ASSOCIATION OF BLEEDING AND STAPLE LINE DEHISCENCE IN SLEEVE GASTRECTOMY - AN ANALYSIS OF THE MBSAQIP DATA

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BACKGROUND

Bleeding from the staple line of a sleeve gastrectomy (SG) could potentially disrupt its consistency and lead to a potential leak. We aimed to evaluate the association between staple line leak and bleeding after laparoscopic SG.

METHODS

This was a retrospective study of patients who underwent laparoscopic SG from 2015 to 2022 using data from the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) database. To identify possible confounders, an univariate analysis of pre-, intra-, and postoperative variables was performed using Chi-square tests for categorical data and independent sample t-tests for continuous data. Logistic regression was used to assess the association between any bleeding within 30 days of SG and leak accounting for confounders in patients who developed postoperative bleeding.

TABLE 1: MULTIVARIATE LOGISITIC REGRESSION

VARIABLES	ESTIMATED EFFECT	ODDS RATIO (OR)	95% CONFIDENCE INTERVAL	P-VALUE
INTERCEPT	**-5.874**	**0.005**	**-6.111; -5.638**	**<0.001**
LEAK	**2.351**	**10.491**	**2.120; 2.581**	**<0.001**
SEX	0.065	1.068	-0.005; 0.0136	0.069
AGE	**0.015**	**1.015**	**0.01 3; 0.018**	**<0.001**
HISTORY OF MYOCARDIAL INFARCTION	**0.287**	**1.033**	**0.112; 0.463**	**0.001**
PREOPERATIVE HYPERTENSION	**0.314**	**1.369**	**0.248; 0.380**	**<0.001**
RENAL INSUFFICIENCY	**0.899**	**2.457**	**0.708; 1.090**	**<0.001**
PREOPERATIVE THERAPEUTIC ANTICOAGULATION	**0.812**	**2.253**	**0.705; 0.920**	**<0.001**
PREOPERATIVE DIABETES MELLITUS	**0.195**	**1.216**	**0.131; 0.260**	**<0.001**
SMOKING HISTORY	**0.155**	**1.168**	**0.055; 0.256**	**0.003**
COPD	**0.309**	**1.368**	**0.140; 0.478**	**<0.001**
OSA	**0.192**	**1.212**	**0.131; 0.253**	**<0.001**
OPERATION LENGTH	**0.004**	**1.004**	**0.003; 0.004**	**<0.001**
ASSESSMENT OF ANASTOMOSIS	**-0.236**	**-7.770**	**-0.296; -0.176**	**<0.001**
BMI	**-0.014**	**-7.230**	**-0.018; -0.010**	**<0.001**

COPD: Chronic obstructive pulmonary disease; OSA: Obstructive sleep apnea; BMI: Body mass index

Values indicated in **bold** represent statistically significant values. *P-value* < 0.05.

DISCUSSION

A total of 951,329 patients were included. 4,931 (0.52%) had postoperative bleeding, and 1,789 (0.19%) presented with leak. Risk factors associated with bleeding were age, history of myocardial infarction, hypertension, renal insufficiency, chronic therapeutic anticoagulation, diabetes, smoking, chronic pulmonary obstructive disease, obstructive sleep apnea, duration of the operation, intraoperative anastomotic assessment, and BMI, as shown in **Table 1**. Intraoperative anastomotic assessment (95% Confidence Interval [CI]: -0.296,-0.176; p<0.001) and having a lower preoperative BMI (95% CI: -0.02,-0.10; p<0.001) were identified as protective factors for bleeding. Leak remained strongly associated with bleeding within 30 days even when adjusted for risk and protective factors identified in the univariate regression (Estimated Effect of 2.35; Odds Ratio = 10.49; 95% CI: 2.12, 2.58; p<0.001).

CONCLUSIONS

Postoperative bleeding within 30 days is strongly associated with leak even when adjusted for previously known risk factors in patients who underwent laparoscopic sleeve gastrectomy.

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