

Temporary Percutaneous Blood Circulation Assist Device

Background

During certain medical procedures and traumas, the heart of a patient is unable to maintain adequate blood pressure. Ventricular assist devices or “VAD” are devices that assist in the maintenance of a patient’s cardiac output when the patient’s heart fails to maintain adequate blood pressure. Left ventricular assist device (LVAD) is commonly used to maintain blood pressure during left ventricular cardiac dysfunction. An example of LVAD is the intra-aortic balloon pump (“IABP”) which is used to enhance a patient’s cardiac output. However, IABP cannot maintain constant blood pressure throughout the heart cycle or create blood pressure without left ventricle function. Furthermore, LVADs have to be surgically implanted. Other types of LVAD pumps available on the market include Heartmate, Thoratec, Novacor and Abiomed and axial flow LVAD pumps. However, each device has its own attendant risks. Thus, there is a need for a blood circulation assist device that can be quickly placed within the patient and that can maintain a patient’s cardiac output.

Description of the Technology

The invention relates to an axial flow blood circulation assist device consisting of an inflatable stator housing an impeller with inflatable blades. The device can be collapsed into a compact form for easy insertion and removal from the patient percutaneously. The device can be delivered through a 10 French arterial or venous sheath under fluoroscopy or transthoracic echocardiogram and inflated upon positioning in the desired location. The device also consists of a small pump attached to a long driveshaft that can be inserted to a target location using a guidewire and then inflated. The drive shaft connected to the impeller can be rotated by an external motor. The device can function as a temporary device suitable during emergencies. This device is designed for short-term use of 3-7 days prior to undergoing a medical procedure.

Advantages

- . • Can be placed without surgery
- . • Maintains blood pressure throughout heart cycle
- . • Uses a simple drive and control system
- . • Does not traumatize surrounding tissues.
- . • Device can be used to unload the ventricular chamber completely allowing the chamber to rest during medical procedures

Applications

- . • To maintain cardiac function during cardiac procedures, cardiogenic shock, intractable ventricular arrhythmia such as ventricular fibrillation or tachycardia, and right ventricular failure.
- . • To improve circulation to other parts of the body such as brain during stroke

Patent Status

- . • United States Patent application filed (Application Number: 10/300, 467)

. • Application published on 07/17/2003 (Publication Number: US-2003-0135086-A1)

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Licensing Opportunity

This technology is available for non-exclusive or exclusive license.

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