The Influence of Significant Risk Factors on Metabolic and Bariatric Surgery Outcomes: An MBSAQIP Analysis

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Background

- In contemporary healthcare, the identification of risk factors holds utmost significance for both patients and health systems, enabling the accurate assessment of mortality, morbidity, and cost associated with surgical interventions. Notably, over the past decade, an emerging body of literature has emphasized the critical role of comorbidities detected during or immediately before surgery in predicting postoperative morbidity and mortality. This study sought to delve into the impact of Factors Present at the Time of Surgery on postoperative outcomes in the context of metabolic and bariatric surgery (MBS).

Methods – Statistical Analysis

- In order to examine the occurrence and significance of risk factors present at the time of surgery on postoperative results after MBS, a retrospective analysis was carried out using data from the MBSAQIP 2015-2018 participant usage file (PUF) database. Chi-square tests and logistic regression tests were utilized to identify potential risk factors associated with perioperative mortality and morbidity. Given the considerable sample size, a statistical significance threshold of $P<0.001$ was adopted.

Results

Table 1. Risk factors present at the time of surgery and their effect on outcomes in metabolic and bariatric surgery

Complication	frequency	Odds ratio for mortality	CI 95
On ventilator>48 hours	0.001 %	138.2	70.756 – 270.118
Pneumonia	0.01 %	72.8	35.292 – 150.168
Urinary Tract Infections	0.03 %	13.6	5.042 – 36.502
Sepsis	0.04%	30.9	16.405 – 58.307
Septic Shock	0.02%	204.9	140.398 – 299.130
Deep incisional SSI	0.02%	13.3	3.282 – 53.746
Organ Space SSI	0.08%	41.7	28.398 – 61.314

Results

- The results from Table 1 depict the occurrences of various complications present at the time of MBS. Among the complications investigated, the incidence of being on a ventilator for more than 48 hours was found to be 0.001%, with an associated high odds ratio for mortality of 138.2 (95% CI: 70.756 – 270.118). Pneumonia was observed in 0.01% of cases, showing an odds ratio for mortality of 72.8 (95% CI: 35.292 – 150.168). Similarly, urinary tract infections were reported in 0.03% of cases, displaying an odds ratio for mortality of 13.6 (95% CI: 5.042 – 36.502). The occurrence of sepsis was found in 0.04% of cases, with an odds ratio for mortality of 30.9 (95% CI: 16.405 – 58.307). The rarest complication, septic shock, occurred in 0.02% of cases but exhibited a remarkably high odds ratio for mortality of 204.9 (95% CI: 140.398 – 299.130). Additionally, the occurrence of wound complications was assessed, revealing a frequency of 0.02% for deep incisional surgical site infections (SSI) and 0.08% for organ space SSI, with corresponding odds ratios for mortality of 13.3 (95% CI: 3.282 – 53.746) and 41.7 (95% CI: 28.398 – 61.314) respectively. These findings provide valuable insights into the prevalence of perioperative complications and their potential impact on postoperative outcomes following MBS.

Conclusions

- In conclusion, the presence of certain risk factors comorbidities at the time of surgery exerts a significant impact on postoperative 30-day morbidity and mortality in the context of MBS. These comorbidities represent a relatively small proportion of the total MBS patient population, accounting for less than 0.1%. Despite their low prevalence, the findings underscore the crucial role that such comorbidities play in influencing surgical outcomes and necessitate careful consideration during the perioperative management of patients undergoing MBS. Enhanced awareness and tailored interventions to address these specific comorbidities hold the potential to improve overall patient outcomes and further reinforce the safety profile of MBS interventions.