

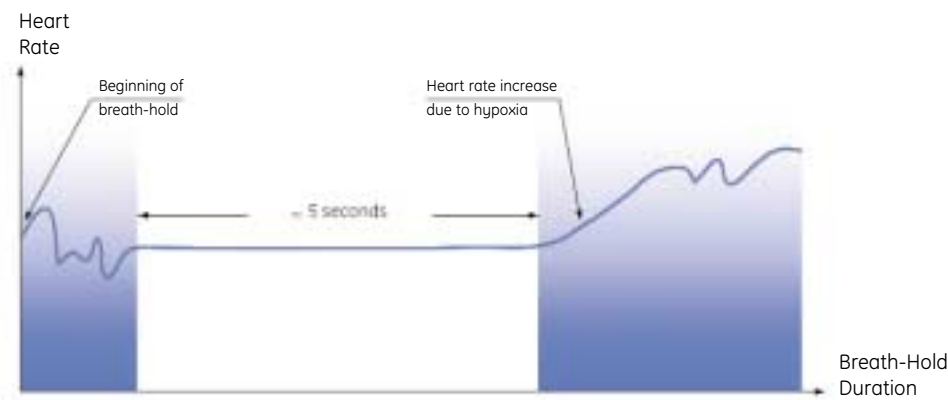
## Conclusion

The LightSpeed VCT (a 64-slice scanner) from GE Healthcare executes a more robust and repeatable cardiac acquisition that is shorter and significantly more tolerable for even the sickest patients. Cardiac acquisitions take approximately five seconds with the VCT compared to 20 seconds for the same acquisition on a 16-slice scanner and can be completed in just five heartbeats.

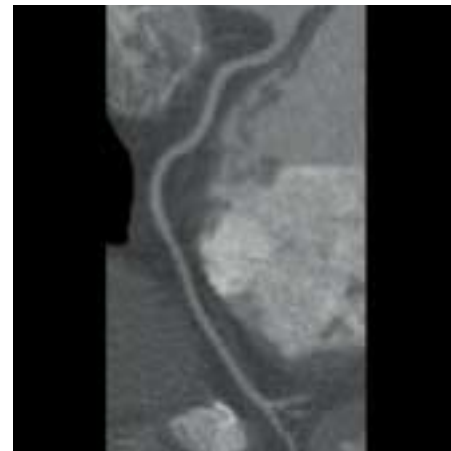
Also as demonstrated by this case study, the acquisition speed enables the exam to be completed within the stable heart rate phase of the patient breath hold, thus eliminating the risks of artifacts due to variations in the heart rate or breathing.

Furthermore, the VCT offers significantly improved visualization of the native, distal and collateral branches of the coronary arteries largely due to the improved temporal resolution and less heart beats along with the excellent isotropic resolution of the Lightspeed VCT scanner.

Finally, cardiac acquisitions can be completed during the arterial phase without any venous contamination.



Relationship between acquisition duration, heart rate and breath hold duration.



Right coronary artery and its proximal portion of the posterior descending artery and lateral branch.



Left circumflex artery and its collateral branches.

GE Healthcare



# CT Clinical Case Study CT Cardiac 5-Beat Cardiac

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GE Medical Systems, a General Electric company, going to market as GE Healthcare.



# CT Clinical Case Study

## CT Cardiac

### 5-Beat Cardiac™

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A 54-year-old male (90 kg weight) with known risk factors presented a left bundle-branch block during a stress test. This block appeared earlier in the ECG cycle than during a stress test two years prior. Based on the stress test findings, a Cardiac CT exam was recommended to further examine the coronary arteries as well as the rest of the mediastinum for any heart disease.

#### Coronary CTA exam

The acquisition, covering 124 mm, was completed in 5.3 seconds utilizing a 0.35-second scan rotation speed and a 64 x 0.625 mm detector configuration in only five heartbeats. It should be noted that beta-blockers were not utilized during this exam.

