Closure of a Left Ventricular Pseudoaneurysm with a VSD Occluder Device after Transapical Transcatheter Aortic Valve Implantation

Voskanian S, Kar S, Conte A, Lubin L
1Cedars Sinai Medical Center, Los Angeles, CA, USA; 2Cedars Sinai, Los Angeles, CA, USA

Introduction: A left ventricular pseudoaneurysm forms when cardiac rupture is contained by adherent pericardium or scar tissue. We report a case of a transcatheter, transseptal closure of a left ventricular (LV) pseudoaneurysm using the Amplatzer VSD Muscular Occluder device.

Case Report: The patient is an 81yr old female with history of severe aortic stenosis that underwent a valve-in-a valve, transapical, transcatheter aortic valve implantation (TAVI) and was found to have an 11mm x 10mm pseudoaneurysm at the access site. The patient's medical history is significant for CABG/AVR. Due to multiple comorbidities and the risks associated with a redo sternotomy, a surgical approach was deferred for a percutaneous approach in the cardiac catheterization laboratory with a device closure. Following an uneventful induction of anesthesia and invasive catheter insertion, TEE exam demonstrated an LV pseudoaneurysm. The right femoral vein was accessed and using both 2D and 3D TEE as a guide as well as fluoroscopy, a transseptal puncture was successfully performed at the mid-portion of the posterior aspect of the intra-atrial septum. Following the puncture, the sheath was advanced to the left atrium and further to the left ventricle. A ventriculogram was performed which demonstrated the pseudoaneurysm. The VSD muscular occluder device was advanced into the neck of the pseudoaneurysm and with the guidance of TEE and fluoroscopy, the device was successfully deployed with a remarkable reduction of the contrast through the pseudoaneurysm (See Figure). The ventriculogram and TEE showed stable position of the device. The patient tolerated the procedure well and was extubated in the cardiac catheterization laboratory without complications and discharged 2 days later.

Discussion: A transapical approach to TAVI is considered an alternative to conventional aortic valve replacement. One of the potential complications of the transapical technique is the occurrence of LV pseudoaneurysm. While the number of reported cases in the literature is low; the rate of appearance has been cited as approximately 1% to 6.6%. The majority of cases were treated surgically with a standard sternotomy approach while others were treated conservatively with equally good results. To our knowledge, this is the first case reported utilizing a VSD occluder device as a means of closing the pseudoaneurysm. This case demonstrates the utility of 2D and 3D TEE in guiding the device closure and accurately confirming proper positioning of the closure device. While the definitive treatment for left ventricular pseudoaneurysms is not well documented, using a closure device appears to be an appropriate alternative to an open surgical approach.