Readmission and reoperation rate after primary laparoscopic versus robotic-assisted bariatric-metabolic surgery

Should we still expect to get better?

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2023

Laparoscopic versus robotic-assisted primary bariatric surgery

Disclosure

I have no potential **conflict of interest** to report

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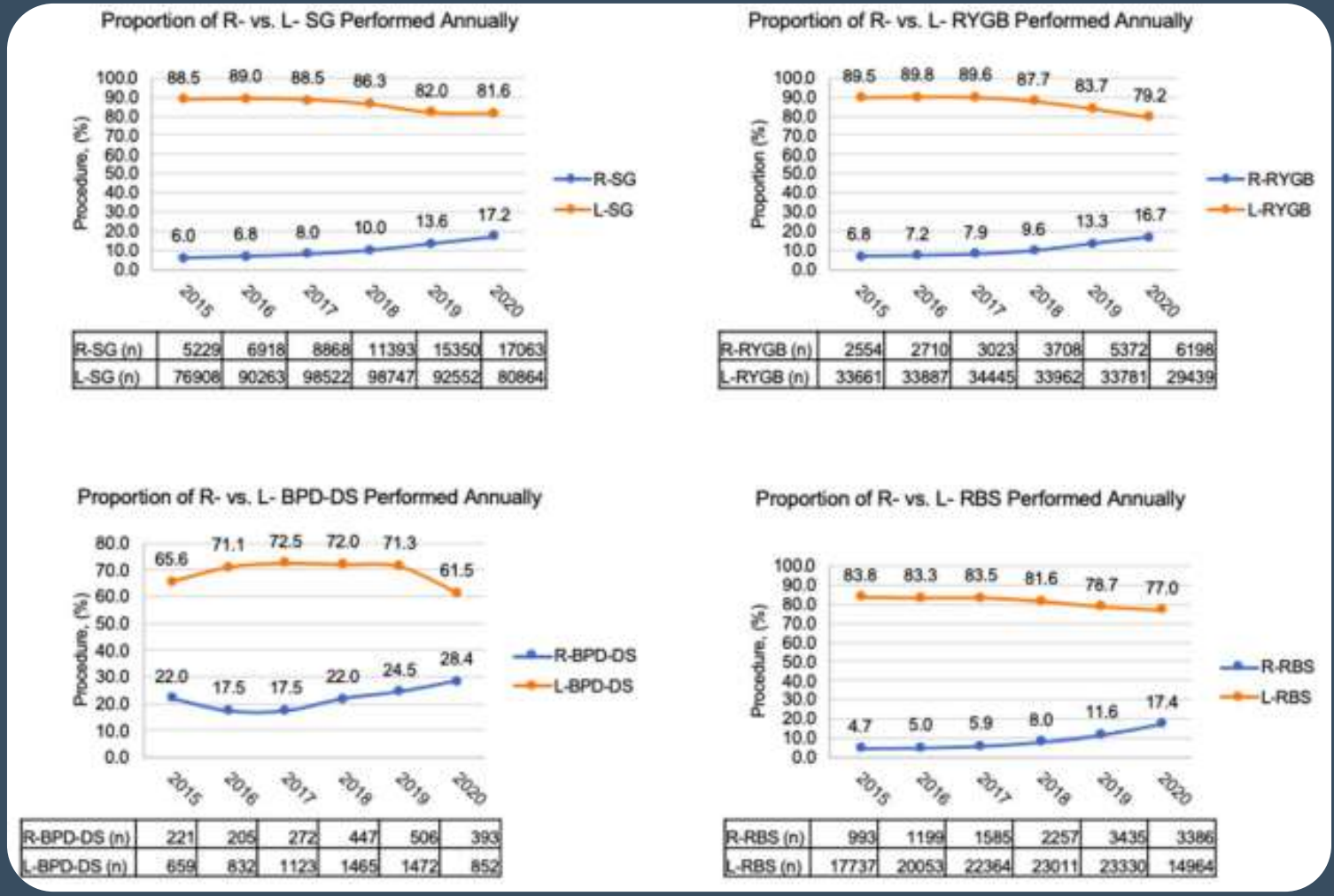
Background

