Title: The Impact of Early Versus Late Cardiac Surgery on Patients with Native Valve Endocarditis in The United States: An Analysis of The National Inpatient Sample Database

Background:

The core treatment of infective endocarditis (IE) is antimicrobial therapy, and in some cases surgical intervention is needed. However, the optimal timing of surgery remains undefined. Hence, we conducted a population-based analysis, using the National Inpatient Sample (NIS) database, to assess the outcomes of early versus late surgery in patients with native valve IE.

Methods:

We queried the NIS database for all hospitalized patients between 2006 and 2016 with a primary diagnosis of IE who had cardiac valve surgery (CVS). We stratified CVS as early ≤ 7 or late > 7 days of admission. Multivariable logistic regression models were used to assess in-hospital mortality and post-operative complications. Length of stay (LOS) and total hospital cost (HC) were evaluated using multivariable log-normal regression models.

Results:

A total of 13,056 patients (57.6% in the early group and 42.4% in the late group) were included. The in-hospital mortality rate in the early group was 5.0 % compared to 5.4 % in the other group. (Figure1-A & B) Overall median LOS and HC was lower in the early group. (Figure1-C). Also, the early group had lower odds of sepsis and acute kidney injury but higher odds of pericardial effusion and post-operative bleed (Figure1-A & B).

Conclusion:

Our study shows that early CVS for native valve IE associated with significantly lower LOS and HC. But, the in-hospital mortality was similar between both groups. Our findings consistent with current guidelines that advocate for early CVS for IE.
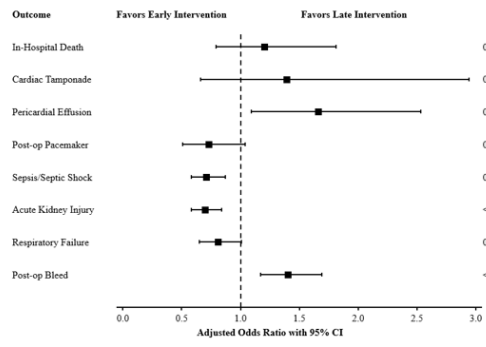
Figure 1-A

Outcome	Favors Early Intervention	Favors Late Intervention	p
In-Hospital Death			0.388
Cardiac Tamponade			0.389
Pericardial Effusion			0.019
Post-op Pacemaker			0.081
Sepsis/Septic Shock			0.001
Acute Kidney Injury			<.001
Respiratory Failure			0.057
Post-op Bleed			<.001

Adjusted Odds Ratio with 95% CI

Figure 1-B

	Total Cohort (N = 13,056)	Early (n = 7,516)	Late (n = 5,539)	p
In-Hospital Death	5.1%	5.0%	5.4%	0.633
Cardiac Tamponade	1.7%	1.7%	1.6%	0.750
Pericardial Effusion	4.4%	5.2%	3.4%	0.031
Post-op Pacemaker	6.2%	5.4%	7.1%	0.079
Sepsis/Septic Shock	24.7%	20.3%	30.7%	<.001
Acute Kidney Injury	31.6%	28.1%	36.3%	<.001
Respiratory Failure	19.6%	17.4%	22.5%	0.001
Post-op Bleed	32.8%	35.7%	28.8%	<.001

Figure 1-C