

CRYOPRESERVED AND TISSUE-ENGINEERED XENOGRAFTS: AN ANIMAL EXPERIMENT

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Aim of Study: This study was performed to compare the biological responses of a tissue-engineered xeno-autograft and a cryopreserved acellularized xenograft.

Materials & Methods: The porcine valve leaflets were treated with high salt-SDS preparation to produce acellularized xenografts. Endothelial cells were isolated from the jugular vein of goats. For xeno-autografts, the autologous endothelial cells were seeded onto the acellularized valve leaflets. A tissue-engineered construct and a cryopreserved (-70 °C) acellularized xenograft were implanted as double pulmonary valve leaflet replacements in the same animal in a goat model. After scheduled sacrifice, the implanted leaflets were retrieved and analyzed.

Results & Conclusion: The analysis of the leaflets from the short-term survivors showed that the tissue-engineered constructs contained less fibrins and protein exudates than the plain xenograft. In construct, leaflets obtained from animals surviving 4 and 12 weeks showed similar well organized granulation tissues in the tissue-engineered constructs and the cryopreserved plain xenografts. This animal experiment demonstrates that in the early phase of implantation, the tissue-engineered construct shows a better biological response in terms of anti-thrombogenicity than the plain xenograft, although both of them give similar results in the later reparative phase.

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