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# CT Clinical Case Study

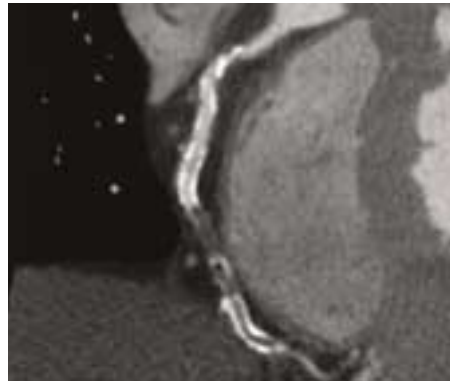
## CT Cardiac Occluded Stent

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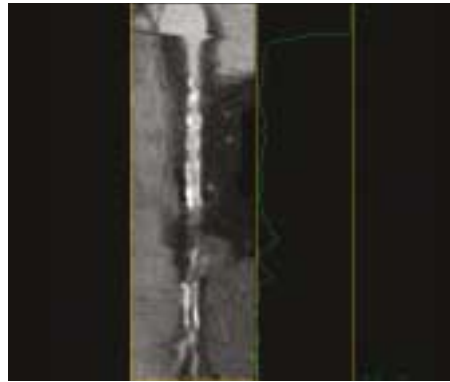
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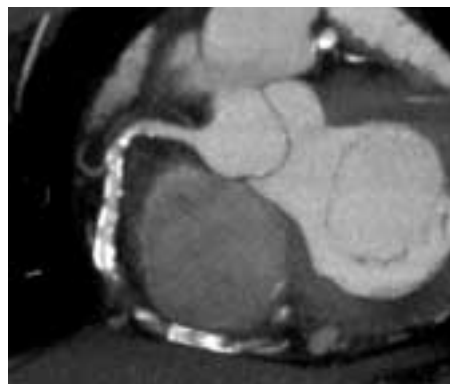




**Figure 1**  
Curved Right Coronary Artery (RCA) view demonstrating mid-RCA segmental partial occlusion, distal stent total occlusion and segmental occlusion between stents.



**Figure 2**  
Lumen View Right Coronary Artery (RCA).



**Figure 3**  
Multiplanar Volume Rendered (MPVR) View Right Coronary Artery View demonstrating stents and occlusions.

## CT Clinical Case Study CT Cardiac Occluded Stent

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### Patient History

A 69-year-old male with known history of hypertension, triple vessel disease and carotid stenosis that resulted in a mild stroke, and diabetes mellitus (DM) had a Percutaneous Transluminal Coronary Angioplasty (PTCA) with two stent placements in the right coronary artery (RCA), as well as one stent placement in the left anterior descending (LAD) coronary artery in 2002. In April of 2003, a nuclear thallium scan demonstrated no residual ischemia. In April of 2004, however, the patient presented with shortness of breath. So another thallium scan was performed that demonstrated a "mild" anterior, a partial reversible infero-lateral and a fixed-basal inferior perfusion defect, which implied either left circumflex coronary artery (LCx) or posterior lateral (PL) vessel disease. Per the standard of care, a conventional coronary angiography procedure was recommended.

A Lightspeed VCT Coronary CT Angiography (CTA) procedure was performed instead of the recommended procedure, due to the patient refusing the standard of care, to evaluate the coronary arteries and the patency of coronary stents.

### Exam Protocol:

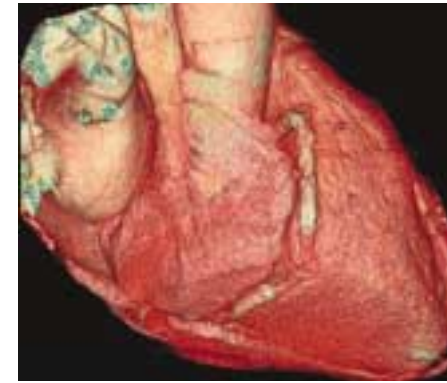
Scanner:	Lightspeed VCT
Scan Type:	Gated Cardiac Helical
Rotation Speed:	0.35 Seconds
Detector Configuration:	64 x 0.625
Slice Thickness:	0.625mm
Pitch:	0.26:1
SFOV:	Cardiac Large
kVp:	120
mAs:	224
Recon Mode:	SnapShot Segment
Total Scan Time:	4.3 Seconds
Coverage:	13cm
Average HR: 5	6 BPM

