



Temporal Associations of Adverse Effects After Bariatric Surgery Approach- and Procedure-Stratified Day-by-Day Patterns

Presented By: Hania Ahmer MD

*Authors: Hania Ahmer, Hamdan Mallick, Anirudha Goparaju, Theodoros Katsichtis
Bayhealth Medical Center, DE*

Introduction

- Thirty-day complication rates after bariatric surgery are well established through national datasets such as the MBSAQIP*. However, aggregate rates fail to capture the **chronologic evolution** of postoperative events.
- Complications occur in predictable temporal patterns. Identifying these “windows of vulnerability” may improve discharge planning, remote monitoring, and early intervention strategies.
- This study defines **day-by-day complication patterns** and compares temporal distributions by surgical approach (robotic vs laparoscopic) and procedure type (SG vs RYGB).

Methods

- We performed a retrospective cohort study using the 2022 MBSAQIP* Participant Use Data File. Adult patients (≥18 years) undergoing primary laparoscopic or robotic sleeve gastrectomy (SG) or Roux-en-Y gastric bypass (RYGB) were included; revisional and emergency cases were excluded. Date-stamped complications were aligned to postoperative day (POD 0–30) to generate day-by-day distributions. Events were categorized as early (POD 0–3) or late (POD 4–30) and stratified by surgical approach and procedure type. Comparisons were performed using chi-square testing with $p < 0.05$ considered statistically significant.

Results

- **Cohort:** 230,707 patients; 30-day mortality **0.081%**; ED utilization **8.39%**. Most common complications were unplanned ICU admission (0.52%), GI bleed (0.43%), bowel obstruction (0.38%), SSI (~0.36–0.37%), leak (0.23%), and VTE (0.23%).
- **Pulmonary complications** (pneumonia, unplanned intubation, ventilator >48h) showed a strong **early clustering on POD 1–3**, representing the first inpatient vulnerability window.
- **Leak and sepsis** demonstrated a distinct **late week-1 peak (POD 5–7)**, frequently occurring after discharge, defining a critical post-discharge vulnerability period.
- **VTE events** were distributed across **POD 1–10** without a sharp peak, while **SSIs and wound complications** rose after POD 5 and extended into weeks 2–3.
- **Approach comparison:** Laparoscopy showed more very-early pulmonary events and a concentrated leak/sepsis peak at POD 5–7, whereas robotic cases showed fewer early pulmonary events and a slightly delayed leak/sepsis peak (POD 6–8); overall early vs late distributions were not statistically different ($p = 0.18$).
- **Procedure-specific leak timing:** RYGB leaks clustered earlier (POD 2–3) compared to sleeve gastrectomy (POD 3–4), though not statistically significant ($p = 0.97$).

Conclusion

- Bariatric surgery complications follow **predictable temporal patterns**, with two key vulnerability windows: **POD 1–3 (pulmonary events)** and **POD 5–8 (leak/sepsis, often post-discharge)**, with subtle chronologic differences by approach and procedure.
- These findings support **chrono-targeted discharge education and telemonitoring**, emphasizing early respiratory optimization and heightened vigilance during the late week-1 post-discharge leak window.

