IFSO
MELBOURNE 2024

XXVII IFSO World Congress

Melbourne Convention and Exhibition Centre

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Is there a cost to safety?

Lilian Kow OAM
President IFSO 2019-2022
Past President IFSO-APC
Past President ANZMOSS (OSSANZ)
Adelaide, South Australia

CONFLICT OF INTEREST DISCLOSURE

I have no potential conflict of interest to report

Safety and Risks in MBS

- The risks of severe obesity outweigh the risks of MBS
- The risk of death associated with MBS is about 0.1%
- The overall likelihood of major complications is about 4%

Definition of Safety in MBS

The absence of preventable harm to a patient and reduction of risk of unnecessary harm associated with MBS to an acceptable minimum

Prevention of

- Error
- Adverse effects

→

- Before
- During MBS
- After

What does safety mean for the MBS patient

Organized Activities

- Processes
- Procedures
- Behaviours
- Technologies

Results: environment

that consistently and sustainably lower risks

- reduce the occurrence of avoidable harm
- make error less likely
- reduce its impact when it does occur

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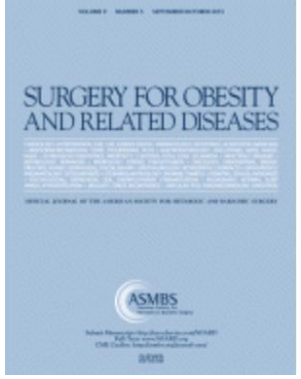
Accreditation

The American College of Surgeons Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP)

Original article

The impact of accreditation on safety and cost of bariatric surgery

Steve Kwon M.D., M.P.H., Bruce Wang Ph.D., Edwin Wong Ph.D.,
Rafael Alfonso-Cristancho M.D., M.Sc, Sean D. Sullivan Ph.D., David R. Flum M.D., M.P.H.



Accreditation
COE vs nonCOE
2003-2009
n=307555

COE 17,896
nonCOE 12,859

Impact of the Medicare and Medicaid Services' national coverage decision (NCD) 2006
Limiting coverage (reimbursements) at designated COE
+ expanding coverage from RYGB to LAGB

SOARD 2013 (9): 617-622

Pre- and Post-NCD Changes in Outcomes According to Accreditation Status (Centers of Excellence versus Non–Centers of Excellence) among Non-Medicare Patients

	Centers of Excellence		Non–Centers of Excellence		Overall	
	(n = 17,896)		(n = 12,859)		(n = 30,755)	
	Pre-NCD	Post-NCD	Pre-NCD	Post-NCD	Pre-NCD	Post-NCD
	(n = 8455)	(n = 9441)	(n = 6534)	(n = 6325)	(n = 14,989)	(n = 15,766)
Inpatient mortality	26 (.3%)	13 (.1%) *	13 (.2%)	15 (.2%)	39 (.3	
90-day reoperations	70 (.8%)	47 (.5%) *	41 (.7%)	35 (.5%)	105 (.	
90-day complications	3073 (36.4%)	2608 (27.6%) *	2372 (36.3%)	1876 (29.7%) *	5,445 (36.3%	
90-day readmissions	915 (10.8%)	826 (8.8%) *	760 (11.6%)	603 (9.5%) *	1675 (11.2%)	(9.1%) *
90-day total payments	$24,543± $40,145	$24,510± $37,769	$26,477± $29,114	$26,403± $37,903	$25,386± $37,769	$26,270± $37,239

Results

- ↓ inpatient mortality
- ↓ 90 D reoperations
- ↓ 90 D complications
- ↓ 90 D readmissions

NCD = national coverage decision.

