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Percutaneous closure of left ventricular pseudoaneurysm in guidance of multimodality imaging

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57 year old woman who had a prosthetic mitral valve presented with recurrent transient ischemic attack and stroke. She had a prosthetic valve thrombosis 4 years ago which was treated with thrombolytic therapy. 2 years after this valve thrombosis, she had suffered from obstructed mechanical mitral valve which was due to pannus formation this time. She was undergone redo-mitral valve replacement surgery. St jude 27 mm bileaflet mechanical valve was implanted in mitral position. Post-operative follow-up was eneventful till 1.5 year after surgery. At that time she had an ischemic stroke while INR levels were in optimal range (INR:3.5). No source of embolism was found at that time and aspirin was added to warfarin therapy. However, 3 months later, she had a second stroke attack despite of dual therapy with warfarin and aspirin. The patient was admitted to our hospital at this stage to be investigated for source of embolism. Transthoracic echocardiography (TTE) showed functional prosthetic mitral valve (gradient 12/4 mmhg PHT:80msec). However, there was a big pouch on posterolateral segment of left ventricle which was consistent with a left ventricular (LV) pseudoaneurysm. Percutaneous closure of this pseudoaneurysm was decided by the heart team due to high surgical risk. The anatomy of this LV pseudoaneurysm was evaluated by transoesophageal echocardiography (TEE) and cardiac computed tomography (CT). Cardiac CT imaging revealed a big and lobulated LV pseudoaneurysm which was possibly occurred due to rupture of posterior atrioventricular groove during surgical mitral valve replacement. The orifice diameter of this sac was measured by multiplaner reconstruction and was determined as 16mm. Percutaneous implantation of 18 mm Amplatzer Septal Occluder was successful. Early postoperative CT and TEE showed well positioned device and diminished opacification of the pouch which indicates a minor residual filling. On follow-up, we expect this pouch to be thrombosed after fully obstruction of the orifice with further device endothelization. This case demonstrates a rare mechanical complication of mitral valve surgery, which was successfully treated with percutaneous techniques in guidance of multimodality imaging.
A: TTE image of LV pseudoaneurysm  
B and C: Preprocedural CT images showing the orifice  
D: Postprocedural CT image showing the well positioned occluder device