Methods For Development Of Hybrid Tissue Engineered Valve With Polyurethane Core

Tech ID: 31703 / UC Case 2018-230-0

BRIEF DESCRIPTION

A hybrid tissue engineered heart valve leaflet including a polyurethane core, such as a polycarbonate-based thermoplastic polyurethane like carbothane. The polyurethane core is enclosed within one or more layer of a patient's cells and collagen. Also disclosed are hybrid tissue engineered heart valves, including a frame; and at least two leaflets attached thereto in a configuration of a heart valve, wherein the leaflets are hybrid tissue engineered heart valve leaflets, and methods of making a hybrid tissue engineered heart valve for deployment in a patient.

Patent application publication no. US20190151509A1

FULL DESCRIPTION

Currently there are two basic types of heart valves (mechanical and bioprosthetic valves). A mechanical heart valve is made from materials that do not include any form of biological tissue. However, patients using mechanical valves need anticoagulation therapy. The current tissue bioprosthetic heart valves have lower durability, functionality and more calcification in short time for patients. Thus, each type of valve has its own disadvantages. It is vital to design and build a novel tissue valve to overcome the above issues.

Disclosed are hybrid tissue engineered heart valves and methods for their development. In one embodiment, the hybrid tissue engineered heart valve comprises leaflets comprising a polyurethane core, made of a polycarbonate-based thermoplastic polyurethane enclosed within layers of a patient's own cells and collagen. Such patient-specific heart valve leaflets provide self-regeneration and lifelong durability.

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SUGGESTED USES

ADVANTAGES

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,792,396	10/06/2020	2018-230

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OTHER INFORMATION

CATEGORIZED AS

- » **Medical**
  - » Devices
  - » Disease: Cardiovascular and Circulatory System

RELATED CASES

2018-230-0

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