Robotic versus Conventional Sternotomy for Redo Mitral Valve Replacement: A Comparative Analysis of Operative Outcomes

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Introduction

Redo mitral valve replacement is a complex procedure with significant morbidity and mortality. While conventional sternotomy has been the standard approach, minimally invasive robotic surgery has emerged as an alternative

Methods

We conducted a retrospective analysis of patients who underwent redo mitral valve replacement. The patients were divided into two groups: conventional sternotomy (**364**) and robotic (**40**),The key outcomes include hospital mortality, stroke, and reoperation for bleeding

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Comparison of Baseline Demographic and Clinical Characteristics between Patients

Variable	Sternotomy (n=364)	Robotic (n=40)	P-value
Age (years)	45	49.5	0.236
Sex (Male)	26.4%	37.5%	0.135
BMI (kg/m²)	27	26	0.650
Diabetes Mellitus	16.5%	28.2%	0.068
Hypertension	15.7%	30.8%	0.017
COPD	6	0	>0.99
Chronic Kidney Disease	12.9%	7.7%	0.450
On Dialysis	3.3%	2.7%	>0.99
Peripheral Arterial Disease	0.3%	2.6%	0.184
Heart Failure	12.4%	12.8%	0.934
Pulmonary Hypertension	55.2%	35.9%	0.022

Results

Hospital Mortality → **P = 0.007**

Reoperation for Bleeding → **P = 0.113**

Stroke → **P = 0.502**

Conclusion

In this risk-adjusted analysis of redo mitral valve replacement, robotic surgery was associated with a significant survival benefit in the immediate postoperative period. The robotic approach also eliminated the need for permanent pacemaker implantation in this cohort. These findings suggest that robotic surgery may offer improved outcomes for select high-risk patients, warranting further large-scale prospective studies