

A Catheter for Delivery of Stem Cells or Cytokines to the Heart via the Pericardial Space

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Technology description

Market Summary

In the United States, more than 700,000 people experienced heart attacks and over 5 million people experienced heart failure in one year alone. Current treatment options for heart failure include drugs or surgery. Surgical treatments require highly invasive open heart surgery which may lead to a variety of complications. Various types of stem cells are being tested to regenerate or repair damaged hearts, but the poor retention and survival of viable cells has been a major limitation. Using a biomaterial to support these cells has been shown to increase their effectiveness but there has not been a safe, minimally invasive and cost effective way to deliver these materials before now.

Technical Summary

Dr. Rebecca Levit has developed a medical device that would allow the delivery of biomaterial-embedded stem cells or cytokines to the heart without invasive surgery. It is the first catheter designed to deliver biomaterials to the heart via the pericardium. The device facilitates precise localization of the delivered patch in a desired area such as an infarct. Other therapeutics that are effective locally but limited by toxicity due to systemic delivery could also be delivered using this device. This device could be used to treat ischemic heart disease, cardiomyopathy, atrial fibrillation, or other conditions.

Application area

A catheter for the delivery of biocompatible, polymer-embedded stem cells or cytokines to the heart via the pericardium.

Advantages

Minimally invasive procedure that does not require open heart surgery

No risk of embolic stroke; greatly reduces risk of cardiac arrhythmia compared to other delivery techniques

Creates a more advantageous environment for stem cells to survive after delivery to the heart.

Institution

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