Elderly patients: real life indication outside the 2022 IFSO/ASMBS guidelines

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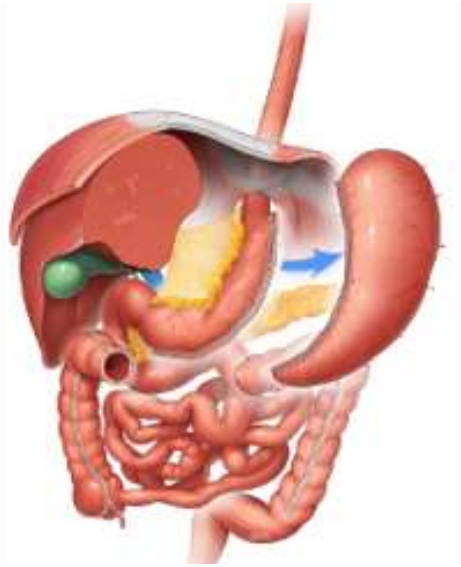
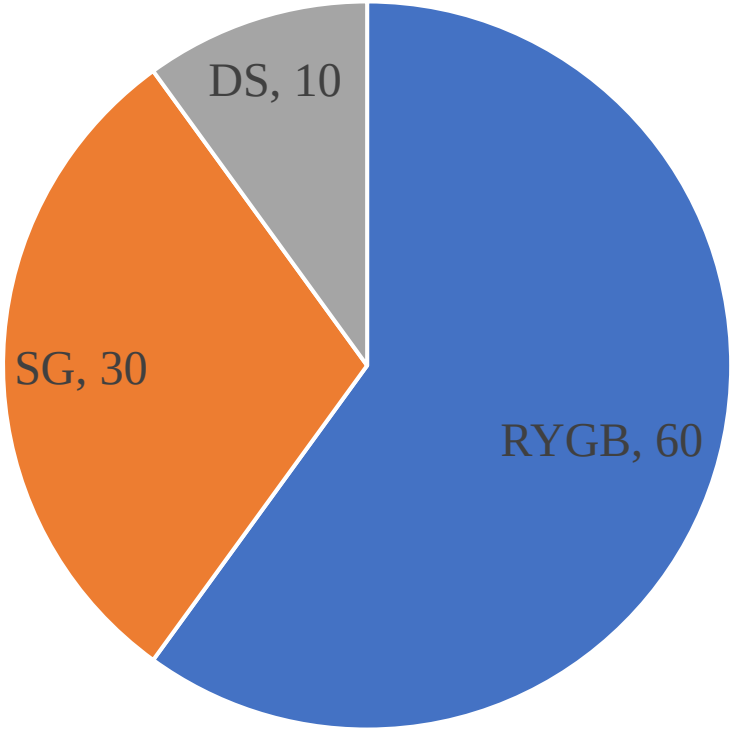
[x] I have the following potential conflict(s) of interest to report:

- **Type of affiliation / financial interest:**
- **Participation in a company sponsored speaker's bureau: Medtronic**

Procedure disclosure





>5000 cases Primary 80% Revisions 20%

RYGB SG DS

- ***Safety of MBS & efficacy short-term in the elderly >65 years.***
- **MBS & effect of cardiovascular disease in elderly >65 years.**
- ***Which procedure is most suitable for elderly patients>65 years.***

AJ 68 y/o Female retried architect with BMI 51.6 and PMH of T2DM, HTN, OSA, GERD & hyperlipidemia & bilateral hip replacement and Lap Chole

Short term outcomes of MBS in the elderly

- *When comparing elderly patients (>65 years of age) to younger patients, the 30-day mortality in elderly patients is low (0.3%,) but mortality in the elderly is higher than the younger population by 2-3 folds.*
- **Older patients have higher respiratory, infectious, renal complications and longer length of stay compared to younger patients.**
- *Maloney et al and Mebeza et al have shown that age alone is an independent risk factor for morbidity and mortality after MBS. In addition, two inflection points for higher morbidity and mortality with increasing age occur at 45 and 59 years of age. Nevertheless, MBS in elderly patients (>65 years of age) is as safe as hip replacement.*

Maloney SR, Dugan N, Prasad T, Colavita PD, Mckillop IH, Gersin KS, Kuwada T, Barbat S, Roberts A, Nimeri A. Impact of age on morbidity and mortality following bariatric surgery..Surg Endosc. 2020 Sep;34(9):4185-4192.

