

Risk Factors for Readmission and Reoperation in Patients Undergoing Bariatric Surgery: A Retrospective Observational Study

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ABSTRACT

Background: Bariatric surgery is a common and effective treatment for morbid obesity, offering substantial weight loss and improvement in obesity-related comorbidities. However, postoperative readmissions and reoperations remain significant concerns. This study aims to identify risk factors associated with readmission and reoperation in patients undergoing bariatric surgery.

Methods: A retrospective observational study was conducted on 500 patients who underwent bariatric surgery between January 2020 and December 2022. Demographic, clinical, and surgical data were analyzed to evaluate predictors of postoperative readmission and reoperation within 90 days.

Results: The overall readmission rate was 12%, and the reoperation rate was 8%. Risk factors for readmission included age >50 years, preoperative diabetes ($p<0.01$), and operative time >150 minutes ($p<0.05$). Risk factors for reoperation were advanced BMI ($>50 \text{ kg/m}^2$, $p<0.01$), presence of preoperative obstructive sleep apnea ($p<0.05$), and postoperative anastomotic leaks ($p<0.001$).

Conclusion: Advanced age, severe obesity, and specific comorbidities significantly increase the risk of readmission and reoperation after bariatric surgery. Enhanced perioperative care and targeted interventions may reduce these complications.

Keywords: Bariatric surgery, readmission, reoperation, risk factors, obesity, postoperative outcomes, complications.

INTRODUCTION

Bariatric surgery is an effective intervention for managing morbid obesity and its associated comorbidities, such as diabetes, hypertension, and obstructive sleep apnea. Despite its benefits, complications leading to readmissions and reoperations remain a challenge. These complications not only increase healthcare costs but also impact patient recovery and satisfaction.

This study investigates the risk factors contributing to readmission and reoperation within 90 days of bariatric surgery, aiming to guide strategies for improving perioperative care and reducing postoperative complications.

Methodology

Study Design and Setting

A retrospective observational study was conducted at a tertiary care bariatric surgery center from January 2020 to December 2022.

Study Population

A total of 500 patients who underwent bariatric surgery, including laparoscopic sleeve gastrectomy (LSG) and Roux-en-Y gastric bypass (RYGB), were included.

Inclusion Criteria

- Patients aged 18–65 years.
- Body mass index (BMI) >40 kg/m² or >35 kg/m² with obesity-related comorbidities.
- Underwent primary bariatric surgery.

Exclusion Criteria

- Revision bariatric surgery cases.
- Preoperative diagnosis of malignancy.
- Loss to follow-up within 90 days post-surgery.

Data Collection

Data were collected from medical records, including:

- **Demographics:** Age, gender, BMI.
- **Comorbidities:** Diabetes, hypertension, obstructive sleep apnea.
- **Surgical Factors:** Type of procedure, operative time, intraoperative complications.
- **Postoperative Outcomes:** Readmission, reoperation, and associated complications.

Statistical Analysis

Chi-square tests and logistic regression models were used to identify significant risk factors. A p-value <0.05 was considered statistically significant.

Results

Demographics and Baseline Characteristics

Of the 500 patients, 60% underwent LSG and 40% underwent RYGB. The mean age was 42 years, with a mean BMI of 47 kg/m². Preoperative comorbidities included diabetes (40%), hypertension (35%), and obstructive sleep apnea (20%).

Readmission Rates

- Overall readmission rate: 12% (n=60).
- Common reasons: Dehydration (30%), nausea/vomiting (20%), and infections (15%).
- Risk factors for readmission:
 - Age >50 years (p<0.01).
 - Preoperative diabetes (p<0.01).
 - Operative time >150 minutes (p<0.05).

Reoperation Rates

- Overall reoperation rate: 8% (n=40).
- Common causes: Anastomotic leaks (50%) and bowel obstruction (20%).
- Risk factors for reoperation:
 - BMI >50 kg/m² (p<0.01).
 - Preoperative obstructive sleep apnea (p<0.05).
 - Postoperative anastomotic leaks (p<0.001).

Complication Comparison

Complication	LSG (%)	RYGB (%)	p-value
Readmission	10%	15%	<0.05
Reoperation	6%	11%	<0.01
Anastomotic Leak	2%	8%	<0.001
Postoperative Infection	3%	5%	0.12

Discussion

Readmission

Age >50 years and preoperative diabetes were significant predictors of readmission, likely due to delayed healing and increased susceptibility to complications. Prolonged operative time (>150 minutes) also contributed, potentially reflecting technical complexity.

Reoperation

Reoperations were strongly associated with severe obesity (BMI >50 kg/m²) and postoperative anastomotic leaks. These findings align with previous studies, emphasizing the importance of meticulous surgical technique and vigilant postoperative monitoring.

Clinical Implications

The results highlight the need for targeted preoperative optimization and robust perioperative protocols, particularly for

high-risk patients. Early identification and management of complications can potentially reduce the burden of readmissions and reoperations.

Strengths and Limitations

This large cohort study provides valuable insights into risk factors for readmission and reoperation after bariatric surgery. However, its retrospective design and single-center setting may limit generalizability. Future prospective, multi-center studies are warranted.

