Computed tomography angiographic demonstration of a ventricular septal defect

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A young Marfan patient underwent composite valve graft aortic root replacement for acute type A dissection. The chronic aortic dissection followed serially using multi-detector computed tomographic angiography. A small muscular ventricular septal defect with left-to-right flow was incidentally noted, and demonstrated using four-dimensional reconstruction techniques (TeraRecon, San Mateo, CA) (Fig. 1).

Fig. 1. Post-processing ECG-gated chest CTA was performed on a 16 channel multidetector, multi row scanner (General Electric Medical Systems Lightspeed Pro 16 Medical, Milwaukee, WI). (A) Axial 2D image at the mid-ventricular level demonstrates a contrast enhanced muscular ventricular septal defect (closed arrow). Dissection flap with a large fenestration in the distal descending thoracic aorta is also evident (open arrow). (B) 3D dynamic time resolved volume rendered image reconstructed at the mid diastolic phase of the cardiac cycle (4D imaging) clearly demonstrates a flow jet across the muscular VSD (closed arrow). The polyester grafts used to replace the ascending aorta and the arch with elephant trunk technique (blue arrows). (C) 3D dynamic time resolved volume rendered image reconstructed at the mid-systolic phase of the cardiac cycle demonstrates contraction of the ventricular cavity and physiologic closure of the muscular VSD (closed arrow). Dissection flap in the distal descending thoracic aorta is also denoted (blue arrow).