- Increase of robotic in bariatric surgery



Bauerle WB et al Obes Surg 2023

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Background

Laparoscopy

+ established technique
+ less expensive
+ efficiency
+ operation length

Robotic

+ articulating instruments
+ 3D visualization
+ learning curve
+ ergonomics

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Background

	Zhang, 2020	Wang, 2018	Magouliotis, 2017	Li, 2016	Economopoulos, 2015
	RYGB, SG, AGB	**RYGB**	**SG**	**RYGB, SG**	**RYGB**
Postoperative complications	non-significant	non-significant		non-significant	non-significant
Major complication				non-significant	
Postoperative leak	non-significant	non-significant	non-significant	**favors robotic**	non-significant
Blood loss	non-significant	non-significant		non-significant	
Postoperative mortality		**favors laparoscopic**		non-significant	
Conversion to open		non-significant		non-significant	non-significant
Reoperation	non-significant	non-significant		non-significant	non-significant
Readmission		non-significant		non-significant	
Operative length	**favors laparoscopic**	**favors laparoscopic**	**favors laparoscopic**	**favors laparoscopic**	non-significant
Length of stay	non-significant	non-significant	**favors laparoscopic**	non-significant	non-significant

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Aims and methods

- To evaluate readmission and reoperation rate of primary bariatric surgery using robotic bariatric surgery
  - Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program MBSAQIP®
  - Primary bariatric operations: RYGB, SG, AGB, BPD/DS
  - 2015 to 2021

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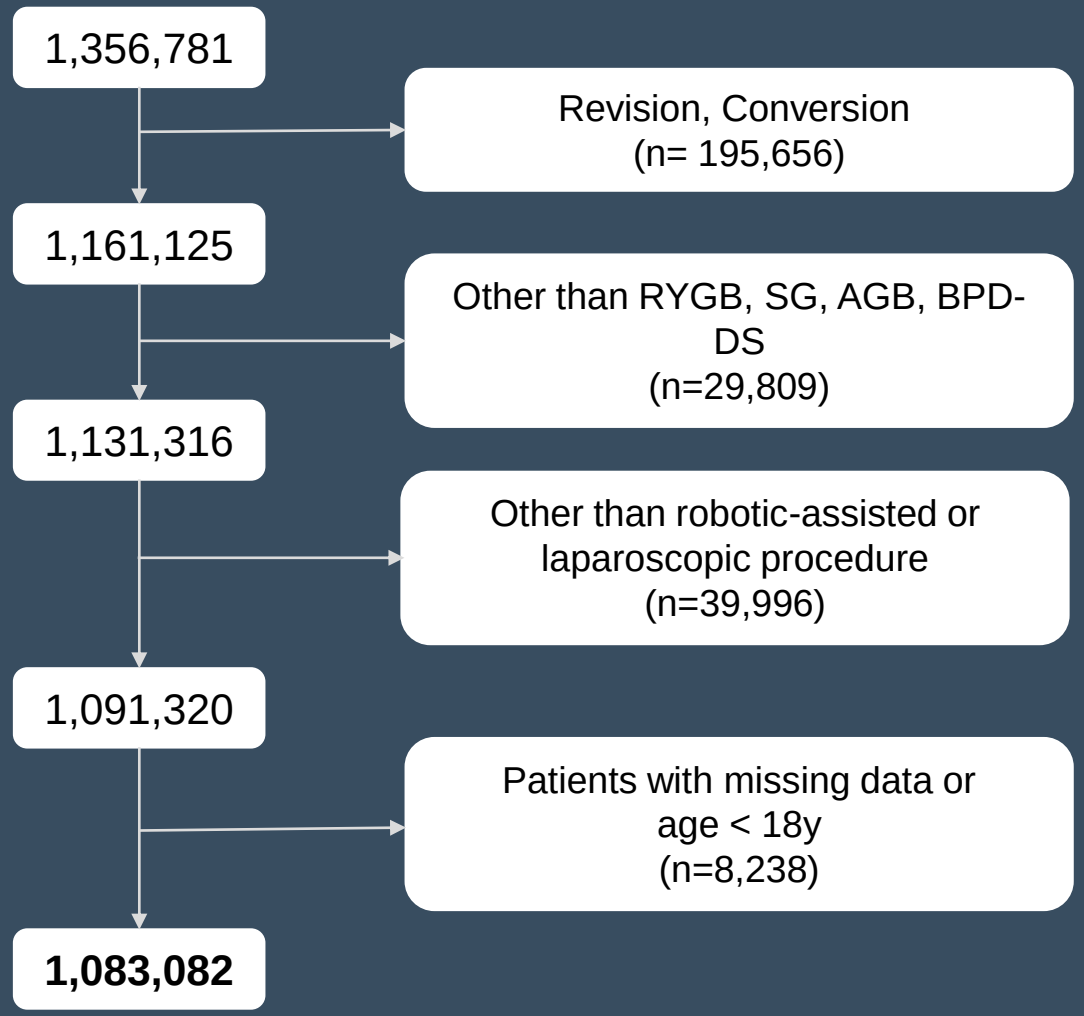
Methods