Mabeza RM et al Bariatric surgery outcomes in geriatric patients: a contemporary, nationwide analysis. SOARD. 2022;18(8):1005-1011

Short term outcomes of MBS in the elderly

BASE RCT: MBS in the elderly

- ***Small RCT 36 patients with BMI 35.5-52.8 kg/m2 comparing 18 SG to 18 RYGB in elderly >65 years of age 2017-2019 from Brazil.***
- ***Similar complications between SG 3% & RYGB 7% P=0.13.***
- ***More severe complications in RYGB 0% SG vs 3% RYGB P=0.07.***
- ***Despite not being statistically significant SG has less complications than RYGB.***

D pajecki et al SOARD 2020

Long term benefits of MBS in the elderly 1/2

- A systematic review by Panagiotou et al including 16 studies & 11,455 patients evaluated elderly patients >65 years who had MBS or non-surgical treatment options.
- ***MBS patients had better weight loss, lower risk of cardiovascular disease (HR=0.59; 95%, CI 0.44-0.79), & significantly more improvement in respiratory, metabolic, and renal outcomes compared to the non-surgical cohort.***
- **Weight loss was greater up to 3 years with (RYGB) versus (SG) or (LAGB).**
- ***After one-year, clinical remission of type 2 diabetes mellitus (T2DM) was higher in the surgical cohort compared to the non-surgical cohort (hemoglobin A1C significantly decreased in RYGB, SG & LAGB).***
- **Elderly patients having MBS had lower risk of myocardial infarction after MBS compared to patients having orthopedic or GI surgery and lower rates of CAD up to 2 years postoperative versus non-surgically treated controls.**

Panagiotou OA et al. Comparative Effectiveness & Safety of Bariatric Procedures in Medicare-Eligible Patients. JAMA Surg. 2018;153(11):e183326.

Long term benefits of MBS in the elderly 2/2

Mentias et al. performed 1:1 propensity matching for a cohort of Medicare beneficiaries who had MBS from 2013-2019

- In each group **94,885 elderly patients who had MBS (65% had SG and 33% had RYGB) were matched** to a control group of elderly patients with obesity.
- ***At a median follow-up of 4 years***, **MBS was associated with a lower risk of mortality (9.2 vs 14.7 per 1,000 person-years; HR: 0.63; 95% CI: 0.60-0.66), new-onset HF (HR: 0.46; 95% CI: 0.44-0.49), MI (HR: 0.63; 95% CI: 0.59-0.68), and stroke (HR: 0.71; 95%: CI: 0.65-0.79) (P < 0.001).**
- ***The benefit of MBS was evident in patients who were 65 years and older.***
- **In aggregate, these studies showed that MBS conferred a longer life-span and reduced risk of cardiovascular events in the elderly patients.**

Mentias A et al. Long-Term Cardiovascular Outcomes After Bariatric Surgery in the Medicare Population. J Am Coll Cardiol. 2022;79(15):1429-1437.

Choice of MBS in the elderly population 1/3

- ***Chao et al conducted a retrospective administrative Medicare database study for outcomes of SG and RYGB in Medicare claims from 2012-2017 for 30,105 patients with 3-year follow-up***
- **Among the elderly (n = 8510), SG was associated with:**

***Lower 3-year complications** (20.1% vs 24.7%, ARR 95%CI: -7.6% to -1.7%).*
***Reinterventions** (14.0% vs 21.9%, ARR 95%CI: -10.7% to -5.2%).*
***ED utilization** (51.7% vs 57.2%, ARR 95%CI: -9.1% to -1.9%).*
***Rehospitalizations** (41.8% vs 45.8%, ARR 95%Ci: - 7.5% to -0.5%).*
Expenditures were $38,632 after SG & $39,270 after RYGB (P = 0.60).

