



Role of laparoscopic/robotic approaches for urologic surgeries

Minimally invasive surgery has changed the field of urology. Over years laparoscopic urology and later robotic urologic surgery revolutionized the surgical treatment of renal, prostate and bladder cancer surgery along with various benign urologic conditions. With increasing expertise laparoscopic and robotic approaches are being used for complex urologic surgeries like radical cystectomy, reconstructive urologic surgeries, and robotic renal transplant. Robotic surgery maintains the benefits of laparoscopic surgery and provides the surgeon with additional advantages of greater dexterity, a wider range of movement, tremor filtration, 3-dimensional vision, and primary surgeon camera control. These benefits are especially useful when working in a deep and narrow field and when intracorporeal suturing and fine tissue dissection are needed.

The most commonly performed and established robotic procedure in urology is robotic radical prostatectomy, which has practically replaced open radical prostatectomy. Various studies have shown significantly reduced intraoperative blood loss, transfusion rates, duration of catheterization, length of hospital stay, positive margins, potency, continence, and readmission rates.

Similarly, robot assisted radical cystectomy (RARC) has shown that compared with open cystectomy RARC has significantly reduced blood loss, fewer complication, increased lymph node yield, and shorter length of stay (LOS). Many experienced urologists having the skills of reconstructive surgeries are now routinely performing intracorporeal urinary diversions, including neobladder reconstruction.

Now robotic surgeries are routinely being performed for renal cell carcinomas. A systemic review comparing robot assisted partial nephrectomy (RAPN) to laparoscopic partial nephrectomy (LPN) showed RAPN to have shorter ischemic times, shorter learning curve than LPN and enables surgeons to perform more complex cases (>4 cm, multifocal, hilar tumors, or solitary kidneys).

Similarly reconstructive urologic procedures like, pyeloplasty, surgeries for ureteral strictures (uretero-ureterostomy, ileal replacement of ureter, bladder augmentation) are now being routinely performed by minimally invasive approaches, like laparoscopic or robotic approaches.

With increasing technologic developments, future urologists will be able to use real-time tissue recognition, functional and 3-dimensional virtual reality imaging to improve surgical success rates.

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