Acquisition commenced four seconds into the patient's breath hold in order to avoid the few seconds of unstable heart rate that normally occurs at the start of a breath hold. This delay ensured a stable heart rate during the acquisition.

#### Exam Protocol:

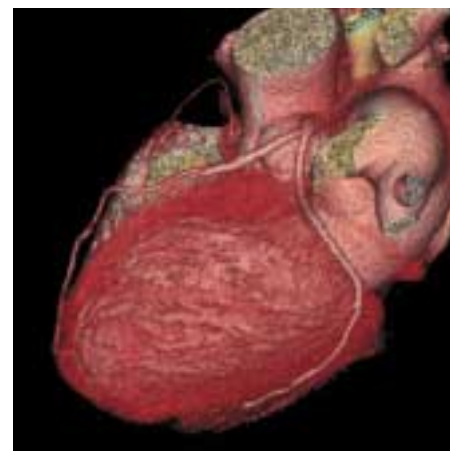
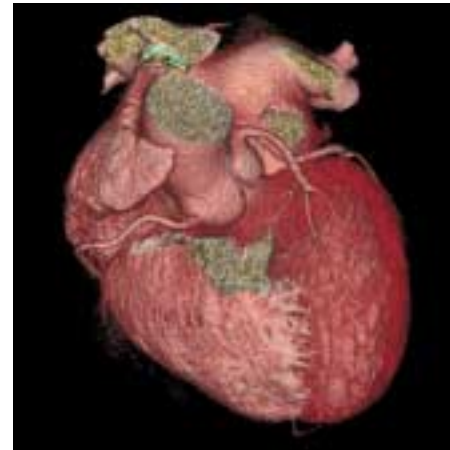
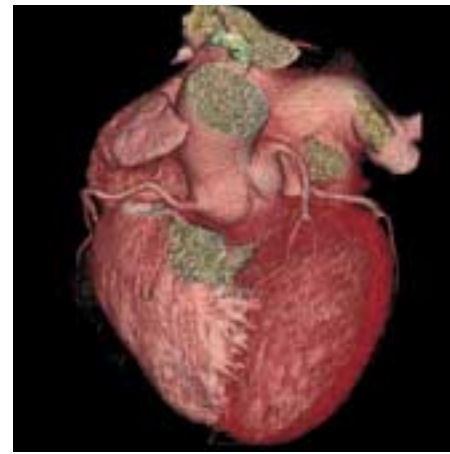
- Scanner: Lightspeed VCT
- Scan Type: Cardiac Helical
- Rotation Speed: 0.35 Sec.
- Slice Thickness: 0.625mm
- Pitch: 0.2:1
- SFOV: Cardiac Large
- kVp: 120
- mAs: 245
- Recon Mode: SnapShot Seg.
- Total Scan Time: 5.3 Sec.
- Average HR: 49 BPM

#### Contrast Injection Parameters:

Three-phase injection using a two-barrel injector:

- 90 ml of contrast media at 5 cc/sec.
- 40 ml of contrast media at 3 cc/sec.  
+ 40 ml of saline flush at 2 cc/sec.

Contrast Type: Omnipaque™ 350



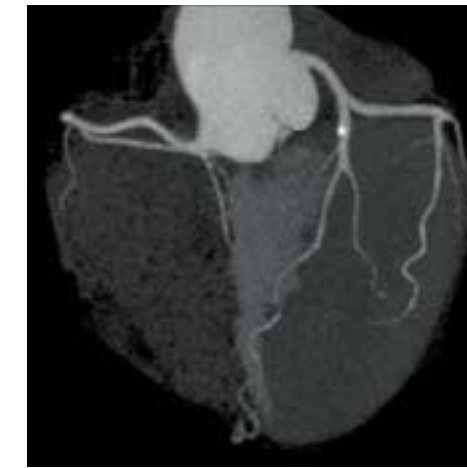
Volume Rendering showing the origin of the coronary arteries and the coronary tree.