Chao GF et al. Bariatric Surgery in Medicare Patients: Examining Safety and Healthcare Utilization in the Disabled and Elderly. Ann Surg. 2022;276(1):133-139.

Choice of MBS in the elderly population 2/3

- ***Howard et al conducted a retrospective administrative Medicare database study for outcomes of antireflux medication utilization after SG and RYGB in Medicare claims from 2012-2017 a cohort of 43,364 elderly patients after SG or RYGB in terms.***
- After 5-year follow-up: both SG and RYGB patients took less anti-reflux medications than at the time of surgery.
- RYGB was associated with significantly lower anti-reflux medication usage (46% for RYGB vs 60% for SG patients).
- A significant decrease in the use of proton pump inhibitors (PPI) specifically in RYGB vs SG after 3, 4 and 5 years was observed.

Howard R, Yang J, Thumma J, et al. Long-term comparative effectiveness of RYGB & SG on use of antireflux medication: a difference-indifferences analysis. SOARD 2022;18(8):1033-1041.

Choice of MBS in the elderly population 3/3

- Howard et al conducted a ***retrospective administrative Medicare database study and compared medication use for diabetes, hypertension, and hyperlipidemia as well as the outcomes of SG and RYGB in Medicare beneficiaries between 2012 to 2018.***
- The study examined **DM, HTN, hyperlipidemia outcomes & restarting medications for those who were able to stop them after SG and RYGB.**
- Patients after ***RYGB were more likely, after 5 years, to discontinue diabetes medications (discontinuation rates of 74.7% after RYGB vs 72% after SG)*** and ***fewer patients after RYGB restarted their diabetes medication (30.2% after RYGB and 35.6% after SG)***.
- **Patients after RYGB were more likely to discontinue their antihypertensive medications after 5 years (53.3% after RYGB vs 49.4% after SG).**
- ***In aggregate, these studies demonstrated advantages to RYGB over SG with respect to medication usage in the elderly population.***

Howard R, Chao GF, Yang J, et al. Medication Use for Obesity-Related Comorbidities after Sleeve Gastrectomy or Gastric Bypass. JAMA Surg. 2022;157(3):248-256.

- **Elderly patients (>65 years of age) undergoing MBS lose weight, experience improvement in T2DM, HTN, GERD medications and MBS is as safe as hip replacment.**
- ***Yet elderly patients are less likely to be referred to MBS and hence the elderly represent only 2.7% of MBS performed in academic teaching US hospitals.***

