Metabolic Surgery Updates: Cardiovascular Disease

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Metabolic Surgery Updates: CV Disease Objectives

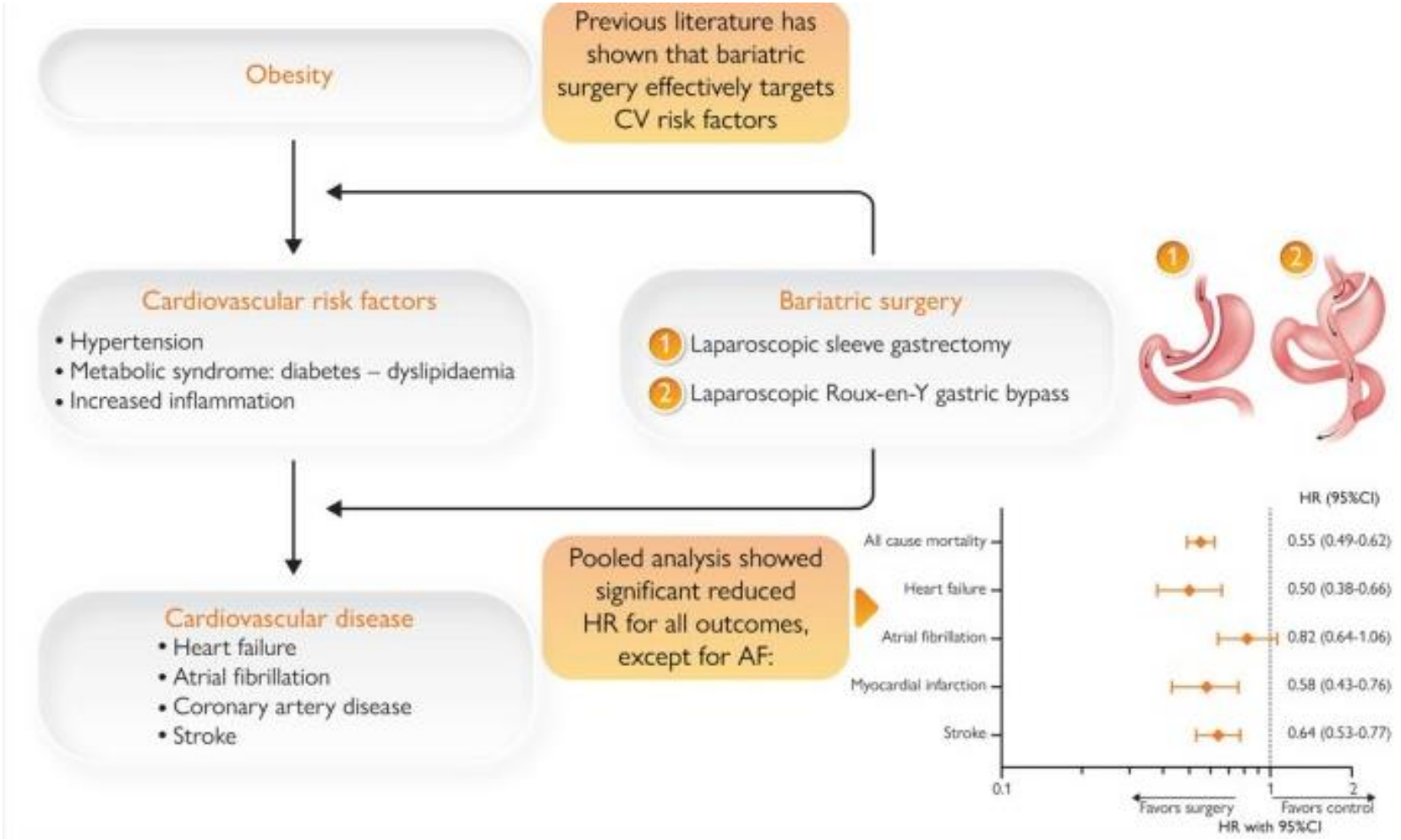
- CV risk reduction
- CV disease treatment
- Where will AOMs leave surgical therapy for CV disease?

MBS for CVD what we know: Obesity-associated medical conditions

What we know

- Multiple RCTs that MBS is superior to best medical therapy for type 2 diabetes mellitus- A1C control and remission
- Multiple RCTs that MBS is superior to best medical therapy for hypertension control and remission
- Non-RCT that MBS is superior to best medical therapy to reduce prevalence and severity of OSA

MBS for CVD what we know: Beyond CV risk reduction



2022 MBS Indications and Evidence

Recommendation:

- Obesity is associated with end-stage organ disease and may limit access to transplantation. Obesity is also a relative contraindication for SOT and poses unique technical challenges during surgery.
- MBS in patients with obesity and HF is associated with improvement of LVEF, improvement of functional capacity, and higher chances for receiving heart transplantation.
- In patients with obesity and HF, MBS has low morbidity and mortality and can be a useful adjunct before heart transplantation or placement of LVAD.
- MBS can also improve heart transplant outcomes.
- Level of evidence 2b, Grade of recommendation B

