

Physician - Valvular Diseases and Surgery

[MSB-29]

Comparative Analysis of Mechanical and Bioprosthetic Valves in Tricuspid Valve Replacement

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Objective: This study aimed to identify whether mechanical or bioprosthetic valves offer better outcomes by analyzing early- and long-term results in tricuspid valve replacement (TVR).

Methods: A retrospective analysis was conducted with 83 patients who underwent TVR between 2014 and 2023. Forty-eight patients (31 females, 17 males; mean age: 55.7±11.65 years) underwent surgery with bioprosthetic valves, while mechanical valves were used in the remaining 35 patients (23 females, 12 males; mean age: 50.7±12.08 years). Demographic, clinical, and surgical data were analyzed. Key outcomes included early and late mortality, reoperation rates, and postoperative complications.

Results: There was no significant difference between the mean ages of the two groups ($p<0.05$). Early and late mortality rates showed no significant differences between the groups. Risk factors for mortality included impaired right ventricular function, combined surgeries, and reoperations for both groups. Comorbidities were more common in the bioprosthetic group. The redo surgery rate was 67%, with higher early mortality compared to primary procedures. While 39% of the cases were combined surgeries, 61% were isolated TVR. The choice of valve type varied over the years, with an increased preference for mechanical valves in patients already on anticoagulation therapy, consistent with guideline recommendations. In the bioprosthetic group, three patients experienced valve degeneration, and two required redo TVR. In the mechanical group, one patient had a stuck valve, and two underwent redo TVR.

Conclusion: This study highlights that both valves have comparable outcomes in TVR. Considering patient-specific risk factors and shared decision-making with the patient are emphasized. Early surgical intervention before right ventricular deterioration may improve long-term results.

Keywords: Replacement, tricuspid, valve.

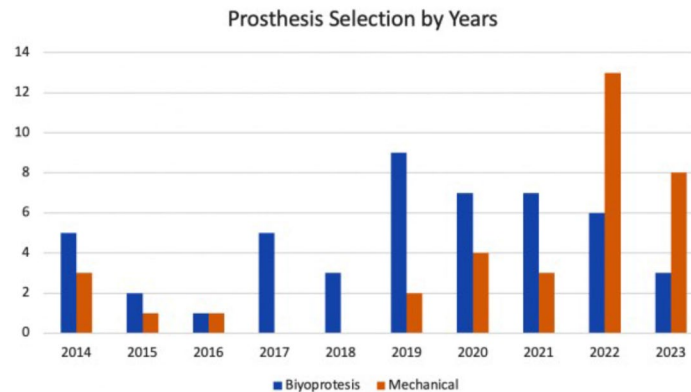


Figure 1. Prosthesis selection by years.

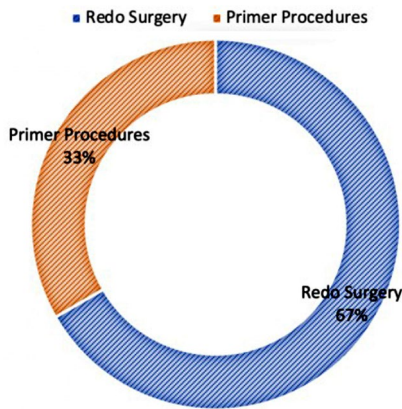


Figure 2. Surgical situation.

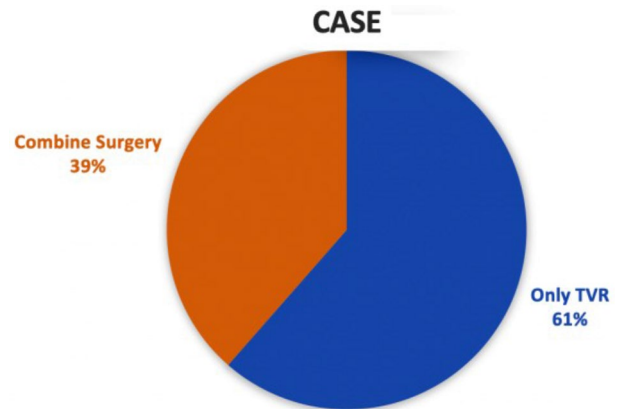


Figure 3. Case type.

Table 1. Demographic data			
	Mechanical (n=35)	Bioprosthesis (n=48)	p
Female n (%)	23 (65.7%)	31 (64.6%)	0.915
Average age (Mean±SD)	50.69±12.08	55.74±11.65	0.047*
HT n (%)	13 (43.3%)	18 (56.3%)	0.309
DM n (%)	13 (43.3%)	11 (34.4%)	0.469
Pulmonary disease n (%)	10 (13.3%)	14 (43.8%)	0.400
CKD n (%)	2 (6.7%)	8 (25%)	0.05
CVE n (%)	4 (13.3%)	4 (12.5%)	0.922
Sinus rhythm n (%)	9 (30%)	7 (21.9%)	0.963
Pace rhythm n (%)	1 (3.1%)	1 (3.1%)	0.963
Previous cardiac surgery n (%)	26 (74.3%)	28 (58.3%)	0.132
EF (Mean±SD)	52.67±8.84	51.72±7.22	0.486
Service stay duration days (min-max)	8.9-2.30	12.2-3.75	0.729
Intensive care hospitalization duration days (min-max)	4.1-1.21	5.9-1.45	0.725

Table 2. Comparison of early mortality according to valve preference				
	Bioprosthesis (n=35)	Mechanical (n=31)	Total (n=66)	p
Ex	5 (14.3%)	3 (9.7%)	8 (12.1%)	0.713
Non-ex	30 (85.7%)	28 (90.3%)	58 (87.9%)	

Table 3. Comparison of late mortality according to valve preference				
	Bioprosthesis (n=30)	Mechanical (n=28)	Total (n=58)	p
Ex	3 (10%)	2 (7.1%)	5 (8.6%)	1
Non-ex	27 (90%)	26 (92.9%)	53 (91.4%)	

References

- Alkhouli M, Berzingi C, Kowatli A, Alqahtani F, Badhwar V. Comparative early outcomes of tricuspid Valve repair versus replacement for secondary tricuspid regurgitation. Open Heart 2018;5:e000878. doi: 10.1136/openhrt-2018-000878.
- Nishimura RA, Otto CM, Bonow RO, Carabello BA, Erwin JP 3rd, Fleisher LA, et al. 2017 AHA/ACC focused update of the 2014 AHA/ACC guideline for the management of patients with valvular heart disease: A report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation 2017;135:e1159-95. doi: 10.1161/CIR.0000000000000503.
- Subbotina I, Girdauskas E, Bernhardt AM, Sinning C, Reichenspurner H, Sill B. Comparison of outcomes of tricuspid valve surgery in patients with reduced and normal right ventricular function. Thorac Cardiovasc Surg 2017;65:617-25. doi: 10.1055/s-0037-1604450.
- Hanedan MO, Çiçekçioğlu F, Aksöyek A, Diken AI, Ünal EU, Parlar AI, et al. Tricuspid valve replacement through right thoracotomy has better outcomes in redo cases. Heart Lung Circ 2017;26:88-93. doi: 10.1016/j.hlc.2016.05.118.