

Impact of Robotic-Assisted Approach on Lymphadenectomy for Colorectal Cancer

Paul Kozak, B.A., Venkata R. Kakarla, M.D., Reza Gamagami, M.D.
Silver Cross Hospital, New Lenox, IL Department of General Surgery

Background

In most recent years, robotic assisted laparoscopic surgery (RALS) has proven to be a viable alternative to laparoscopic and traditional open surgery for colorectal cancer. Obtaining the adequate number of lymph nodes is not only essential for accurate staging, but also impacts both prognosis and the need for adjuvant chemotherapy. To date, the efficacy of lymph node harvest for RALS is not well studied or established. The aim of our study is to analyze the impact of RALS on lymphadenectomy for colorectal cancer.

METHODS

We performed a retrospective review of patients who underwent curative resections for colorectal cancer over a five-year period at a single institution by a single surgeon. Resections were classified as right-sided, sigmoid, or rectal, and subdivided into robotic and non-robotic surgery groups. The demographic data and histopathology were obtained, with an emphasis on the number lymph nodes harvested (LNH) during resections. Emergencies and non-curative resections were excluded.

Table 1. Patient demographics

Variable	Right Colon			Sigmoid			Rectum		
	Lap	Robotic	p value	Lap	Robotic	p value	Open	Robotic	p value
n (patients)	28	36	ns	11	14	ns	15	32	ns
Sex, n (%)									
Male	16 (57)	21 (58)	ns	7 (64)	10 (71)	ns	11 (73)	20 (63)	ns
Female	12 (43)	15 (42)	ns	4 (36)	4 (29)	ns	4 (27)	12 (38)	ns
BMI mean ± SD	27.3 ± 4.9	29.6 ± 6.7	ns	28.7 ± 5.1	30.0 ± 7.2	ns	29.0 ± 5.3	27.1 ± 6.9	ns
ASA Class (mean)	2.7	2.7	ns	2.5	2.5	ns	2.3	2.4	ns
Preop Chemo/XRT n (%)							11 (73)	26 (81)	ns

ns = not significant

RESULTS

Between January 2010 and December 2015, 136 patients with colorectal cancer underwent curative resections. Sixty-four underwent right-sided resections (28 laparoscopic, 36 robotic). Twenty-five underwent sigmoid resections (11 laparoscopic, 14 robotic), and 47 underwent rectal resections (15 open, 32 robotic). There was no significant difference in age, sex, BMI and ASA scores between the cohorts examined. The mean number of LNH with RALS was significantly higher in all three groups (right-sided—24 vs. 15 (p=.0001), sigmoid—16 vs. 12 (p=.046), rectal—14 vs. 8 (p=.0016)). There was no difference in the rate of adequate lymph node extraction for staging purpose, i.e., 12 lymph nodes in all three groups.

Table 2. Results: Lymph Node Harvest

Variable	Right Colon		
	Robotic	Lap	p Value
Collected LNs ± SD	24.2 ± 9.4	15.4 ± 4.1	0.0001
Variable	Sigmoid		
	Robotic	Lap	p Value
Collected LNs ± SD	16.6 ± 5.2	12.2 ± 5.2	0.044
Variable	Rectum		
	Robotic	Open	p Value
Collected LNs ± SD	13.6 ± 5.0	8.1 ± 5.4	0.0001

Conclusion

Robotic-assisted laparoscopic surgery is associated with a statistically significant increase in lymph node harvest for right-sided, sigmoid and rectal resections for malignancy. Future studies with larger sample sizes are necessary to validate these findings.