Antidiabetic impact of bariatric surgery: A meta-analysis of long-term outcome data

Authors: Grace C. Bloomfield, MS[1], Iwanger-T-Ter T. Jia[1], Mike Y. Chen, BMS[1], Marcus H. Cunningham, BS[1], Dan E. Azagury, MD[2], Nicholas J. Prindeze, MD[3], Yewande R. Alimi, MD[3]

1. Georgetown University School of Medicine, Washington, DC
2. Department of Surgery, Stanford University School of Medicine, Palo Alto, CA
3. Department of Surgery, MedStar Georgetown University Hospital, Washington, DC

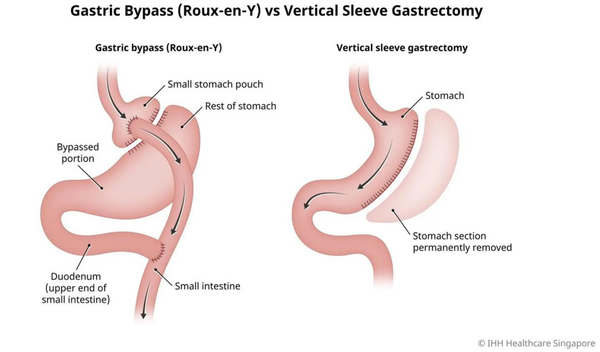
Introduction

Bariatric surgery is the most effective tool for weight reduction and has been shown to have an impact on obesity-related comorbidities. The correlation between obesity and type-2 diabetes has been well characterized, however the impact of bariatric surgery specifically on this population is less understood. The objective of this study is to evaluate the relative outcomes of bariatric surgery on the diabetic population for reduction in obesity-related comorbidities as compared to the general population.

Hypothesis: Patients with a diabetes mellitus (DM) diagnosis prior to surgical intervention would experience significant resolution of comorbidities postoperatively and that RYGB would have the most significant impact on all outcomes of interest.

Methods & Analysis

We performed a meta-analysis of publications from 2000 to 2024. Articles containing primary data on the outcomes after bariatric surgery were included. Data were incorporated into a database and separately analyzed.



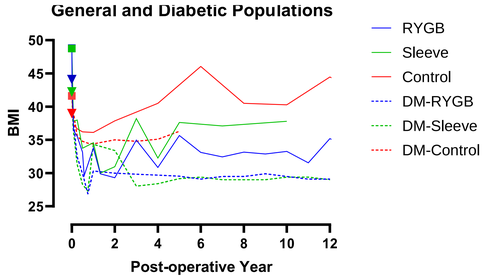


Fig 1: Post-operative BMI for the general and diabetic populations

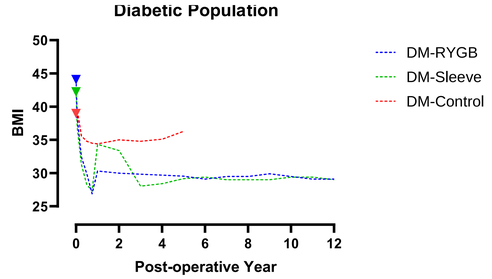
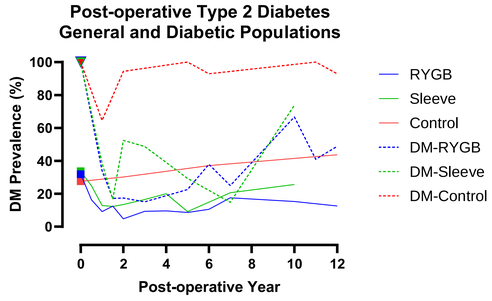


Fig 2: Post-operative BMI for only the diabetic population



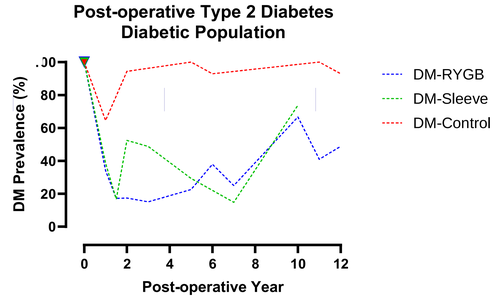
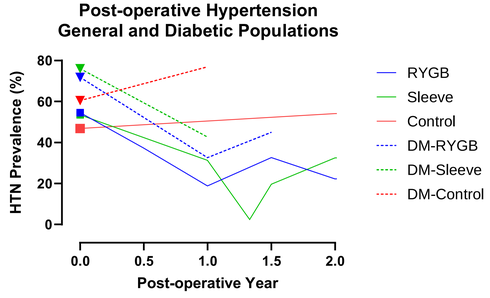


Fig 3: Post-operative DM prevalence for the general and diabetic populations Fig 4: Post-operative DM prevalence for only the diabetic population



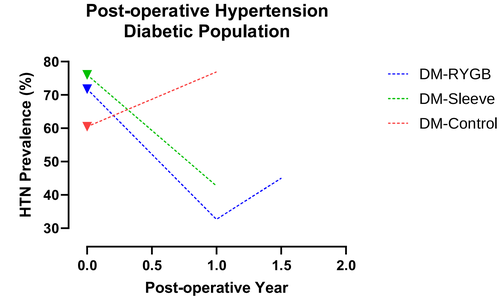


Fig 5: Post-operative HTN prevalence for the general and diabetic populations Fig 6: Post-operative HTN prevalence for only the diabetic population

Results

28 studies met inclusion criteria for a total of 116,610 patients. As compared with the general bariatric surgery population, patients with DM had a lower starting BMI (45 vs. 49 kg/m^2). At 5 years the general bariatric population had BMI reduction of 33% for RYGB and 22% for sleeve while both the DM RYGB and sleeve groups both had 33% reduction. In the general population, DM rates precipitously drop with a slow rise over time. Long-term (>10 year) rates of DM remission in the DM population had 50% for RYGB and 22% for sleeve gastrectomy. Hypertension completely resolved at 1-year in the general population after RYGB and sleeve. The DM population had 58% and 42% reduction in HTN rates after RYGB and sleeve, respectively.

Conclusion

This study however has demonstrated that while patients with diabetes substantially benefit from bariatric surgery, the response is different from the general population. Weight loss outcomes at 1-year were found to be similar between groups, however a much greater durability of weight loss was evident in the diabetic population in the long-term.

Both surgical procedures produced a dramatic impact on weight loss and obesity-related comorbidities, however the RYGB consistently out-performed the sleeve for weight loss, reductions in comorbidities, and the durability of these effects in both the diabetic and general populations.