

Hands-on experience using ECG-less Cardiac CT:

Paving the way for better image diagnostics

Initially, it may not sound like a groundbreaking innovation in cardiac imaging, that ECG-less Cardiac CT is a technique that allows clinicians to obtain high-quality cardiac images without needing electrodes, or traces, to monitor the patient's electrocardiogram (ECG) signal.



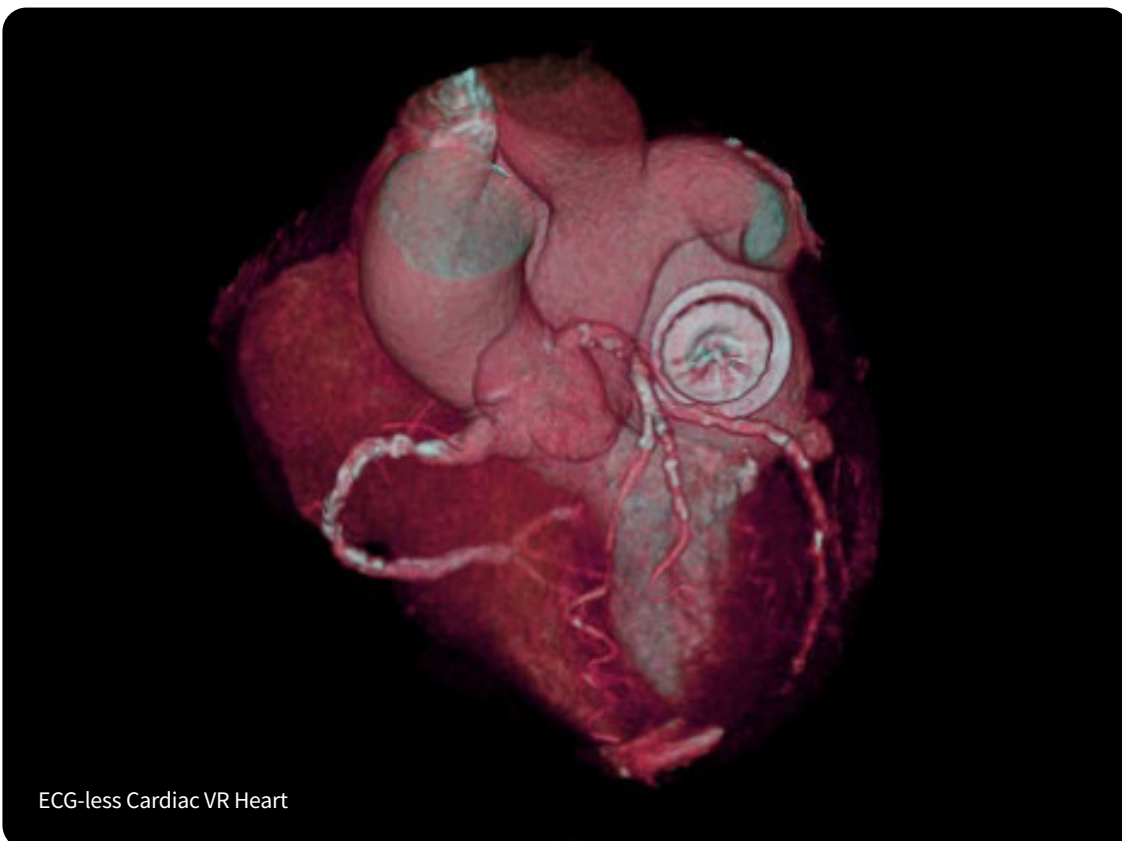
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Nanna Beyer Dragsbæk
Radiographer and CT
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Martin Lundsgaard Hansen
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ECG-less Cardiac VR Heart

However, the approach, powered by GE HealthCare's Revolution™ Apex CT system, is, in fact, poised to transform the field. Faster, simpler, and more efficient, the technique optimizes workflows in radiology departments and, even more importantly, makes high-quality cardiac imaging accessible to patients in different acute settings—something previously unattainable. This advancement paves the way for more precise and dependable diagnostics, transforming the future of cardiac imaging.

In short, this is the conclusion reached by a team of radiologists and radiographers at a hospital in Copenhagen, Denmark, after six months of hands-on experience using ECG-less Cardiac CT in their daily practice.

Head of Radiology, Dr Martin Lundsgaard Hansen, explains:

“We have learned in recent months that ECG-less Cardiac CT is bringing CT to the next level. In a way, the approach democratizes cardiac CT because capturing ECG images becomes easier and more accessible for clinicians and diagnostic teams. It also allows us to expand the use of cardiac imaging into acute settings, in emergency and trauma situations. This means we can scan patients we didn't scan gated before, so I think there is potential for a substantial change in cardiac imaging diagnostics in the future.”

