

Using Photon-Counting CT to Determine In-Stent Restenosis

Images/courtesy Semmelweis University, Budapest, Hungary

The high level of spatial resolution in a diagnostic cardiac computed tomography angiography (CCTA) scan conducted using photon-counting CT can help clinicians determine whether a patient with cardiac disease also requires an invasive coronary angiography procedure. In this case, a 5'6", 180 lb male patient with coronary artery disease was scanned on a photon-counting CT scanner (the NAEOTOM Alpha, Siemens Healthineers) for follow-up care after stenting and evaluation for in-stent restenosis. The CT scan, which used a sequential Quantum HD Cardiac CCTA acquisition and was reconstructed in the Best Diastolic phase utilizing a 1024x1024 matrix, was performed at 140 kVp with an estimated patient radiation dose of 4 mSv. The scan revealed not only multiple areas of in-stent restenosis (Figures 1-2), but also soft and hard plaque in non-stented areas (Figures 1-3). ■



Figure 1. Left anterior descending artery (LAD) curved planar reformat (CPR).

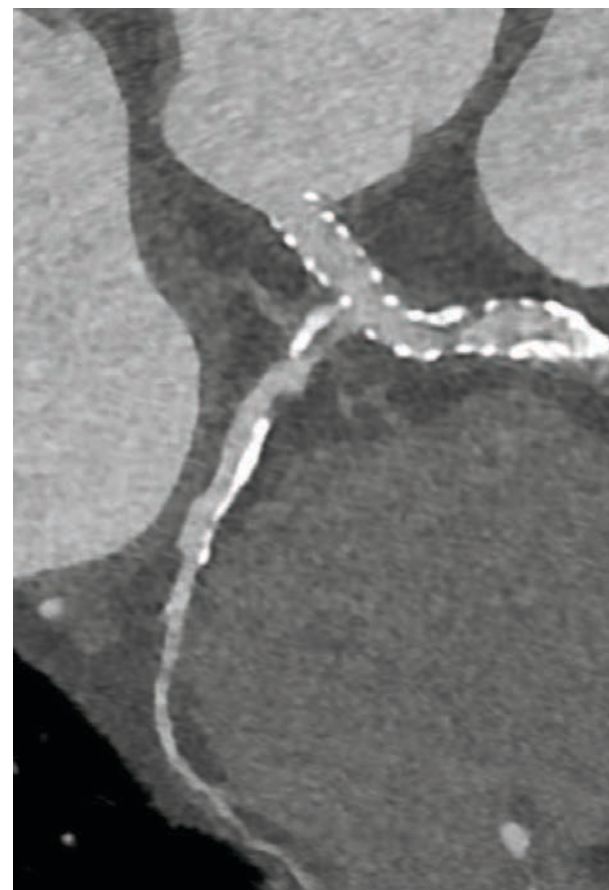


Figure 2. Circumflex artery (Cx) CPR with portion of LAD.



Figure 3. Right coronary artery (RCA) CPR.

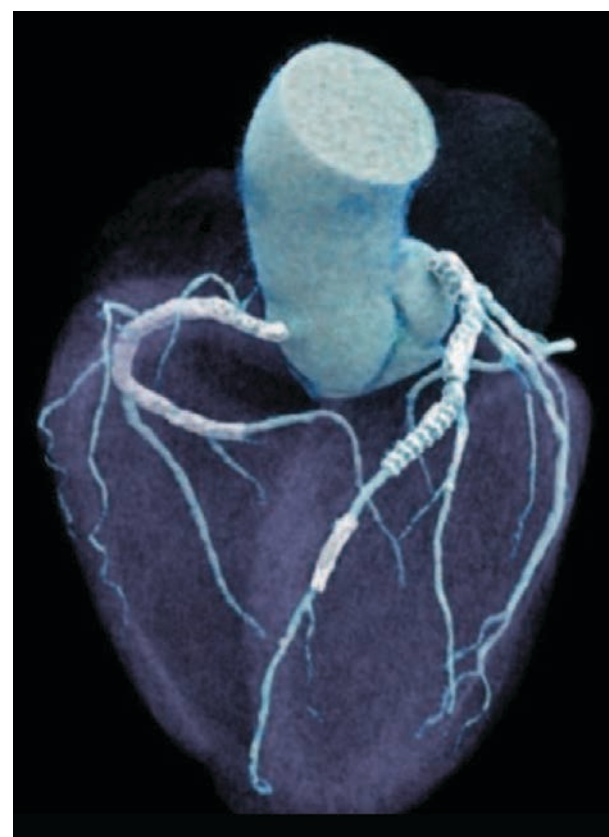


Figure 4. Cinematic-rendered cardiac image visualizing multiple stents.

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