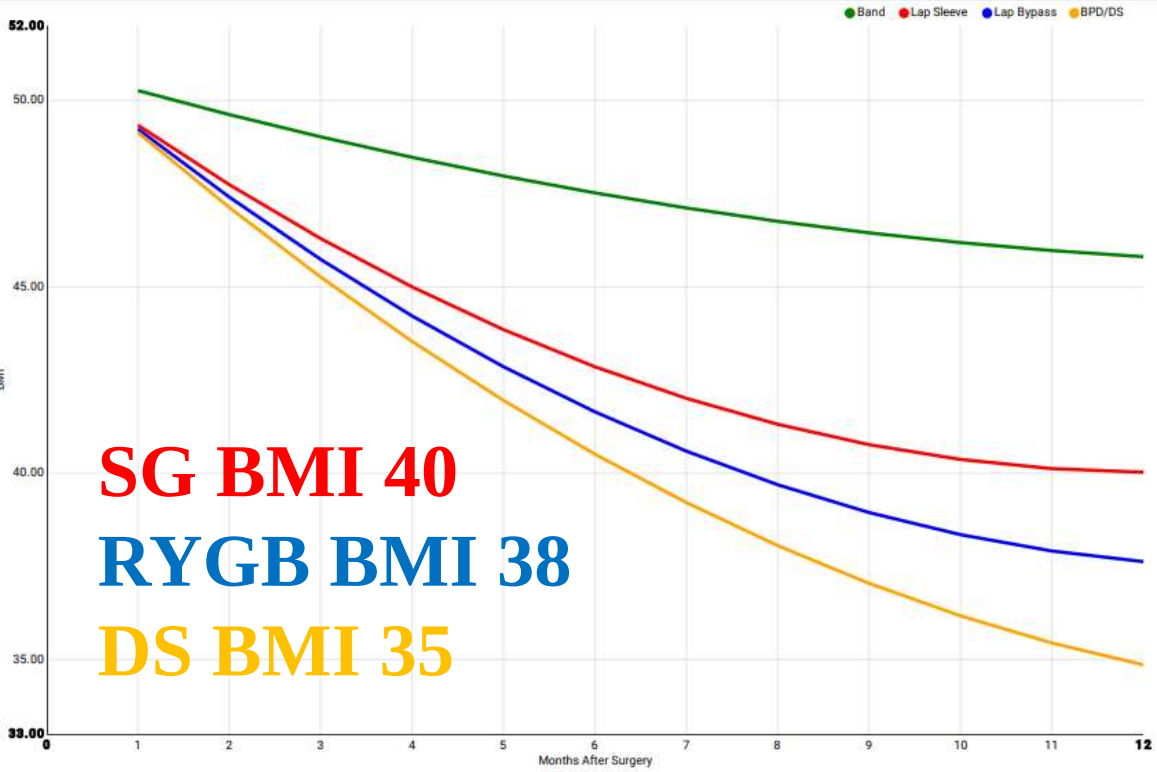
Mabeza RM et al Bariatric surgery outcomes in geriatric patients: a contemporary, nationwide analysis. SOARD. 2022;18(8):1005-1011

AJ 68 y/o F BMI 51.6 with T2DM, HTN, OSA, GERD & hyperlipidemia

MBSAQIP Bariatric Surgical Risk/Benefit Calculator ACS

1-year BMI

Risk Factors: 51.64 (BMI), 68.00 (Age), Female, No (Hispanic Ethnicity), Severe Systemic Disease, Insulin, HTN, Sleep Apnea, GERD, Hyperlipidemia