Speed and Precision in One Rotation

AI technologies embedded within the Revolution Apex platform simplify nearly every step of the imaging process, from pre-scan to post-scan. Nanna Beyer Dragsbæk, radiographer and super-user at the Revolution Apex scanner, highlights some of the advanced features:

“The Apex CT scanner can capture an entire heartbeat in a single rotation, thanks to its 16 cm coverage. On top of that, we have the SmartPhase function that automatically selects the optimal phase in the heartbeat with minimal motion. After that, I use the SnapShot Freeze 2 tool to correct any motion in the coronary arteries or myocardium for sharper images. As a radiographer, this is a great combination of functionality for me, and it works well,” says Dragsbæk, adding that the system doesn't require much training.

“When I started using ECG-less Cardiac CT, I found it easy and intuitive to set up the protocol. The colleagues I have taught ECG-less Cardiac CT feel the same way.”

Better patient experience

Another benefit registered by the team is that ECG-less cardiac CT improves the general patient experience. This is due to the calmer, faster and less invasive nature of the process but also because ECG-less Cardiac CT eliminates the need for pre-treatment with beta-blockers and much of the previous preparation, including the need for ECG traces.

“Naturally, the improved patient experience is a step forward in its own right. But at the same time, the importance of a much easier workflow for the tests for teams and departments performing them should not be underestimated,” Klaus Fuglsang Kofoed, MD, PhD, DmSc, Professor in Cardiology, emphasises.



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Today, cardiac CT can be a difficult and cumbersome exercise because you need technicians and nurses, and you need doctors to apply medication to secure the right cardiac beat during the examination. Together with fast gantry rotation and motion correction software, ECG-less Cardiac CT allows more professionals to perform the test, and it will no longer be considered a specialised and somewhat limited type of examination. This will undoubtedly be a huge advantage for any healthcare system.”

Still, the most important benefit of using ECG-less cardiac CT in daily hospital practice is the ability to obtain high-quality cardiac images from patients in situations where this was previously impossible.

“We can now perform cardiac CT in more cases, including patients intolerant to heart rate medication and even pediatric in cases where motion-free images are crucial. We can broaden the indication for cardiac CT in individuals we couldn’t scan before because they could not lower their heart rate. That is the real game-changer,” says Klaus Fuglsang Kofoed while Martin Lundsgaard Hansen concludes:

“A cornerstone in radiology is getting the images right the first time you do the acquisition. We want to be confident in the technology we use, and with ECG-less Cardiac CT as a new technology we are more confident in difficult cases.”

Key features of the ECG-less Cardiac CT technology include:

Full Organ Axial Coverage:

Enabled by using simulated ECG traces matched to specified heart rates, this mode allows for different scan durations to meet clinical performance needs.

Unlimited 1-beat Cardiac Imaging:

This feature enables consistent, high-quality imaging for every cardiac patient, even in challenging scenarios.

Automatic Phase Selection:

The technology automatically selects the optimal phase of least motion, ensuring superior image quality.¹

¹Unlimited 1-beat Cardiac CT, A Summary of Peer-Reviewed Clinical Evidence. JB28893XX

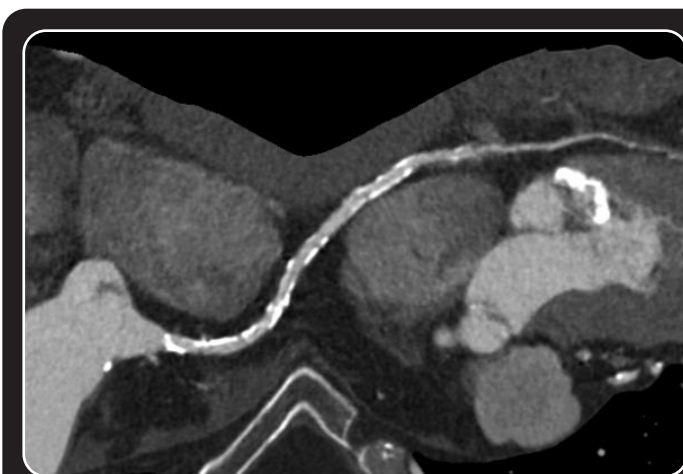


Figure 1. ECG-less Cardiac 66ABPM Right Coronary Artery.



Figure 2. ECG-less Cardiac Sagittal view of Atrial Appendage closure device.