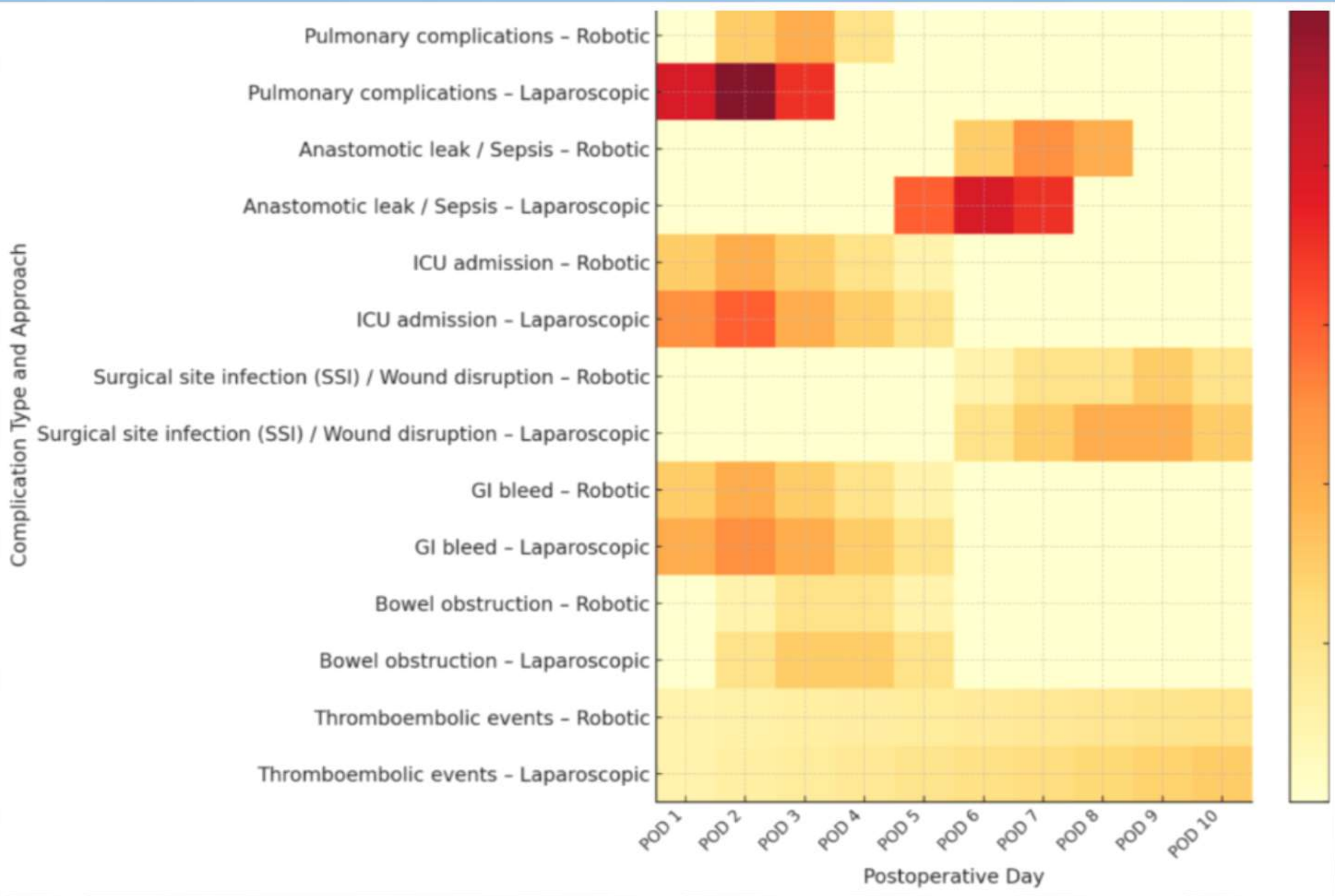


Figure 1: Heatmap showing complication timeline by approach (robotic vs laparoscopic). Red indicating higher incidence.

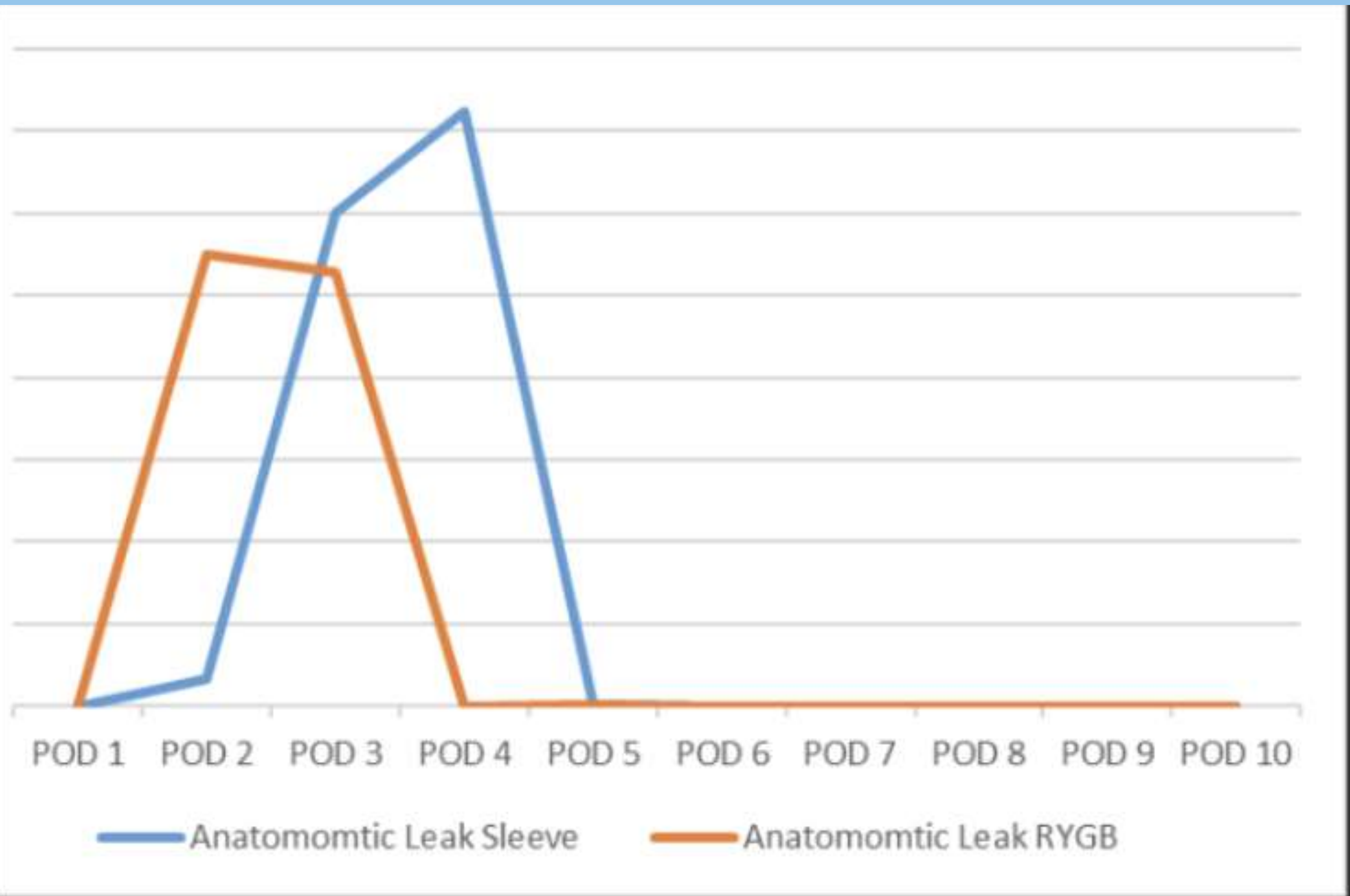


Figure 2: Line graph showing anastomotic leak distribution pattern in sleeve vs Roux en Y patients.

*MBSAQIP= Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) P