Outcomes of Transcatheter Aortic Valve Replacement in Patients with Cardiogenic Shock: National Readmission Database Analysis

CRF®
TCT® TRANSCATHETER CARDIOVASCULAR THERAPEUTICS®

Disclosure of Relevant Financial Relationships

I, Junaid Mir DO NOT have any financial relationships to disclose.

Faculty disclosure information can be found on the app.

Nature of Financial Relationship	Ineligible Company
Grant/Research Support	none
Consultant Fees/Honoraria	none
Individual Stock(s)/Stock Options	none
Royalties/Patent Beneficiary	none
Executive Role/Ownership Interest	none
Other Financial Benefit	none

Disclosure of Relevant Financial Relationships

- Within the prior 24 months, I did not have a financial relationship with a company producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients:

Background

Cardiogenic shock (CS) in severe aortic stenosis carries high mortality and presents unique challenges

While TAVR offers a less invasive alternative to SAVR and is widely used in high-risk patients, outcomes in those with CS remain poorly defined despite growing adoption in this population.

Methods

The Nationwide Readmissions Database (NRD) was used to identify patients readmitted with TAVR from the years 2016 to 2022 using ICD-10 codes.

Patients were stratified into two groups based on the presence of CS.

Propensity score matching was performed.

Results

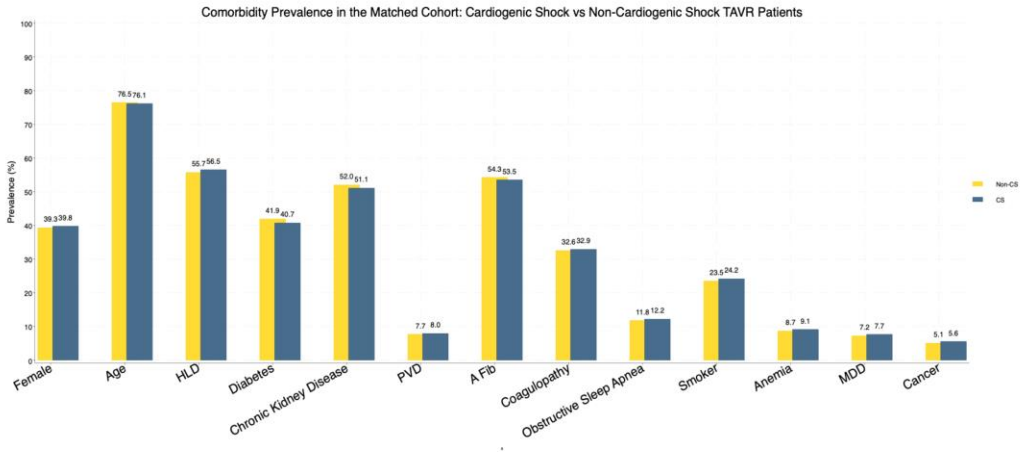
Among 513,824 patients undergoing TAVR, 2.03% (n=10,971) had (CS) during index admission.

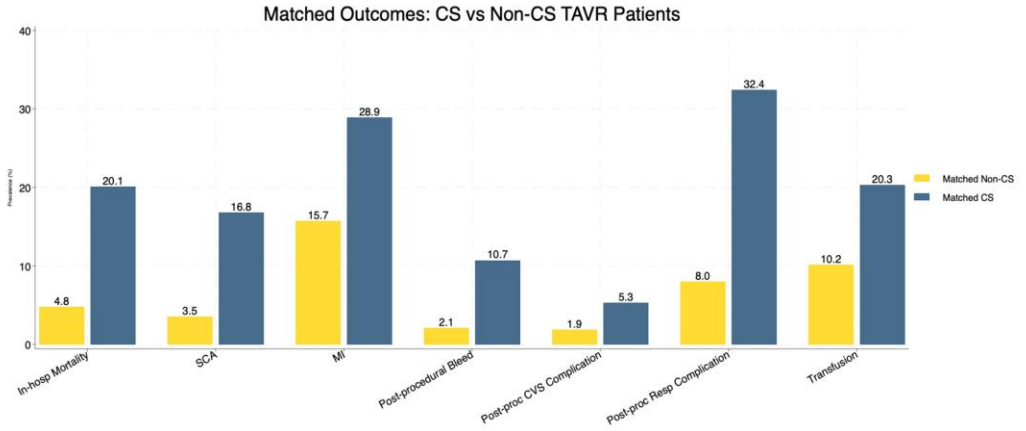
TAVR patients admitted with CS increased from 9.3% in 2016 to 19% in 2022. CS patients were younger and more often male. In a propensity matched analysis, CS patients undergoing TAVR was associated with higher risk of mortality, (20.1% vs 4.80 %), sudden cardiac arrest (16.8 % vs 3.5%) MI, (28.9% vs 15.7%) post-procedural bleed (10.7%vs 2.1%), post-procedure cardiovascular complications (5.3% vs 1.9%), post-procedure respiratory complication (32.4%vs 8%), transfusion (20.36% vs 10.2%),longer stay (13 vs. 2 days), lower routine discharge (24.7% vs. 73.1%), and higher cost ($104K vs. $51K) compared to non-CS patients.

Table. Clinical and In-Hospital Outcomes of TAVR Patients With and Without Cardiogenic Shock (CS)

Variable	TAVR with CS	TAVR without CS	p-value
Total patients (N = 513,824)	10,971 (2.03%)	502,853 (97.97%)	—
Trend over time	Increased from 9.3% (2016) → 19% (2022)	—	—
Age	Younger	Older	<0.001
Sex (male)	More frequent	Less frequent	<0.001
In-hospital mortality	20.1%	4.8%	<0.001
Sudden cardiac arrest	16.8%	3.5%	<0.001
Myocardial infarction	28.9%	15.7%	<0.001
Post-procedural bleeding	10.7%	2.1%	<0.001
Cardiovascular complications	5.3%	1.9%	<0.001
Respiratory complications	32.4%	8.0%	<0.001
Blood transfusion	20.4%	10.2%	<0.001
Length of stay (days)	13	2	<0.001
Routine discharge	24.7%	73.1%	<0.001
Mean hospitalization cost (USD)	$104,000	$51,000	<0.001

*All comparisons between groups were statistically significant ($p < 0.001$) unless otherwise specified.


Comorbidity Prevalence in the Matched Cohort: Cardiogenic Shock vs Non-Cardiogenic Shock TAVR Patients
Prevalence (%)
Non-CS
CS
Female
Age
HLD
Diabetes
Chronic Kidney Disease
PVD
A Fib
Coagulopathy
Obstructive Sleep Apnea
Smoker
Anemia
MDD
Cancer


Matched Outcomes: CS vs Non-CS TAVR Patients
Matched Non-CS
Matched CS
In-hosp Mortality
SCA
MI
Post-procedural Bleed
Post-proc CVS Complication
Post-proc Resp Complication
Transfusion

Conclusion

Cardiogenic shock at the time of TAVR is associated with significantly increased mortality, morbidity, and resource utilization.

Early identification, optimal patient selection, and aggressive management of comorbidities are essential to improve outcomes in this high-risk population.