Docket #: S19-419

Systems, Devices, and Methods to Prevent Auto and Xeno Graft Failure

Coronary artery bypass grafting (CABG) surgery is performed on nearly half a million patients with multivessel or diffuse coronary artery disease each year in the United States. Venous grafts, used in about 95% of patients, occlude and fail, however, at a rate of 50% within 5-10 years after surgery, leading to repeat revascularization procedures, myocardial infarction, or death in 30% of patients within 5 years of graft failure. Guided by advanced computational modeling, researchers at Stanford and Yale have developed a custom constructed, multilayer, patient-specific sheath composed of biocompatible, biodegradable, elastomeric, drug-eluting biomaterials to serve as an external (non-blood contacting) support for prevention of vein graft failure.

State of Development:
There is a prototype with plans for evaluating efficacy in an animal model.

Applications

- Support for vein grafts in clinical applications including:
    - Coronary bypass surgery
    - Peripheral arterial disease
    - Arteriovenous fistula

Advantages

- External Support: the device supports the graft from outside the vessel, preventing maladaptation
- Patient Specific: the device is custom constructed, and made of biodegradable or bioresorbable materials

Patents

- Published Application: WO2021207535
- Published Application: 20230080204

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