SG BMI 40

RYGB BMI 38

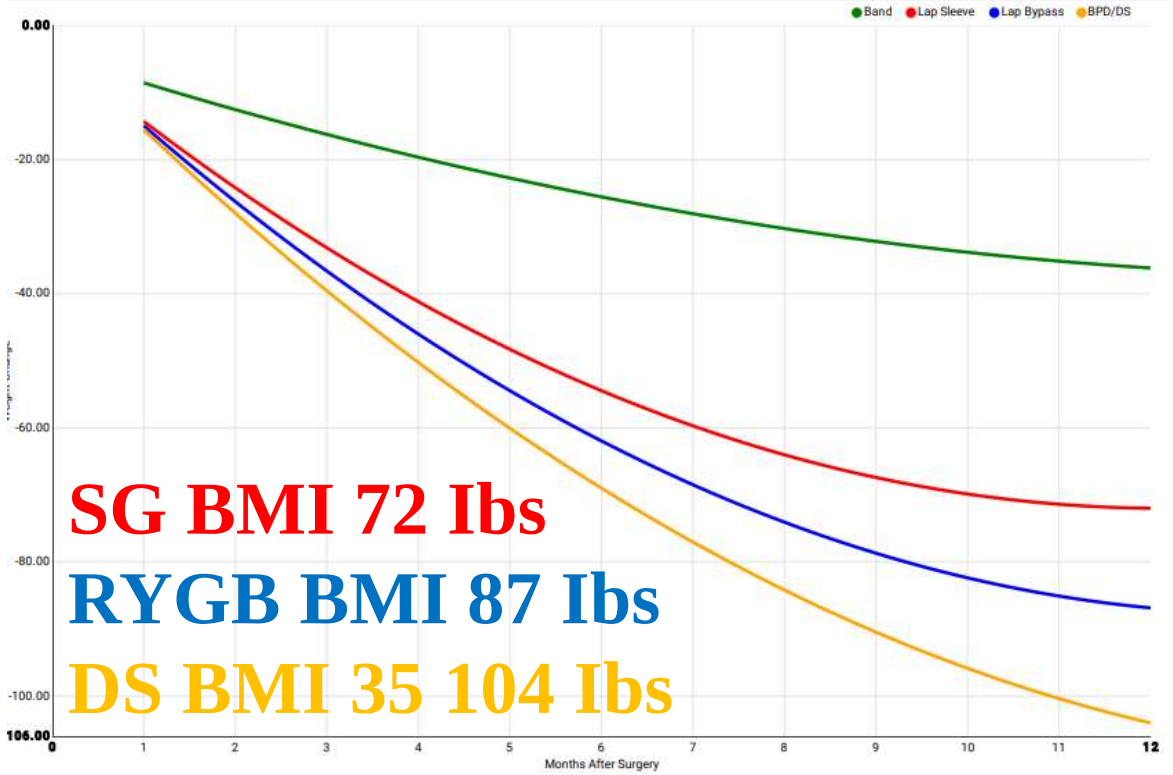
DS BMI 35

Procedure	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Band	50.27	49.62	49.03	48.48	47.98	47.52	47.12	46.76	46.45	46.19	45.98	45.81
Lap Sleeve	49.34	47.74	46.30	45.00	43.85	42.86	42.01	41.31	40.77	40.37	40.12	40.03
Lap Bypass	49.24	47.41	45.74	44.22	42.86	41.65	40.59	39.69	38.94	38.35	37.91	37.63
BPD/DS	49.14	47.13	45.26	43.54	41.95	40.51	39.21	38.06	37.04	36.17	35.44	34.86

MBSAQIP Bariatric Surgical Risk/Benefit Calculator ACS

1-year Weight Change

Risk Factors: 51.64 (BMI), 68.00 (Age), Female, No (Hispanic Ethnicity), Severe Systemic Disease, Insulin, HTN, Sleep Apnea, GERD, Hyperlipidemia



SG BMI 72 lbs

RYGB BMI 87 lbs

DS BMI 35 104 lbs

Procedure	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Band	-8.52 lb	-12.51 lb	-16.21 lb	-19.62 lb	-22.72 lb	-25.53 lb	-28.04 lb	-30.26 lb	-32.18 lb	-33.80 lb	-35.12 lb	-36.15 lb
Lap Sleeve	-14.27 lb	-24.16 lb	-33.13 lb	-41.17 lb	-48.27 lb	-54.45 lb	-59.70 lb	-64.01 lb	-67.40 lb	-69.86 lb	-71.39 lb	-71.99 lb
Lap Bypass	-14.92 lb	-26.23 lb	-36.59 lb	-46.00 lb	-54.45 lb	-61.94 lb	-68.48 lb	-74.07 lb	-78.70 lb	-82.37 lb	-85.09 lb	-86.85 lb
BPD/DS	-15.50 lb	-27.96 lb	-39.54 lb	-50.24 lb	-60.05 lb	-68.98 lb	-77.03 lb	-84.19 lb	-90.47 lb	-95.87 lb	-100.38 lb	-104.01 lb

