National Trends of Anastomotic Leak Rates following Elective Laparoscopic and Robotic Colectomy: A NSQIP Analysis from 2012 to 2019

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BACKGROUND

- Anastomotic leak (AL) following colectomy is a feared complication resulting in significant morbidity and mortality.
- Laparoscopic and robotic-assisted techniques area commonly utilized for colorectal resections.
- The aim of this study is to evaluate the recent trends in AL following laparoscopic and robotic surgery utilizing the National Surgical Quality Improvement Program(NSQIP).

METHODS

- We preformed a retrospective review of the NSQIP database from 2012-2019.
- Our study included patients age 18 years and older undergoing elective laparoscopic or robotic-assisted colectomy (CPT codes 44204, 44205, and 44207). Open assisted and hand assisted were included.
- Patients with ileostomy or colostomy were excluded.
- 30-day AL rates and management of AL were evaluated over time.

RESULTS

- A total of 123,254 patients (52.3% female, age 61±14.2) underwent laparoscopic and robotic colorectal resection.
- 3,076 (2.5%) patients had AL within 30 days.
- The overall AL rate significantly decreased from 2.9% in 2012 to 2.3% in 2019(P=0.006).

National Trends of Leaks after Elective Laparoscopic Colectomy

Year	2012	2013	2014	2015	2016	2017	2018	2019
Total leak rate*	2.9%	2.7%	2.7%	2.7%	2.3%	2.5%	2.3%	2.3%
Types of Laparoscopic Procedure								
Partial colectomy	2.5%	2.2%	2.7%	2.9%	2.1%	2.4%	2.3%	2.3%
Right colectomy	2.6%	2.7%	2.0%	2.2%	2.1%	2.2%	1.9%	2.1%
Partial colectomy with low pelvic anastomosis*	4.0%	3.6%	3.2%	3.0%	2.8%	2.9%	2.7%	2.5%
Robotic-assisted colorectal resection	2.9%	2.9%	3.0%	2.6%	2.8%	2.7%	2.8%	2.6%
Management of AL								
Needed Reoperation	1.7%	1.5%	1.6%	1.6%	1.3%	1.4%	1.3%	1.3%
Non-Operative Intervention	0.7%	0.6%	0.6%	0.5%	0.5%	0.6%	0.5%	0.5%
No intervention needed	0.6%	0.6%	0.5%	0.6%	0.6%	0.6%	0.6%	0.5%
*P<0.05								

RESULTS CONT.

- Laparoscopic colorectal resection with low pelvic anastomosis leak rates decreased significantly from 4% in 2012 to 2.5% in 2019(P=0.008).
- There was no significant change in the trend of AL rates among right colectomies, other partial colectomies, and robotic colectomies.
- AL were managed with reoperation (56.7%), non-operative interventions (21.1%), and no interventions (22.2%). AL management did not significantly change over time.

CONCLUSION

- National AL rates after elective laparoscopic colectomy have decreased from 2012 to 2019. Specifically, leak rates after laparoscopic colorectal resection with low pelvic anastomosis have decreased the most when compared to other types of colon resection.
- Leak rates among patients who underwent robotic colectomy were similar from 2012-2019.



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