The Degree of Preoperative Hypoalbuminemia is Associated with Risk of Postoperative Complications in Metabolic & Bariatric Surgery Patients

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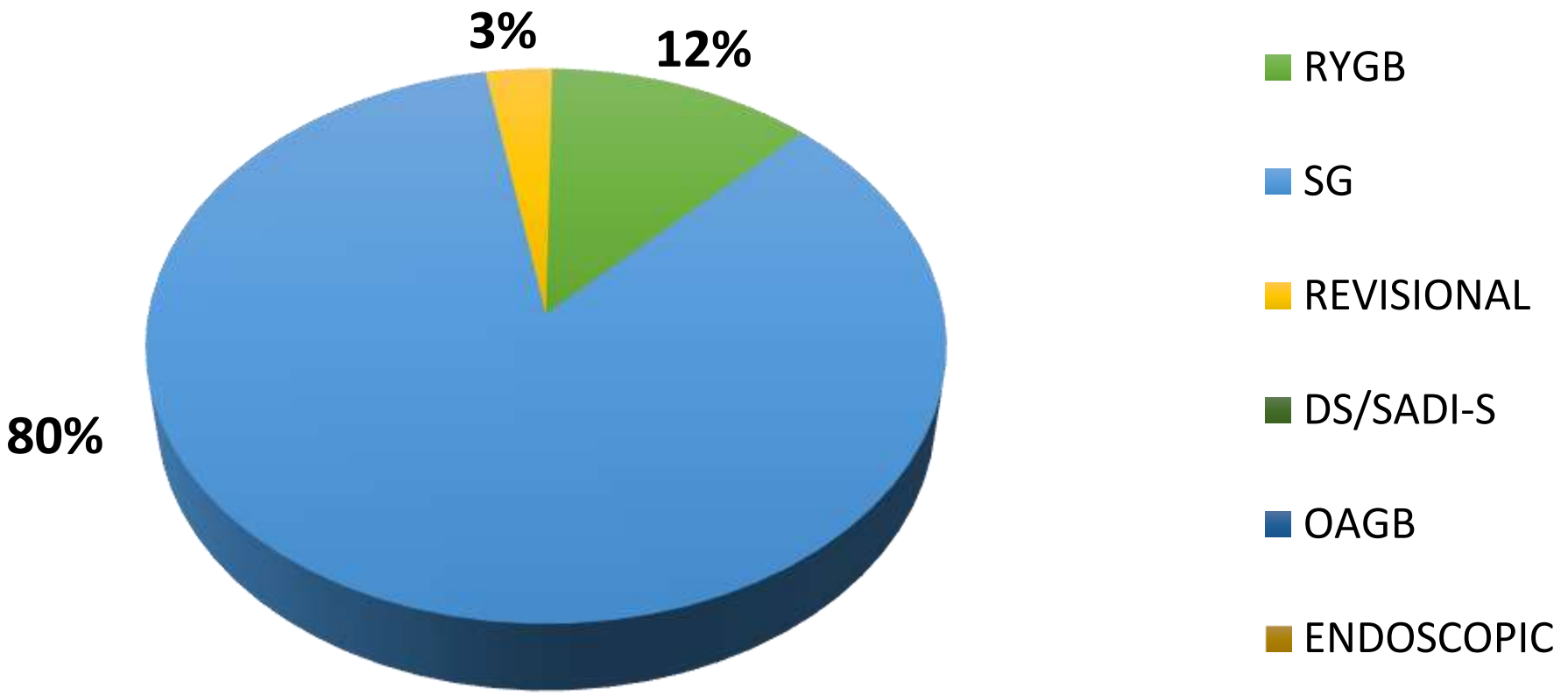
No conflicts of interest to report


3%
12%
80%
RYGB
SG
REVISIONAL
DS/SADI-S
OAGB
ENDOSCOPIC

Background

~15-20% of patients present with significant micronutrient deficiencies.[1,2]

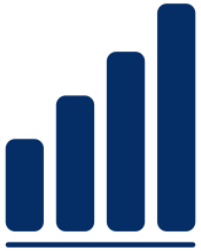
A reported **50% present with hypoalbuminemia**.[2]

Patients with albumin ≤ 3.5g/dL had higher rates of **anastomotic leaks**, **deep surgical site infections**, and **mortality**.[3]