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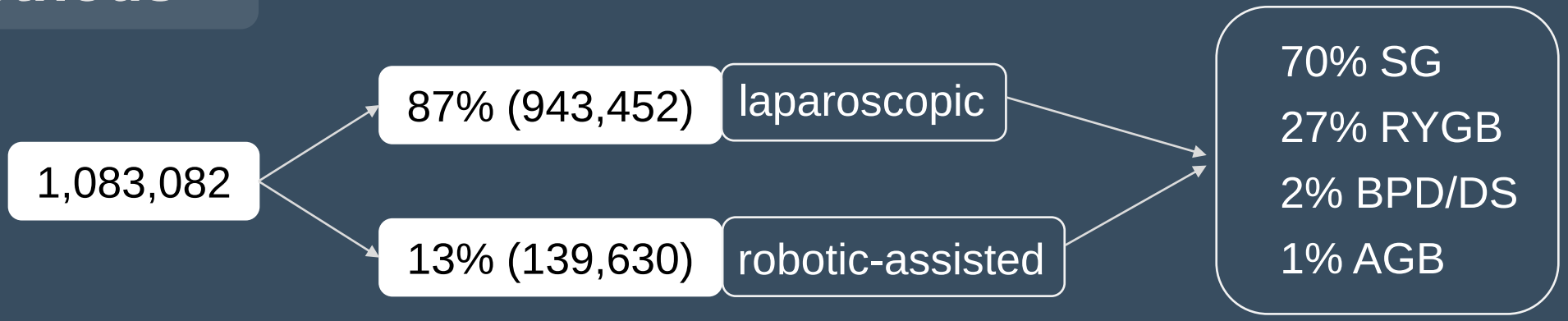
Methods



1:1 propensity score matching with greedy nearest neighbor

- Age
- BMI
- Race
- Surgery type
- MI, dialysis, COPD, diabetes
- Previous foregut surgery
- Chronic steroid use
- Therapeutic anticoagulation
- Smoking
- Functional health status
- ASA score

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Results

Outcomes at 30 days postoperatively using logistic regression, matching sample from 2015-2021

