Intraoperative Leak Testing During Vertical Sleeve Gastrectomy and Roux-en-Y Gastric Bypass

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INTRODUCTION

Staple line leak occurs in 1-3% of vertical sleeve gastrectomy (VSG) cases and 1-5% of Roux-en-Y gastric bypass (RYGB) cases. This accounts for significant morbidity and mortality after bariatric surgery.

The Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) is a large database of bariatric data from accredited bariatric centers in the US and Canada.

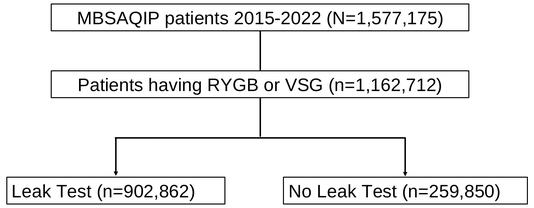
Complications of staple line leak in patients who did or did not undergo an intraoperative leak test have not previously been analyzed using the MBSAQIP.

HYPOTHESIS

Intraoperative leak testing during bariatric surgery will decrease morbidity and mortality.

METHODS

- MBSAQIP datasets from 2015-2022 were separately concatenated.
- Patients undergoing RYGB or VSG were collected and appropriate variables tabulated as shown in the tables to the right.
- Categorical variables were analyzed using chi-squared tests, while continuous variables were compared using t-tests with equal variance assumptions.
- Postoperative leak was defined as an organ space SSI



RESULTS

- Patients who underwent leak tests were generally more likely to have comorbidities, including hypertension, hyperlipidemia, GERD, COPD, diabetes, renal insufficiency, a history of PE, higher BMI, longer operative duration, sleep apnea, and older age as shown in Table 1.
- Patients with no leak test were more likely to experience a 30-day morbidity, superficial SSI, along with other morbidities identified in Table 2.
- There was no significant difference in postoperative mortality between the leak test and no leak test groups

TABLE 1: Patient Characteristics

Characteristics	Leak Test (n=902,862)	No Leak Test (n=259,850)
Hypertension	420,238 (46.6%)	114,533 (44.1%)
Hyperlipidemia	213,096 (23.6%)	55,463 (21.3%)
Smoker	67,940 (7.52%)	20,766 (7.99%)
GERD	28,5341(31.6%)	68,454 (26.3%)
COPD	12,949 (1.43%)	3,066(1.18%)
Diabetes	135,030 (15.0%)	36,265 (14.0%)
Renal Insufficiency	5,246 (0.58%)	1,347 (0.52%)
History of PE	11,673 (1.29%)	3,037(1.17%)
BMI	45.2 (7.72%)	44.9 (7.57%)
DTDISCH_OP	1.52 (1.29%)	1.4 (1.07%)
Albumin	4.1 (0.35%)	4.11 (0.35%)
Sleep Apnea	352,159 (39.0%)	88,196 (33.9%)
Age	44.1 (11.9)	43.4 (11.9%)
Operation Length	90.0 (50.1%)	69.1 (37.5%)
Robotic Approach	145,142 (16.1%)	40,587 (15.6%)

TABLE 2: Postoperative morbidity and mortality

Variables	Leak Test (n=902,862)	No Leak Test (n=259,850)
30 Day Morbidity	36,836 (4.08%)	12,480 (4.8%)
UTI	3,293 (0.36%)	800 (0.31%)
Unplanned Intubation	1,037 (0.11%)	229 (0.09%)
Pneumonia	1,696 (0.19%)	363 (0.14%)
Superficial SSI	3,572 (0.4%)	754 (0.29%)
Deep Incisional SSI	506 (0.06%)	71 (0.03%)
Organ Space SSI	2,238 (0.25%)	544 (0.21%)
30 Day Reoperation	10,491 (1.16%)	2,228 (0.86%)
READ30	31,668 (3.51%)	7,371 (2.84%)
Postop Sepsis	964 (0.11%)	230 (0.09%)
Death	695 (0.08%)*	176 (0.07%)*

*P=NS; otherwise, p<0.05.

CONCLUSION

Patients who underwent leak tests were, generally, more likely to have comorbidities

Patients with hypertension, hyperlipidemia, GERD, COPD, robotic surgeries, white, black, increased BMI, renal insufficiency, low albumin, diabetes, and immunosuppression therapy had higher associated risk for post-operative organ space SSI