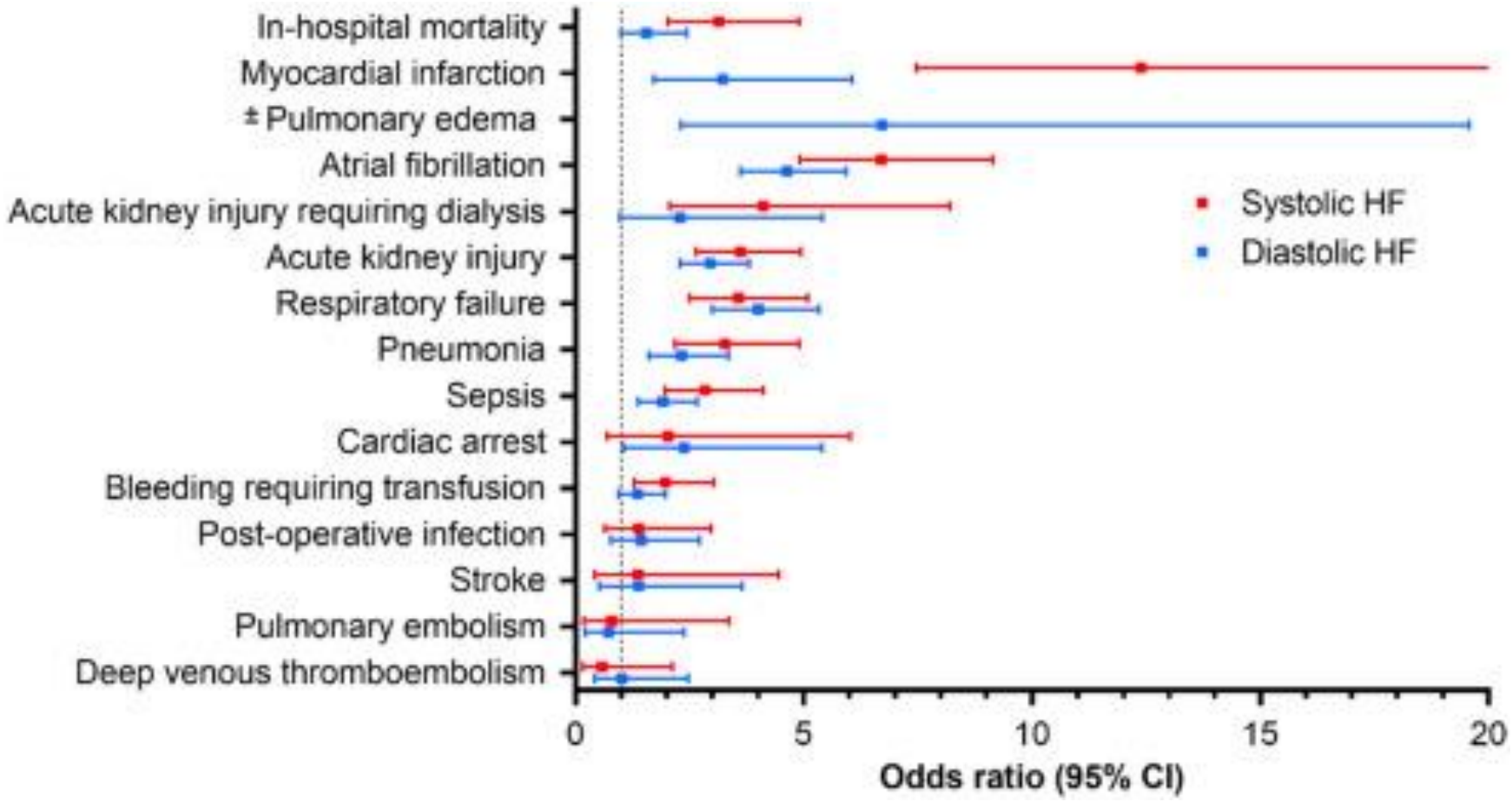
ELSEVIER Surgery for Obesity and Related Diseases ■ (2022) 1–12

Original article

2022 American Society for Metabolic and Bariatric Surgery (ASMBS) and International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO): Indications for Metabolic and Bariatric Surgery

PMID: 39419572, 36280539

In-hospital outcomes after MBS in patients with HF



PMID 32991845

Safe peri-operative management

- Anticoagulation plan
- Preoperative volume assessment
- Cardiac anesthesia
- Intra-operative HD monitoring
- Post-operative observation and slow titration back of GDMT

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Bariatric Surgery

Bariatric surgery in patients with advanced heart failure: A proposed multi-disciplinary pathway for surgical care in medically complex patients

