An Analysis of the Impact of Anesthetic Approach on Trans-catheter Aortic Valve Replacement Outcomes: Monitored Anesthesia Care vs. General Anesthesia

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BACKGROUND

- Transcatheter aortic valve replacement (TAVR) is becoming the new standard of care in patients with aortic stenosis[1]
- TAVR is minimally invasive, allowing for the option to choose between General Anesthesia (GA) or Monitored Anesthesia Care (MAC) for sedation[2]
- MAC has been associated with decreased rates of postoperative delirium, all-cause mortality, and necessary hemodynamic support[3,4,5]
- Direct comparison of the post-operative outcomes patients who receive MAC and GA have not been adequately studied in TAVR

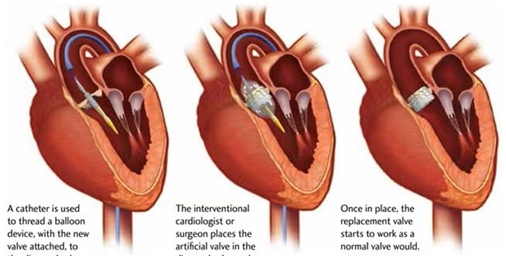
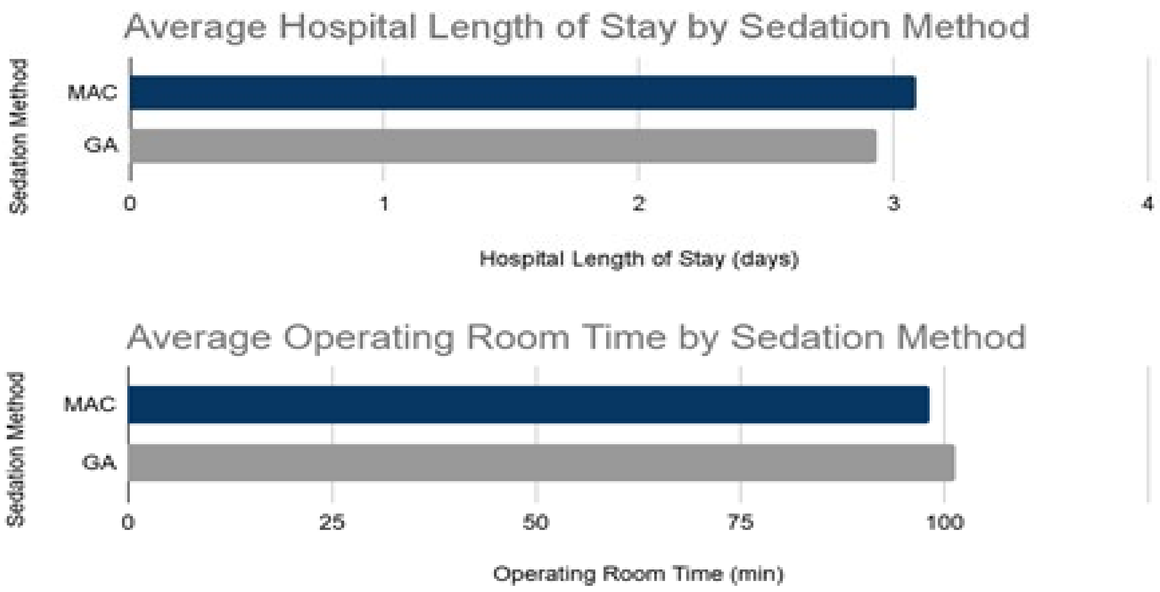


Figure 1: Illustration of a simplified summary of the TAVR Procedure [6]

