Short-term Outcomes of Minimally Invasive Surgery Compared to Open Surgery for Large (≥ 5 cm) Colonic Adenocarcinomas in Patients Aged More Than 75 Years

Cleveland Clinic
Digestive Disease Institute

[1,2]Spencer Barnes, [1,3]Sameh Hany Emile, MBBCh, MSc, MD,, [1]Anjelli Wignakumar, MBBS, [1,2]Cameron Perrone, [1,2]Matthew Bilotti, [1]Steven D Wexner, MD, PhD (Hon)

[1]Ellen Leifer Shulman and Steven Shulman Digestive Disease Center, Cleveland Clinic Florida, Weston, FL; [2]Charles E. Schmidt College of Medicine, Florida Atlantic University, Boca Raton, FL; [3]Colorectal Surgery Unit, General Surgery Department, Mansoura University Hospitals, Mansoura, Egypt.

Spencer Barnes
Student Researcher
Department of Colorectal Surgery
Cleveland Clinic Florida
sbarnes2022@health.fau.edu

Background

Previous literature has established an association with superior short and long-term oncological outcomes. Tumor size and frailty associated with older age are independent factors that may dissuade surgeons from pursuing minimally invasive surgery (MIS).

This study aimed to compare short-term outcomes of MIS and open surgery for elderly patients (75+) with a large (≧ 5 cm) colonic adenocarcinomas

Methods

Study Design: Retrospective cohort study from the NCDB (2010-2020)

Population: Patients ≧75 years with stage I - III colonic adenocarcinomas **≧ 5 cm** who underwent colectomy

Analysis: Open and MIS cohorts were propensity-score matched for stage, tumor location, facility type, and resection of contiguous organs.

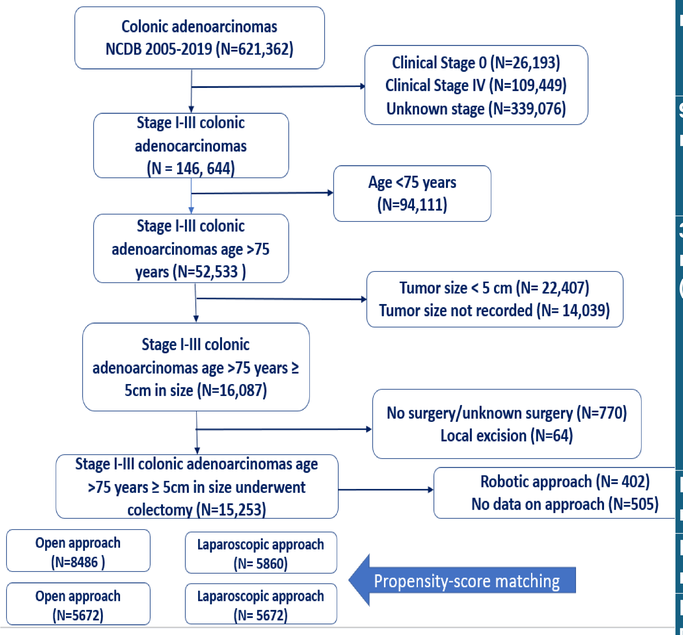
Primary Outcome: 30-day and 90-day mortality, as a surrogate for major complications.

Secondary Outcome: hospital stay, 30-day readmission, surgical margin status, harvested lymph nodes

Results

Patient Characteristics:

- 15,253 patients
- After matching, 5,672 patients included in each group.
- 60.4% female; mean age 82.5 ± 4.7 years.
- Right-sided cancers 68.2%, transverse colon cancers 9%, left colon cancers 19.7%.
- 28.4% stage I, 46.7% Stage II, 24.9% stage III



Outcomes of the Matched Cohort

Factor	Group	Open (n=5672)	Laparoscopic (n=5672)	p-value
Surgical margins (%)	Negative	5201 (92.4)	5332 (94.2)	**<0.001**
	Positive	422 (7.5)	320 (5.7)	
30-day mortality (%)	No	5227 (92.6)	5370 (95.8)	**<0.001**
	Yes	415 (7.4)	238 (4.2)	
90-day mortality (%)	No	4939 (87.7)	5173 (92.5)	**<0.001**
	Yes	692 (12.3)	420 (7.5)	
30-day readmission (%)	None	5241 (92.8)	5207 (92.4)	0.553
	Unplanned	316 (5.6)	338 (6.0)	
	Planned	83 (1.5)	79 (1.4)	
	Planned and unplanned	8 (0.1)	13 (0.2)	
Median number of harvested nodes [IQR]		18 [14, 24]	19 [15, 25]	**<0.001**
Median number of positive nodes [IQR]		0.[0, 2]	0 [0, 1]	0.382
Median hospital stay in days [IQR]		7 [5, 9]	5 [4, 8]	**<0.001**

Key Findings

Laparoscopic surgery was associated with **significantly lower 30-day mortality** (OR: 0.56, 95%CI: 0.47, 0.66, P < 0.001) and **90-day mortality** (OR: 0.58, 95%CI: 0.51, 0.66, P < 0.001) than open surgery, overall and for **all tumor locations**

Laparoscopic surgery in the right colon was associated **with more harvested lymph nodes** except for **transverse colon cancers** (18.0 [14.0 - 25.0] vs 19.0 [14.0 - 25.0], P = 0.518).

Rates for **negative margins in the left** (93.5% vs 92.2%, P = 0.273) and **transverse colon** (95.8% vs 92.9%, P = 0.064) **were similar**.

Conclusions

- Laparoscopic surgery was **significantly associated** with **lower short-term mortality rates**, **shorter hospital stays**, and **more complete resections**.
- These findings were consistent when stratified by tumor location, except in transverse colon cancers where the quality of resection was comparable to open surgery.
- This study highlights the potential for laparoscopic surgery in elderly patients with large colonic adenocarcinomas regardless of the tumor location