BANGLADESH JOURNAL OF
UROLOGY
Bangladesh J. Urol. 2023; 26(1): 1-2
www.banglajol.info/index.php/BJU
DOI: https://doi.org/10.3329/bju.v26i1.70084

Editorial

ISSN : 2304 - 8514 (Print)
ISSN : 2304 - 8522 (Online)

The Past, Present, and Future of Single Port Surgery

Mutahar Ahmed, Mubashir Shabil Billah

The aspiration for single-incision surgery has intrigued surgeons since the dawn of laparoscopic procedures. Laparoendoscopic single-site (LESS) surgery marked an early step in this direction, but its adoption faced numerous challenges. In 2018, the introduction of the DaVinci Single Port (SP) Robotic Platform brought a transformative shift to single-incision surgery. This platform facilitated the use of multi-articulating arms and a camera through a single incision, employing technology familiar to urologists from the DaVinci Multiport Xi Robotic Platform.

As one of the pioneering institutions in the country to embrace the SP robot, our team witnessed its remarkable growth. In the initial phase, surgeons attempted to emulate methods used with the multiport (MP) platform, employing a metal trocar directly in the body, akin to the Xi approach. However, this method limited mobility due to the SP robot's constrained working distance. To overcome this, we swiftly transitioned to a floating dock system, utilizing an Alexis retractor and GelPort Mini. This innovative approach allowed the trocar to remain outside the body, enhancing flexibility within the working space. DaVinci responded promptly, introducing the DaVinci SP access port kit, seamlessly integrating with the SP robot and offering additional advantages over the GelPort Mini, including built-in instrument trocar sites.

Over subsequent years, the SP platform evolved rapidly, enabling surgeons to explore new techniques and reintroduce approaches previously considered premature. An exemplar is the SP robotic-assisted laparoscopic prostatectomy (RALP). Initially, SP RALPs mirrored the intraperitoneal approach of MP RALP at our institution. However, recognizing the advantages, extraperitoneal RALP became the standard SP approach nationwide. Extensive series on SP RALP highlighted benefits such as reduced pain requirements. While extraperitoneal RALP was attempted over a decade ago with the MP platform, it was abandoned due to lateral arms piercing the peritoneum. The SP platform revived this approach. Kaouk reported on other SP-enabled approaches, including transvesical RALP and transperineal RALP.

The SP platform also transformed our approach to partial nephrectomies. Given the limited maneuverability of MP robots in the retroperitoneum, SP's ability to work in confined spaces became pivotal. Early on, we performed SP partial nephrectomies

Fig-1: *The Single Port Ahmed Modification (SPAM) approach emerged, placing the incision two-thirds from the umbilicus to the ASIS.*

Department of Urology, Hackensack University Medical Center, Hackensack, NJ, New York, USA
Correspondence: Dr. Mutahar Ahmed, Director of the Center for Bladder Cancer at Hackensack University Medical Center, Hackensack, NJ & Associate Professor of Urology Hackensack Meridian School of Medicine, New York, USA. Email: drahmedgu@gmail.com

transperitoneally, improving cosmesis. For the extraperitoneal approach, the initial subcostal docking led to bulging at the incision site. Thus, the Single Port Ahmed Modification (SPAM) approach emerged, placing the incision two-thirds from the umbilicus to the ASIS. SPAM enabled both retroperitoneal and transperitoneal surgery within the same case, aligning with the SP robot's longitudinal movement and providing easy access to the hilum. SPAM became the standard at our institution, undergoing prospective evaluation for SP partial nephrectomies and other retroperitoneal surgeries.

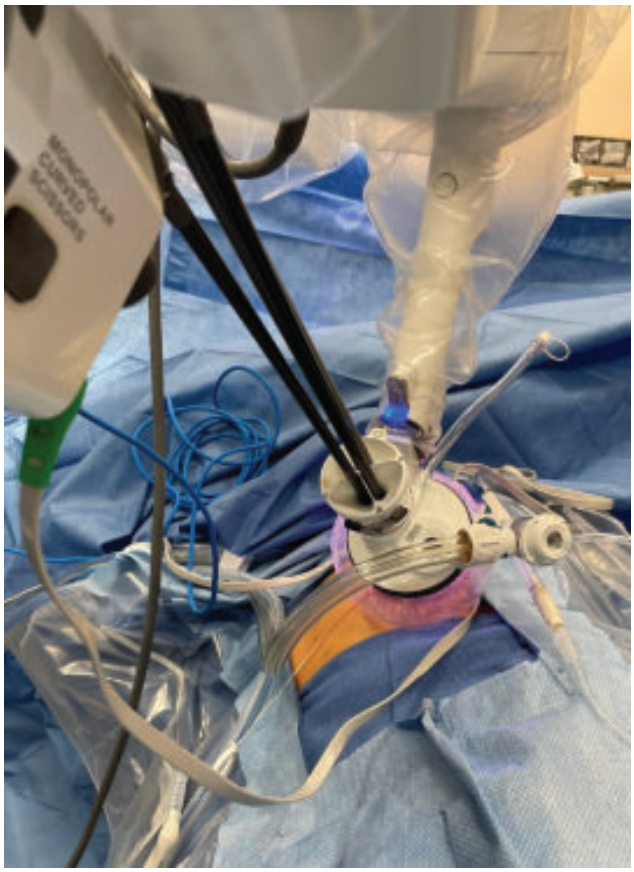

Fig-2: *Retroperitoneal & transperitoneal robotic surgeries using SPAM.*

In urologic surgery, the SP robot excels even in complex cases. For radical cystectomy, a 3cm umbilical incision suffices, incorporating NOTES principles for the second trocar in female patients. This blend of SP platform and NOTES achieves true single-incision cystectomy, showcasing a radical cystectomy with neobladder creation through a barely visible 3cm incision. SP radical cystectomy series reported reduced opioid requirements and faster recovery with the SPAM approach, exemplifying the transformative impact of SP surgery.

The SP platform also rejuvenates traditional surgeries. Simple prostatectomies now often occur transvesically, with direct docking in the bladder, insufflation limiting bleeding, and enabling excellent visualization. This approach, combined with circumferential closure, allows same-day discharge for SP simple prostatectomies. At our institution, the transvesical approach expands to cross trigonal reimplant, ureteral reimplantation, colovesical fistula repair, and vesicovaginal fistula repair.

Initially met with skepticism, the SP platform has proven its worth alongside the MP platform. It has redefined incisions, introduced novel approaches, and revitalized forgotten surgeries. The ongoing evolution of the DaVinci SP platform promises exciting developments on the horizon.