

The Risk of Early Discharge Following Mitral Valve Repair

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INTRODUCTION

- Isolated mitral valve repair (MVR) in the modern era is performed with remarkably low morbidity and mortality, which has led to reduced hospital length of stay. However, the safety of early post-operative discharge with respect to readmission and mortality remains uncertain.
- Objective:** To compare 30-day postoperative outcomes between patients discharged early (≤ 3 days) versus late (> 3 days) following elective isolated MVR surgery.
- 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:** Observational cohort study using a prospectively maintained cardiac surgery database from a multihospital academic health system.
- Study population:** Adults (≥ 18 years) undergoing elective isolated MVR surgery discharged home alive between 2010–2025.
- Exclusion criteria:** EF $< 20\%$ or STS PROM $> 8\%$.
- Exposure:** Early (≤ 3 days) vs. late (> 3 days) post-operative discharge.
- Outcomes:** 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).

Table 1. Propensity scored matched patient characteristics			
	Early discharge (Before PSM N = 110; After 1:1 PSM N = 109)	Late discharge (Before PSM N = 789; After 1:1 PSM N = 109)	SMD
Age; median (Q1-Q3)	57.0 (47.0-65.0)	58.0 (48.0-65.0)	0.05
Female; n (%)	32 (29.4%)	36 (33.0%)	0.08
Diabetes mellitus; n (%)	4 (3.7%)	6 (5.5%)	0.08
Hypertension; n (%)	54 (49.5%)	60 (55.0%)	0.10
Arrhythmia; n (%)	7 (6.4%)	4 (3.7%)	0.12
Ejection fraction; median (Q1-Q3)	0.4 (0.3-0.6)	0.4 (0.3-0.6)	0.01
Preoperative estimated glomerular filtration rate (ml/min/1.73m2); median (Q1-Q3)	60.0 (55.0-63.0)	58.0 (55.0-63.0)	0.10
BMI (kg/m2); median (Q1-Q3)	91.2 (81.8-101)	91.9 (77.0-101)	0.07
STS Risk Score; median (Q1-Q3)	25.7 (22.7-28.1)	25.4 (22.7-28.0)	0.03

Table 2. Perioperative outcomes			
	Early discharge (N = 109)	Late discharge (N = 109)	P-value
Post-operative stroke; n (%)	0 (0.0%)	0 (0.0%)	NA
Re-operation for bleeding; n (%)	1 (0.9%)	2 (1.8%)	0.561
Re-operation; n (%)	2 (1.8%)	3 (2.8%)	0.651
Renal failure; n (%)	0 (0.0%)	0 (0.0%)	NA
Post-operative pacemaker implantation; n (%)	0 (0.0%)	1 (0.9%)	0.316
Lower extremity paralysis; n (%)	0 (0.0%)	0 (0.0%)	NA

Table 3. Postoperative outcomes			
	Early discharge (N = 109)	Late discharge (N = 109)	P-value
MACCE at 30 days; n (%)	5 (4.6%)	5 (4.6%)	1
MACCE at 1 year; n (%)	8 (7.3%)	13 (11.9%)	0.251
Any readmission at 30 days; n (%)	7 (6.4%)	12 (11.0%)	0.23
Any readmission at 1 year; n (%)	10 (9.2%)	19 (17.4%)	0.073
All-cause mortality at 30 days; n (%)	0 (0.0%)	0 (0.0%)	NA
All-cause mortality at 1 year; n (%)	0 (0.0%)	0 (0.0%)	NA
Atrial fibrillation at 30 days; n (%)	1 (0.9%)	0 (0.0%)	0.316
Atrial fibrillation at 1 year; n (%)	2 (1.8%)	2 (1.8%)	1