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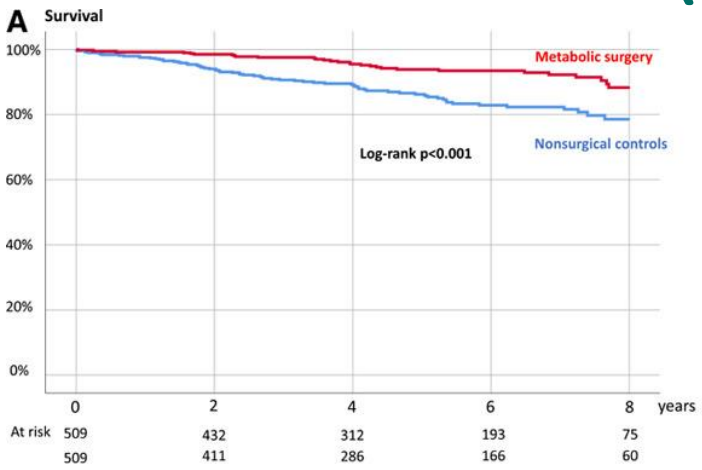
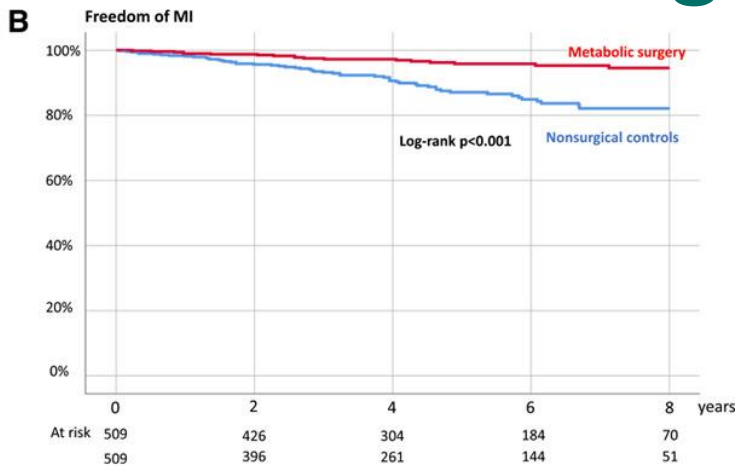
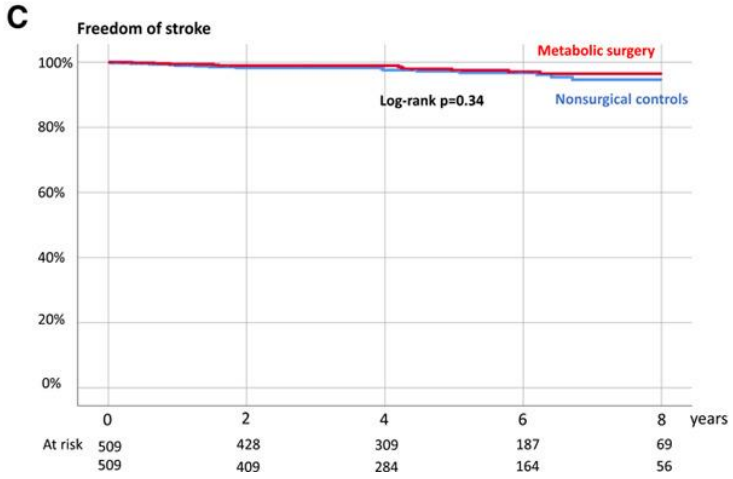
Long-term safety for patients with prior MI (SWEDEHEART registry)







