

Aortic Valve Implantation

Supported by syngo DynaCT Cardiac

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Patient history

81-year-old female patient with high grade aortic stenosis and increased operative risk.

Diagnosis

The patient suffers from aortic valve stenosis, pulmonary hypertension and respiratory dysfunction. In addition she had arterial hypertension, chronic atrial fibrillation and diabetes mellitus.

Treatment

Under general anesthesia, a right femoral arterial sheath and a right femoral venous guidewire were inserted. A pigtail catheter was then advanced through the femoral sheath to the aortic root. Left anterolateral mini-thoracotomy was performed opening the pericardium at the apex of the left ventricle. An epicardial pacemaker lead was then introduced, secured by apical purse-string sutures.

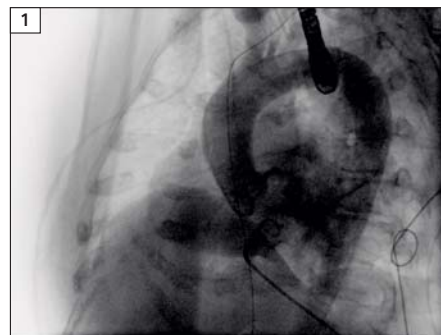
syngo DynaCT Cardiac images were acquired under rapid biventricular pacing; 3:1 contrast dilution was injected into the aortic root. Guided by the calculations of the 3D volume, the C-arm was placed in an orthogonal position

and the segmented image was overlain onto the fluoroscopic image. An ante-grade approach was used to negotiate a soft guidewire across the stenotic aortic valve. A 14 F sheath was then advanced into the ascending aorta. A super-stiff guidewire was also advanced into the descending aorta.

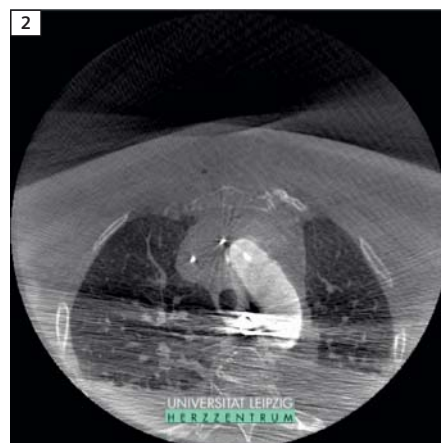
During a brief episode of rapid ventricular pacing, a 20 mm balloon was inflated to dilate the high grade aortic stenosis. The balloon catheter was exchanged for a 26 mm sheath, which was advanced to position the aortic valve bioprosthesis. Positioning was confirmed by angiography and syngo DynaCT Cardiac. An Edwards SAPIEN aortic valve bioprosthesis was successfully deployed during a second episode of rapid pacing. Intra-operative transesophageal echocardiography and angiography revealed no relevant aortic insufficiency. The successful transcatheter valve replacement procedure was performed without open-heart surgery.

Contact

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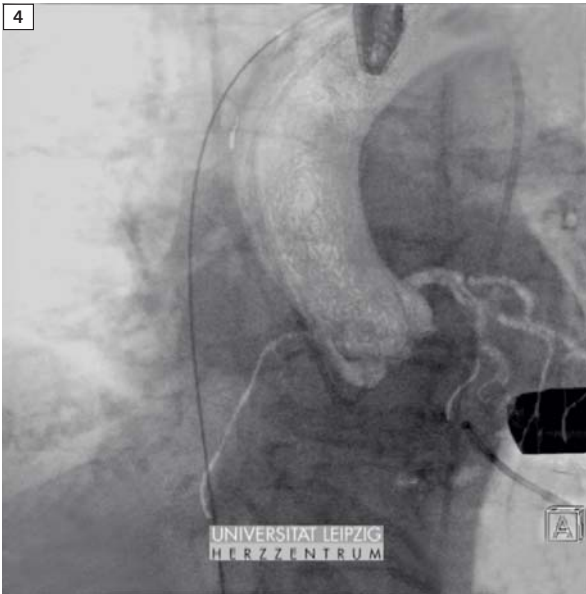
1 Rotational angiographic scan with syngo DynaCT. 20 cc contrast media (diluted with sodium chloride 1:3) injected via pigtail catheter into the aortic root, followed by a 5 sec run under rapid ventricular pacing.



2 Single slices of a syngo DynaCT 3D reconstruction (axial MPRs).



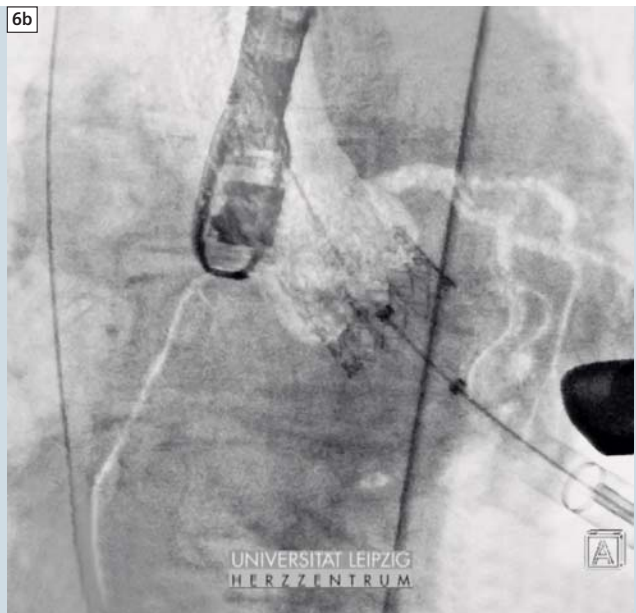
3 Interactive segmentation of the aortic root and coronary ostia in 3D syngo DynaCT volume.



4 Selection of optimal C-arm angulation for procedure by using three-dimensional image information. *syngo* iPilot is used for overlay of live fluoro image with *syngo* DynaCT 3D volume.



5 Balloon dilatation for aortic valvuloplasty supported by *syngo* iPilot superimposition.



6 (a + b) Aortic valve deployment is performed and was supported by *syngo* iPilot overlay.