

Robot-Assisted Laparoscopic Surgeries: Current Use in Pediatric Urology Patients

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Abstract : Introduction: The use of robot-assisted laparoscopic surgeries (RALS) has largely increased in recent years, offering faster and safer treatment options for pediatric patients. In the field of urology, RALS has shown a significant advantage over laparoscopic and open surgeries but continues to be controversial in pediatric cases due to limited comprehensive data on its use. Methods: In this review, we aim to summarize the factors associated with RALS use in pediatric cases involving pyeloplasty, ureteral reimplantation, heminephrectomy, and lower urinary tract reconstruction. We used PubMed, EMBASE, and the Cochrane Database of Systematic Reviews to systematically search for literature on the topic. We then critically assessed and compiled data on RALS outcomes, complications, and associated factors. Results: To date, numerous comparative studies have been conducted on pediatric RALS, with only one randomized control trial investigating the nuances of robotic use against standard of care treatments. These robotic approaches have shown promise in post-surgical outcomes for pediatric patients undergoing upper and lower urinary tract reconstruction. Barriers to use still persist, however, showcasing a need to increase access to the technology, refine instruments for pediatric use, address cost barriers, and provide proper training for surgeons. Conclusion: RALS provides an opportunity to improve pediatric patient outcomes for numerous urologic complications. Additional studies are required to better compare the use of RALS with current standard practices. Due to the difficult nature of conducting randomized control trials, additional prospective observational studies are needed.

Keywords : pediatric urology, robot-assisted laparoscopic surgeries (RALS), pyeloplasty, ureteral reimplantation, heminephrectomy, and lower urinary tract reconstruction

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