

Editors Perspective

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Advancing Urological Surgery: Exploring the Potential of Single-Port Robotic Applications

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How to cite this: Anwar A, Malik MA. Advancing Urological Surgery: Exploring the Potential of Single-Port Robotic Applications. Journal of University Medical & Dental College. 2023; 14(3):vi-vii.



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Technological breakthroughs are ongoing and creating an impact on all aspects of life, especially in the field of medicine where these cutting-edge robotic technologies have given a new shape to surgical practices. Nowadays, in many developed countries, a vast number of minimally invasive (MIS) keyhole operations are performed with the assistance of a robot. These robotic systems have changed the whole paradigm of patient care, safety and surgical training. Multi-port and single port robotic surgeries have overcome the technical limitations of laparoscopy, enabling trained robotic surgeons of this era to perform more complex and delicate procedures with improved dexterity and great precision. Urology as a surgical sub-speciality is at the forefront of advancement. As a Urologist our top goal is patient's safety; robotic surgery gives us improved control and dexterity to carry out challenging operations with higher accuracy. The wristed instrumentation and three-dimensional visualisation offered by the robotic platform helps us with careful dissection, meticulous suturing, and rebuilding ^[1].

Studies have demonstrated that single-port robotic surgery in urology can lead to better clinical results, including: reduced blood loss, less pain during surgery, shorter hospital stays and swifter recovery ^[2]. These advantages help patients feel better and get back to their regular routines more quickly. Similarly, single-port robotic-assisted radical prostatectomy has shown equivalent oncological results to conventional multi-port techniques in prostate cancer - one of the most frequent urological malignancies-while providing the benefits of less scarring and improved cosmesis ^[3].

For the treatment of kidney tumours, robotic-assisted partial nephrectomy has grown in popularity. Particularly in patients with complex renal anatomy or numerous tumours, this method enables precise tumour removal while maintaining renal function ^[4]. The results of robot assisted restorative surgeries like urinary diversion and pyeloplasty is comparable to traditional surgical approaches. The articulating devices of the robotic platform enable precise anastomosis and suturing, which improves both short term

and long-term surgical outcomes ^[5]. In paediatric urology operations, robotic surgery has showed promising results; robot assisted surgeries benefit this population of vulnerable patients by reducing invasiveness and improving cosmesis. Initial results point to its viability and safety in surgeries like ureteral re-implantation and pyeloplasty ^[6]. To conclude, robotic surgery - especially single-port robotic surgery - has a lot of potential, however it also yields a number of challenges. These consist of: the price of different robotic systems, their limitations, the learning curve for surgeons, and the accessibility of the necessary equipment. Therefore, to overcome these obstacles and broaden the uses of single-port robotic surgery in urology, further technological advancements, training, studies and local availability of subsidised equipment is still required.

These are well established facts about merits of robotics urological surgery. But we like other third world countries, don't have financial resources to purchase this equipment. In Pakistan particularly a country of 240 million have only one or two (in SIUT Karachi) with very occasional use. Otherwise, it is fascinating and surely has a lot of merits over traditional surgery.

To facilitate this, developed and advanced countries should reserve some funds and training slots for third-world developing/underdeveloped countries for the benefit of patients of these nations.

CONFLICT OF INTEREST: None.

GRANT SUPPORT & FINANCIAL DISCLOSURE: None.

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