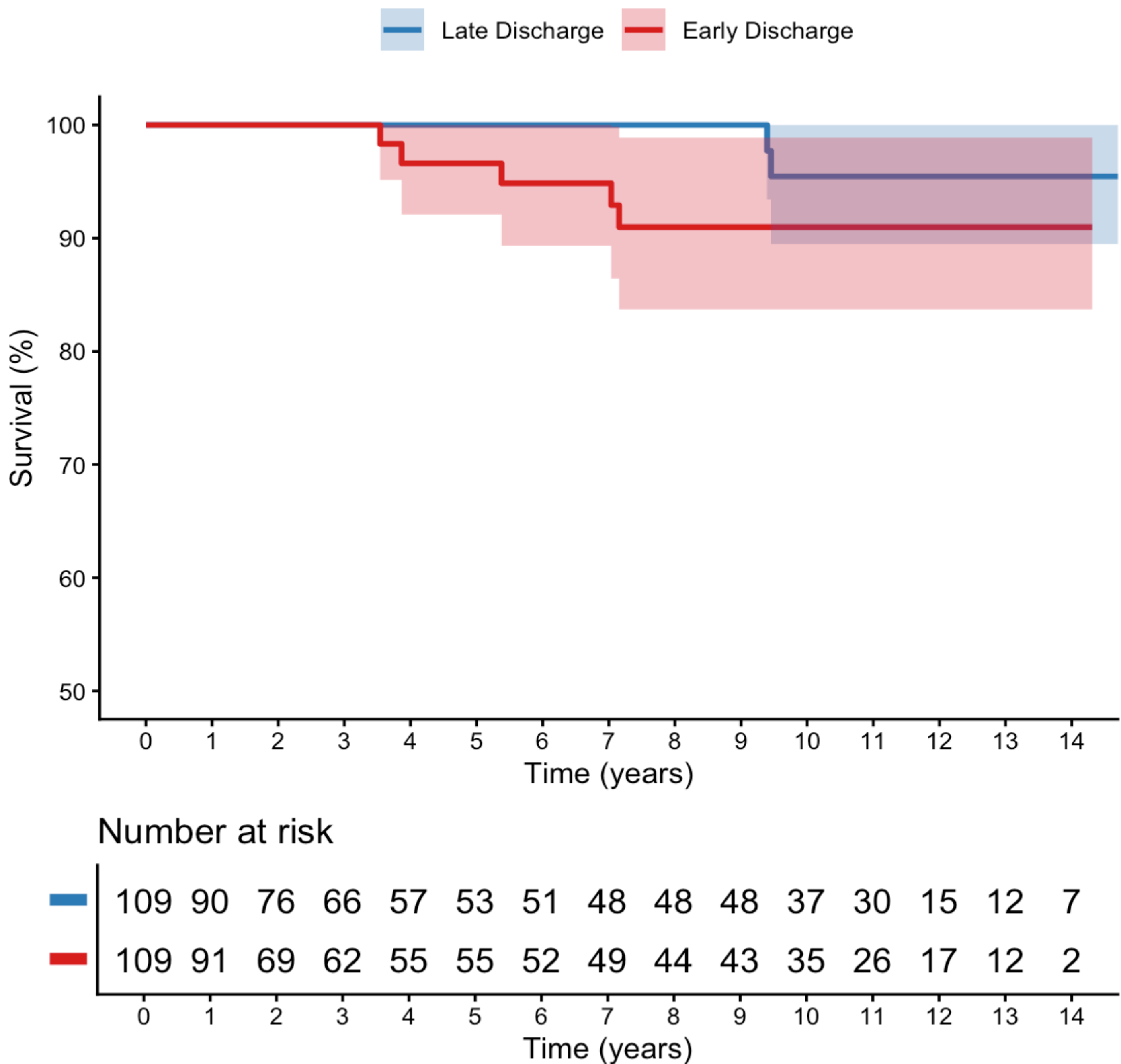


Figure 1. Kaplan-Meier survival curves for early vs. late discharge following isolated MVR

CONCLUSION

Early discharge after MVR did not significantly increase the risk of 30-day or 1-year MACCE, death, cardiac events, or readmission. Future studies should focus on the integration of risk stratification tools within Enhanced Recovery After Surgery (ERAS) protocols to identify and counsel patients who are eligible for safe early discharge after MVR surgery.