

Introduction

Robotic-assisted surgery has become increasingly popular in the field of bariatrics. Despite better ergonomics for the surgeon and comparable outcomes, there is a learning curve associated with adopting this technology. This study analyzes a large series of bariatric operations to identify differences in readmission rates between robotic-assisted procedures and conventional laparoscopy.

Methods

This is a retrospective, multicenter analysis of all bariatric operations performed at eight hospitals over 40 months. Cases were divided into laparoscopic and robotic groups, and further subdivided by type of bariatric procedure. Demographics and outcome variables were collected. Thirty-day readmission rates were compared between these groups. Subgroup analysis was also carried out to identify differences in readmission rates over time.

	Laparoscopic	Robotic	
Male	1114 (25.52%)	130 (21.24%)	p=0.02
Female	3252 (74.48%)	482 (78.76%)	
Average Age (Years)	42.77	40.58	p<0.001
Thirty Day Readmission Rate	3.37%	5.23%	p=0.02

Figure 1. Basic demographic information

Results

Basic demographic information and thirty day readmission are seen in Figure 1. There were significant differences between the average age and gender distribution between the laparoscopic and robotic groups. The overall 30 day readmission rates were also significantly different. The total readmission rate for the entire sample was 3.60%.

The breakdown of different types of bariatric operations is seen in Figure 2.

	Laparoscopic	Robotic	Total
Sleeve Gastrectomy	3902	416	4318 (86.74%)
Gastric Bypass	307	154	461 (9.26%)
Duodenal Switch	157	42	199 (4.00%)
	4366 (87.71%)	612 (12.29%)	4978 (100%)

Figure 2. Breakdown of bariatric operations

	Laparoscopic	Robotic	
Sleeve Gastrectomy	3.02%	4.09%	p=0.24
Gastric Bypass	6.51%	7.14%	p=0.80
Duodenal Switch	5.73%	9.52%	p=0.38

Figure 3. Thirty day readmission rates by operation

	2016	2017	2018	2019	
Thirty Day Readmission Rate	5.00%	3.36%	5.88%	5.94%	p=0.76

Figure 4. Robotic thirty day readmission rates by year

On subgroup analysis, the readmission rates by procedure (laparoscopic compared to robotic) was: 3.02% to 4.09% (p=0.24) for VSG, 6.51% to 7.14% (p=0.80) for RYGB, and 5.73% to 9.52% (p=0.38) for DS. No significant differences were found in readmission rates for the individual operations (Figure 3). Looking at changes in readmission rates over time for robotic cases, there was no significant difference between years 2016 – 2019 (p=0.76) (Figure 4).

Conclusion

The robotic platform has promising applications in the field of bariatric surgery. However, the rapid adoption of such technology across a large multi-institutional cohort of patients might have resulted in an increase in readmission rates. Such an increase in readmission rates could be secondary to the learning curve required to achieve proficiency in this technology. Additionally, on subgroup analysis, none of the individual operations had a significantly higher rate of readmissions. Further studies are needed to determine if any interventions are warranted to improve outcomes.

Contact

For more information please email:
nalper@northwell.edu