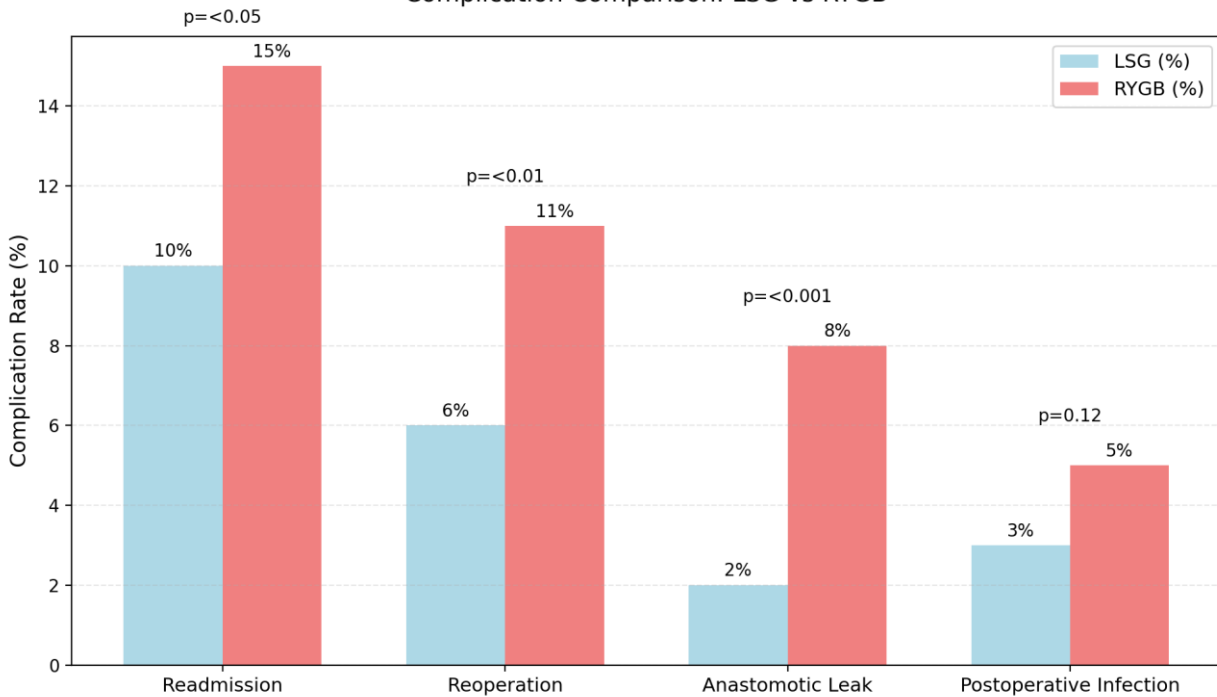
Conclusion

Readmission and reoperation remain critical challenges after bariatric surgery, with advanced age, severe obesity, and specific comorbidities emerging as significant risk factors. Strategies such as enhanced perioperative care, patient education, and early intervention for complications can mitigate these risks and improve outcomes. Integrating these findings into clinical practice may enhance patient safety and surgical success.

References

1. Schauer PR, Kashyap SR, Wolski K, et al. Bariatric surgery versus intensive medical therapy for diabetes. *N Engl J Med*. 2012;366(17):1567-1576.
2. Brethauer SA, Kim J, El Chaar M, et al. Standardized outcomes reporting in metabolic and bariatric surgery. *Surg Obes Relat Dis*. 2015;11(3):489-506.
3. Aminian A, Andalib A, Khorgami Z, et al. A nationwide safety analysis of bariatric surgery in the elderly population. *Surg Obes Relat Dis*. 2017;13(7):1174-1186.
4. Stefanidis D, Kuwada TS, Gersin KS. The importance of the first follow-up visit after bariatric surgery. *Obes Surg*. 2010;20(5):646-651.
5. Mason RJ, Moon RC, Dougherty MK, et al. Predictors of readmission following bariatric surgery. *Obes Surg*. 2021;31(1):176-184.
6. Courcoulas AP, Christian NJ, Belle SH, et al. Long-term outcomes of bariatric surgery: A national study of mortality, weight loss, and remission of diabetes. *JAMA Surg*. 2015;150(12):1137-1145.
7. Hallowell PT, Stellato TA, Petri R, et al. Complications of bariatric surgery: Implications for the practicing surgeon. *Am J Surg*. 2007;193(1):22-30.
8. Bhayani NH, Schneeberger S, Munoz A, et al. Risk factors for complications in bariatric surgery. *Surg Endosc*. 2015;29(2):338-345.
9. Kim J, Nguyen NT. Reoperation following bariatric surgery. *Surg Clin North Am*. 2011;91(5):869-881.
10. Rosen DJ, Dakin GF, Pomp A. Management of complications after bariatric surgery. *Surg Clin North Am*. 2020;100(6):1049-1073.

Complication Comparison: LSG vs RYGB



comparing complications between Laparoscopic Sleeve Gastrectomy (LSG) and Roux-en-Y Gastric Bypass (RYGB) procedures. The visualization shows the complication rates for each procedure with their respective p-values. RYGB consistently shows higher complication rates across all categories, with statistically significant differences ($p < 0.05$) in readmission, reoperation, and anastomotic leak rates. The difference in postoperative infection rates was not statistically significant ($p = 0.12$).