

Short-term safety and efficacy of robot-assisted metabolic and bariatric surgery in adolescents: an analysis of the MBSAQIP database

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Background: Despite the recent increase in metabolic and bariatric surgery (MBS) in adolescent patients, analyses of short-term outcomes of robot-assisted MBS in this population are lacking.

Methods: We conducted a comparative analysis of postoperative outcomes of MBS in patients ≤ 19 years of age with or without robot assistance using the 2020-2023 MBSAQIP database. Our primary outcome was 30-day incidence of major complications, defined as Clavien-Dindo Grade ≥ 2 . Secondary outcomes included operative time, length of hospital stay, readmission, re-operation, re-intervention, and anastomotic or staple line leak.

Results: From 5521 total minimally-invasive adolescent MBS procedures, 1326 (24.0%) were robot-assisted. The two most common procedures performed were sleeve gastrectomy (4836 [87.5%] with 1166 [24.1%] robot-assisted) followed by Roux-en-Y gastric bypass (590 [10.6%], with 147 [24.9%] robot-assisted). The rate of 30-day major complications was low at 1.7% ($n=94/5521$) across the cohort, with no significant difference between robot-assisted and laparoscopic MBS (OR 0.99 [95%-CI 0.6-1.57]). Robot-assisted surgery was associated with a greater operative time (Mean Difference (MD) 18.57 min [95%-CI 16.31-20.84], $p<0.0001$) and a statistically but not clinically significant shorter length of stay in hospital (MD -0.06 days [95%CI -0.11 – (-0.01)], $p=0.015$). There were no statistically significant differences between the two approaches in odds of re-operation, re-intervention, readmission, and anastomotic or staple line leak within 30 days.

Conclusion: Based on MBSAQIP data, robot-assisted MBS appears safe in the adolescent population with short-term outcomes comparable to laparoscopic MBS. These findings warrant further prospective studies evaluating the longer-term safety and efficacy of robotic surgery in adolescent patients.