

OPERATIVE TIMES WITH ROBOTIC ASSISTED LAPAROSCOPIC PYELOPLASTY ARE ASSOCIATED WITH SURGEON EXPERIENCE LEVEL AND TRAINEE LEVEL

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Background: Robotic-assisted laparoscopic pyeloplasty (RALP) is the most commonly performed robotic procedure in pediatric urology. While the safety and efficacy of RALP has been demonstrated previously, there is a paucity of data regarding procedure times, which can reflect quality outcomes and costs. This study aims to examine surgeon and patient factors associated with pediatric RALP procedure times.

Materials/Methods: Prospectively collected quality improvement data was reviewed for all pediatric patients undergoing RALP at a tertiary care children's hospital (2013 – 2020). Demographic information included patient age, gender, BMI, primary surgeon experience level, trainee level, console time, and total procedure time. t-test and ANOVA were utilized to compare total procedure and console times among the cohorts.

Results: A total of 285 pediatric patients were included. Patient factors such as younger age at the time of the surgery ($p < 0.005$) and lower BMI (< 0.005) were associated with significantly lower total procedure and console times. Patient gender did not significantly affect procedure times ($p = 0.33$). Surgeon factors including surgeon experience level at the current institution and trainee level were associated with significant differences in console time and total procedure time, where higher primary surgeon experience level at the current institution were associated with lower total procedure times ($p < 0.005$) and console times ($p < 0.005$). Of note, cases with fellow assistance had higher total procedure times ($p < 0.005$) and console times ($p < 0.005$), that likely reflect the educational activity time differences at most academic institutions.

Conclusions: Total procedure times and console times of RALP in children are influenced by surgeon and patient factors, with longer times associated with lower primary surgeon experience levels, higher trainee levels, as well as older patient ages and higher BMI. Consideration of such factors may allow for improved pre-operative allocation of resources including operating room scheduling times and cost analyses.

Images / Graph / Table

Variable	Mean Total Procedure Time (min)	95% Confidence Interval (min)	P-value
Patient Age			< 0.005
< 1	157.75	146.35 – 169.15	
1 – 4	157.11	145.86 – 168.38	
4 - 10	181.40	170.02 – 192.78	
> 10	206.29	188.65 – 223.92	
Patient Gender			0.33
Male	177.34	169.38 – 185.28	
Female	175.09	165.54 – 184.63	
BMI			< 0.005
< 19.5	168.44	161.62 – 175.26	
19.5 - 25	210.14	184.20 – 236.08	
> 25	214.91	173.05 – 256.77	
Surgeon Experience at Current institution			< 0.005
< 30 cases	227.70	197.15 – 258.24	
30 – 100 cases	194.72	175.04 – 214.31	
> 100 cases	166.20	160.11 – 172.29	
Trainee Level			< 0.005
Fellow	190.93	180.05 – 201.82	
Resident	168.42	160.82 – 176.02	