Comparison of Robotic Versus Laparoscopic Bariatric Surgery with Concurrent Cholecystectomy: An MBSAQIP Database Analysis (2015-2023)

Jason Silvers[1], Oscar Tuesta[1], Adrian Riva[1], Alba Zevallos[2,3], Hien Nguyen[4], Gina Adrales[4], Christina Li[1], Michael Schweitzer[4], Raul Sebastian[1,4]

[1]Department of Surgery, Northwest Hospital, Randallstown, MD, USA
[2]Department of Surgery, Loma Linda University Medical Center, Loma Linda, CA, USA
[3]Universidad Cientifica del Sur, Lima, Peru
[4]Department of Surgery, The Johns Hopkins University, Baltimore, MD, USA

Background

Obesity-linked cholelithiasis may warrant simultaneous cholecystectomy during bariatric surgery. While concurrent procedures may lead to increased complication risk, it is unclear if that risk is the same for laparoscopic and robotic approaches.

Objective

To compare 30-day outcomes and bariatric-specific complications in patients undergoing laparoscopic versus robotic sleeve gastrectomy (SG) with concurrent cholecystectomy (CC), and laparoscopic versus robotic Roux-en-Y gastric bypass (RYGB) with CC. We additionally compared these approaches in patients with BMI ≥50.

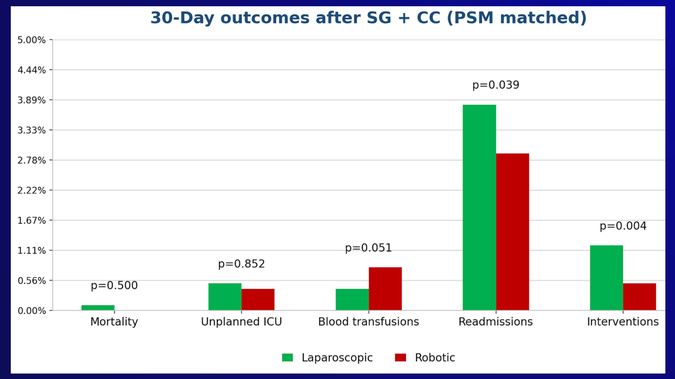
Methods

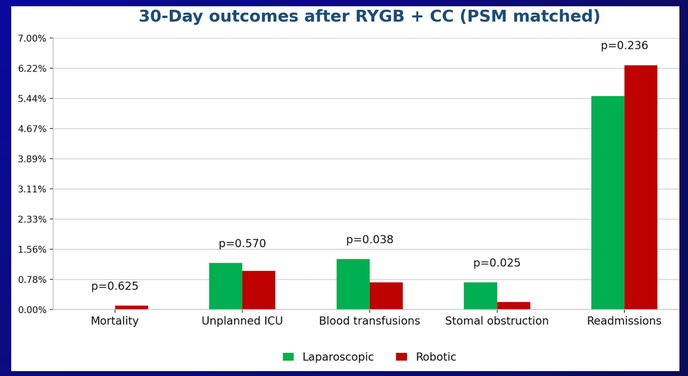
We analyzed patients from the 2015–2023 MBSAQIP. A propensity score matching (PSM) analysis was performed using 22 preoperative variables. 30-day postoperative outcomes and bariatric-specific complications were compared in patients undergoing laparoscopic vs robotic SG with CC, and laparoscopic vs robotic RYGB with CC. Those groups were then analyzed for BMI ≥50.

MBSAQIP 2015-2023
Primary SG/RYGB + CC
(n=26,704)

→ **SG + CC**
Lap (n=13,104)
Rob (n=3,280)
1:1 PSM → **SG + CC matched**
Lap (n=3,279)
Rob (n=3,279)
1:1 PSM → **BMI ≥ 50 subgroup**
(n=652 vs 652)

→ **RYGB + CC**
Lap (n=8,018)
Rob (n=2,302)
1:1 PSM → **RYGB + CC matched**
Lap (n=2,300)
Rob (n=2,300)
1:1 PSM → **BMI ≥ 50 subgroup**
(n=657 vs 657)





Results

We analyzed 16,384 SG and 10,320 RYGB patients. Our analyses showed no differences in mortality, unplanned ICU admissions and cardiopulmonary complications. Patients undergoing robotic SG with CC had decreased rates of readmission (2.9% vs. 3.8%, p=0.039) and interventions (0.5% vs. 1.2%, p=0.004) and longer operative times (119.54 ± 45.51 vs. 95.92 ± 41.59 min, p<0.001). Robotic RYGB with CC had decreased rates of blood transfusions (0.7% vs. 1.3%, p=0.038), and stomal obstructions (0.2% vs. 0.7%, p=0.025), but increased operative time (184.29 ± 67.25 vs. 144.72 ± 55.93 min, p<0.001). There were no differences in outcomes with BMI ≥50, except longer robotic operative times (127.16 ± 51.22 vs. 102.28 ± 47.09 min, p<0.001 for SG and 195.37 ± 73.33 vs 155.56 ± 61.53 min, p<0.001 for RYGB).

Conclusion

Robotic bariatric surgery with CC had longer operative time, but lower rates of readmissions and interventions in the SG group, and lower rates of blood transfusions and stomal obstructions in the RYGB group. Outcomes in patients with BMI >50 showed no significant differences.