BACE DEVICE FOR FUNCTIONAL MITRAL REGURGITATION: FIRST IN HUMAN EXPERIENCE

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BACKGROUND

Functional mitral regurgitation (MR) is primarily due to abnormalities of the ventricular muscle in the presence of normal mitral leaflets and a relatively normal sized annulus. Present surgical treatment options address the mitral valve annulus and leaflets, and not the ventricular muscle. We describe our early experience with a new technique of epicardial treatment of MR with a novel, adjustable device that can implanted without cardiopulmonary bypass.

METHODS

Five patients with coronary artery disease and ischemic MR were evaluated. All patients had severe MR (Grades 3 to 4) on trans-thoracic and trans-esophageal echocardiography, impaired LV function and high PA pressures. They underwent implantation of a custom made BACE (Basal Annuloplasty of the Cardia Externally) device, along with CABG. The device was placed at the base of the heart, overlapping the atrial and ventricular surfaces of the atrio-ventricular groove circumferentially. All procedures were performed on a beating heart, two of which were off-pump. Intra-operative trans-esophageal echocardiography allowed customized and remote inflation of specific chambers to selectively deform the annulus and sub-annular myocardium.

RESULTS

There were no peri-operative deaths. The degree of MR improved from a mean of 3.14 to 0.9, with an across the board reduction of > 2 grades of MR in every patient. There was also reduction in the mean diameter of the mitral annulus of 0.54 cm. The improvement in MR was sustained over the 3-month follow-up period.

CONCLUSIONS

Mitral valve regurgitation can be effectively improved by epicardial deployment and adjustment of the BACE device. This technique has significant implications in the treatment of functional MR without entering the heart. There is also a unique ability to remotely adjust this device in fine-tuning MR.