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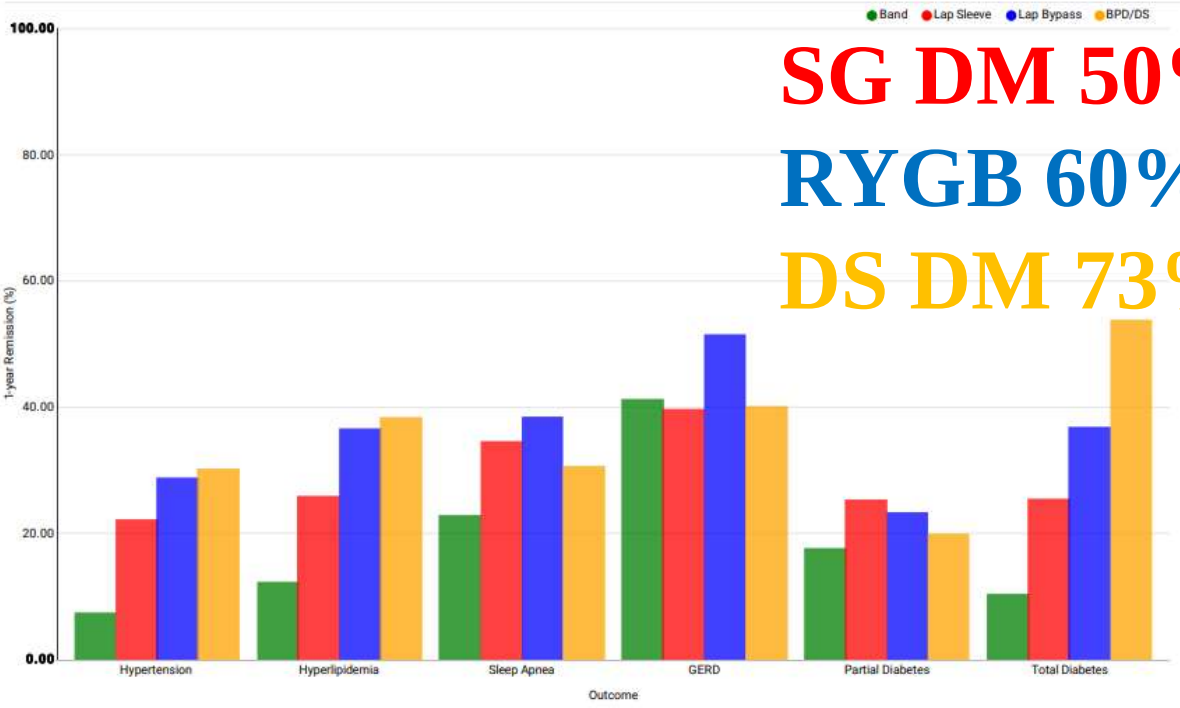
MBSAQIP Bariatric Surgical Risk/Benefit Calculator ACS

1-year Comorbidity Remission

Risk Factors: 51.64 (BMI), 68.00 (Age), Female, No (Hispanic Ethnicity), Severe Systemic Disease, Insulin, HTN, Sleep Apnea, GERD, Hyperlipidemia



Procedure	Hypertension	Hyperlipidemia	Sleep Apnea	GERD	Partial Diabetes	Total Diabetes
Band	7.29%	12.25%	22.90%	41.28%	17.51%	10.26%
Lap Sleeve	22.20%	25.88%	34.47%	39.72%	25.26%	25.32%
Lap Bypass	28.81%	36.43%	38.31%	51.54%	23.18%	36.73%
BPD/DS	30.27%	38.24%	30.52%	40.01%	19.80%	53.70%

