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Evaluation of Novel Biomaterials for Hemodialysis Vascular Access Graft Patency and Infection Resistance

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Vascular access graft failure and infection are major complications in hemodialysis patients. This experimental study tested new biomaterial-coated grafts designed to resist thrombosis and bacterial colonization in a sheep model over 6 months. The coated grafts demonstrated significantly improved patency rates (90% vs. 65%) and reduced bacterial biofilm formation compared to standard PTFE grafts. Histological analysis revealed decreased inflammatory cell

infiltration. These findings suggest biomaterial innovation may enhance long-term vascular access outcomes

Biography

Sofia Martinez specializes in biomaterials for medical devices with an emphasis on vascular applications. Her interdisciplinary work bridges engineering and nephrology to develop advanced graft materials for dialysis patients.