

Ventricular Venting Catheter for Minimally Invasive Valve, Aortic, and Coronary Bypass Procedures

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Technology description

Market Summary

All open chamber cardiac surgical procedures require the de-airing of the cardiac chamber following the procedure. There are approximately 400,000 cardiac surgical procedures performed in the US each year and that most of these procedures could benefit from a catheter de-airing step. The current technique for de-airing the heart involves monitoring the presence of air bubbles using transesophageal sonography with mechanical manipulation of the organ. Infusion fluid (blood) is vented until no more bubbles are seen by ultrasound. This process can take upwards of 15 minutes extending the on-pump period for the patient.

Technical Summary

The interior surface of the ventricle is not a smooth surface and can readily trap air bubbles after open chamber cardiac procedures. Standard ventricle refilling procedures cannot rapidly or adequately clear these trapped air pockets. This catheter is specifically designed to allow the surgeon to direct the infusion flow during ventricle refilling via a multi-port design with specifically placed infusion and suction ports for removal of dislodged air and particulates. An additional port to measure intra-myocardial pressure to monitor infusion pressures to maintain physiological levels during the de-airing process may also be included in this catheter design.

Application area

Disposable cardiac catheter that facilitates rapid, atraumatic de-airing after open chamber cardiac surgical procedures.

Advantages

Current cardiac de-airing procedures are inefficient and require significant time extension on cardiac bypass pump.

Failure to remove all air from the heart allows air emboli to enter the blood stream creating significant post-surgery complications.

Institution

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