

# Posterior lumbar fusion outcomes in patients who undergo bariatric surgery - does losing the weight matter?

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## Introduction

- Morbid obesity (MO) is associated with increased risk of adverse events following surgical procedures, including Posterior Lumbar Fusion (PLF)
- To ameliorate these issues, bariatric surgery (BS) may be recommended prior to performing PLF.
- However, not all patients undergoing bariatric surgery lose the expected weight.
- Furthermore, the actual impact of BS-induced weight loss has not been fully evaluated.
- The purpose of the present study is to investigate how bariatric surgery affects outcomes for PLF patients when the patients either lose weight post-surgery or remain morbidly obese.

**Table 1: Quick Facts**

- 42.4% of Americans are obese, 9.2% are morbidly obese (CDC 2021)
- 105,195 PLF's are performed annually (Saifi et al. 2019)
- 252,000 BS's are performed annually (ASMBS 2019)

## Methods

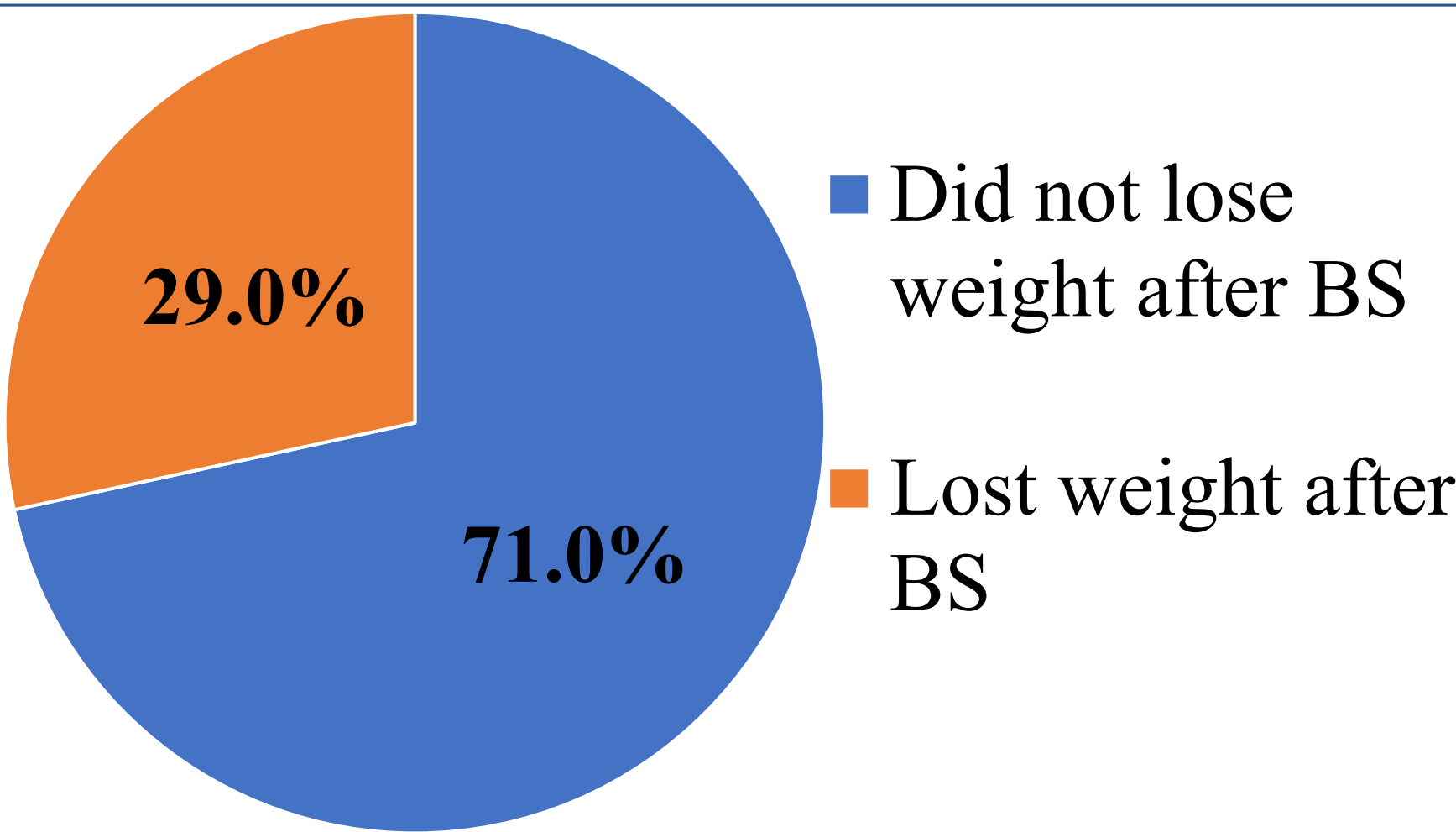
- PearlDiver MSpine database was used to identify patients undergoing elective PLF between 2010-2020.