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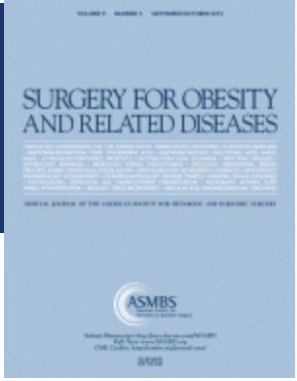
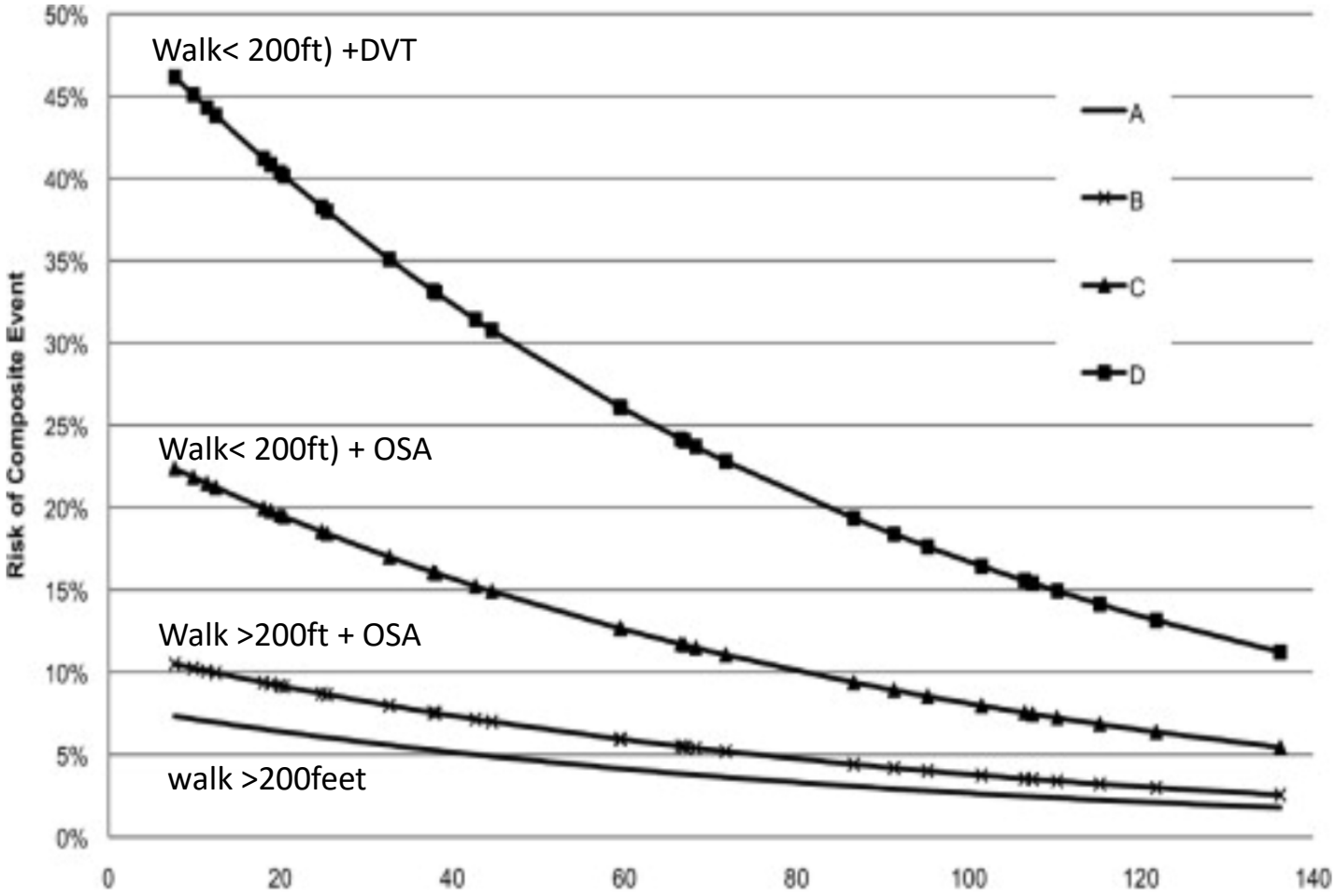
Relationship between surgeon volume and adverse outcomes after RYGB in Longitudinal Assessment of Bariatric Surgery (LABS) study



§ Surgeon volume included as continuous variable in multivariate model.



Longitudinal Assessment of Bariatric Surgery (LABS)-1 is a prospective study examining the 30-day adverse outcomes MBS
March 2005 to December 2007
33 LABS-certified surgeons USA = 5069 ops

Annual case volume ↑ → ↓AE

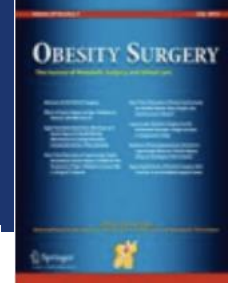
for each 10-case/yr ↑ volume

↓

rate of AEs decreased by 10%

Smith M et al SOARD 2010-03-04, Volume 6, Issue 2, 118-125

The Impact of Metabolic and Bariatric Surgeon Status on Outcomes After MBS: a Retrospective Cohort Study Using the MBSAQIP Database