8 year cumulative probability of MACE

- 18.7% MBS
- 36.2% controls
- Adjusted HR of 0.44

- Pos. Effect on death, new MI, new HF
- No Effect on stroke, Afib

PMID 33103469

MBS for HF (Medicare): HF treatment

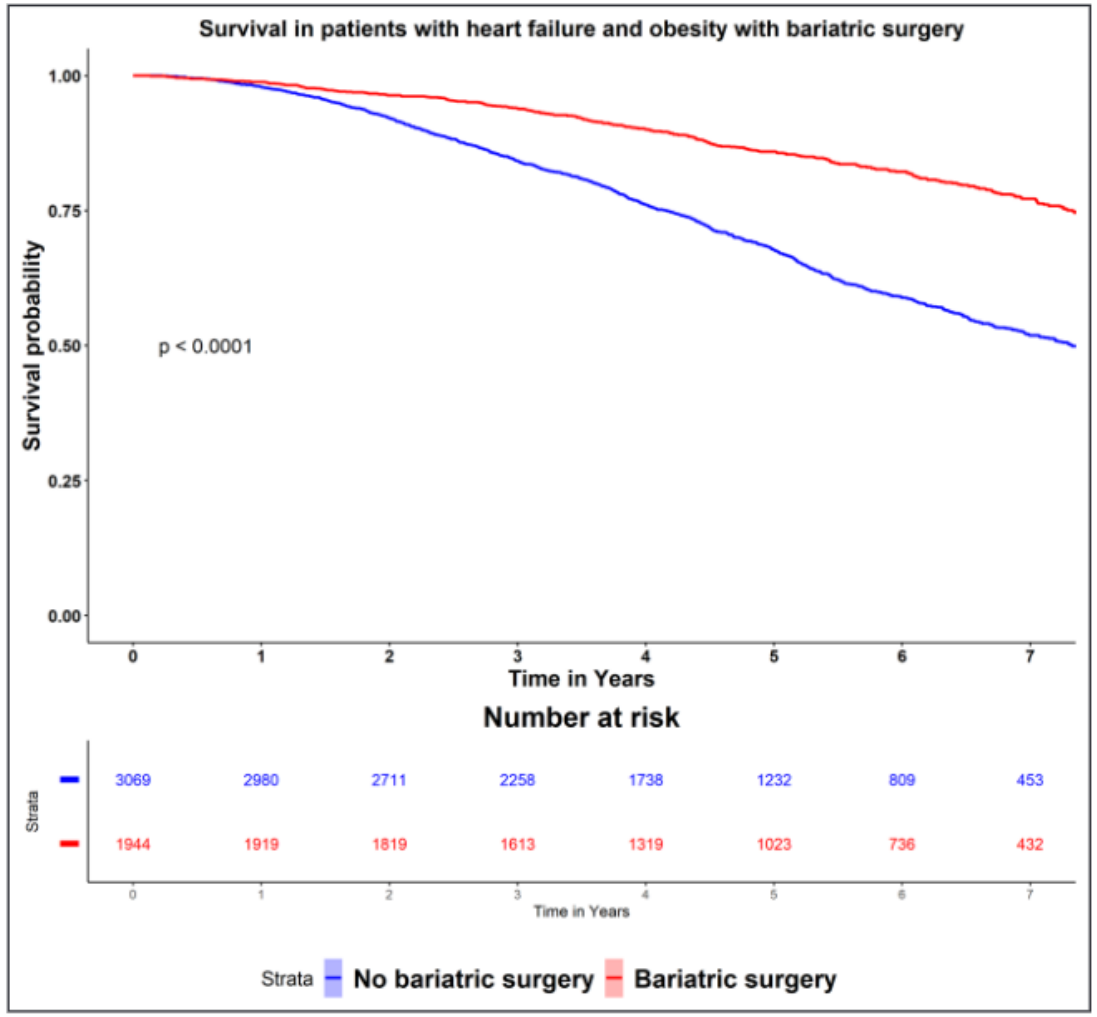
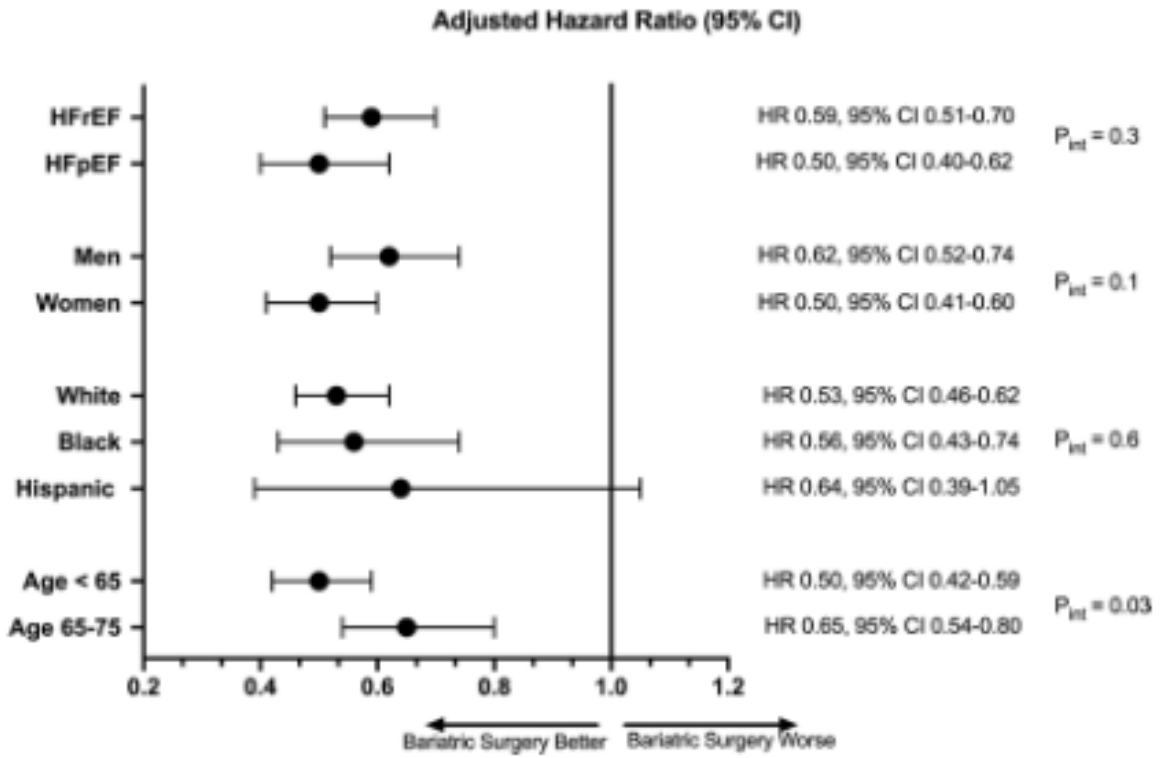


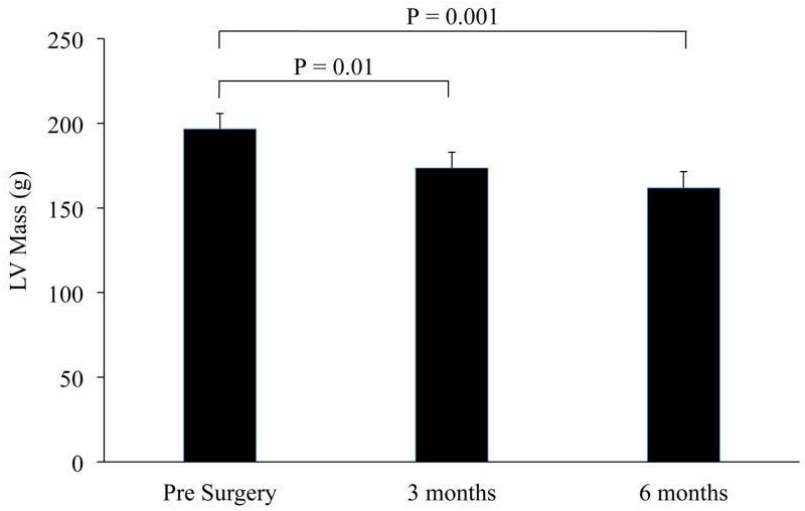
Figure 2. Survival in patients with heart failure and obesity with and without bariatric surgery.

