

Cardiac CTA with FIRST (MBIR)

"FIRST iterative reconstruction is integrated in the automated exposure control of our cardiac protocol which makes it easy to use for the radiographer, ensuring dose reduction automatically. The images reconstructed with FIRST are less noisy and sharper than before."

Kyung Nyeo Jeon MD, PhD

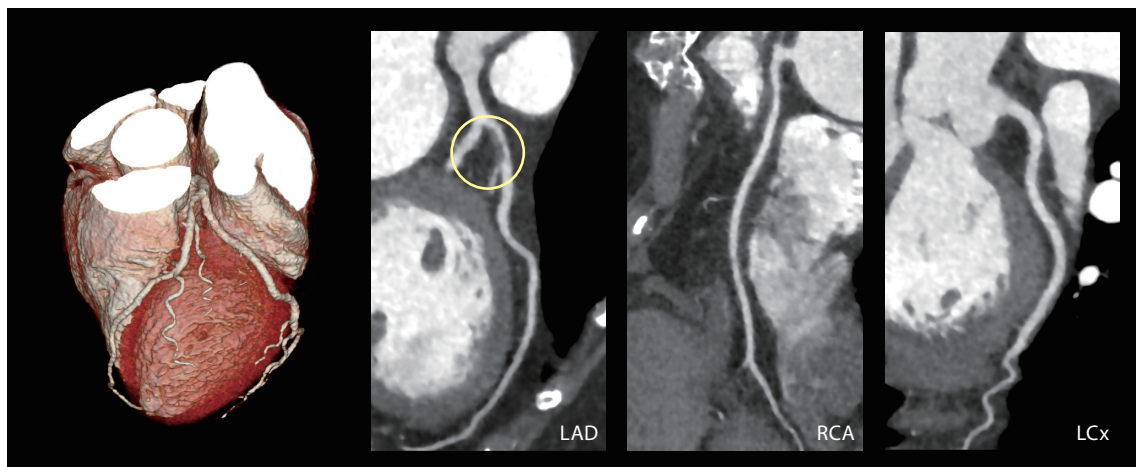
Professor, Pulmonary and Cardiac Imaging
Gyeongsang National University School of Medicine,
Gyeongsang National University Changwon Hospital
Changwon, Korea



Patient History

A 76-year-old woman presented with recent onset of atypical chest pain. A coronary CTA was requested to rule out coronary artery disease. FIRST (MBIR) is integrated into the coronary CTA scan ensuring sharp images with automatic dose reduction.

Results

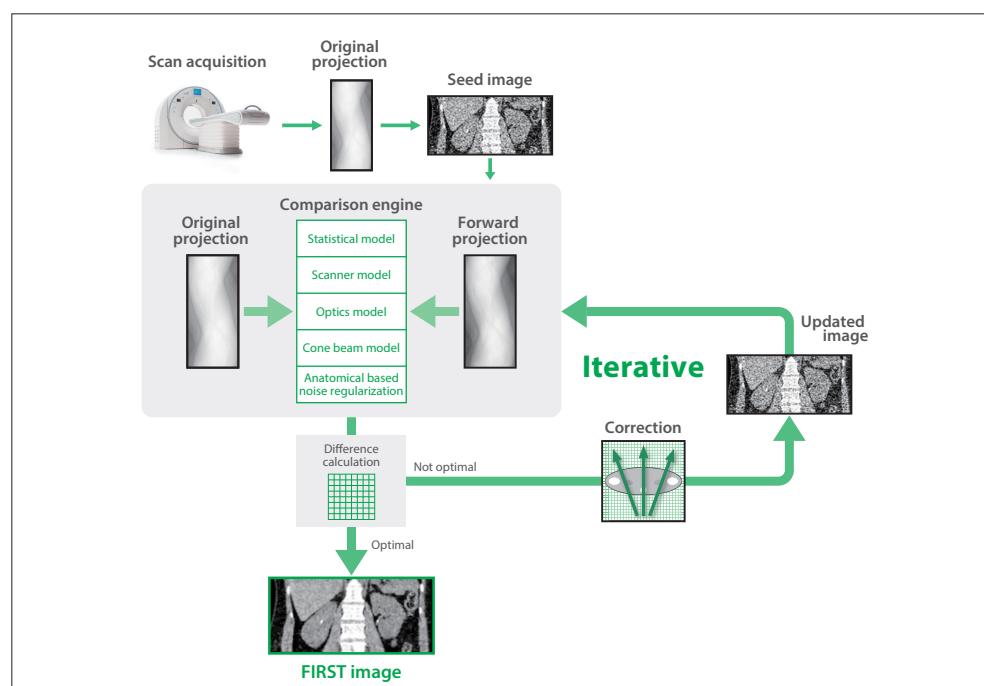


A non-calcified plaque is demonstrated in the proximal left anterior descending artery (LAD) causing a luminal stenosis of approximately 50%. No lesions are seen in the right coronary artery (RCA) and the left circumflex artery (LCx).

Technology

The Forward projected model-based Iterative Reconstruction SoluTion (FIRST^{*1}) algorithm is a true MBIR algorithm, meaning that a forward projection step is performed for every iteration. FIRST provides improved spatial resolution of up to 2.29 times sharper and dose reduction of up to 84.6% compared to FBP on the Aquilion ONE VISION Edition.¹

The integration of FIRST (MBIR) with automatic exposure control allows users to take full advantage of the dose reduction capabilities of true iterative reconstruction without any of the guesswork that can interfere with clinical workflow.



Conclusion

Tailored to the size of the patient and the clinical task through anatomically specific parameters, FIRST (MBIR) allows the seamless transformation to true MBIR scanning in routine clinical practice.

1. Joemai R et al, Forward projected model-based Iterative Reconstruction SoluTion "FIRST", white paper Leiden University Medical Center, Leiden, the Netherlands.

Acquisition

Scanner Model:
Aquilion ONE / VISION Edition

Scan Mode:	Volume
Collimation:	0.5 mm x 256
Exposure:	100 kV, ^{SURE} Exposure
Rotation Time:	0.275 second
Dose Reduction:	FIRST Cardiac Standard
CTDI:	6.8 mGy
DLP:	87.1 mGy·cm
Effective Dose:	1.2 mSv
k-factor:	0.014 ^{*2}

^{*1} Option

^{*2} American Association of Physicists in Medicine (AAPM) Report 96, 2008.

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