MBSAQIP
Complication rates between MBS vs GS
RYGB + SG between 2016 and 2019
n=622,079
MBS n=606594 (97.5%, mean age 44.4 yr, mean BMI45.2
GS n=. 15485 (2.5%, mean age 44.7 yr, mean BMI 45.2

multivariable logistic regression (adjusted for covariates)
no statistically significant relationship for

- 30-day mortality
- rate of serious complications

Complication	Generalist (*n*=15485)	Metabolic specialist (*n*=606594)	*p*-value
Leak	84 (0.5)	2016 (0.3)	<0.001
Bleed	170 (1.1)	5476 (0.9)	0.011
Reoperation	197 (1.3)	7002 (1.2)	0.176
Reintervention	181 (1.2)	6613 (1.1)	0.352
Readmission	656 (4.2)	21503 (3.5)	<0.001
Dehydration requiring outpatient treatment	549 (3.6)	25048 (4.1)	<0.001
ED visit outpatient	1102 (7.1)	42725 (7.0)	0.725
Follow-up at 30 days	14843 (95.9)	578162 (95.3)	0.002
Cardiac	6 (0.04)	364 (0.06)	0.284
Pneumonia	27 (0.2)	1089 (0.2)	0.881
AKI	15 (0.1)	695 (0.1)	0.519
UTI	59 (0.4)	2099 (0.4)	0.465
VTE	28 (0.2)	1664 (0.3)	0.027
Sepsis	13 (0.1)	590 (0.1)	0.599
Serious complication	548 (3.5)	19260 (3.2)	0.011
Mortality (30 days)	10 (0.06)	511 (0.08)	0.404

ED emergency department; *AKI* acute kidney injury; *SSI* superficial site infection; *VTE* venous thromboembolism

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Guidelines for Perioperative Care in Bariatric Surgery: Enhanced Recovery After Surgery (ERAS) Society Recommendations: A 2021 Update

ERAS recommendations for pre-admission care for MBS

- Information, education & counselling
- Indications & contraindications for MBS
- Smoking & alcohol cessation
- Preop weight loss
- Prehabilitation & exercise

→

- Preop information & education should be given to all patie
- Global ASMBS /IFSO 2022 guidelines
- All patients screened for alcohol and tobacco use.
- Preop weight loss to ↓ liver size
- Beneficial but insufficient data to recommend

Stenberg E et al World J Surg (2022) 46:729–751

Guidelines for Perioperative Care in Bariatric Surgery: Enhanced Recovery After Surgery (ERAS) Society Recommendations: A 2021 Update

ERAS recommendations for pre-operative care for MBS

- Supportive pharmacological intervention
- Preoperative fasting
- Carbohydrate loading
- PONV

→

- 8 mg IV dexamethasone pre induction →↓PONV + IR
- Solids 6 h & clear liquids 2 h before induction
- ? Preoperative carb loading in MBS
- A multimodal approach

Guidelines for Perioperative Care in Bariatric Surgery: Enhanced Recovery After Surgery (ERAS) Society Recommendations: A 2021 Update

ERAS recommendations for intra-operative care for MBS

- Perioperative fluid management
- Standardized anaesthetic protocol
- Airway management
- Ventilation strategies

- Neuromuscular blockade
- Surgical technique,volume and training
- Abdominal drainage and NG decompression

→

- maintain normovolemia/optimize tissue perfusion/O2
- Opioid-sparing anaesthesia
- Specific challenges in airways in patients with obesity
- Reverse Trendelenburg, flexed hips, reverse/beach chair positioning →↑ pul mechanics & gas exchange
- Deep NM blockade ↑ surgical performance.
- Strong association hospital volume & surgical outcomes
- To be avoided

Stenberg E et al World J Surg (2022) 46:729–751

Guidelines for Perioperative Care in Bariatric Surgery: Enhanced Recovery After Surgery (ERAS) Society Recommendations: A 2021 Update

ERAS recommendations for post-operative care for MBS

- Postoperative oxygenation

- Thromboprophylaxis
- Early postoperative nutritional care
- Supplementation of vitamins & minerals

- PPI prophylaxis
- Gallstone prevention

→

- OSA or uncomplicated OSA→O2 prophylactically
- head-elevated or semisitting position.
- mechanical and pharmacological measures.
- clear liquid regimen initiated after surgery
- regimen of life-long MVT & mineral sup nutritional biochemical monitoring is necessary
- PPI prophylaxis - 30 days post op
- Ursodeoxycholic acid considered for 6 months

