

BACKGROUND / STUDY OBJECTIVE

- Obesity is a common risk factor in cardiac surgery.
- Minimally invasive aortic valve replacement (mini-AVR) is being increasingly utilised.
- There is limited data on how BMI influences outcomes in mini-AVR.
- Higher BMI has previously been associated with increased perioperative risk and postoperative complications in conventional cardiac surgery.
- This study aims to evaluate the relationship between BMI (<30 vs ≥30) and postoperative outcomes, including incidence of complications, length of postoperative stay and mortality following mini-AVR between 2007 and 2022.

COHORT

- All patients undergoing mini-AVR at a single centre from 2007 to 2022 were retrospectively identified.
- Patients were stratified into 2 cohorts: BMI <30 and BMI ≥30.
- A total of 472 patients underwent mini-AVR. All patients were included in this analysis.
- 317** patients had a BMI <30 and **155** patients had a BMI ≥30.

METHODS

- The primary outcomes were incidence of cumulative postoperative complications, length of post operative stay, in-hospital mortality, and 30-day mortality.
- The secondary outcomes were incidence of pulmonary, renal, gastrointestinal, neurological, infective, and wound-related complications. Incidence of multisystem organ failure, arrhythmias, effusions, and reoperation rates were also compared.
- Categorical data was analysed using Chi-square or Fischer's exact test.
- Length of postoperative stay was assessed via the unpaired t-test.
- Kaplan-Meier survival and log-rank analysis were used.
- All analysis was conducted using Python. Statistical significance set at $p < 0.05$.

Body Mass Index and Outcomes After Minimally Invasive Aortic Valve Replacement: A 15-Year Retrospective Cohort Analysis

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PRIMARY OUTCOMES

Outcome	% Occurred – BMI <30 (n = 317)	% Occurred – BMI ≥30 (n = 155)	Statistical Test / p-value	Conclusion
Postoperative complications	30.59%	29.03%	$p = 0.727$	No significant difference
Mean postoperative stay	9.04 ± 6.63 days	9.16 ± 7.23 days	t(472) = 0.18, $p = 0.861$ 95% CI: -1.43 to 1.20	No significant difference
In-hospital mortality	0.6%	1.9%	$p = 0.337$	No significant difference
Thirty-day mortality	1.26%	3.22%	$p = 0.142$	No significant difference
Cumulative Survival	95.8%	97.7%	Log-rank $p = 0.994$	No significant difference in survival curves

KAPLAN-MEIER SURVIVAL CURVES

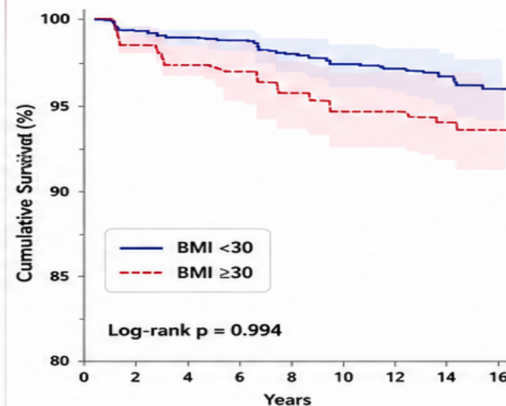


Fig 1. Kaplan-Meier survival curves showing high cumulative survival with no statistically significant difference between BMI <30 and BMI ≥30 groups following mini-AVR.

SECONDARY OUTCOMES

Outcome	% Occurred – BMI <30 (n = 317)	% Occurred – BMI ≥30 (n = 155)	p-value
Pulmonary complications	15.14%	13.54%	$p = 0.645$
Renal complications	1.89%	5.16%	$p = 0.078$
Gastrointestinal complications	0.63%	1.29%	$p = 0.600$
Neurological complications	0.32%	1.94%	$p = 0.104$
Infective complications	3.79%	3.87%	$p = 1.000$
Wound-related complications	1.26%	1.94%	$p = 0.688$
Multisystem organ failure	0.32%	1.29%	$p = 0.252$
Arrhythmias	28.08%	30.97%	$p = 0.515$
Effusions	30.28%	22.58%	$p = 0.079$
Reoperation rates	4.42%	5.16%	$p = 0.816$

CONCLUSION



High BMI (≥30) did not increase the risk of in-hospital or 30-day mortality after mini-AVR.



No significant differences in postoperative complication rates between the BMI groups.



Length of hospital stay was slightly longer in patients with BMI ≥30, though not statistically significant.



High BMI should not be considered a contraindication for mini-AVR.



This study supports safe surgical planning for patients across the BMI categories to undergo mini-AVR.

