



Patient Risk Factors Associated with Increased Morbidity and Mortality following Revisional Bariatric Surgery: An Analysis of the ACS-MBSAQIP Database

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Introduction

- Revisional bariatric surgery operations are associated with increased morbidity and mortality compared to primary bariatric surgery operations.
- There is a paucity of data that identifies preoperative patient variables that may contribute to increased morbidity and mortality following revisional bariatric surgery.
- The purpose of our study was to (1) determine if preoperative patient variables are associated with a increased risk of 30-day morbidity and mortality following revisional bariatric surgery and (2) to generate expected model probabilities for 30-day outcomes in order to risk-stratify patients undergoing revisional bariatric surgery.

Methods

- All patients undergoing elective, laparoscopic, revisional Roux-en-Y gastric bypass (RYGB) or sleeve gastrectomy (SG) from 2015-2016 were identified within the ACS-MBSAQIP.
- Multivariable logistic regression analysis was used to investigate the association of preoperative patient variables with 30-day morbidity and mortality outcomes.
- The association of preoperative patient variables with the 30-day outcomes of interest were then used to generate predictive risk models/calculators for each of the 30-day morbidity and mortality outcomes.

Table 1: Clinical Examples and Application of the Predictive Risk Models/Calculator

Clinical Scenario	Outcome of Interest (Area Under the Curve)	Probability of Outcome	
		RYGB	SG
60-year-old African American female, BMI 40 kg/m², non-independent functional status, uses a mobility device, ASA of 3, current smoker and steroid use, albumin of 3.2, with a history of HTN, HLD, COPD, GERD, CKD, and NIDDM.	Cardiac (0.92)	0.2%	0.1%
	Pulmonary (0.76)	1%	0.4%
	Wound (0.68)	8%	4%
	Renal (0.87)	5%	5%
	Clotting (0.69)	0.7%	0.2%
	Bleeding (0.68)	42%	25%
	UTI (0.68)	3%	0.9%
	Septic Events (0.70)	9%	5%
	ICU (0.68)	49%	30%
	Readmission (0.63)	5%	3%
	Reintervention (0.64)	31%	19%
	Reoperation (0.64)	14%	6%
	Mortality (0.85)	0.2%	0.1%
75-year-old Hispanic male, BMI 45 kg/m², has a non-independent functional status and uses a mobility device, ASA of 3, albumin of 3.0, no other associated comorbidities.	Cardiac (0.92)	0.4%	0.2%
	Pulmonary (0.76)	3%	1%
	Wound (0.68)	3%	1%
	Renal (0.87)	0.5%	0.5%
	Clotting (0.69)	3%	2%
	Bleeding (0.68)	3%	1%
	UTI (0.68)	0.7%	0.3%
	Septic Events (0.70)	4%	2%
	ICU (0.68)	7%	3%
	Readmission (0.63)	1%	1%
	Reintervention (0.64)	2%	1%
	Reoperation (0.64)	2%	1%
	Mortality (0.85)	0.1%	0.1%
	Composite (0.64)	16%	8%

Results

- A total of 13,551 patients met inclusion criteria:
 - 5,310 (39.2%) patients underwent revisional RYGB
 - 8,241 (60.8%) patients underwent revisional SG
- Each of the preoperative patient variables was associated with at least one of the 30-day morbidity and mortality outcomes.
- The risk models/calculators for each of the 30-day outcomes of interest are available online at: <http://www.gw-docs.com/surgery/bariatric-surgery-risk-calculator>.
- Clinical examples using the predictive risk models/calculators are detailed in Table 1.
- The strength of the predictive models ranged from 0.63 (unplanned hospital readmission) to 0.92 (cardiac events) (Table 1).

Conclusions

- Preoperative patient variables are associated with one or more 30-day morbidity and mortality outcomes following elective, laparoscopic, revisional RYGB or SG.
- The risk models/calculators generated in our study can be used as a tool during preoperative counseling and optimization of patients prior to elective, laparoscopic, revisional bariatric surgery.