Stenberg E et al World J Surg (2022) 46:729–751

Results of Implementing an Enhanced Recovery After Bariatric Surgery (ERABS) Protocol

Pre-ERABS 2010-2012
ERABS protocol 2012-2014

↓ procedural time
↓LOS

↑ efficiency and cost effectiveness

Table 6 Mean (95 % confidence interval) operation times before and after implementation of ERABS

	Before ERABS (n=652)	After ERABS (n=1321)	p value
Induction	17.9 (17.4–18.4)	14.6 (14.4–14.8)	<0.05
Surgical time	57.8 (55.7–59.9)	50.5 (49.6–51.5)	<0.05
Bypass	76.6 (72.6–80.6)	59.6 (58.3–60.9)	<0.05
Sleeve	47.1 (45.3–48.8)	40.8 (39.8–41.7)	<0.05
Emergence time[a]	8.9 (8.5–9.3)	7.6 (7.5–7.8)	<0.05
Time at recovery	89.6 (86.9–92.3)	79.9 (78.3–81.5)	<0.05
Total time in OR	84.6 (82.1–87.0)	72.8 (71.7–73.8)	<0.05
Bypass	103.5 (98.8–108.1)	82.2 (80.8–83.6)	<0.05
Sleeve	73.8 (71.6–76.0)	62.6 (61.6–63.7)	<0.05

[a] Time between end of surgery and transport to recovery area

Mannaerts et al OBES SURG (2016) 26:303–312

The Application of Enhanced Recovery After Surgery (ERAS) for Patients Undergoing Bariatric Surgery: a Systematic Review and Meta-analysis

17 studies ERAS vs Standard Care
4964 ERAS group vs 3218 SC group
5 RCTs
12 observational studies

ERAS
↓ LOS ($p < 0.01$)
↓ PONV ($p < 0.01$)

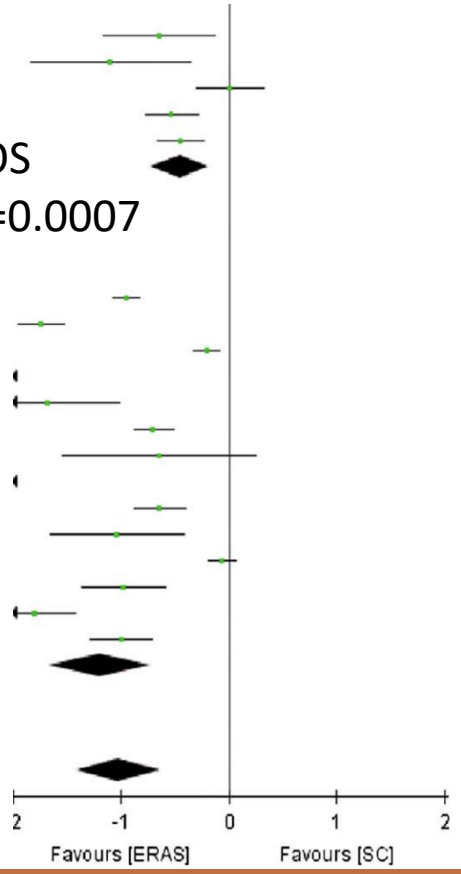
No difference in
- Operation Time
- PostOp complications
- Re-admission
- ED visit

ZHOU J et al Obesity Surgery (2021) 31:1321-1331

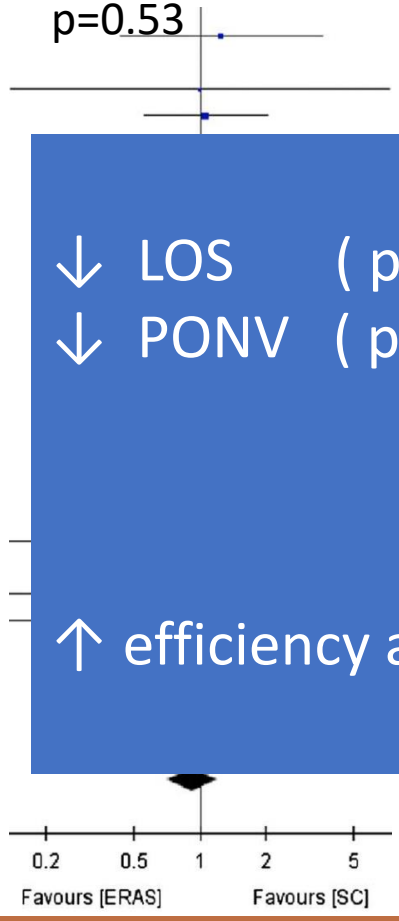
Efficacy and safety of enhanced recovery after surgery protocol on minimally invasive bariatric surgery: a meta-analysis