SG DM 50% HTN 22% Dysli 25% GERD 40%

RYGB 60% HTN 29% Dylip 38% GERD 52%

DS DM 73% HTN 30% Dysl 38% GERD 40%

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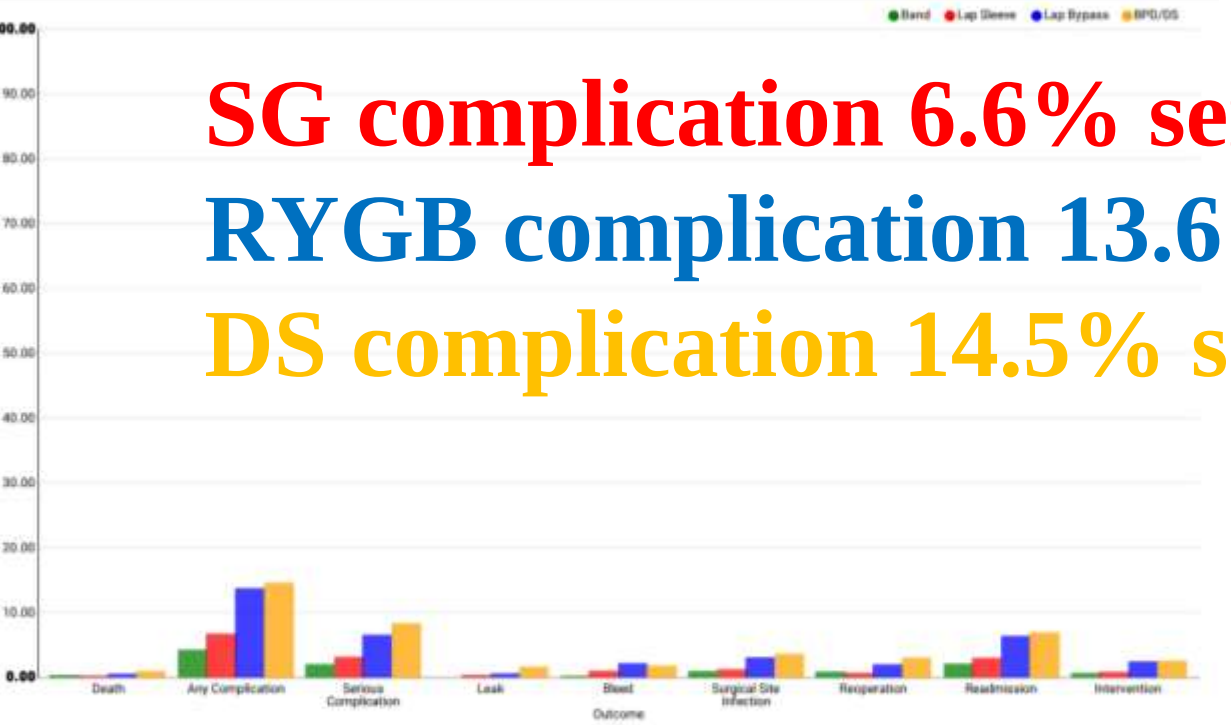
MBSAQIP Bariatric Surgical Risk/Benefit Calculator ACS

30-day Risk

Risk Factors: 51.64 (BMI), 68.00 (Age), Female, No (Hispanic Ethnicity), Severe Systemic Disease, Insulin, HTN, Sleep Apnea, GERD, Hyperlipidemia



SG complication 6.6% serious 3% leak 0.3%

RYGB complication 13.6% serious 6.5% leak 0.5%

DS complication 14.5% serious 8.2% leak 1.5%

Procedure	Death	Any Complication	Serious Complication	Leak	Bleed	Surgical Site Infection	Reoperation	Readmission	Intervention
Band	0.12%	4.17%	2.01%	N/A	0.19%	0.85%	0.78%	2.08%	0.63%
Lap Sleeve	0.21%	6.59%	3.08%	0.30%	0.90%	1.04%	0.64%	2.97%	0.76%
Lap Bypass	0.42%	13.63%	6.48%	0.46%	2.10%	2.91%	1.99%	6.22%	2.33%
BPD/DS	0.85%	14.53%	8.15%	1.46%	1.70%	3.43%	3.01%	6.73%	2.40%

- *MBS is safe & effective short-term in elderly patients >65 years.*
- **MBS conferred a longer life-span & reduced risk of cardiovascular events in the elderly patients.**
- *SG has lower risk, but RYGB has better improvement in T2DM, HTN & GERD medication use.*

AJ 68 y/o Female retried architect with BMI 51.6 and PMH of T2DM, HTN, OSA, GERD & hyperlipidemia & bilateral hip replacement and Lap Chole