

The Age-Adjusted Charlson Comorbidity Index in Robotic Mitral Valve Repair

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INTRODUCTION

- ✓ Robotic-assisted mitral valve repair (raMVR) has low perioperative mortality, making appropriate baseline patient selection critical.
- ✓ STS PROM is the gold standard for risk but requires complex procedural variables often unavailable in administrative datasets.
- ✓ The age-adjusted Charlson Comorbidity Index (aaCCI) is an easily derived measure of chronic disease burden.

Objective

- ✓ To evaluate the utility of aaCCI in raMVR and its relationship with STS PROM and postoperative recovery.

Methods

1

- Retrospective Review
- July 2021 – August 2025

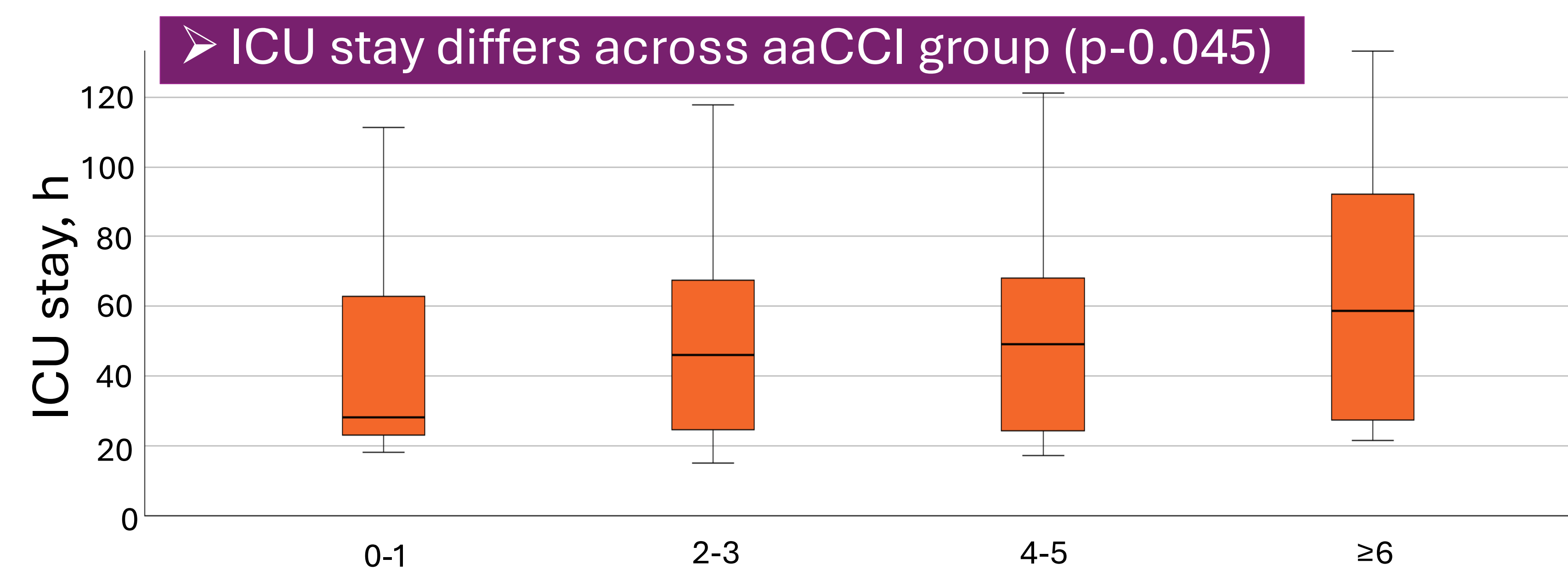
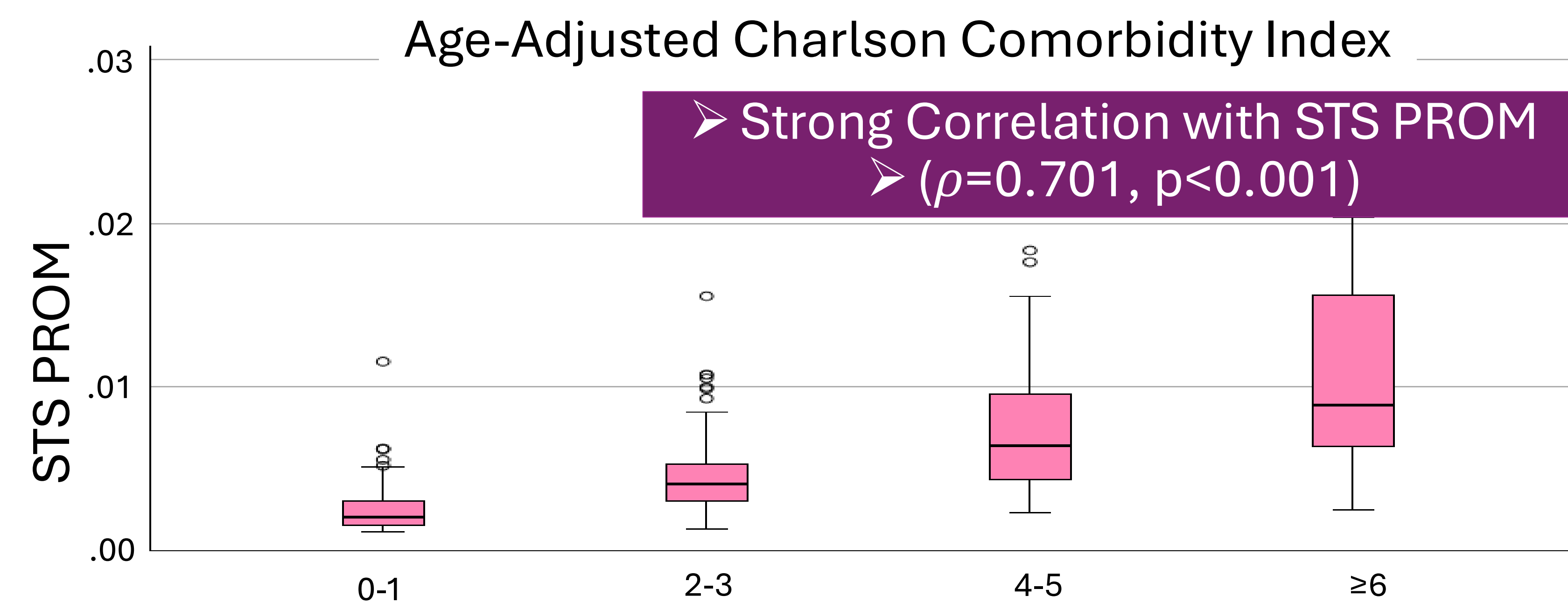
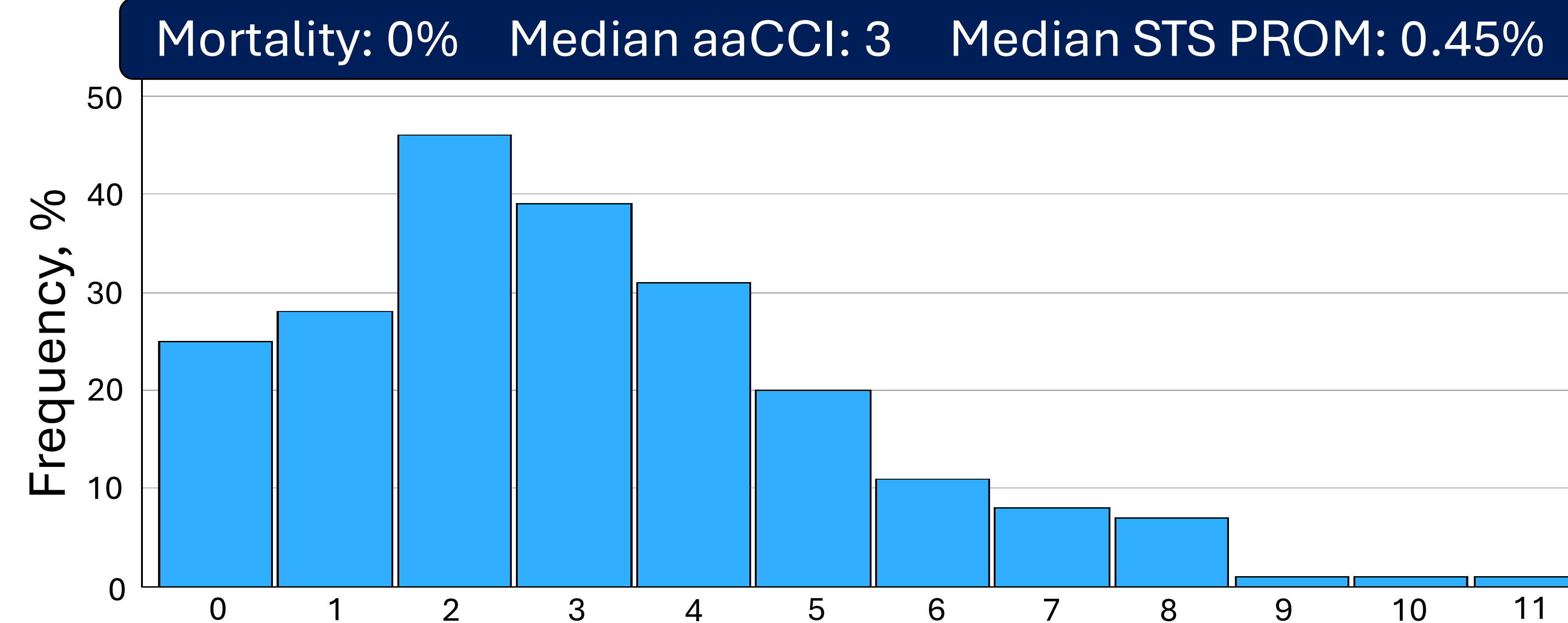
2