[1]Roust, L.R. and J.K. DiBaise, Nutrient deficiencies prior to bariatric surgery. *Curr Opin Clin Nutr Metab Care*, 2017. 20(2): p. 138-144.
[2]Aron-Wisnewsky, J., et al., Nutritional and Protein Deficiencies in the Short Term following Both Gastric Bypass and Gastric Banding. *PLoS One*, 2016. 11(2): p. e0149588.
[3]McLean, C., et al., Hypoalbuminemia Predicts Serious Complications Following Elective Bariatric Surgery. *Obes Surg*, 2021. 31(10): p. 4519-4527

Question

Though we know that hypoalbuminemia is associated with postoperative complications, no study to date has evaluated the effect of varying degrees of hypoalbuminemia.



Does level of pre-operative albumin affect post-operative complications?

Severe Hypoalbuminemia	Moderate Hypoalbuminemia	Mild Hypoalbuminemia	Normal Albumin
< 3 g/dL	3 to < 3.5 g/dL	3.5 to < 4g/dL	4 g/dL and above

Methods

Data Source: MBSAQIP database from 2015-2021

Inclusion: Sleeve gastrectomy (SG) and Roux-en-Y gastric bypass (RYGB)

Analysis: Performed separately for Primary surgery cohort and Revisional/Conversion surgery cohort

Multivariable logistic regression was used to compare hypoalbuminemia level to normal albumin. Factors adjusted for: age, sex, race, procedure type, BMI, functional status, ASA, and operative length.

Severe Hypoalbuminemia	Moderate Hypoalbuminemia	Mild Hypoalbuminemia	Normal Albumin
< 3 g/dL	3 to < 3.5 g/dL	3.5 to < 4g/dL	4 g/dL and above

Results Baseline Patient Characteristics

Primary Surgery

n = 817,310

Severe Hypoalbumin-emia	Moderate Hypoalbumin-emia	Mild Hypoalbumin-emia	Normal Albumin
< 3 g/dL	3 to < 3.5 g/dL	3.5 to < 4 g/dL	4 g/dL and above
0.3%	5.2%	28.3%	66.2%

~34% Hypoalbuminemia

Revisional Surgery

n = 69,938

Severe Hypoalbumin-emia	Moderate Hypoalbumin-emia	Mild Hypoalbumin-emia	Normal Albumin
< 3 g/dL	3 to < 3.5 g/dL	3.5 to < 4 g/dL	4 g/dL and above
0.6%	6.5%	31.4%	61.4%

~39% Hypoalbuminemia

Results Baseline Patient Characteristics

Primary Surgery

n = 817,310

Severe Hypoalbumin-emia	Moderate Hypoalbumin-emia	Mild Hypoalbumin-emia	Normal Albumin
< 3 g/dL	3 to < 3.5 g/dL	3.5 to < 4 g/dL	4 g/dL and above
Age (p < .001)			
45.5 +/- 11.9	43.6 +/- 11.7	44.2 +/- 11.9	44+/- 12.0
Preoperative BMI (p < .001)			
48.8 +/- 10.2	48.8 +/- 9.0	46.5 +/- 8.2	44.4 +/- 7.3
ASA Class IV (p < .001)			
11.2%	6.6%	4.4%	3.0%

