MitraPlug: Transcatheter Mitral Valve Repair

Published date: June 19, 2017

Technology description

Market Summary
Mitral regurgitation secondary to a heart attack is estimated at 400,000 patients annually in the United States and Europe, yet reliable technologies to correct this lesion are currently lacking. Uncorrected mitral regurgitation accelerates congestive heart failure, with most patients eventually becoming nonresponsive to drug therapy. Referral cardiologists often shy away from highly invasive open-heart surgery for their patients. Transcatheter repair therapies provide a viable solution for these patients.

Technical Summary

The MitraPlug consists of a novel catheter-plug system to eliminate mitral regurgitation, and halt the progression of the heart towards congestive failure. Correction of mitral regurgitation using this technology requires a small, two-inch incision between the ribs on the patient?s chest through which a catheter is introduced into the heart via the ventricular apex. An inflatable plug is implanted on one or more of the mitral leaflets by the catheter under 3D echocardiographic guidance. The position and size of the plug are then adjusted until mitral regurgitation is completely eliminated as seen on real-time color Doppler imaging. The catheter is then retracted out of the beating heart and the apical incision is closed. Considering the minimal invasiveness of this procedure, the patient may require only general anesthesia and can leave the hospital within one day of the procedure, similar to coronary stent implantation.

Application area

Repair of mitral valve regurgitation, using a minimally-invasive transcatheter-based technology.

Advantages

Can be delivered using a one-shot transcatheter approach via the apex of the heart.
Miniature adjustable plug mounts directly on the valve leaflets, closing the gap between the leaflets and eliminating leakage.
Designed to be implanted by an interventional cardiologist under echo guidance with a small (< 2?) incision in the chest.

Institution

Emory University

Inventors

Sai Muralidhar Padala
Assistant Professor of Cardiothoracic Surgery
SOM: Surgery: Thoracic
Eric Sarin
Assistant Professor