

A Retrospective Study -survival And Predictors Of Minimally Invasive Mitral Valve Replacement In Rheumatic Population

AKSHAYA SINGH, KUMARAN MANGALAM, DEEP JAKASANIYA
NARAYANA INSTITUTE OF CARDIAC SCIENCES, BANGALORE, INDIA

BACKGROUND

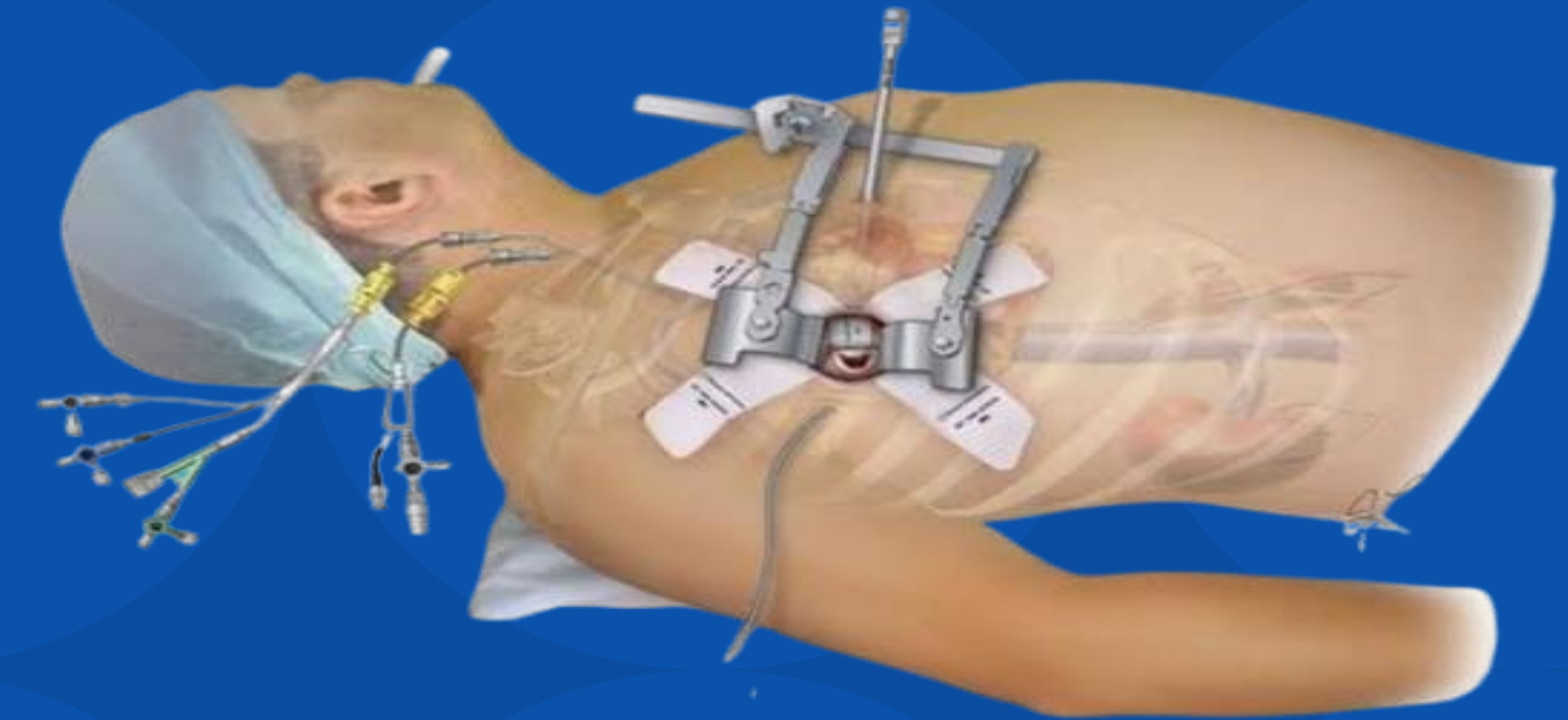
To analyze Immediate (30 day) and Early (9 month) survival patterns following MIMVR in Rheumatic population. To assess the impact of aortic cross-clamp time on 1) Duration of mechanical ventilation (hours). 2) Duration of hospital stay (days). METHODS: This is a retrospective observational study conducted on patients with rheumatic heart disease who underwent minimally invasive mitral valve replacement. Data were extracted from electronic medical records. Kaplan-Meier survival analysis used to evaluate survival patterns, stratified by age, gender, and BMI. Log-rank tests were used to compare survival patterns. Linear regression analysis used to identify predictors of aortic cross-clamp time.

