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## Open to Debate – Referee

## Intracorporeal Orthotopic Neobladder: Est Modus in Rebus

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## Article info

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The Holy Grail for any orthotopic urinary diversion is achievement of continence. No single factor is responsible for success, but several criteria must be met to achieve this quality-of-life landmark. The reservoir needs to be tailored by a surgeon who is aware of the key technical principles. These include carefully meeting the demands for capacity, compliance, and maximum functional length of the urethra, in addition to the age and willingness of the patient.

Studer and Hautmann open urinary diversions are the techniques most utilized and have shown longevity in terms of results. Skill in translating these procedures to robot-assisted approaches has been the biggest challenge in achieving a complete intracorporeal procedure. A recent publication by the International Robotic Cystectomy Consortium (IRCC) [1] showed that utilization of intracorporeal urinary diversion has increased, reaching 95% of all robot-assisted radical cystectomies performed by IRCC institutions in 2018. The major advantages of a robotic approach include intracorporeal suturing and visualization of the complex anatomy in the deep confines of the pelvis, with a possible advantage in not opening the abdominal cavity.

Lavallée and Wiklund [2] provide evidence on the reproducible intracorporeal neobladder (Karolinska-modified

Studer) performed and modified by the senior author since 2003. This Karolinska-modified Studer approach has been studied in terms of functional outcomes, with a daytime continence rate of 85% and a nighttime continence rate approaching 70% in the largest series reported. The authors' main argument is that they follow the principles of an ideal urinary diversion and have functional evidence and reproducibility data confirming that multiple different surgeons can perform the procedure.

Nouhand and Coughlin [3] argue that the Hautmann W-shaped intracorporeal neobladder needs no modification to the original technique, in contrast to the Karolinska-modified Studer approach. They report that the controversy relates to the technical challenges involved in complete folding in the Karolinska-modified Studer technique, which subsequently leads to a more J- or S-shaped neobladder. The authors feel that urodynamic and functional outcomes have not been thoroughly studied and published.

The challenges in completing an intracorporeal urinary diversion are worth mentioning. First, the skill threshold needed to reach the level required for complex reconstruction is very high; second, the need to operate on larger surface areas of bowel in the confines of a smaller space in the pelvis is demanding. Once these challenges are met, the most difficult technical skill is managing tension on the bowel. Manipulation of this tension is critical in aligning the detubularized bowel segment and folding it at a certain angle, despite other innate limitations such as a short mesentery and body habitus.

Technically, it is critical that detubularized cross-folding is performed so that a spherical shape is obtained that meets the Laplace principles. As the radius of the sphere increases, wall tension helps to decrease the internal pressure. The volume attained must reach a capacity to hold adequate urine volumes for longer intervals. Preservation

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of the urethral complex during apical dissection helps to maintain the mechanisms underlying continence. Ultimate success in terms of daytime continence is determined by the external sphincter and cross-folded detubularization, while nighttime continence is dependent on the reservoir function.

Unfortunately, very few publications address functional outcomes after robot-assisted intracorporeal urinary diversion. These studies include small numbers of cases with limited information, and only nine that included 15 or more patients treated with a single technique have been published [4].

To put this in perspective, the urologic surgical community has traditionally moved the field of surgical science forward. These advances have happened with scientific vigor and safety and, most importantly, are beneficial for patients. The small number of studies providing functional evidence for these techniques and the lack of randomized trials have not stopped urologic surgeons from attempting to replicate open techniques for the benefit of patients. Urologic robotic surgeons need to conduct functional urodynamic studies to finally provide adequate scientific evidence that there is no difference between open and robot-assisted approaches to

urinary diversion. Robot-assisted radical cystectomy with intracorporeal urinary diversion is here to stay, but not without a robust body of evidence that secures it a respectable place in the modern surgical armamentarium.

**Conflicts of interest:** The author has nothing to disclose.

## References

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