Morbidity Following Hiatal Hernia Repair During Bariatric Surgery: A Comparison of NIS and MBSAQIP Outcomes

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INTRODUCTION

The rate of hiatal hernia repair (HHR) during primary bariatric surgery is around 21% for vertical sleeve gastrectomy (VSG) and 10.8% for Roux-en-Y gastric bypass (RYGB). Morbidity of HHR during bariatric surgery has not previously been compared between two large datasets:

National Inpatient Sample (NIS)
- Inpatient data designed to be a representative 20% sampling of all US hospitalizations

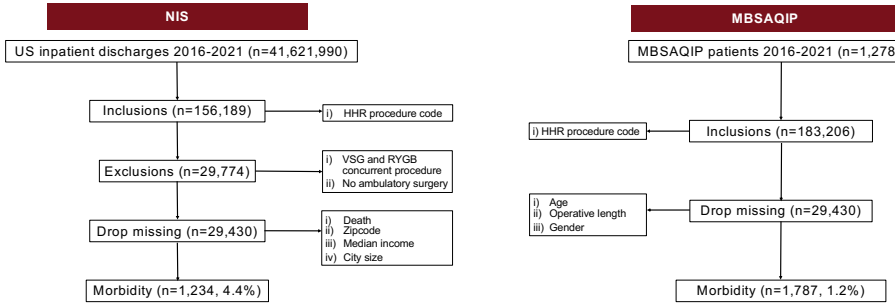
The Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP)
- Bariatric data from accredited bariatric centers
- US and some Canada

HYPOTHESIS

The MBSAQIP and NIS databases will share predictors of morbidity of HHR during bariatric surgery.

METHODS

- NIS and MBSAQIP datasets were separately concatenated and appropriate variables analyzed as shown in the CONSORT diagram below.
- Categorical variables were analyzed using chi-squared tests, while continuous variables were compared using t-tests with equal variance assumptions.
- Multivariable logistic regression models were developed for each dataset to identify independent predictors of morbidity.
- Morbidity was defined as a composite of postoperative sepsis, pneumonia, infection, myocardial infarction, cardiac arrest, deep venous thrombosis (DVT), pulmonary embolism (PE), acute renal failure, blood transfusion, ventilator requirement or urinary tract infection.



RESULTS

TABLE 1: Significant risk factors for morbidity and mortality following HHR during bariatric surgery, NIS versus MBSAQIP

Risk Factor	NIS - OR [95% CI]	MBSAQIP - OR [95% CI]	Concordant
Hypertension	4.59 [2.34, 9.01]	1.12 [1.02, 1.22]	Yes
Sleep apnea	3.15 [2.71, 3.67]	1.12 [1.03, 1.22]	Yes
History of DVT	1.79 [1.28, 2.51]	1.94 [1.57, 2.4]	Yes
Black race	1.26 [1.06, 1.51]	1.12 [1.01, 1.24]	Yes
Age	1.19 [1.09, 1.29]	1.15 [1.1, 1.21]	Yes
VSG (ref: RYGB)	0.68 [0.59, 0.78]	0.65 [0.59, 0.71]	Yes
Female	0.76 [0.65, 0.9]	1.14 [1.01, 1.29]	No
Emergency	3.02 [2.58, 3.54]	1.83 [0.9, 3.72] **	No
Diabetes	1.18 [1.02, 1.37]	0.97 [0.87, 1.07] **	No
GERD	1.06 [0.92, 1.23] **	1.25 [1.15, 1.36]	No
Operation year	1.05 [0.99, 1.13] **	0.9 [0.86, 0.94]	No
Robot assist	1.32 [1.12, 1.56]	0.81 [0.72, 0.91]	No

**P not significant; otherwise, p<0.05.

TABLE 2: Significant risk factors for morbidity and mortality following HHR during bariatric surgery found in MBSAQIP, but not in NIS

Risk Factor	MBSAQIP - OR [95% CI]
History of foregut surgery	1.44 [1.29, 1.61]
Therapeutic anticoagulation	1.55 [1.29, 1.86]
Operation duration	1.16 [1.11, 1.20]

Conclusions

- There are shared predictors of morbidity of HHR during bariatric surgery.
- Independent risk factors of hypertension, sleep apnea, history of DVT, black race, and advanced age were found to increase morbidity across both databases in patients undergoing HHR during bariatric surgery.
- Limitations to our study include residual confounding from the use of administrative data, such as the lack of disease severity scoring.
- Further prospective studies will be necessary to identify risk factors for morbidity in this patient population