Functional Performance and Structural Maturation of Decellularized Pericardial Valves in Central Venous Position: An Experimental Study

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PURPOSE

Background: Transcatheter Heterotopic Valve Implantation for Treatment of Severe Tissue Regurgitation

Self-expanding valves in central venous position to reduce venous congestion

METHODS

Experimental Setup

RESULTS I

Valve Function: Acute and Chronic Hemodynamics

RESULTS II

Autopsy: Macroscopy of Caval Valves after 6 Month

RESULTS III

Von Kossa Stain: Calcification

RESULTS IV

Movat Pentachrome Stain: Connective Tissue

RESULTS V

Electron Microscopy (x 600–1000): Reendothelialisation

RESULTS VI

Reendothelialisation & Repopulation of the ECM

CONCLUSIONS

Conclusions

- Decellularized valves (dTV) are feasible for percutaneous valve procedures with excellent short-term function in caval/venous position
- During chronic follow-up, dTV demonstrate superior functional performance compared to GA-TV due to less calcification and a more homogenous interstitial reseding
- Current RT PCR data warrant further exploration regarding the genetic background, the cellular biological mechanisms and the possible regulators of the early degradation of GA-TV and the maturation of dTV