### Contrast Injection Parameters:

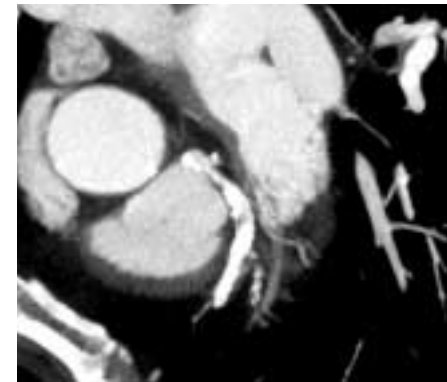
Three-phase injection using a two-barrel injector:

- Prep Delay = 22 seconds
- 60 ml of contrast at 5cc/sec.
- 20 ml of contrast at 3.5 cc/sec.  
+ 50 ml of saline at 5cc/sec.

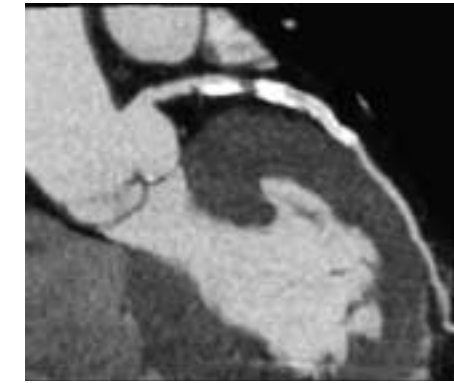
Contrast Type: 370mg I/ml



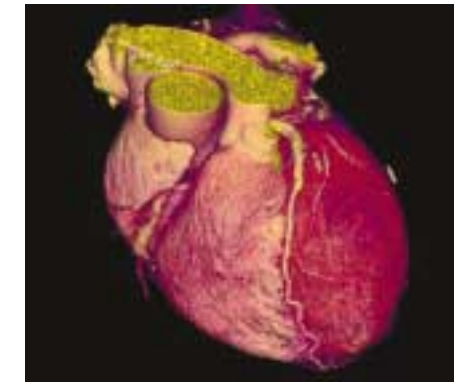
**Figure 4**  
3-D Volume Rendered Heart View demonstrating mid and distal Right Coronary Artery (RCA) stents.



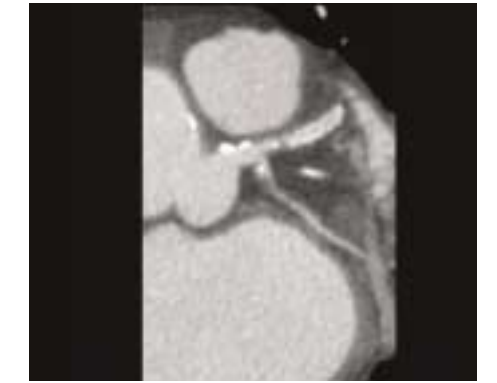
**Figure 7**  
MPVR view demonstrating the second diagonal coronary artery with a >70 percent stenosis.



**Figure 5**  
Curved view demonstrating Left Anterior Descending (LAD) stent and Left Main (LM) coronary artery plaque.



**Figure 8**  
3-D volume rendered view demonstrating LAD and RCA.



**Figure 6**  
Curved View Left Circumflex (LCx) coronary artery demonstrating mixed plaque and stenosis in the origin.

### Clinical Findings

The coronary CTA exam demonstrated calcified plaques in the proximal and mid segments of the RCA. The mid-RCA segment presented with at least 50 percent stenosis. The stent in the mid RCA was partially occluded and the stent in the distal segment of the RCA was completely occluded. In addition, there was segmental occlusions between the stents in the RCA.

The left main coronary artery had calcified plaques with <50 percent stenosis. The proximal LAD stent was patent.

Additionally, there was a greater than 70 percent stenosis in the second diagonal coronary artery and ~70 percent to 90 percent stenosis in the origin of left circumflex coronary artery.