21 studies ERAS vs Standard Care
6449 ERAS group vs 4315 SC group
5 RCTs
15 non RCTs

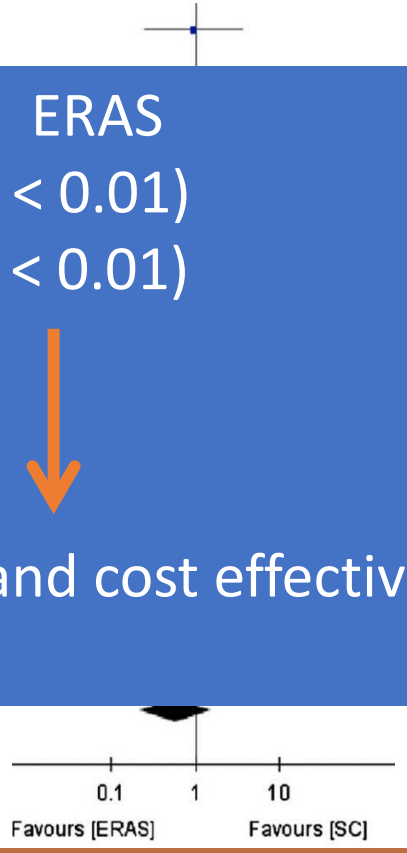
LOS
p=0.0007



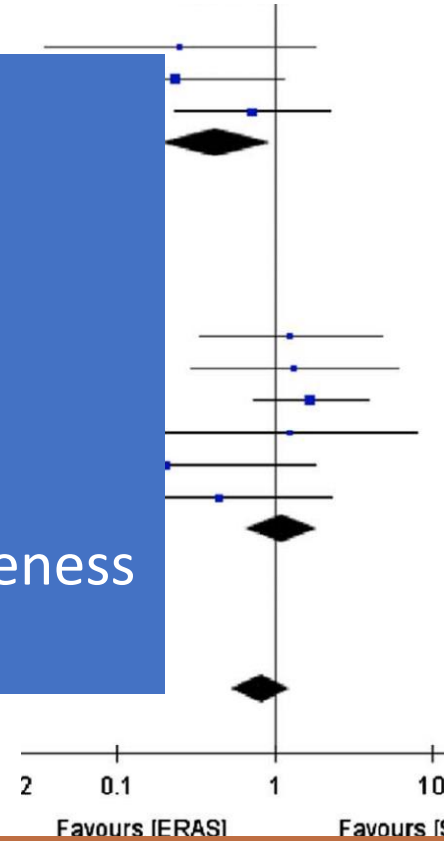
Overall Complications
p=0.53



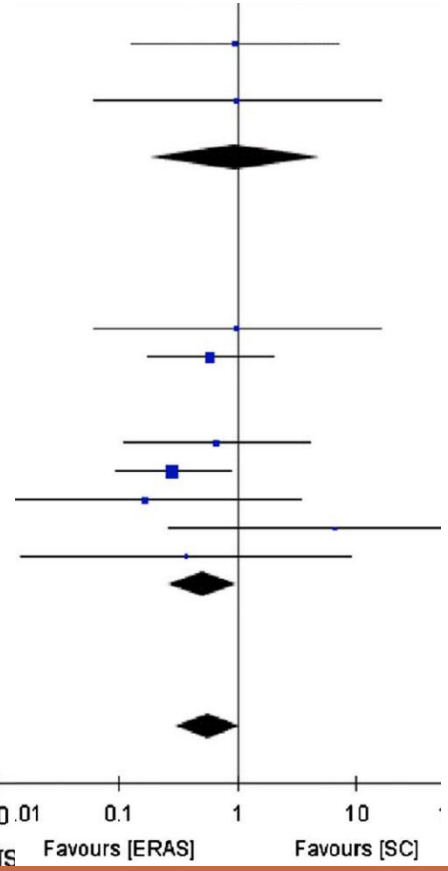
Major Complications
p=0.28



PONV
p= 0.04



Leaks
p=0.97



ERAS
↓ LOS (p < 0.01)
↓ PONV (p < 0.01)