RESULTS

This study analyzed demographic, clinical, and procedural characteristics of 88 patients undergoing surgical intervention. The mean age was 44.2 years (SD: 11.8), Descriptive statistics revealed a mean BMI of 23.4 (SD: 3.88), and the average ICU stay was 3.29 days (SD: 3.13). The mean hospital stay was 11.0 days (SD: 3.51), and the average ventilation duration was 28.6 hours (SD: 63.6). Immediate (30day mortality) is 0% and early mortality(9 month) is 5%. Key predictors of aortic cross-clamp time (mean: 98.2 minutes, SD: 44.7) included ventilation duration (positive), hospital stay (positive), and ejection fraction (negative). A positive association was found between duration of ventilation ; hospital stay and aortic cross clamp time. This suggests that longer periods of ventilation and hospital stay were associated with longer cross-clamp times($p < .05$). Duration of Ventilation (hours) Estimate: 0.1669, $p = 0.02$,Each additional hour of ventilation is associated with a significant increase of 0.1669 minutes in cross-clamp time. Hospital Stay (days): Estimate: 6.2341, $p < 0.001$ Longer hospital stays are strongly associated with increased cross-clamp time, with each additional day adding approximately 6.23 minutes. While the Kaplan-Meier survival analysis suggests some differences in survival patterns between males and females, age group ($<45, \geq 45$), BMI group (underweight, normal, obese, overweight) the log-rank p-value 0.98,0.078,0.16 (all are >0.05) respectively indicates that these differences are not statistically significant.

CONCLUSIONS

Minimally invasive MVR in rheumatic population can be performed safely and effectively with minimal complications. The Immediate and early outcomes in these patients are acceptable. Aortic cross clamp time showed significant impact on hospital stay.



Model Coefficients - Aortic cross clamp time (min)

Predictor	Estimate	SE	95% Confidence Interval		t	p
			Lower	Upper		
Intercept ^a	94.725	65.9441	-37.0950	226.546	1.436	0.156
Age (in Years)	-0.575	0.4188	-1.4123	0.262	-1.374	0.175
BMI	1.411	1.4021	-1.3923	4.213	1.006	0.318
Duration of stay in ICU (days)	-1.135	1.7044	-4.5422	2.272	-0.666	0.508
Duration of ventilation (hours)	0.184	0.0712	0.0416	0.326	2.584	0.012
Hospital stay (days)	4.442	1.7247	0.9945	7.890	2.576	0.012
Duration of surgery (hrs)	0.129	0.2685	-0.4076	0.666	0.481	0.632
Pre-induction MAP (mmHg)	0.583	0.3429	-0.1025	1.268	1.700	0.094
Ejection fraction (%)	-2.339	0.8790	-4.0961	-0.582	-2.661	0.010
Syncope:						
Yes – No	10.569	14.6286	-18.6730	39.811	0.723	0.473
Hypertension:						
Yes – No	-15.600	11.5697	-38.7275	7.527	-1.348	0.182
PAH:						
Yes – No	18.230	10.2740	-2.3070	38.768	1.774	0.081
MR:						
Moderate – Mild	12.964	13.4988	-14.0194	39.948	0.960	0.341
Severe – Mild	11.968	12.0525	-12.1242	36.061	0.993	0.325
Is angina present?:						
Yes – No	11.497	9.5969	-7.6870	30.681	1.198	0.235

^a Represents reference level