

Case 1

Coronary CTA with Flash Spiral Scanning in 300 msec Scan Time

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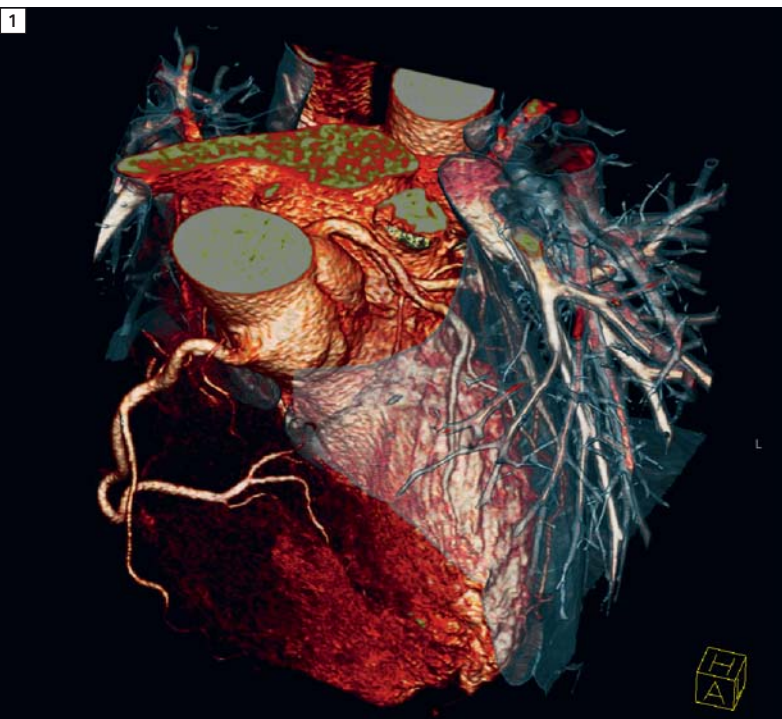
HISTORY

A 58-year-old male patient with atypical chest pain and a family history of premature coronary artery disease was referred to the cardiology department to rule out coronary artery disease. Coronary CT-Angiography (CTA) was performed with a Dual Source CT in low dose technique using prospective

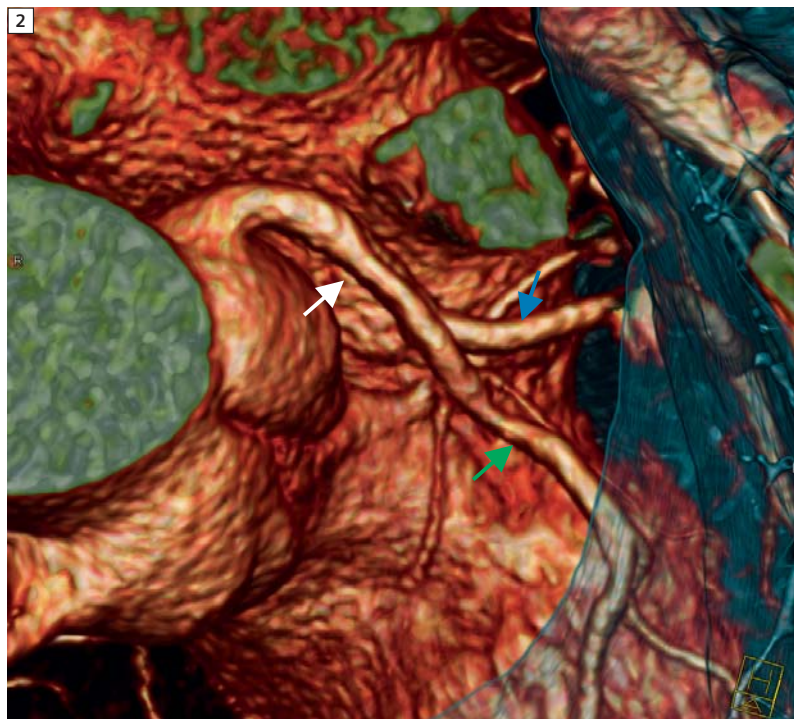
triggering in combination with Flash Spiral Cardio. This new heartbeat-controlled scan mode allows ultrafast spiral acquisition as a direct result of having 2 X-ray tubes, simultaneously collecting information. The entire scan was acquired in just 300 ms.

