

INTRODUCTION

- Enhanced Recovery After Surgery (ERAS) protocols have made earlier discharge following cardiac surgery increasingly common. However, some surgeons remain hesitant because the potential adverse effects of early discharge are not yet fully understood.
- Objective:** To compare postoperative outcomes between robotic and non-robotic cardiac surgery patients discharged early versus late.
- Hypothesis:** Early discharge after cardiac surgery is not associated with an increased risk of major adverse events in the immediate postoperative period, at 30 days, or at 1 year.

METHODS

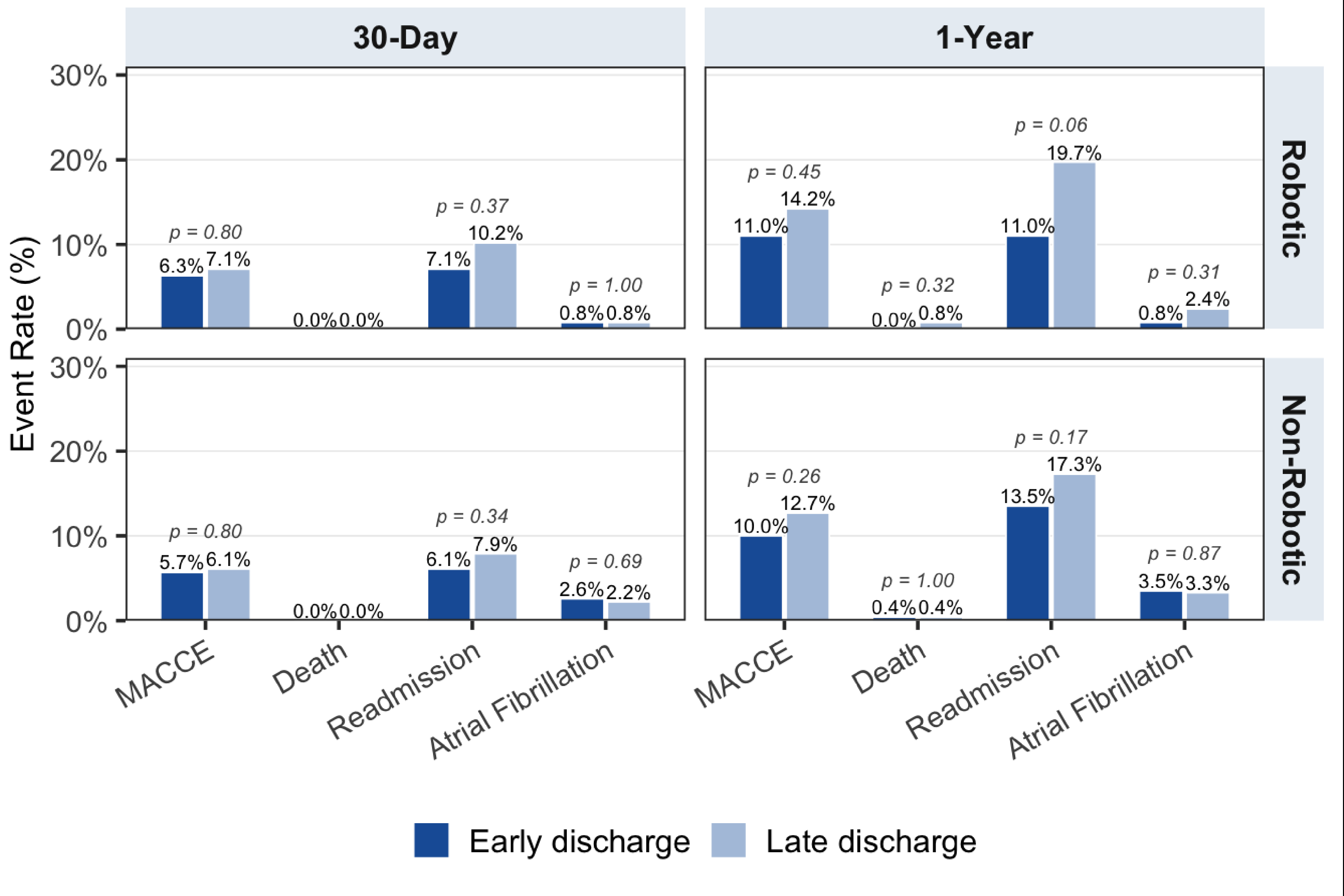
- Data:** Retrospective cohort study of electronic health records from a multi-hospital academic institution.
- Study population:** Adults undergoing isolated cardiac surgery (e.g., CABG, AVR, MVR) and were discharged alive between 2010-2025.
- Exposure:** Early (≤3 days) vs. late (>3 days) discharge.
- Outcome:** Major adverse cardiac and cerebrovascular events (MACCE) at 30 days and 1 year postoperatively. Secondary outcomes include perioperative events, death, readmission, and atrial fibrillation.
- Statistical analysis:** Propensity score–matching, followed by Poisson regression (MACCE), and McNemar’s test (secondary outcomes).

Early Discharge After Cardiac Surgery Is Safe Across Robotic and Non-Robotic Approaches: A Propensity-Matched Analysis

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FIGURE. 30-Day and 1-Year Outcomes:



TAKEAWAYS

Early discharge (≤3 days) after elective, isolated cardiac surgery was not associated with increased risk of adverse outcomes across either robotic or non-robotic surgical approaches. These findings support the safety and feasibility of early discharge in appropriately selected low-risk patients.

TABLE 1. Patient characteristics before and after propensity score matching (PSM):

	Pre-PSM		Post-PSM Robotic			Post-PSM Non-robotic		
	Early	Late	Early	Late	SMD*	Early	Late	SMD*
N	358	6533	127	127		230	920	
Age, median	61.0	66.0	60.0	60.0	0.09	62.0	63.0	0.04
BMI, median	27.5	29.3	26.9	25.9	0.05	27.8	28.3	0.01
Female, %	18.7	28.0	23.6	21.3	0.05	15.7	14.7	0.03
White Race, %	94.7	93.9	91.3	93.7	0.00	97.0	97.5	0.03
Black Race, %	3.1	3.2	2.4	2.4	0.00	3.0	2.5	0.03
Hypertension, %	72.1	85.9	63.8	62.2	0.03	76.5	78.3	0.04
Diabetes, %	24.0	35.4	15.0	12.6	0.07	29.1	27.1	0.05
Previous MI, %	17.3	26.8	14.2	12.6	0.05	19.1	18.4	0.02
Arrhythmia, %	16.8	20.3	8.7	8.7	0.09	20.9	18.2	0.01
STS-PROM Risk	0.5	0.8	0.4	0.4	0.07	0.6	0.7	0.01

*Patient characteristics were well balanced, with all standardized mean differences (SMDs) ≤0.10.

TABLE 2. Perioperative outcomes:

	Robotic			Non-robotic		
	Early	Late	P-value	Early	Late	P-value
Post-operative stroke, %	0.0	0.0	--	0.0	0.8	0.185
Re-operation, %	1.6	3.9	0.250	0.9	2.9	0.074
Post-operative pacemaker, %	0.0	0.8	0.316	0.0	0.9	0.156
Renal failure, %	0.0	0.0	--	0.0	0.3	0.386
Re-operation for bleeding, %	0.8	2.4	0.314	0.9	2.2	0.197