↑ efficiency and cost effectiveness

Gao B et al Int Journal of Surgery (2023) 109:1015–1028

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REVIEW ARTICLE

Safety of Laparoscopic vs Open Bariatric Surgery

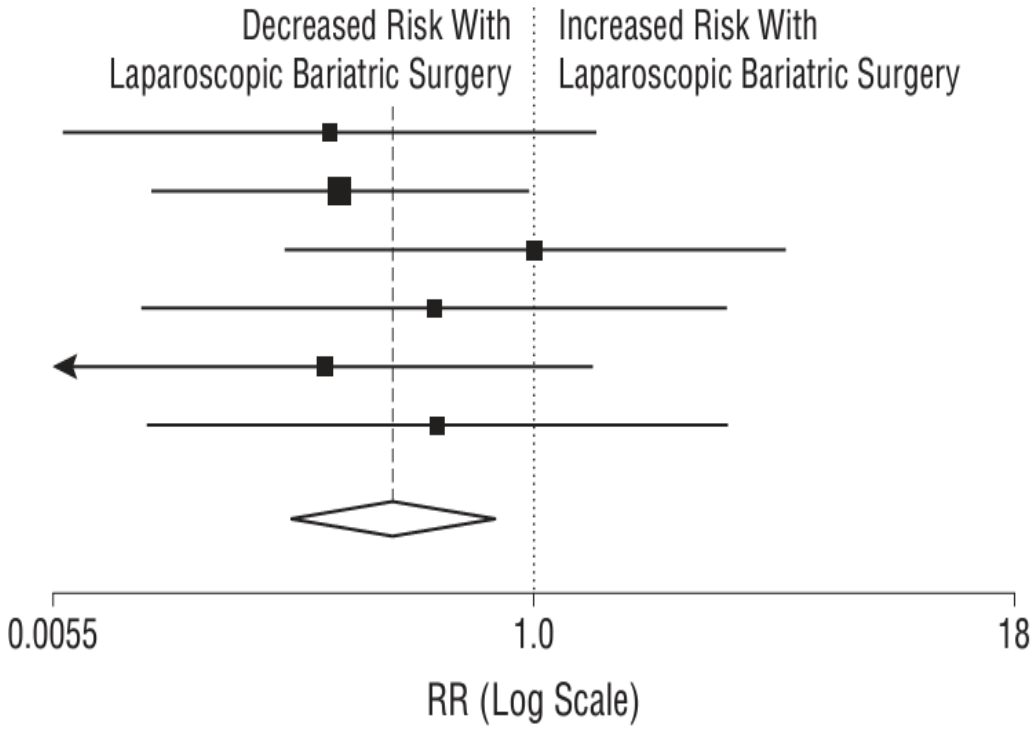
A Systematic Review and Meta-analysis

Lap vs Open MBS
Min 12 month followup
6RCT n=510

Lap MBS

↓

Lower risk of wound infection



wound infection
RR 0.21

Reach J etal. ArchSurg.2011;146(11):1314-1322

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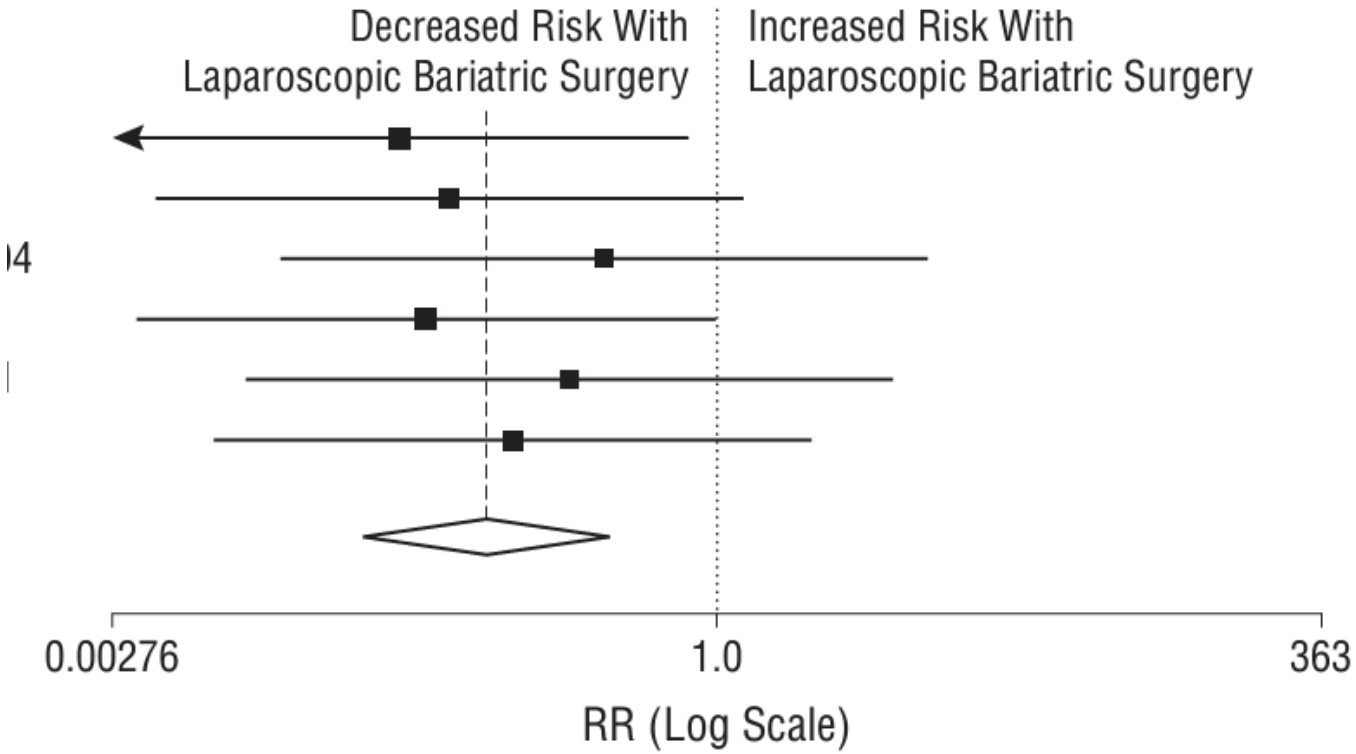
Min 12 month followup
6 RCT n=510

Lap MBS

↓

Lower risk of incisional hernia



Incisional hernia
RR 0.11

Reach J etal. ArchSurg.2011;146(11):1314-1322

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A Systematic Review and Meta-analysis

Lap vs Open MBS
Min 12 month followup
6 RCT n=510

Lap MBS

Lower risk

- Wound infection
- incisional hernia

Similar risk

- Reoperation
- Anastomotic leak
- All cause mortality

Reach J etal. ArchSurg.2011;146(11):1314-1322

laparoscopic MBS surgery has become the preferred method

Safer
↓ LOS
↓postop pain
↓infection
↑ patient comfort

→

Technical Complexity: higher level skill
Potential for internal injuries
specialized lap instruments
more expensive to set up

