



ACC.14

TCT@ACC-12 | innovation in intervention

A1030

JACC April 1, 2014

Volume 63, Issue 12



Non Invasive Imaging

IMPACT OF DEVICE LANDING ZONE CALCIFICATION ON PARAVALVULAR AORTIC REGURGITATION AFTER TRANSCATHETER AORTIC VALVE REPLACEMENT: A REAL-TIME THREE-DIMENSIONAL TRANSESOPHAGEAL ECHOCARDIOGRAPHY STUDY

Poster Contributions

Hall C

Saturday, March 29, 2014, 10:00 a.m.-10:45 a.m.

Session Title: Non Invasive Imaging: Advances in Aortic Valve Disease

Abstract Category: 15. Non Invasive Imaging: Echo

Presentation Number: 1102-41

Authors: *Hirotsugu Mihara, Kentaro Shibayama, Kenji Harada, Javier Berdejo, Yuji Itabashi, Robert Siegel, Hasan Jilaihawi, Raj Makkar, Takahiro Shiota, Cedars-Sinai Heart Institute, Los Angeles, CA, USA*

Background: The determinants of paravalvular aortic regurgitation (PAR) after transcatheter aortic valve replacement (TAVR) remain unclear. The purpose of this study was to investigate the impact of aortic valve calcification on PAR after TAVR using real-time three-dimensional transesophageal echocardiography (RT3D-TEE).

Methods: A total of 227 consecutive patients were evaluated who underwent TAVR using the Edwards SAPIEN and intraoperative RT3D-TEE. We assessed the severity of aortic valve calcification (AVC) on a visual scale from 0 to 3 at aortic annulus, leaflet near nadir, and commissure. In addition we assessed the shape of calcification by measuring a radial and circumferential distance of annular calcification and by focusing calcification protruding into left ventricular outflow tract (LVOT) from annular level. The severity of PAR was determined by the sum of cross-sectional area of vena contracta from 2D and 3D color Doppler TEE data. Significant PAR was defined as at least moderate degree.

Results: After excluding 25 patients (11%) with inadequate image quality of 3D data for analysis, we could evaluate AVC in 202 patients. Significant PAR was occurred in 37 patients (18%). As assessed by receiver operating characteristic analysis, a radial and circumferential distance of the annular calcification at a best cutoff value of 3.0 mm and 8.0 mm yielded a sensitivity and specificity of 93 % and 78 %, 88 % and 70 % to estimate significant PAR, respectively. On multivariate analysis, annular calcification of a radial distance of ≥ 3.0 mm, of a circumferential distance of ≥ 8.0 mm, and calcification protruding into LVOT, were independent predictors of significant PAR while AVC scale at three levels was not. The Bland-Altman analysis of AVC scale revealed non-significant bias in intra- (0.1 ± 0.5) and inter-observer (0.2 ± 0.8) measurements. Intraclass correlation coefficient of the calcification distance was 0.89 for intra-, and 0.91 for inter-observer variability.

Conclusion: Assessment of AVC by RT3D-TEE is feasible and has a good predictive value in patients with TAVR. Significant PAR after TAVR is associated with the shape of calcification at aortic annulus and LVOT, not with the severity.