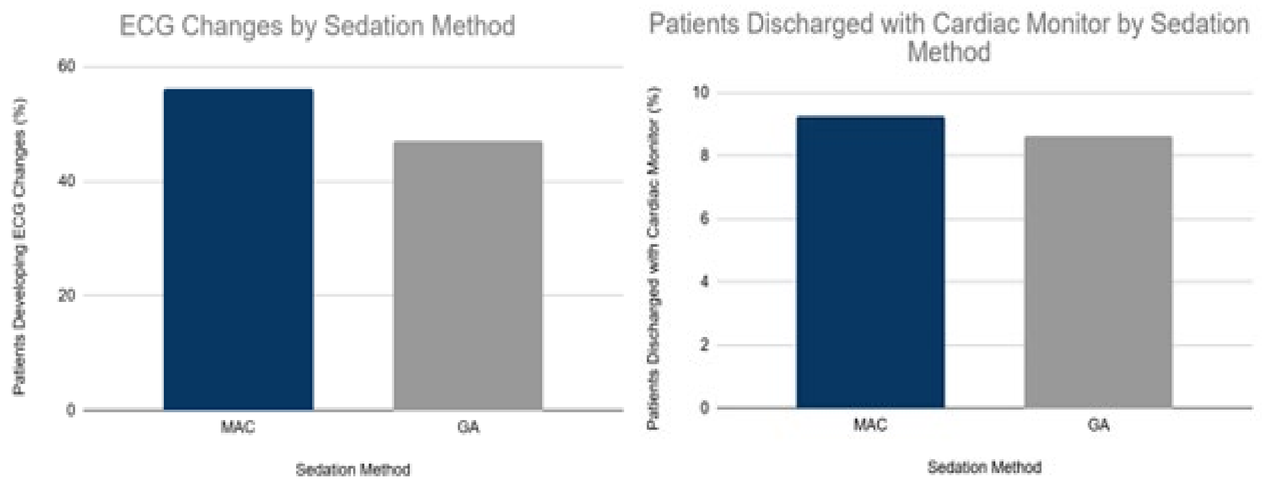
MATERIAL & METHODS

- Retrospective chart review of all patients who underwent TAVR with either MAC or GA per EMR at St. Francis Hospital & Medical Center in Hartford, CT between 10/01/2019 and 12/31/2023
- Exclusion criteria: patients who underwent transcarotid, transapical, transaxillary, and open femoral approaches, those who converted from MAC to GA intraoperatively, had a body mass index (BMI) > 40, were older than 90 years of age, those actively receiving vasopressor support at the time of TAVR, those requiring an intervention that significantly added to operating room (OR) length of time, and those who had an extended postoperative stay unrelated to the effects of anesthesia use during surgery
  - 373 patients were selected: 292 MAC, 81 GA
- Analysis of covariance models compared the primary outcomes length of hospital stay (LOS) and operating room time between groups
  - Covariates considered were patient age, race, sex and comorbidities
- Secondary outcomes (any ECG change or sent home with cardiac monitor), were compared using chi-square analyses.

RESULTS



Figures 2 & 3: Hospital length of stay (LOS) and operating room (OR) time were compared by sedation method. LOS following TAVR was 3.09 days vs 2.93 days (p = 0.20) in the MAC and GA groups respectively. OR time was 98.32 min vs 101.31 min (p = 0.25) in the MAC and GA groups respectively.



Figures 4 & 5: The number of patients with postoperative ECG changes and the number of patients requiring discharge with cardiac monitor were compared by sedation method. 56.16% of patients developed ECG changes in the MAC group compared to 46.91% in the GA group (p=0.14). 9.25% of patients went home with cardiac monitor in the MAC group compared to 8.64% in the GA group (p=0.87).

DISCUSSION

- No statistically significant differences were found between patients who underwent TAVR with MAC and GA with regard to hospital length of stay and average operating room time
- There were also no statistically significant differences found between the MAC and GA groups for the secondary outcomes of patients with ECG changes postoperatively and patients discharged with a cardiac monitor.
- In addition, there were no significant differences between the anesthesia groups regarding post-operative complications of respiratory failure and hemodynamic lability, although this study was not adequately powered to detect smaller differences in these measures, but rather to detect significant differences in OR time and LOS
- These findings suggest that MAC and GA may yield similar clinical outcomes for patients undergoing TAVR
- While findings suggest similar outcomes, the study was not adequately powered to exclude the possibility of a type II error
- The similar outcomes in both groups may be interpreted as providing flexibility in clinical decision making to providers performing TAVR
- Given results of this study, as well as prior evidence showing MAC reduces risk of all-cause mortality, MAC may be especially beneficial for high-risk patients

CONCLUSIONS & IMPACTS

- Patients who underwent TAVR with MAC and GA sedation had similar clinical outcomes in terms of hospital LOS, OR time, postoperative ECG changes, and necessity of cardiac monitor upon discharge.
- While this study was not adequately powered to detect small differences, these findings suggest clinical flexibility in anesthetic choice
- Larger, multicentered studies are needed for confirmation of these findings

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