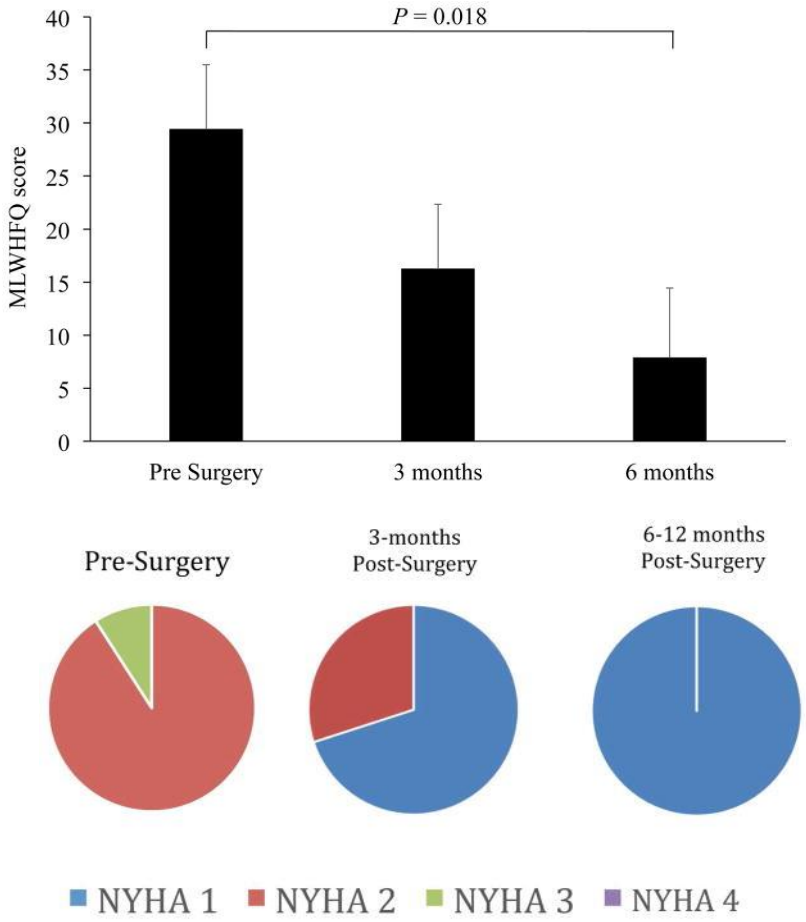


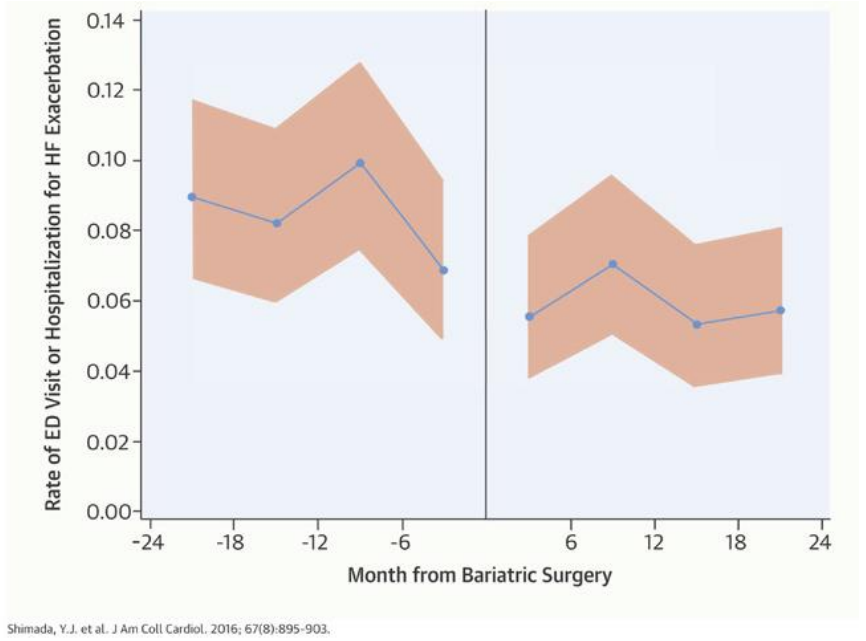
MBS lower risk of all-cause mortality, HF hospitalization rate and lower Afib risk