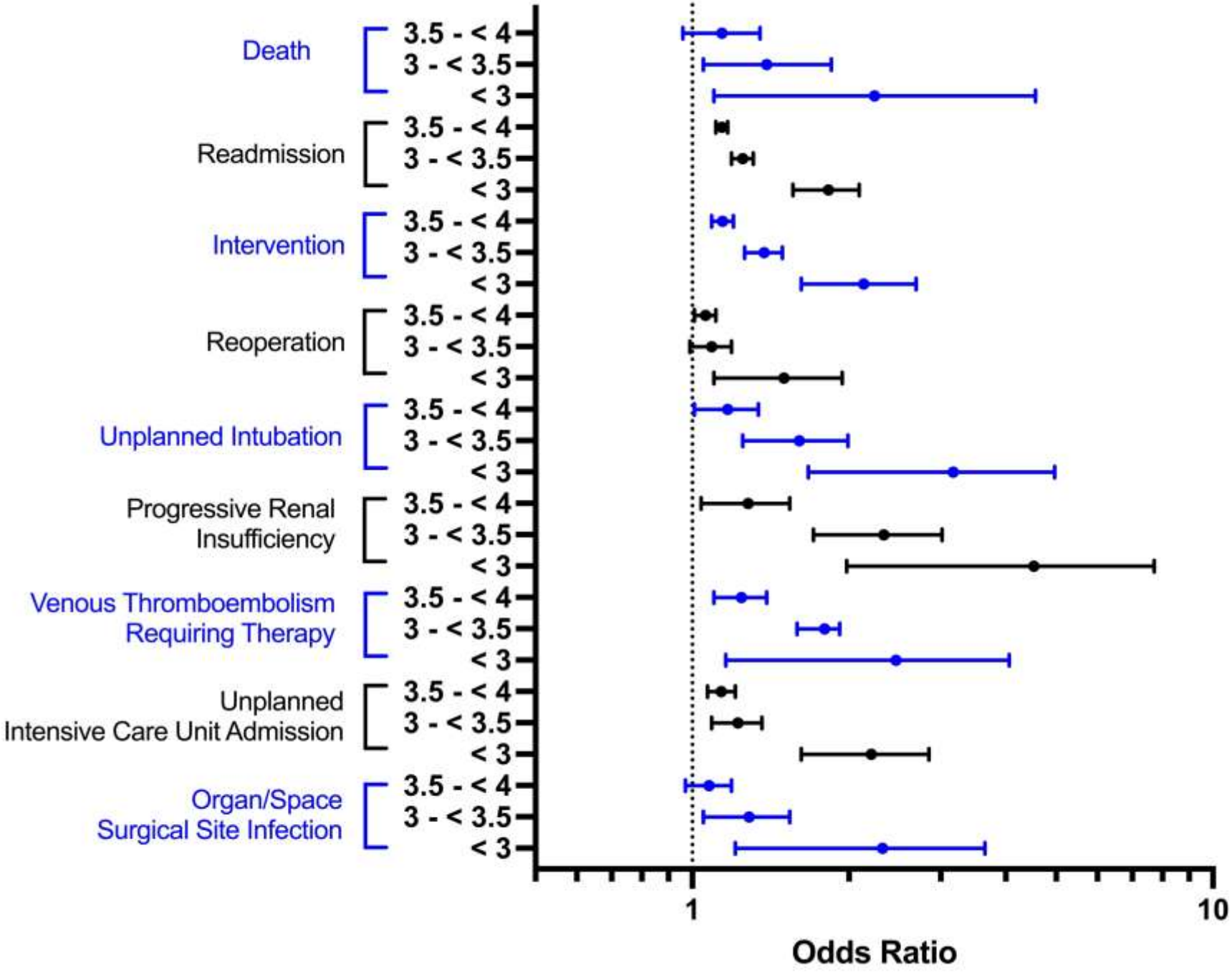
Revisional Surgery

n = 69,938

Severe Hypoalbumin-emia	Moderate Hypoalbumin-emia	Mild Hypoalbumin-emia	Normal Albumin
< 3 g/dL	3 to < 3.5 g/dL	3.5 to < 4 g/dL	4 g/dL and above
Age (p < .001)			
48.5 +/- 12.2	47.3 +/- 10.7	48.2 +/- 10.9	48.3 +/- 10.8
Preoperative BMI (p < .001)			
39.5 +/- 10.8	43.9 +/- 9.3	42.6 +/- 8.3	41.3 +/- 7.7
ASA Class IV (p < .001)			
7.7%	4.8%	3.0%	2.1%

