blood loss was 210 milliliters, time to regular diet was 6 days and median length of hospital stay was 8 days.

Post-operative histopathology confirmed organ-confined disease in 25 patients with a mean lymph node count of 35 (range: 14–56). Thirteen patients had pathologic nodal metastases. Two-year disease free survival, cancer specific

survival, and overall survival rates were 72.5%, 82.3%, and 82.4%, respectively.

The overall incidence of perioperative, 30-day and 180-day complications were 44.4%, 57.8%, and 77.8%, respectively, whilst severe complications occurred in 17.8%, 17.8%, and 35.5%. From a functional standpoint, daytime and nighttime continence rates were 73.3% (84.4% in men, 46.1% in women) and 55.5% (62.5% in men, 38.5% in women), respectively at 2 years. This data was based on a strict definition of continence with no pad use.

Whilst operative time is important, this should not come at the expense of a well-functioning, structurally sound orthotopic bladder substitute. Traditional dogma has been challenged recently with the use of staples in contact with urine. Conventional hand sewn bladder substitutes are reported to have a 5% stone formation rate (8). Fontana *et al.* reported a 6% rate of stone formation in their titanium stapled ileal neobladder series (9). In fact, a lower rate of 4.5% incidence of neobladder stone formation at a median of 36 months was reported by Muto *et al.* in 606 patients treated with open radical cystectomy and stapled Camey II neobladders (10). Interesting the lead author of this paper along with Ferriero *et al.* reported a higher, 9.2% stone formation rate in a long-term, single-center experience of stapled orthotopic ileal neobladders and identified self-catheterisation as an independent predictor of stone formation in this cohort (11).

It is important to acknowledge that a poorly functioning neobladder may result in a poorer quality of life when compared to a well functioning ileal conduit urinary diversion. As a result, with all new series publishing on modifications of the ICNB technique, it is of critical importance to reflect on the quality of life outcomes and patient experience.

Despite a growing bank of techniques in ICNB formation, there is a paucity of data in the literature looking at long term postoperative physical and social functioning between ICNB subtypes. Bother resulting from urinary incontinence and the risk of sexual dysfunction, need for self-catheterisation and dysfunctional voiding should be reported to those electing for neobladder reconstruction.

It is becoming apparent that most, if not all-open orthotopic reconstructive techniques are technically feasible in the robotic era. What is not apparent to the emerging robotic reconstructive surgeon is which technique should be used. The answer to this lies in long term patient reported outcomes and function. This is where the literature should focus for the future.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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