

Robotic Versus Conventional Sternotomy for Primary Mitral Valve Surgery: Operative Outcomes and Survival

Feras Khaliel, M PhD, Alanoud Almuhaysin MD, Ebtisam Alhuwaidar MD, Ahmed Alsulbud MD, Ali Alenazi MD, Mohammed Alamri

MD, Zain Khalpey MD PhD, Shahid Khan MD, Hani Alsergani MD

King Faisal Specialist Hospital & Research Center, Riyadh ,Saudi Arabia



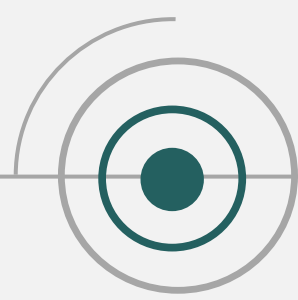
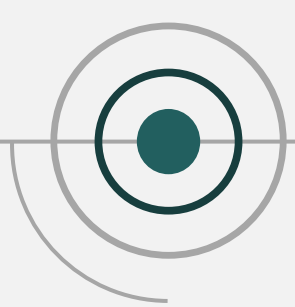
Introduction

Robotic cardiac surgery has emerged as an alternative approach to conventional sternotomy for mitral valve procedures. This study compares the operative outcomes and safety profile of robotic versus sternotomy approaches for primary mitral valve surgery

Methods

We conducted a retrospective comparative analysis of **756** patients undergoing primary mitral valve surgery: **474** patients underwent conventional sternotomy, and **282** patients underwent robotic surgery. Baseline demographics, operative variables, and postoperative outcomes were compared between the two groups

February 2019



December 2024

Comparison of Baseline Demographic and Clinical Characteristics between Patients

Variable	Sternotomy (n=474)	Robotic (n=282)	P-value
Age (years)	49	49	0.770
Sex (Male)	31.2%	34%	0.423
BMI (kg/m²)	28.2	27.3	0.288
Diabetes Mellitus	20.7%	23.1%	0.428
Hypertension	24.3%	31%	0.044
COPD	1.3%	2.8%	0.120
Chronic Kidney Disease	13.1%	8.9%	0.082
On Dialysis	5.3%	2.8%	0.115
Peripheral Arterial Disease	0.6%	0.7%	0.897
Heart Failure	10.1%	8.9%	0.591
Pulmonary Hypertension	46.4%	28.8%	<0.001
Atrial Fibrillation	40.7%	34.9%	0.111
Prior Stroke	8.9%	10.3%	0.507
NYHA			
I	13.8%	2.1%	0.086
II	24.1%	17.5%	
III	60.3%	67.5%	
IV	11.8%	12.9%	

Results

📋 Reduced postoperative support requirements→ **P < 0.001**

🩸 Reduced Blood Transfusion Requirement→ **P < 0.001**

🏥 Shorter Postoperative Hospital Stay→ **P < 0.001**

🔄 Fewer reinterventions → **P < 0.001**

Conclusion

Robotic mitral valve surgery offers significant operative advantages, Both approaches demonstrate comparable safety profiles with similar mortality and major complication rates. However, the robotic approach is superior in terms of hospital and ICU length of stay, shorter mechanical ventilation, red blood transfusion rate, reoperations for valve failure, and permanent pacemaker implantation