

C1. Durability Of Porcine Bio-roots In Younger Patients With Aortic Root Pathology: A Propensity Matched Comparison With Composite Mechanical Roots

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OBJECTIVES: Porcine roots provide excellent hemodynamics and do not require anticoagulation. However, their durability and freedom from valve-related events are not well established in younger patients. We compare porcine and composite mechanical root replacement in a large series of patients under 60 years old who required full root replacement for true root pathology.

METHODS: Between 1997 and 2008, we performed 986 aortic root replacements including 504 patients under 60 years old. Of these, porcine roots were implanted in 138 patients (38 St. Jude Toronto Root, 98 Medtronic Freestyle, 2 Edwards Prima) and mechanical composite roots in 366 patients. Univariate, logistic and Cox regression, and propensity matching techniques were used.

RESULTS: Porcine root patients were older and sicker. To adjust for baseline differences, propensity matching was performed, yielding 128 matched pairs with similar risk profile. Indications for operation included: complex endocarditis 5.9%, aortic dissection 8.2%, complex removal of old aortic valve prosthesis 4.8%, aneurysmal dilatation 80.1%. Operative (30day) mortality was 3.1% in porcine roots and 1.6% in mechanical roots, $p=0.7$. Overall survival at 8.6 years was 88+/-3%. Root type (porcine root versus mechanical) did not influence early (OR 0.8, 0.2-3.2) or late mortality (HR 1.4 0.5-3.8). Multivariate predictors of late mortality included (HR, 95%CI): age (1.01, 1.00-1.03), chronic renal failure (3.6, 1.1-12.6), and preoperative bacterial endocarditis (3.6, 1.1-11.8). Longitudinal outcomes in the propensity matched groups are outlined in Table 1. Bleeding events were more common among mechanical root patients.

CONCLUSIONS: Porcine roots provide durable outcomes after aortic root replacement in younger patients and limit morbidity associated with anticoagulant related bleeding.

Table 1.

EVENT	PORCINE ROOT (%Freedom±SE)	MECHANICAL ROOT (%Freedom±SE)	P-VALUE (LOG RANK)
Mortality	87±5.5	88±4.2	0.7
Aortic Root Reoperation	87±6.8	91±5.8	0.3
Reoperation for Structural Valve Deterioration	97±3.1	100	0.4
Thromboembolism	94±4.1	92±4.5	0.7
Any Bleeding Event	94±0.4	76±8.9	0.03
Endocarditis	86±6.6	86±7.8	0.8