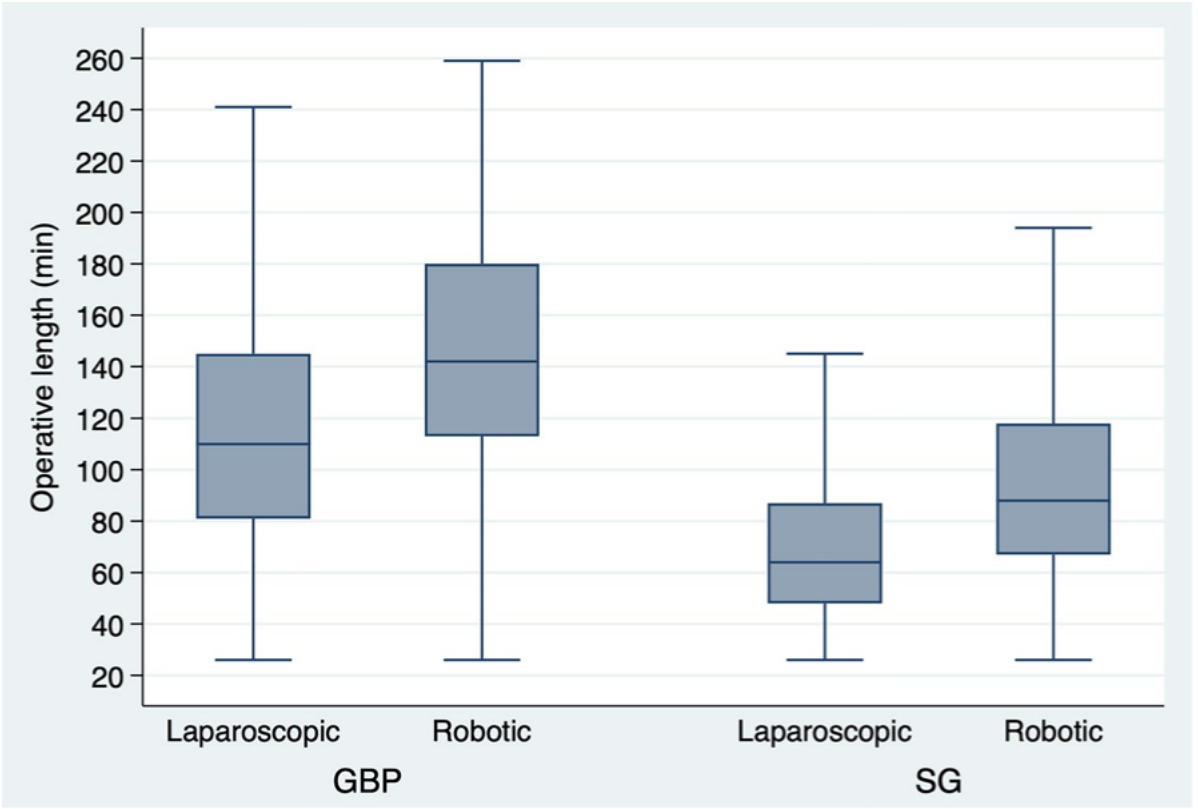
Economic Impact

Shorter recovery times and fewer complications
→ reduced overall healthcare costs in the long term
despite higher upfront costs.

Robotic vs. Laparoscopic Metabolic and Bariatric Surgery, Outcomes over 5 Years in Nearly 800,000 Patients

R. Wesley Vosburg[1,2] · Omar Haque[1,3] · Eve Roth[1,3]

MBSAQIP database
2015-2019
n 791,423
Robotic 13.7% SG
16.6% RYGB



Mean operative time was significantly ↑ robotic surgery for both
RYGB (+ 40.5 min, $p < 0.001$)
SG (+ 26.8 min, $p < 0.001$)

Obesity Surgery (2022) 32:2341–2348

Laparoscopic Bariatric Surgery

Advantages:

1.Minimally Invasive: Smaller incisions lead to less postoperative pain, shorter recovery time, and less scarring.

2.Faster Recovery: Generally quicker recovery compared to open surgery, with many patients resuming normal activities sooner.

3.Lower Risk of Infection: Smaller incisions reduce the risk of wound infections.

4.Less Pain: Associated with reduced postoperative pain and discomfort.

Challenges:

1.Limited Range of Motion: Surgeons work with fixed, rigid instruments, which may limit their dexterity compared to other methods.

2.2D Visualization: Surgeons view the operative field in two dimensions, which can make depth perception challenging.

Robotic Bariatric Surgery

Advantages:

1.Enhanced Precision: The robotic arms offer superior dexterity and precision, allowing for more intricate movements and complex maneuvers.

2.3D Visualization: Provides a high-definition, three-dimensional view of the operative field, improving depth perception and accuracy.

3.Reduced Surgeon Fatigue: The robotic system can help reduce physical strain on the surgeon, potentially leading to improved outcomes.

4.Minimally Invasive: Like laparoscopic surgery, it involves small incisions and offers similar benefits in terms of recovery time, scarring, and pain.

Challenges:

1.Higher Costs: The use of robotic systems can be more expensive due to the cost of the technology and maintenance.

2.Learning Curve: Requires specialized training for surgeons, which can impact availability and expertise.

3.Device Availability: Not all hospitals or surgical centers may have robotic systems available.

Reach J etal. ArchSurg.2011;146(11):1314-1322

Is there a cost to safety for the MBS patient?

- Processes: accreditation
- Procedures:surgeon volume
- Behaviours: ERAS
- Technologies: lap/robotic

Results

- ↓ inpatient mortality
- ↓ 90 D reoperations
- ↓ 90 D complications
- ↓ 90 D readmissions

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Annual case volume ↑ → ↓AE

for each 10-case/yr ↑ volume

↓

rate of AEs decreased by 10%

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↓ LOS ($p < 0.01$)
↓ PONV ($p < 0.01$)

↑ efficiency and cost effectiveness

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↓ LOS (p < 0.01)
↓ PONV (p < 0.01)

↑ efficiency and cost effectiveness

↑ precision
3D → ↑depth perception and accuracy
↓ Surgeon Fatigue

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- Error
- Adverse effects

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