Investigating the Efficacy of Robot-Assisted Natural Orifice Intracorporeal Anastomosis and Extraction of Sigmoid Colon

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Background

Sigmoidectomies are considered a mainstay of treatment for colon cancer, recurrent uncomplicated diverticular disease and complicated diverticular disease. Examples of available techniques for colectomies include open, laparoscopic, robot-assisted, natural orifice specimen extraction (NOSE) with extracorporeal anastomosis, and natural orifice intracorporeal anastomosis and extraction of specimen (NICE). With different techniques available, its important to investigate the best option for patients to limit length of stay (LOS), operative time, post-operative complications and infection.

Objective

To determine in adult patients with diverticular disease or colon cancer if robot-assisted natural orifice intracorporeal anastomosis with transrectal extraction (NICE) is the most efficacious method of sigmoidectomy in comparison to other techniques in regard to hospital length of stay, operative time, and readmission of patients.

Methods

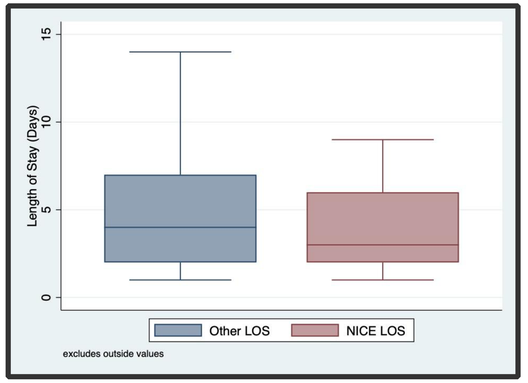
This was a retrospective chart review study that identified 312 colon surgeries performed robotically by three surgeons from Hackensack University Medical Center between 2014 -2019. Participants were patients with diverticular disease or colon cancer who underwent elective left-sided colectomies. 161 participants were excluded because they did not meet criteria or were classified as urgent or emergent. 151 participants met the criteria; 31 of which were performed robotically using the NICE technique and 120 were robotic sigmoidectomies with transabdominal specimen extraction. The data examined operative time of the procedure in minutes, LOS in days from admission to discharge, and rates of readmission within 30 days.

Results

The median operative time for the robotic sigmoidectomies utilizing the NICE technique was 351 minutes, while the median operative time for robotic sigmoidectomies with transabdominal specimen extraction was 355 minutes. Mann-Whitney U test p value of .333 for operative time. The median length of stay with the NICE technique was 2 days, while the LOS for transabdominal specimen extraction was 3 days. Mann-Whitney U p value <.05. Of the 151 patients who underwent a robotic sigmoidectomy using the NICE technique, no patients were readmitted within 30 days after their procedure, whereas 5 patients in which the specimen was extracted transabdominally were readmitted. Fisher's exact test p value of .58 for readmissions.

Results Table 1

	Median operative time (min)	Median LOS (days)	Readmissions
NICE	351	2	0
Transabdominal Specimen Extraction	355	3	5
P value	.333	<.05	.58



Conclusion

Ultimately, the NICE technique has the potential to be an efficacious means of robotic sigmoid resection. The NICE technique's efficacy was statistically significant in achieving a decreased LOS. By demonstrating shorter LOS, the NICE method has potential to decrease hospital acquired infections, medical costs, and possibly improve patient quality of life. Moving forward, future studies with larger sample sizes could impact preferred methods of sigmoidectomies for minimally invasive surgeons for patient benefit. Future studies should investigate other variables such as postoperative pain, rate of conversion, postoperative complications, and overall hospital cost.

Resources

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