Mentias et al. Circ Heart Fail 2024 17(2):e010453

Bariatric surgery improves HFpEF





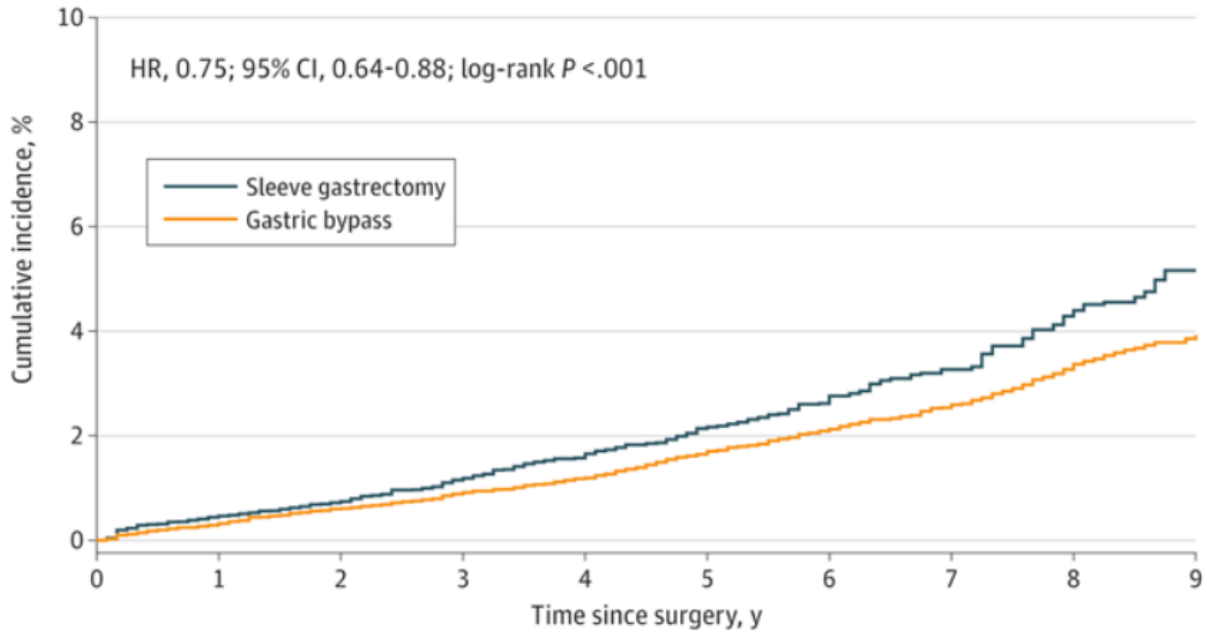


Shimada, Y.J. et al. J Am Coll Cardiol. 2016; 67(8):895-903.

Mikhalkova D et al. Obesity 2018 26(2):284-290

What's New: Procedure Selection for MACE

Figure 1. Cumulative Incidence of Major Adverse Cardiac Events (MACE)



No. at risk

Sleeve gastrectomy	35178.08	31533.61	27702.96	24633.04	20820.60	16774.47	12923.59	9000.388	5655.366	2623.583
Gastric bypass	39465.61	35874.92	31916.15	28635.43	24667.25	20431.94	16288.41	12162.13	8514.734	4932.533

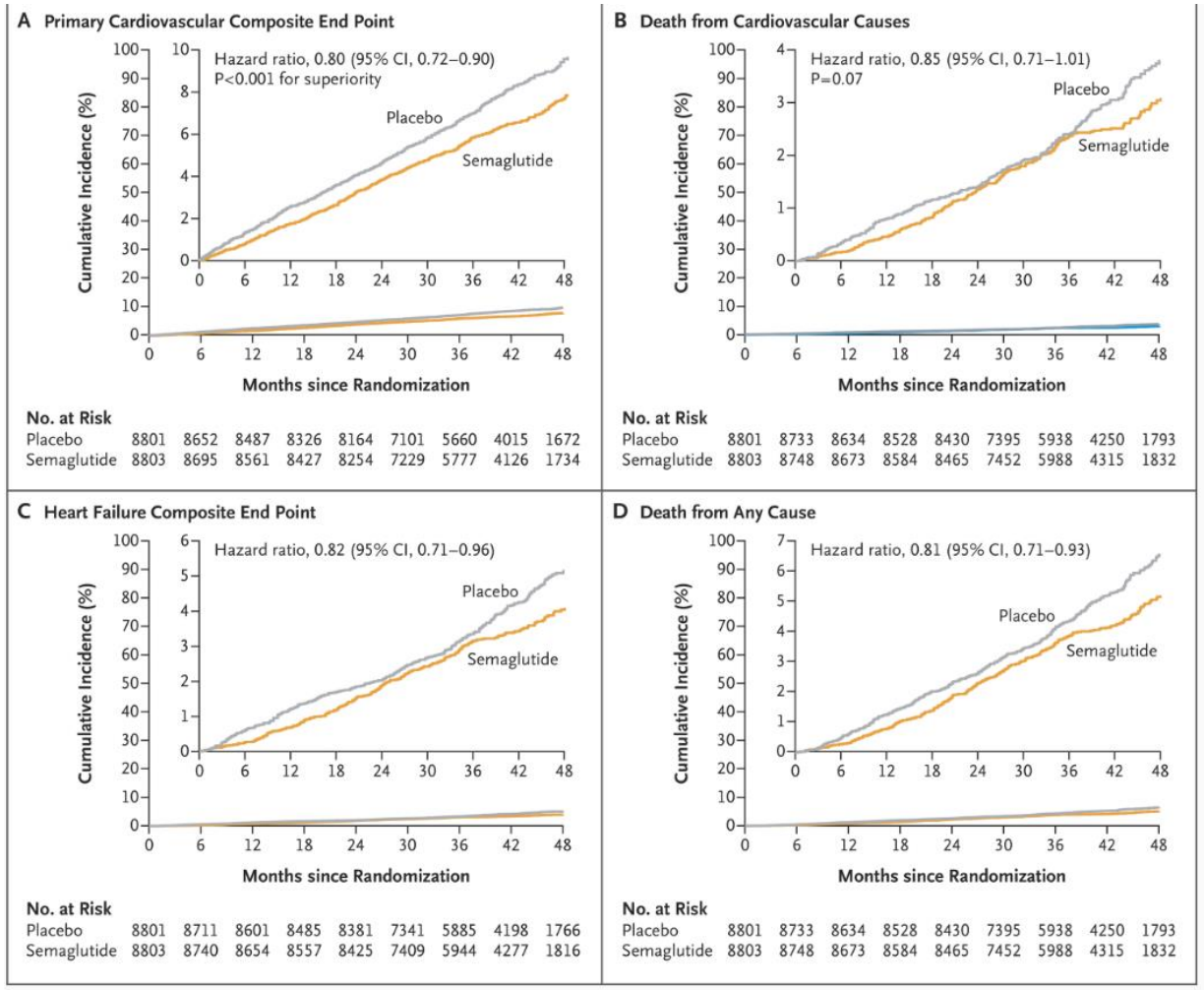
Inverse probability-weighted (IPW) Kaplan-Meier curves for MACE, with the follow-up truncated at 9 years postsurgery. Number at risk represents the number in the pseudopopulation generated by the IPW. HR indicates hazard ratio.

