

Low Dose Coronary CTA Reveals High-grade Stenosis

SOMATOM Definition Dual Source Scanning

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HISTORY

A 38-year-old female patient with a history of ex-nicotine abuse, arterial hypertension, and family history of premature coronary artery disease, hyperlipidemia, and apoplectic stroke was referred to the Cardiology Department with atypical chest pain to rule out coronary artery disease.

Coronary CT-Angiography (CTA) was performed with a SOMATOM Definition Dual Source CT in low dose technique using prospective triggering (Adaptive Cardio Sequence), with a temporal resolution of 83 ms and spatial resolution of 0.33 mm.

DIAGNOSIS

After determination of the contrast transit time using a test bolus approach, coronary CT – Angiography was performed in cranio-caudal direction injecting 95ml of iodine contrast agent followed by a 50ml saline chaser, both at 6ml/s. Due to the relatively low heart rate of 50 bpm, a sequential scan was chosen. Tube voltage was set at 100 kV, with a tube current of 215 mAs, which resulted in a very low dose (1.6 mSv). Total scan time was 8 seconds.

Coronary vessels were visualized free of artifacts. The left circumflex coronary artery (LCX) revealed a highgrade stenosis.

The left anterior descending coronary artery (LAD) and the right coronary artery (RCA) showed no relevant plaques or stenosis.

COMMENTS

SOMATOM Definition Dual Source CT allowed accurate and artifact-free visualization of LM, LAD and RCA without showing any stenosis or plaques, while a high grade stenosis was demonstrated in the left circumflex coronary artery, at a total dose of 1.6 mSv.

The patient was referred to the angiography suite for revascularisation of the circumflex artery by percutaneous coronary intervention (PCI).

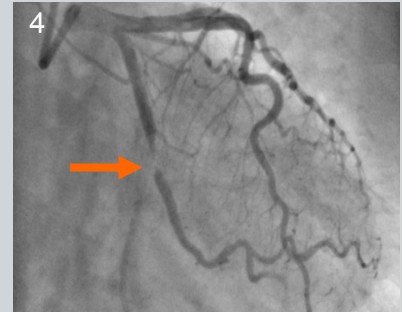
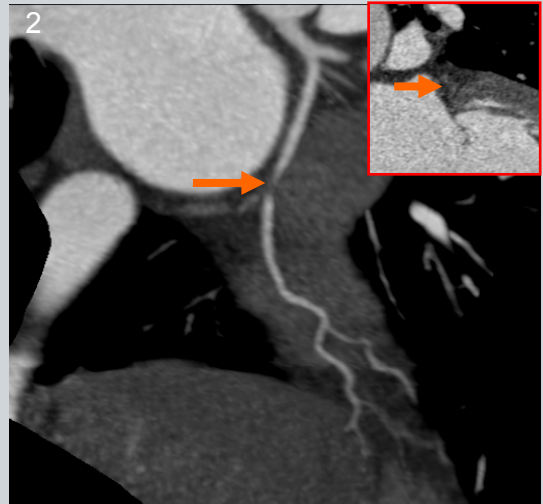
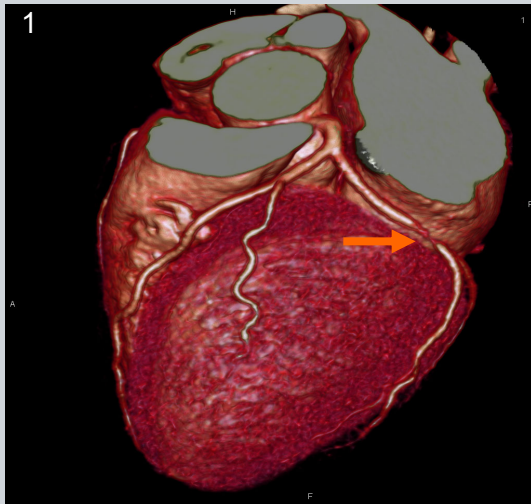


Fig1: Volume rendered image (VRT) of the heart.
 Fig2: Multiplanar reformation (MPR) of left circumflex artery (LCX);crosssectional view of LCX
 Fig3: Angio view produced with syngo Circulation
 Fig4; 5: Conventional Angiography prior (4.) and after PCI (5.)

EXAMINATION SEQUENCE PROTOCOL

<i>Scanner</i>	<i>SOMATOM Definition</i>
<i>Scan area</i>	<i>Heart</i>
<i>Scan length</i>	<i>104mm</i>
<i>Scan direction</i>	<i>Cranio - Caudal</i>
<i>Scan time</i>	<i>8s</i>
<i>Heart rate</i>	<i>50bpm</i>
<i>kV</i>	<i>100kV</i>
<i>mAs</i>	<i>215mAs</i>
<i>Dose</i>	<i>1.6mSv</i>
<i>Rotation time</i>	<i>0.33s</i>
<i>Slice collimation</i>	<i>0.6mm</i>
<i>Reconstructed slice thickness</i>	<i>0.75mm; 0.6 mm</i>
<i>Increment</i>	<i>0.3</i>
<i>Kernel</i>	<i>B30f</i>

The information presented in this case study is for illustration only and is not intended to be relied upon by the reader for instruction as to the practice of medicine. Any health care practitioner reading this information is reminded that they must use their own learning, training and expertise in dealing with their individual patients. This material does not substitute for that duty and is not intended by Siemens Medical Systems to be used for any purpose in that regard.

The drugs and doses mentioned herein are consistent with the approval labelling for uses and/or indications of the drug. The treating physician bears the sole responsibility for the diagnosis and treatment of patients, including drugs and doses prescribed in connection with such use. The Operating Instructions must always be strictly followed when operating the CT System. The source for the technical data is the corresponding data sheets. Results may vary.