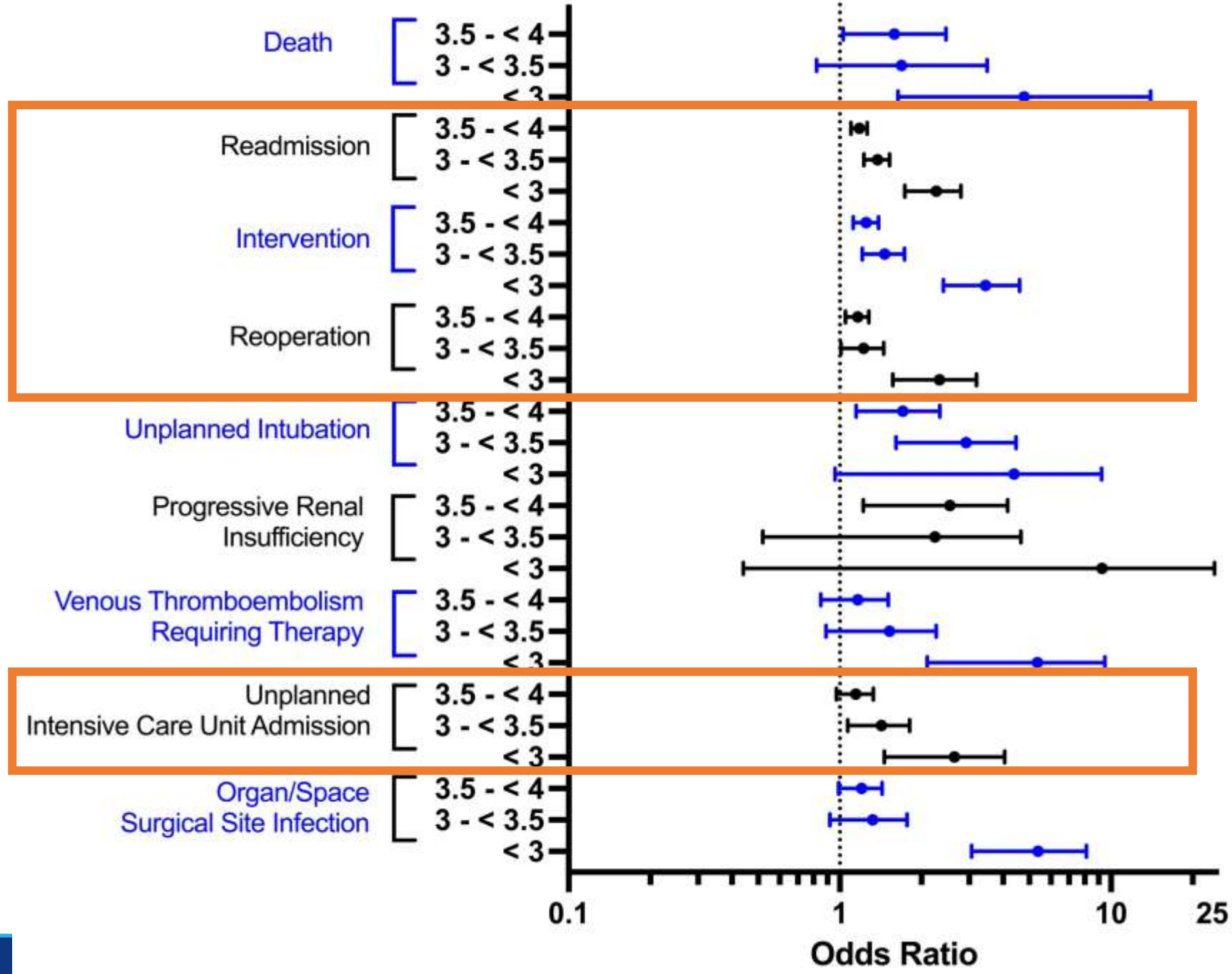
Results

Complications for Patients Undergoing **Primary** Surgery



Results

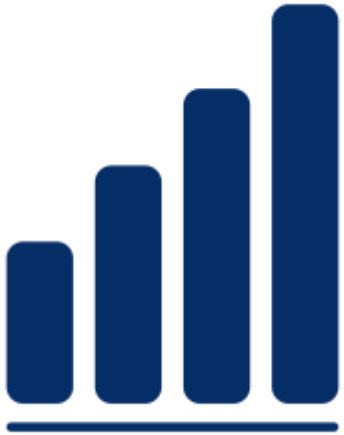
Complications for Patients Undergoing **Revisional/ Conversion** Surgery



Conclusion

A significant percentage of patients underwent metabolic and bariatric surgery despite a low albumin level.

There was a **dose-dependent response for level of albumin** for a number of complications, notably for 30-day readmission, intervention, and reoperation after both **Primary** and **Revisional/Conversion** surgeries.



Pre-operative hypoalbuminemia may not be as useful of a predictor of complications in **Revisional/Conversion** surgeries.

In both groups, patients may need **nutritional optimization** prior to surgery.