4 point MACE:
Acute MI
Ischemic stroke
Hosp. For HF
All-cause mortality

JAMA Surg 2025;160;(6):690-700.

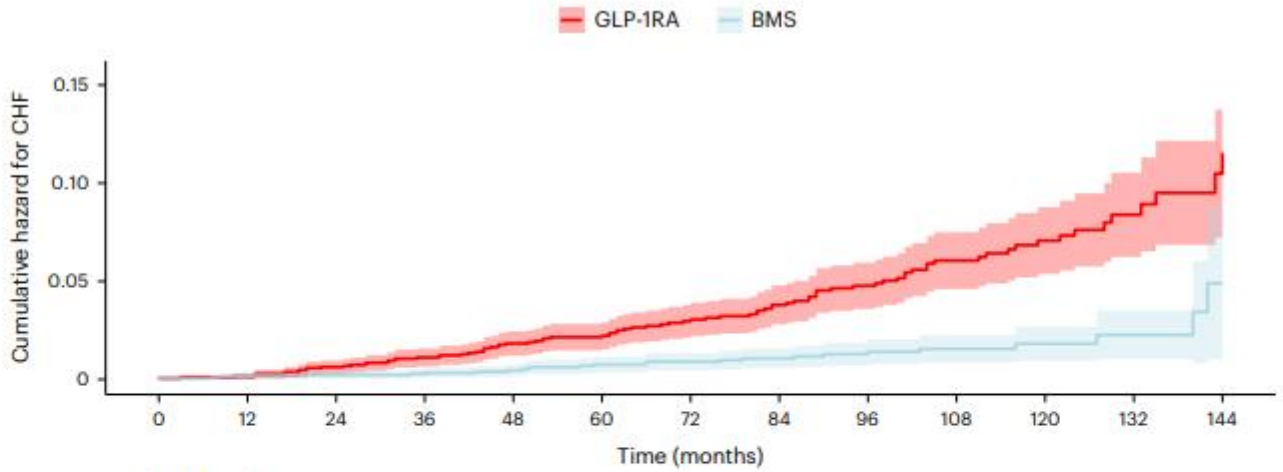
The challenge ahead

SELECT TRIAL comparison (risk reduction)



PMID: 38066700

MBS vs GLP-1RA for incident CHF



Number at risk

GLP-1RA	2,205	2,170	1,910	1,800	1,602	1,441	1,194	1,015	782	592	418	193	93
BMS	2,205	2,174	2,035	1,890	1,710	1,529	1,291	1,020	799	555	310	163	55

Cumulative number of events

GLP-1RA	1	3	13	22	34	40	51	59	68	77	82	86	90
BMS	1	4	5	7	9	14	16	18	21	22	23	24	26

Fig. 2 | Cumulative hazards for CHF. Cumulative hazards (95% CIs) for CHF are shown for patients with diabetes and obesity who underwent BMS versus patients treated with GLP-1RA. The shaded areas represent 95% CIs of the cumulative hazards.

PMID 38749475

JAMA Network | Open™

Original Investigation | Diabetes and Endocrinology

Bariatric Metabolic Surgery vs Glucagon-Like Peptide-1 Receptor Agonists and Mortality