	Conventional Laparoscopy n(%) n=139621	Robotic-assisted n(%) n=139621	OR (95%CI)	p-value
Postoperative morbidity	2824(2.02)	3341(2.39)	1.09(1.06-1.13)	<0.0001
Reoperation	1756(1.26)	2144(1.54)	1.22(1.15-1.30)	<0.0001
Reintervention	1515(1.09)	2037(1.46)	1.35(1.26-1.44)	<0.0001
Unplanned Admission to ICU	979(0.70)	1124(0.81)	1.15(1.05-1.25)	0.0015
Readmission	5051(3.62)	6066(4.34)	1.21(1.17-1.26)	<0.0001
Emergency department visit	8898(7.29)	10362(7.92)	1.09(1.06-1.13)	<0.0001
Emergency department visits > 1	1103(1.40)	1237(1.80)	1.29(1.19-1.40)	<0.0001
LOS > 3 days	3980(2.85)	4230(3.03)	1.06(1.02-1.11)	0.0048
Cumulative LOS > 5 days	2397(1.72)	2727(1.95)	1.14(1.08-1.21)	<0.0001
Postoperative mortality	136(0.10)	130(0.09)	0.96(0.75-1.22)	0.7130

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Results

Outcomes at 30 days postoperatively using logistic regression, matching sample

	2015-2018 n=48638	2019-2021 n=48638	OR (95%CI)	p-value
Postoperative morbidity	1191(2.45)	1137(2.34)	0.95(0.88-1.04)	0.2565
Reoperation	940(1.93)	691(1.42)	0.73(0.66-0.81)	<0.0001
Reintervention	989(2.03)	585(1.20)	0.59(0.53-0.65)	<0.0001
Unplanned Admission to ICU	493(1.01)	367(0.75)	0.74(0.65-0.85)	<0.0001
Readmission	2507(5.15)	1972(4.05)	0.78(0.73-0.86)	<0.0001
Emergency department visit	3023(7.58)	3886(7.99)	1.06(1.01-1.11)	0.0225
Emergency department visits > 1	348(0.87)	449(2.15)	2.50(2.17-2.88)	<0.0001
LOS > 3 days	1876(3.86)	1269(2.61)	0.67(0.62-0.72)	<0.0001
Cumulative LOS > 5 days	1602(3.29)	700(1.44)	0.43(0.39-0.47)	0.1998
Postoperative mortality	51(0.10)	45(0.09)	0.88(0.59-1.32)	0.5406

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Results

Outcomes at 30 days postoperatively using logistic regression, matching sample from 2020-2021

	Conventional Laparoscopy n(%) n=67559	Robotic-assisted (%) n=67559	OR (95% CI)	p-value
Postoperative morbidity	1380(2.04)	1587(2.35)	1.09(1.06-1.13)	0.0001
Reoperation	679(1.01)	778(1.15)	1.15(1.03-1.27)	0.0091
Reintervention	545(0.81)	660(0.98)	1.21(1.08-1.36)	0.0009
Unplanned Admission to ICU	361(0.53)	388(0.57)	1.08(0.93-1.24)	0.3214
Readmission	2010(2.98)	2376(3.52)	1.19(1.12-1.26)	<0.0001
Emergency department visit	5407(8.00)	5481(8.11)	1.01(0.98-1.06)	0.4589
Emergency department visits > 1	678(12.54)	656(11.97)	0.95(0.84-1.06)	0.3445
LOS > 3 days	1426(2.11)	1606(2.38)	1.13(1.05-1.21)	0.0009
Cumulative LOS > 5 days	403(0.60)	440(0.65)	1.09(0.95-1.25)	0.1998
Postoperative mortality	55(0.08)	56(0.08)	1.02(0.70-1.48)	0.9244

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Results

Limitations

- selection bias
- heterogenous entry methods
- errors

Strengths

- large dataset
- over 900 accredited bariatric centers

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Conclusion

Robotic-assisted bariatric surgery has

higher readmission rate, higher reoperation rate, higher postoperative morbidity at 30 days

than conventional laparoscopy

In cases performed between 2020 and 2021 **laparoscopic surgery remains superior to robotic surgery**

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Conclusion

Should we still expect to get better ?

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Every life deserves world class care.