DIAGNOSIS

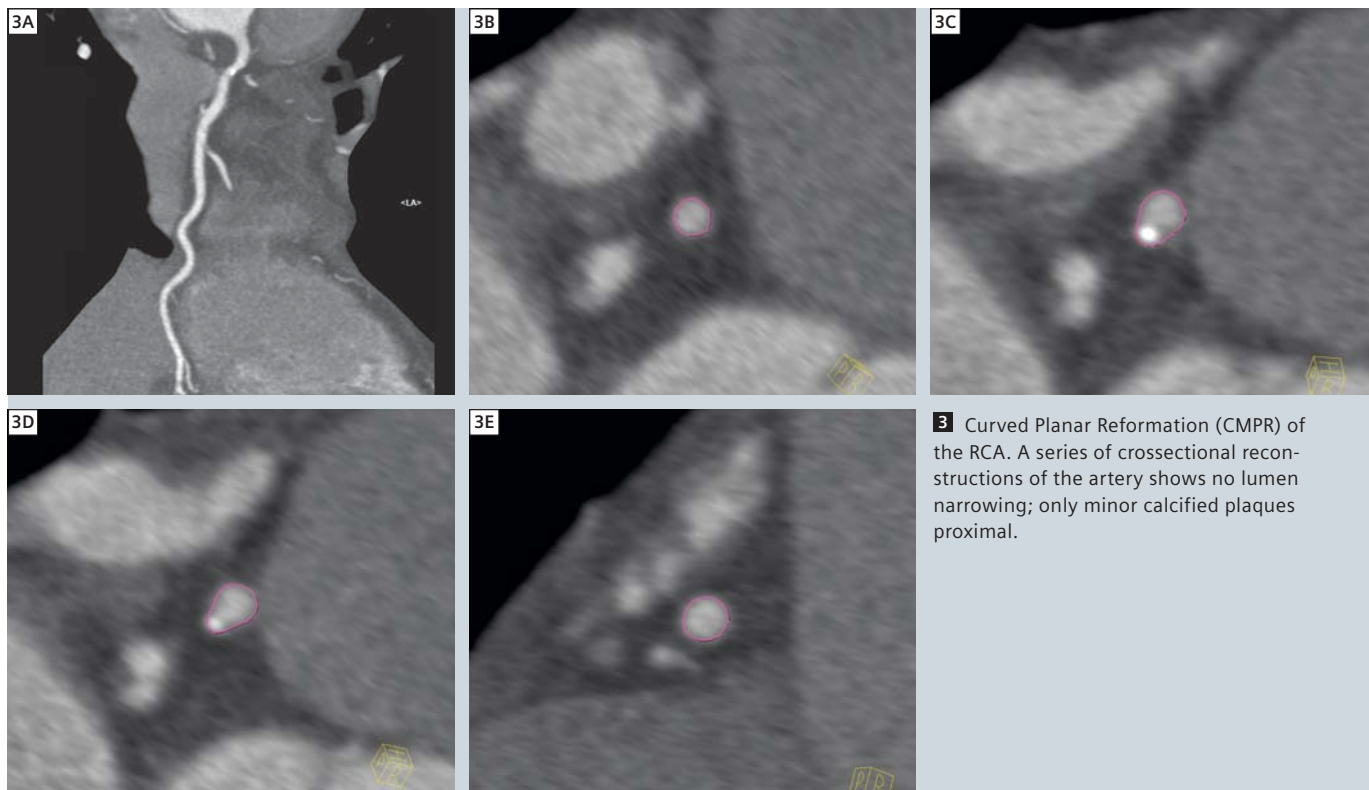
After determination of the contrast transit time using a test bolus approach, coronary CTA was performed in cranio-caudal direction after injecting 60 ml iodine contrast agent followed by a 50 ml saline chaser, both at 6 ml/s. The mean heart rate of the patient was 52 beats per minute, which allowed



1 Volume Rendered Image of the heart shows artifact free course of the right coronary artery (RCA) including side branches.



2 Zoomed VRT of left main coronary artery (LM, white arrow) including left circumflex (LCX, blue arrow) and left artery descending (LAD, green arrow).



3 Curved Planar Reformation (CMPR) of the RCA. A series of cross-sectional reconstructions of the artery shows no lumen narrowing; only minor calcified plaques proximal.

COMMENTS

for a particularly sharp visualization of the coronary tree. Tube voltage was set at 100 kV, with a tube current of 280 mAs, which resulted in a very low dose of 0.9 mSv. Coronary vessels were visualized free of artifacts. The left anterior descending coronary artery (LAD) and the right coronary artery (RCA) showed minor calcified and non-calcified plaques without lumen narrowing. The left main coronary artery (LM) and left circumflex coronary artery (LCX) did not show any abnormalities.

Scanning with Flash Spiral Cardio allowed accurate and artifact-free visualization of the coronary arteries in one ultrafast acquisition of 0.3 seconds. The Flash Spiral Cardio scan mode combined with the simultaneously working two X-ray tubes results in significantly faster scan time, reducing the applied dose to the patient.

The RCA and LAD revealed minor calcified plaques and non-calcified plaques without vessel stenosis. No further diagnostic method was needed to determine an adequate diagnosis for the patient. The new scan mode allows to rule out coronary stenosis at an extremely low dose, making further diagnostic assessment unnecessary.

EXAMINATION PROTOCOL

Scanner		Flash Spiral mode	
Scan area	heart	Spatial resolution	0.33 mm
Scan length	138 mm	Slice width	0.6 mm
Scan time	300 ms	Reconstruction increment	0.5 mm
Scan direction	cranio-caudal	Reconstruction kernel	B26f
Heart rate	52 bpm	Contrast	
Tube voltage	100 kV	Volume	60 ml
Tube current	280 mAs/rot.	Flow rate	6 ml/s
Dose	0.9 mSv	Start delay	26 s