- The study cohort was divided into three groups:
  - 1] non-morbidly obese (BMI <35 kg/m<sup>2</sup>) patients without a history of BS aka BS-MO-
  - 2] non-morbidly obese patients who underwent BS within five years of PLF aka BS+MO-, and
  - 3] morbidly obese (BMI >35 kg/m<sup>2</sup>) patients who underwent BS within five years of PLF aka BS+MO+.
- Patient characteristics assessed included age, sex, Elixhauser Comorbidity Index (ECI), and stay length
- Ninety-day adverse events were additionally tabulated.
- Univariate, multivariate regression, and Kaplan-Meier analysis were performed.

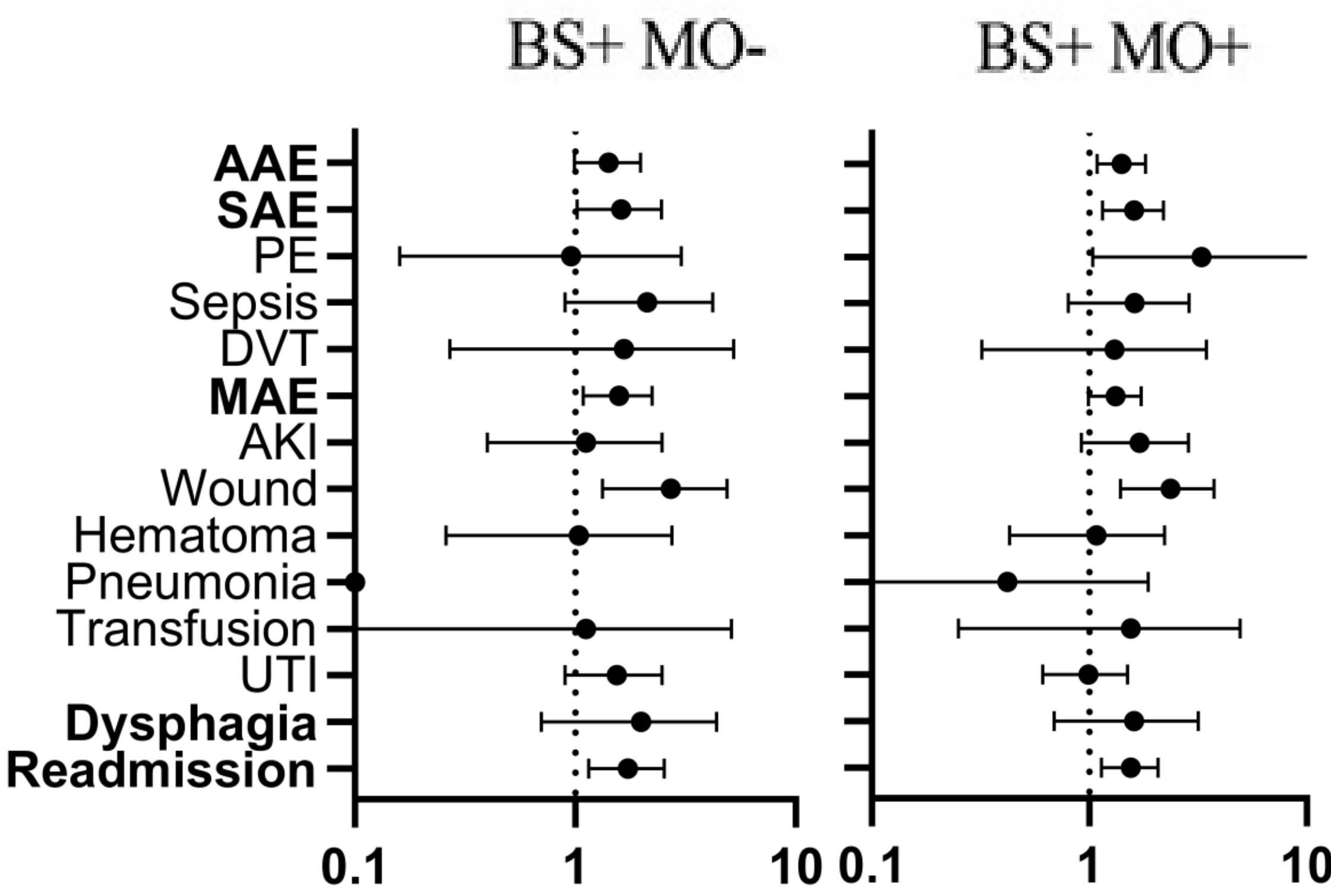
## Results

- A total of 172,422 patients were identified, including 171,694 BS-MO- patients, 211 BS+MO- patients, and 517 BS+MO+ patients. Notably 71.0% of patients who underwent PLF within five years of bariatric surgery remained morbidly obese.

