Comparative Analysis of Outcomes Following Aortic Valve Replacement in Children

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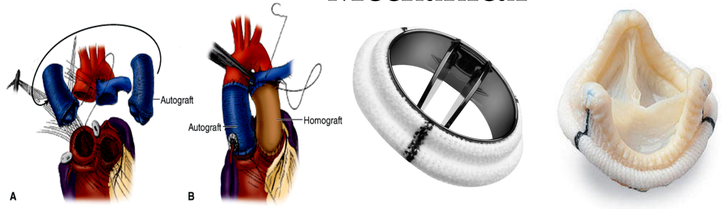
INTRODUCTION

- Aortic valve replacement (AVR) is frequently needed to palliate congenital aortic valve abnormalities. The objective of this study was to compare the long-term, transplant-free survival of children who received 1st AVR <21 years of age between 1991-2010 by technique.
- There are three major techniques used:

Ross | **Mechanical** | **Tissue**



METHODS

- Data was identified on 1, 301 children in the Pediatric Cardiac Care Consortium (PCCC). The final cohort of 1, 068 children were linked to the National Death Index and United Network of Organ Sharing with a sensitivity of 88% and 90% respectively.[1]
- Inclusion Criteria: < 21 years of age, US resident and treatment center, Congenital Heart Disease, 1st AVR after 1991

RESULTS

Table 1: Patient Characteristics

	Total (n= 1068)	Ross (n= 526)	Mech (n= 391)	Bio (n= 53)	Homo-graft (n = 98)
Male n (%)	**763 (71.4)**	366 (70.5)	293 (74.9)	35 (66.0)	69 (65.7)
Age, yrs* Median (IQR)	12.7 (6.9-16.1)	**11.5 (5.8 – 15.8)**	13.7 (9.3-16.8)	14.6 (12.0-16.9)	**9.7 (1.5 – 14.2)**
Hemodynamic Lesion n (%) *					
Stenosis	203 (19.4)	109 (21.0)	64 (17.0)	5 (9.4)	25 (26.3)
Regurgitation	395 (37.7)	**132 (25.4)**	189 (50.3)	28 (52.8)	39 (41.1)
Mixed	449 (42.9)	275 (52.6)	123 (32.7)	20 (37.7)	31 (32.6)

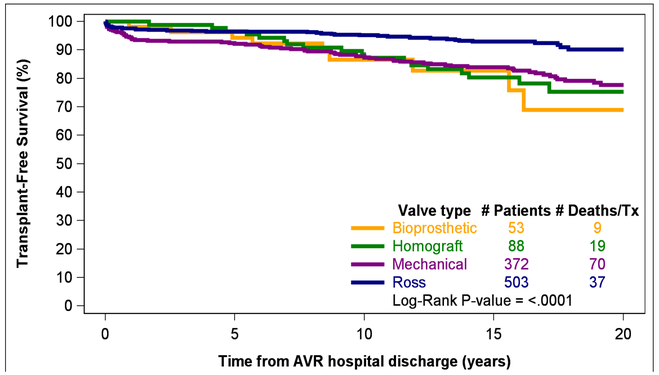
** p <0.0001*

Table 2: Adjusted Hazard Ratio for long term survival

	10 years HR (95% CI)
Ross	ref
Mech	**2.0* (1.1 – 3.7)**
Bio	**4.2* (1.6 – 10.9)**
Homo-graft	**3.9* (1.9 – 8.1)**

*Adjusted for age 1st AVR, sex, era, hemodynamic lesion, genetic syndromes, complex heart anomaly

Figure 1: Long-term Transplant Free Survival



- Long-term transplant free survival for Ross was 92.9%

SUMMARY

- Largest multi-institutional AVR study in patients < 21 years
- Long-term survival outcomes in children undergoing AVR favor the Ross procedure compared to mechanical or tissue AVR.
- Limitations of our study include the nature of registry based data, sensitivity of linkage, lack of re-operative data.

CONCLUSION

- These results support a reconsideration of the valve choice for AVR in children.

REFERENCE/ACKNOWLEDGENTS

- [1]*Spector, et al, 2016, JAHA.*
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