- N = 218 consecutive isolated raMVR patients (da Vinci Xi surgical system)

3

- Stratified into 4 aaCCI groups (0-1, 2-3, 4-5, ≥ 6) and correlated with intra-op metrics and post-op recovery

RESULTS



Correlation with Physiological Reserve

Lower FEV1%
($\rho=-0.198$, $p=0.004$)

Lower DLCO%
($\rho=-0.321$, $p<0.001$)

Lower Albumin
($\rho=-0.282$, $p<0.001$)

Higher aaCCI significantly associated with post-op recovery



Hospital Length of Stay
($p<0.001$)



ICU Stay
($p=0.008$)

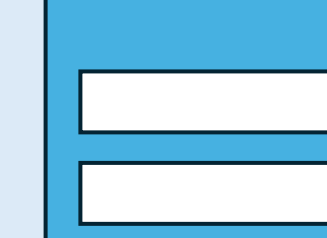


Postop Ventilation Time
($p=0.021$)

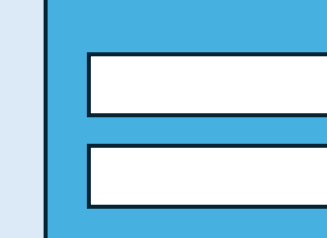


Odds of Extubation in the OR
(OR 0.872, $p=0.032$)

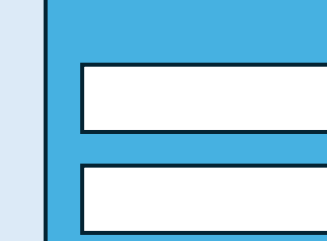
No association with intra-op metrics



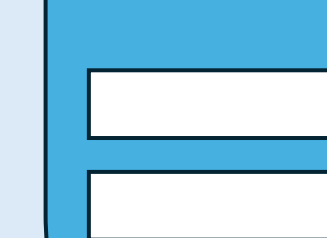
Total Procedure Time
($p=0.305$)



Robotic Console Time
($p=0.599$)



Instrument Active Time
($p=0.570$)



CPB Time
($p=0.511$)

- ✓ No association with readmission within 1 year (12.4% in total)

Limitation

- ✓ Retrospective, single-center design.
- ✓ Modest cohort size relative to the low frequency of major adverse events.
- ✓ The study was intended to evaluate clinical relevance of aaCCI rather than to develop a multivariable prediction model.

Conclusions

- ✓ aaCCI closely aligns with STS PROM and effectively captures baseline multimorbidity and physiologic reserve.
- ✓ aaCCI stratifies early postoperative course in low-mortality raMVR.
- ✓ aaCCI serves as an excellent adjunctive tool for comorbidity-based preoperative stratification.