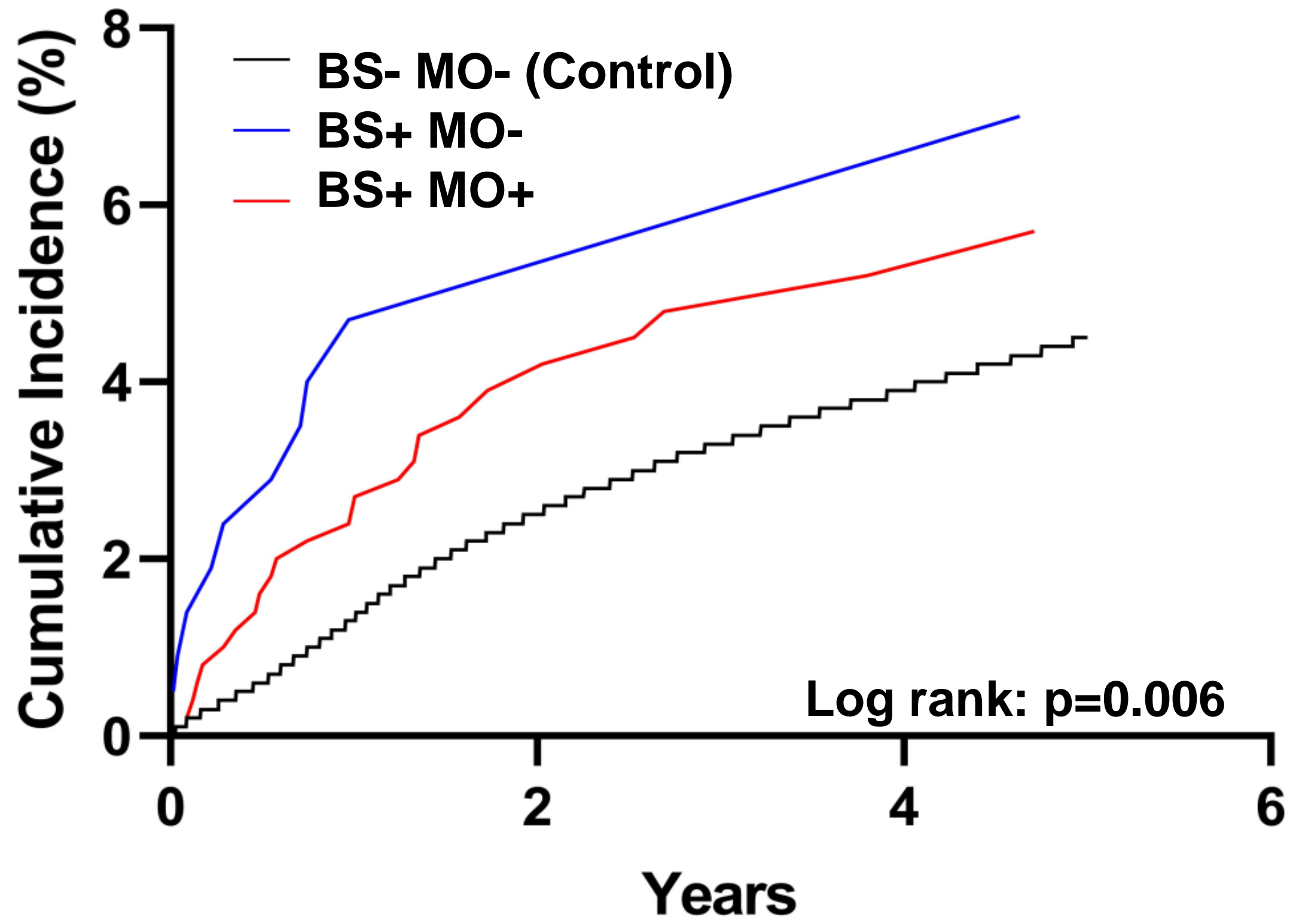
**Figure 1: Patient Outcomes after BS**



**Figure 2: Forest Plot 90-Day Adverse Events (Referent=Control)**



**Figure 3: Kaplan-Meier 5-Year Cervical Reoperations**



- Upon multivariate analysis comparison to the BS-MO- controls, BS+MO+ patients had significantly greater odds ratios (OR) of 90-day rates of Any Adverse Event (OR=1.41, p=0.007), Serious Adverse Events (1.61, p=0.004), and wound complications (2.37, p<0.001).
- Meanwhile, BS+MO- patients showed significantly greater odds ratios for Minor Adverse Events (1.58, p=0.012). Five-year reoperation rates were significantly higher for both groups compared to the control group upon pairwise analysis (p>0.05).

## Conclusions

- While the potential impact of bariatric surgery on surgical outcomes is often touted, this is the first study to directly assess that in context of PLF.
- The findings show that after elective PLF, patients who had a prior bariatric surgery who did not lose the weight faced greater rates of serious adverse and overall adverse events compared to patients who had a prior bariatric surgery and did lose the weight. Meanwhile, patients who did lose the weight faced greater rates of minor adverse events.
- The findings indicate that losing weight is critical to optimizing outcomes after PLF and mitigating complications.
- Will aid orthopaedic and bariatric surgeons in counseling BS patients on effects of weight loss in reducing risk of adverse events following PLF.