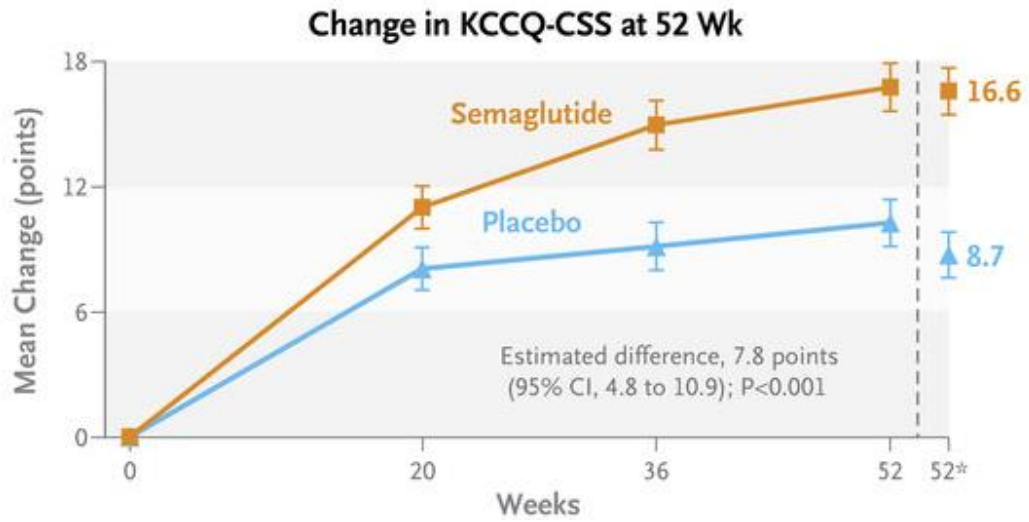
Dror Dicker, MD; Yael Wolff Sagy, PhD; Noga Ramot, BSc; Erez Battat, MBA; Philip Greenland, MD; Ronen Arbel, PhD; Gil Lavie, MD; Orna Reges, PhD

"No difference was observed in the risk of mortality among those with a longer duration of diabetes, nor in the risk of MACEs among all patients."

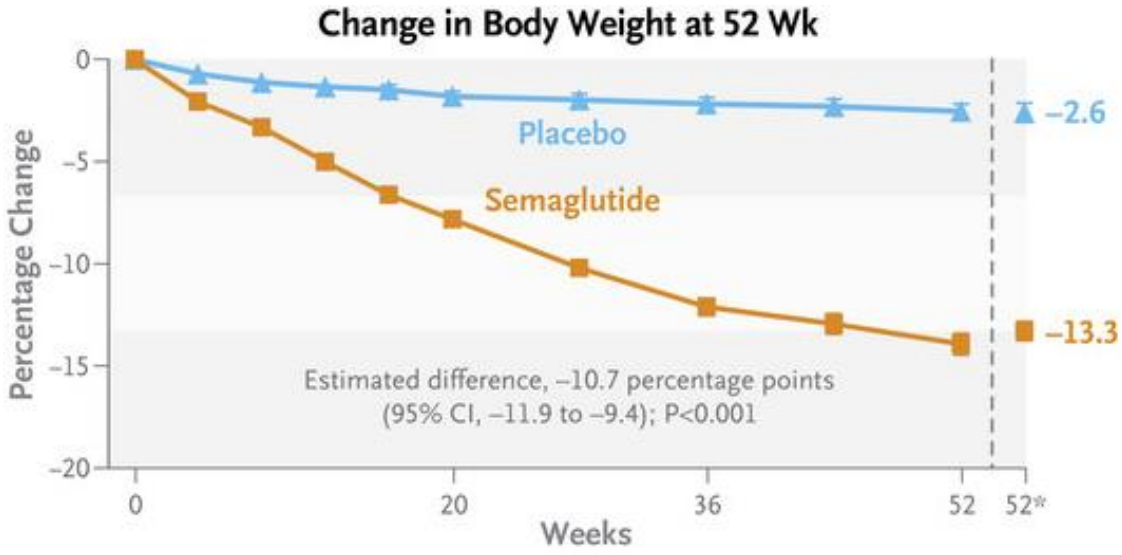
Table 3. Associations Between Treatment Type and Outcomes According to the Duration of Diabetes

Outcome	Diabetes duration ≤10 y (n = 4742)	Diabetes duration >10 y (n = 1328)
All-cause mortality, No. (%)	161 (3.4)	88 (6.6)
Nonfatal MACEs, No. (%)	178 (3.8)	109 (8.2)
BMS vs treatment with GLP-1RAs, HR (95% CI)		
All-cause mortality		
Unadjusted	0.33 (0.23-0.47)	0.65 (0.42-0.995)
Adjusted[a,b]	0.38 (0.25-0.58)	0.65 (0.39-1.08)
Adjusted, including HbA_{1c} level maximal change	0.43 (0.27-0.99)	NA
Adjusted, including BMI level maximal change	0.79 (0.43-1.48)	NA
Nonfatal MACE		
Unadjusted	0.61 (0.46-0.82)	0.89 (0.62-1.30)
Adjusted[a]	0.74 (0.49-1.10)	1.21 (0.80-1.85)

Are AOMs or surgery the future for obesity and HFpEF?



(STEP-HFpEF Trial)



Kosiborod et al. NEJM 2023 389(12):1069-1084

MBS for Cardiometabolic Health Conclusions

- Strong evidence that MBS decreases incident CVD in high risk severely obese patients- RYGB maybe favored over SG for MACE
- MBS best treats obesity-associated co-morbidities commonly found in HF patients
- MBS can be performed safely in patients with HF recognizing these patients are high risk for CV complications and need aggressive perioperative medication optimization and titration, close postoperative follow-up, and collaboration with HF specialists
  - AHF and MCS- AOM trial probably warranted for risk reduction
- MBS can improve cardiac function and/or increase likelihood of cardiac transplantation

Thank you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