#### Results

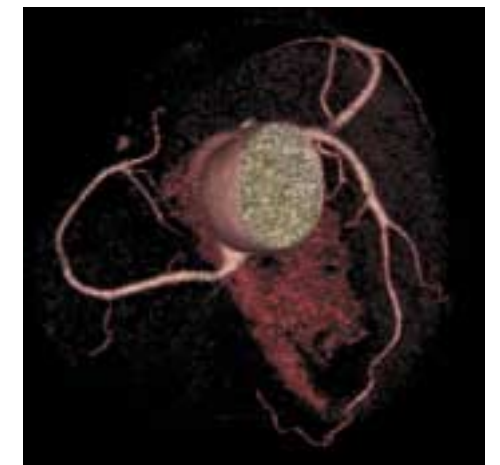
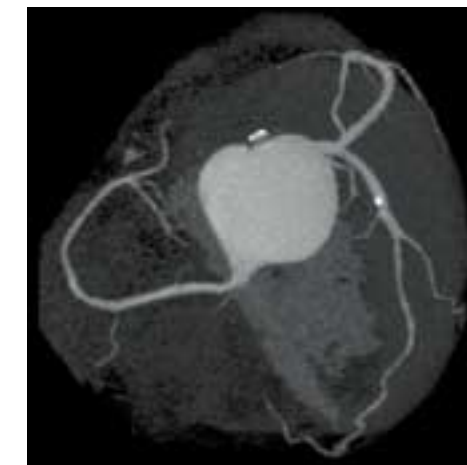
Coronary CTA demonstrates the left main trunk, which is of normal caliber with no significant stenosis. The LAD is normal and wraps the apex of the heart and displays a diagonal and septal branch. There are no significant stenoses in the LAD or diagonal branch. There is a small amount of calcification on the LAD first segment but with no significant stenoses.

The circumflex is of normal caliber and has no flow-limiting stenoses and gives off multiple collateral branches. The RCA is dominant, giving off a posterior descending artery and posterior lateral branch. There are no flow-limiting stenoses in the RCA.

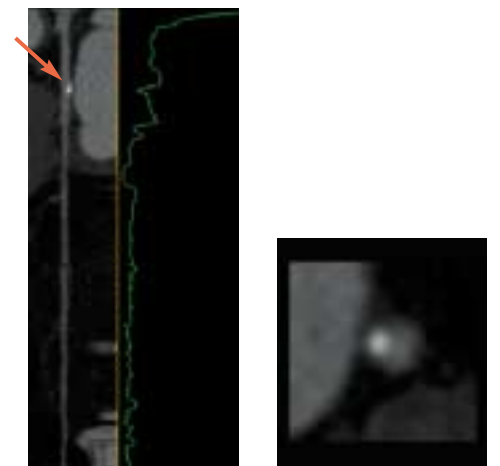
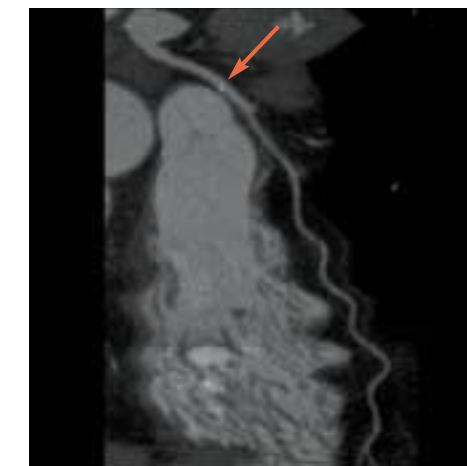
This is a negative study for any significant flow-limiting disease, no significant calcium or soft plaques seen in the coronary tree, and no coronary anomalies seen. **Follow-up cardiac catheterization determined not to be needed due to negative coronary CTA.**



The angiographic view in MIP and in VR clearly demonstrates the distal branches of the coronary arteries.



The spider view in MIP and in VR shows the collateral, septal and distal branches of the coronary arteries.



Curved view (1), lumen (2) and X-section (3) views showing the calcified plaque on the LAD (red arrow).