

ORGAN TRANSPLANTATION: LIVER, KIDNEY, HEART, LUNG: NEW ASMBS/IFSO GUIDELINES:

Bariatric Surgery Considerations in Renal Transplantation

Nestor de la Cruz-Muñoz, MD FACS FASMBS
Professor of Clinical Surgery
University of Miami Miller School of Medicine



Disclosures

- No Conflicts of Interests to disclose
- Site PI for USGI, Allurion, and GI Dynamics Pivotal Trials

How do Patients with obesity fare with ESRD?

- “Obesity Paradox”
- A BMI >31 kg/m² at the start of the dialysis was associated with a lower likelihood of receiving a kidney transplant, and the likelihood decreased even further with higher BMI values.
- However, this likelihood increased for overweight patients losing weight during follow-up.
 - A 1kg/m² decrease in BMI after the start of dialysis was associated with a subsequent 9 to 11% improvement in the likelihood of access to kidney transplantation.
- Nicoletto et al. (metaanalysis) observed that before the year 2000, obesity was a risk factor for graft loss, cardiovascular death and all-cause mortality. However, obese patients transplanted after 2000 had much the same graft loss and survival rates as non-obese patients.

Questions I'd like to answer

1. Can MBS be done safely in ESRD patients?
2. Can MBS be done safely in renal transplant patients?
3. Which MBS operation is best for them?
4. What to do with peritoneal dialysis patients



Can MBS be done safely in
ESRD patients?

Does MBS help patients with obesity and CKD?

802 pts with both followed for greater than 5 years.
Compared to non-operated controls

79% decrease in mortality, unabated whether they developed ESRD or not

- Coleman KJ, Shu YH, Fischer H, et al. Bariatric Surgery and Risk of Death in Persons With Chronic Kidney Disease. *Ann Surg*. 2022;276(6):e784-e791. doi:10.1097/SLA.0000000000004851

Bariatric surgery in patients with obesity and end-stage renal disease

- 2 Metaanalyses
 - I. MBS +/- ESRD
 - 6 studies
 - II. GBP vs. SG in ESRD
 - 8 studies
 - Risk of bias; moderate to serious
- I. Higher major postop complications (OR=2.82), re-op (2.66), readm (2.37), and mortality (4.03)
- II. SG w 10% lower complications than GBP

A 5-year propensity-matched analysis of perioperative outcomes in patients with chronic kidney disease undergoing bariatric surgery

- MBSAQIP Database (2015-2019): 717,809 Pts, 5817 w CKD, 2266 on dialysis
- 74.3% Sleeves, 25.7% Bypasses
- CKD cohort had higher risk of complications: bleeding 2.1%v 0.9%, readmission 9.3%v4.9%, reoperation 2.7%v1.3%, reintervention 2.2%v1.3%. mortality 0.6%v0.2%
- The risk is still considerably low, and the potential benefit on renal function and improvement in candidacy for renal transplant outweigh the risk. They should be considered as surgical candidates.



Can MBS be done safely in
renal transplant patients?

Bariatric surgery outcomes following organ transplantation: A review study.

- Reviewed 7 studies of MBS in RT patients
- Cumulatively, reports suggested that bariatric surgery, regardless of the type of procedure (sleeve vs gastric bypass) and surgical approach (robotic assisted vs conventional laparoscopic), ensures significant weight loss and improvement of related conditions, together with good immunosuppressive maintenance, along with the absence of serious graft rejection or dysfunction and with a trivial mortality rate in this high surgical risk population.

· Bariatric surgery before and after kidney transplant: a propensity score–matched analysis

- KT first vs MBS first
- Both pre- and posttransplant MBS are effective and safe
- There was no significant difference in 1-year total weight loss, 1-year percentage of excess weight loss, and the incidence of postoperative complications

Fang Y, Outmani L, de Joode AAE, et al. Bariatric surgery before and after kidney transplant: a propensity score–matched analysis. *Surgery for obesity and related diseases*. 2023;19(5):501-509. doi:10.1016/j.soard.2022.11.010

2 YEAR METABOLIC HEALTH OUTCOMES IN PATIENTS UNDERGOING BARIATRIC SURGERY AFTER RENAL AND HEPATIC TRANSPLANT

- Overall mortality was significantly reduced in renal allograft recipients (RAR) after MBS at 6 months, 1-year, and 2-year mark ($p < 0.05$ in all)
- There was significant reduction in incidence of low glomerular filtration rate (GFR) in RAR after MBS at 6-month mark, 1-year mark and 2-year mark ($p < 0.05$). There was significant reduction in AKI in RAR after MBS at 6-month mark and 1-year mark ($p < 0.05$).



Which MBS operation is
best for them?

A 5-year propensity-matched analysis of perioperative outcomes in patients with chronic kidney disease undergoing bariatric surgery

- MBSAQIP Database (2015-2019): 717,809 Pts, 5817 w CKD, 2266 on dialysis
- 74.3% Sleeves, 25.7% Bypasses
- RYGB had a higher rate of deep organ space infection (0.7%vs.0.1%, $p = 0.021$) and re-intervention (5.0% vs. 2.2%, $p < 0.001$)
- Sleeve seems to be procedure of choice

