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 peri-operative 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
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References
1. Hu JC, Chughtai B, O'Malley P, et al. Perioperative Outcomes, Health Care Costs, and Survival After Robotic-assisted Versus Open Radical Cystectomy: A National Comparative Effectiveness Study. Eur Urol 2016;70:195-202.
2. Al-Tartir T, Raza S, Alotaibi M, et al. Robot-assisted surgical approach to bladder cancer: a decade of progress! Minerva Urol Nefrol 2015;67:55-63.
3. Tyritzis SI, Hosseini A, Collins J, et al. Oncologic, functional, and complications outcomes of robot-assisted radical cystectomy with totally intracorporeal neobladder diversion. Eur Urol 2013;64:734-41.
4. Chopra S, de Castro Abreu AL, Berger AK, et al. Evolution of robot-assisted orthotopic ileal neobladder formation: a step-by-step update to the University of Southern California (USC) technique. BJU Int 2017;119:185-91.
5. Goh AC, Gill IS, Lee DJ, et al. Robotic intracorporeal orthotopic ileal neobladder: replicating open surgical principles. Eur Urol 2012;62:891-901.
6. Kane AM. Criteria for successful neobladder surgery: patient selection and surgical construction. Urol Nurs 2000;20:182, 187-8.
7. Simone G, Papalia R, Misuraca L, et al. Robotic Intracorporeal Padua Ileal Bladder: Surgical Technique, Perioperative, Oncologic and Functional Outcomes. Eur Urol 2016. [Epub ahead of print].
8. Turk TM, Koleski FC, Albala DM. Incidence of urolithiasis in cystectomy patients after intestinal conduit or continent urinary diversion. World J Urol 1999;17:305-7.
9. Fontana D, Bellina M, Fasolis G, et al. V-neobladder: an easy, fast, and reliable procedure. Urology 2004;63:699-703.
10. Muto G, Collura D, Simone G, et al. Stapled orthotopic ileal neobladder after radical cystectomy.
for bladder cancer: Functional results and complications over a 20-year period. Eur J Surg Oncol 2016;42:412-8.

11. Ferriero M, Guaglianone S, Papalia R, et al. Risk assessment of stone formation in stapled orthotopic ileal neobladder. J Urol 2015;193:891-6.

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