Research on acellular dermal matrix, a potential vascular substitute material

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Background: The homologous human vessel grafts are presently in clinical use for vascular surgery. However, these have progressive stenosis caused by an immune response that is not clearly identified. As blood vessel substitutes' importance is increasingly recognized, it is attractive to engineer human tissues for abdominal surgery or organ transplantation.

Methods: We show here that decellularized human dermis can be used for venous reconstruction (animals: 40 rabbits, patch on inferior vena cava [IVC]; 8 pigs, segmental interposed graft to IVC).

Results: Like normal veins, this human dermis formed a stable conduit. Its inner layer was covered with endothelial cells soon, and it maintained patency for a long time *in vivo* after transplantation to animals. When interposed the engineered grafts to the IVC of pigs, it fulfilled the vessel role.

Conclusions: Successful preclinical results suggest that human dermis could be applied to patients suffering from proper vessel substitutes shortage.

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