SAGES Manual of Bariatric Surgery – Solid Organ Transplant and Bariatric Surgery

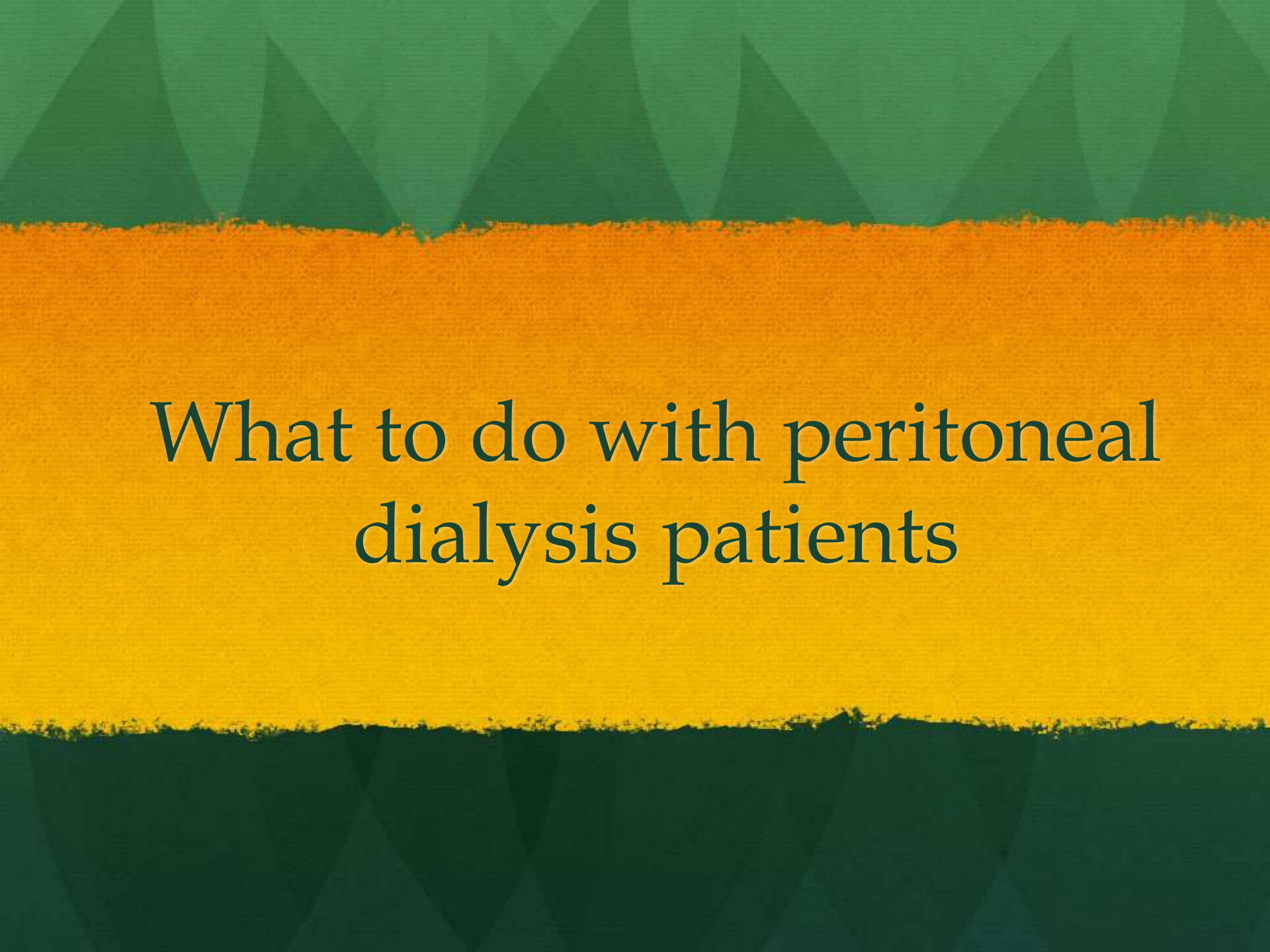
Sleeve gastrectomy is superior to RnYGB in transplant patients

Tsamalaidze, L., Elli, E.F. (2018). Solid Organ Transplantation and Bariatric Surgery. In: Reavis, K., Barrett, A., Kroh, M. (eds) The SAGES Manual of Bariatric Surgery. Springer, Cham. https://doi.org/10.1007/978-3-319-71282-6_45

Roux-en-Y gastric bypass is an effective bridge to kidney transplantation: Results from University of Miami

- 31 patients w ESRD and obesity (mean BMI 43.5) underwent GBP. 87% achieved BMI <35
- 14 GB with ESRD were transplanted and compared to 19 controls with obesity
- While biopsy-proven acute rejection (BPAR) occurred significantly higher among RYGB vs control patients (6/14 vs 3/19, $P = .03$), patients developing T-cell BPAR were also significantly more likely to have a tacrolimus (TAC) trough level < 4.0 ng/mL within 3 weeks of T-cell BPAR ($P = .0007$). In Cox's model, the impact of having a TAC level < 4.0 ng/mg remained significant ($P = .007$) while the effect of RYGB was no longer significant ($P = .13$).
- Infections, graft, and patient survival were not significantly different.
- Check tacrolimus levels!, but procedure safe

Thomas, I.A. "Roux-En-Y Gastric Bypass Is an Effective Bridge to Kidney Transplantation: Results from a Single Center." *Clinical transplantation*. 32.5 (2018)



What to do with peritoneal dialysis patients

UM experience

- 8 patients with ESRD on peritoneal dialysis have undergone MBS without discontinuing PD.
- Use half normal volume for up to 7 days post op.
- Have done bands, sleeves and bypasses

Valle, G.A. “Successful Laparoscopic Bariatric Surgery in Peritoneal Dialysis Patients Without Interruption of Their CKD6 Treatment Modality.”
Advances in peritoneal dialysis. 28 (2012): 134–139.

Conclusions

- MBS can be done with acceptable outcomes in ESRD and KT patients.
- Complication rates will be higher than general population.
- Probably best done at a center that routinely deals with KT patients
- PD does not need to be interrupted for MBS.



Thank you!