

Coronary CTA Using Dual Source CT

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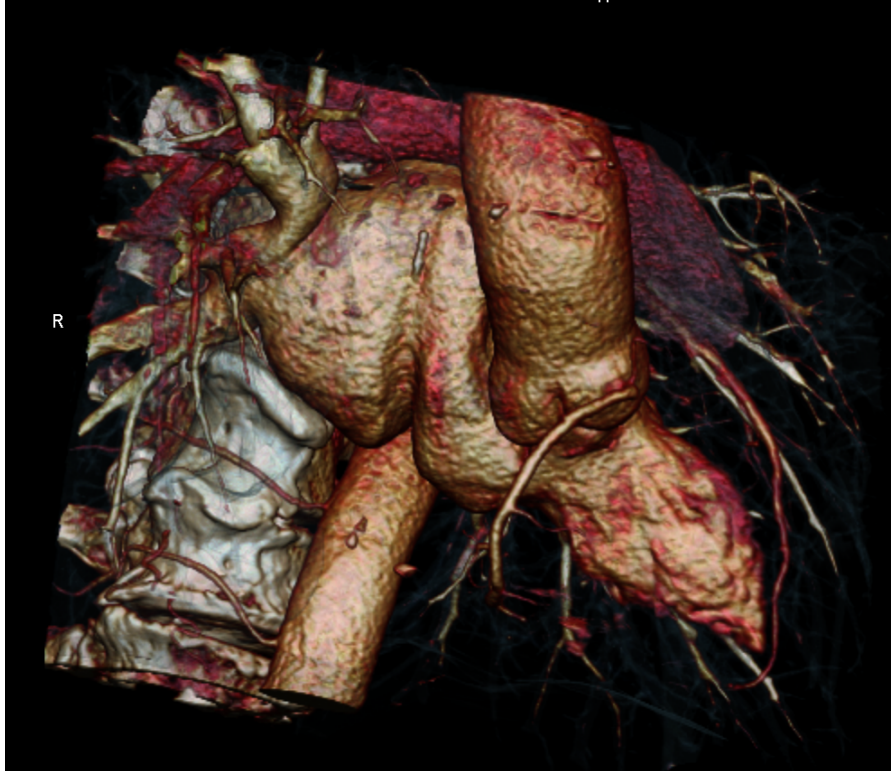
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Coronary CTA in a Patient with Previous Allogenic Heart Transplantation and a Heart Rate of 102 Beats/Minute

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Patient scanned after heart transplantation, heart rate of 102 bpm



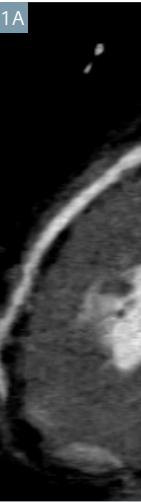
Examination Protocol

Scanner	SOMATOM Definition
Temporal resolution	83 ms
Scan direction	cranio-caudal
Rotation time	0.33 s
Spatial resolution	< 0.4 mm 7 s for 140 mm
Heart rate	102 bpm
Slice acquisition	64 x 0.6 mm
Pitch	0.39
Scan time	8.03 s
kV	120 kV
mAs	420 mAs/rot.
Slice thickness	0.6 mm

Contrast	
Volume	65 ml iodine contrast 50 ml saline chaser
Flow rate	5 ml/s

Volume rendered display

Patient scanned after heart transplantation, heart rate of 102 bpm



History

A 66-year-old male patient who had undergone allogenic heart transplantation 16 years ago was referred to non-invasive coronary angiography for the exclusion of significant coronary artery stenoses.

Diagnosis

The mean heart rate during examination was 102 beats per minute (bpm), no administration of beta blockers was performed prior to the scan.

Tube voltage was 120 kV for both tubes, tube current was set to 420 mAs/rot.

After calculation of the contrast transit time using a test bolus approach, coronary CT-Angiography was performed in craniocaudal direction injecting 65 ml of iodine contrast agent followed by a 50 ml saline chaser, both at 5 ml/s. Due to the relatively high heart rate a pitch of 0.39 was chosen, resulting in scan time of 8.03 seconds. For systolic reconstructions the window of ECG-pulsing was set from 35%–70% of the cardiac cycle.



Raw data was reconstructed in 5%-increments of the RR-cycle using a slice thickness of 0.6 mm. A systolic reconstruction at 40% of the RR-cycle provided the artifact-free visualization and allowed the exclusion of significant stenoses and plaque burden in the Left Artery Descending [1A] and the Ramus Circumflex [1B]. Even the Right Coronary Artery, which is frequently affected by motion artifacts at heart rates of more than 60 bpm, could be visualized in its entire course without artifacts [1C].

Comments

In conclusion, this case confirms the ability of DSCT to visualize coronary artery lumina without motion artifacts independent from the patient's heart rate and without precedent heart rate lowering medication.

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Contrast Agent

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