Minimally Invasive Vascular Graft System (16074)

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Technology description

Market Opportunities

Heart disease is the leading cause of death in the United States. Heart disease can often lead to heart failure, which affects about 5.7 million people in the United States. When a heart transplant is not an option, which occurs frequently, a left ventricular assist device is used. Left ventricular assist devices are attached via a graft from the device to a major artery. End-to-side anastomosis is the surgical connection of this tubular graft end to the side of a blood vessel that allows for the flow of blood between the graft and the vessel. Currently, the graft is attached via a suture hand sewn by the surgeon. This not only requires a lengthy procedure through large surgical openings in the patient, but also a skilled and experienced surgeon. Complications resulting from this include blood clotting and dead vessel tissue. A clear need for a less invasive, lower risk procedure is present. This technology addresses these issues by eliminating the need for sutures in order to attach the graft to the blood vessel. This may facilitate quicker graft attachment and make minimally invasive options now plausible.

Technology

Left ventricular assist devices are used in order to assist the heart to pump blood through the cardiovascular system. This technology improves upon existing technologies in that it may not require any sutures in order to be implemented. Researchers at the University of Louisville have developed this technology in order to be minimally invasive and easily adaptable. A surgical adhesive adheres the system together. In research, it was demonstrated that the non-suture technology may provide secure attachment withstanding physiological blood pressures and flows with comparable leak rates with the hand sewn suture approach.

Advantages

May allow clinicians to complete LVAD outflow connection using a minimally invasive approach
May reduce risk of blood clots, necrosis and other post-surgery complications.
Potentially could be used in broader applications outside of left ventricle assist device grafts

Institution

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