

Improving diagnostic accuracy and safety in Chest CT: Ultra-Low Dose Assessment

"The radiation dose reduction obtained by the SilverBeam Filter is fantastic! The ultra-low dose SilverBeam scan has enabled us to make increasingly safer acquisitions for our patients."



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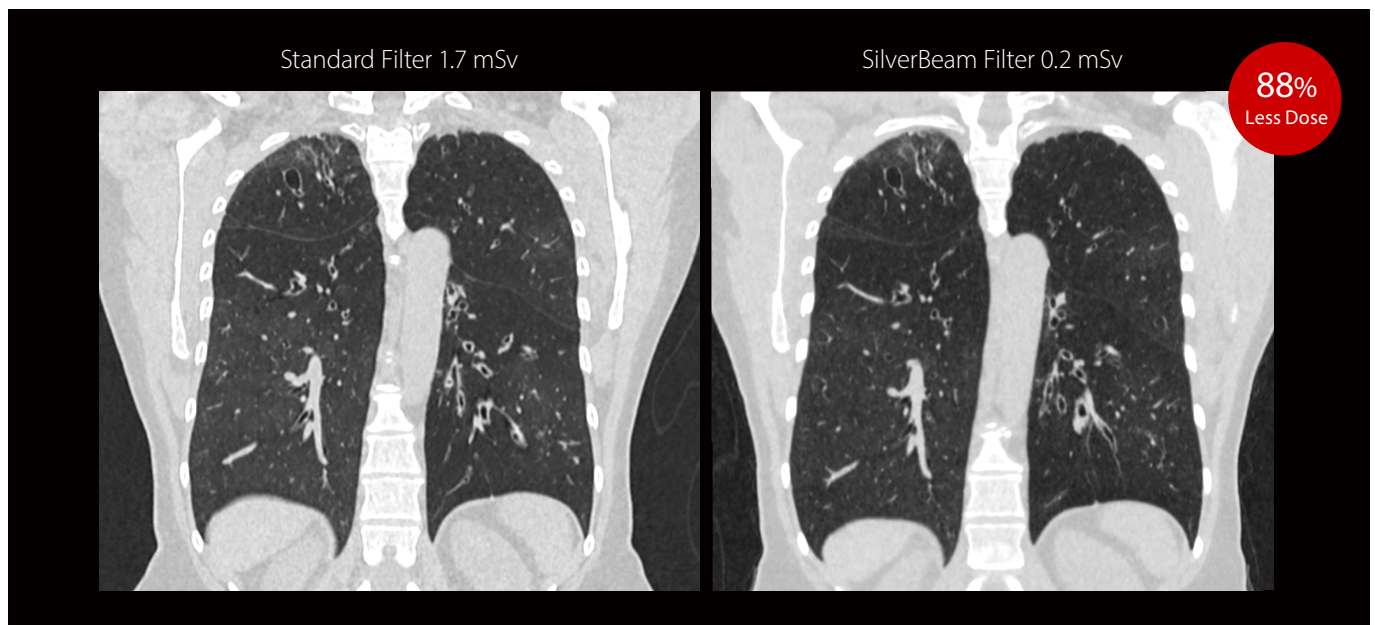
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Patient History

A 42-year-old woman, who had completed breast cancer treatment and subsequently developed bronchiectasis, underwent a low-dose chest CT after 4 months to monitor disease progression.

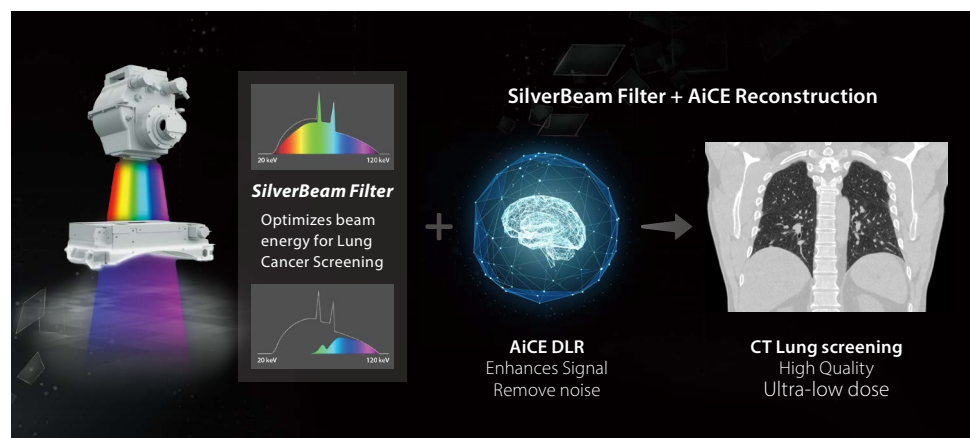
Result



The initial scan was performed with standard filter and Adaptive Iterative Dose Reduction (AIDR) 3D, while the follow-up scan was performed with the SilverBeam Filter and Advanced intelligent Clear-IQ Engine (AiCE) DLR. Both scans provide high quality and low noise images and demonstrate bronchiectasis. SilverBeam Filter combined with AiCE resulted in a radiation dose of 0.2 mSv compared to 1.7 mSv on the conventional scan, a dose reduction of 88%.

Technology

SilverBeam, a beam shaping energy filter, leverages the photon-attenuating properties of silver to selectively remove low energy photons from a polychromatic X-ray beam, leaving an energy spectrum optimized for low dose lung cancer screening. Designed to work in combination with AiCE, SilverBeam delivers AI enhanced, high quality, low noise CT lung images at low radiation doses.



Conclusion

The unique combination of a beam shaping filter (SilverBeam) and AiCE DLR provides high quality images with low noise and achieved an 88% reduction in radiation dose compared to the conventional scan.

Acquisition

Scanner Model: Aquilion ONE / PRISM Edition
Scan Mode: Ultra Helical
Collimation: 0.5 mm × 80

Standard CT Chest

Exposure: 120 kV, ^{SURE}Exposure
CTDIvol: 3.5 mGy
DLP: 126 mGy-cm
Effective Dose: 1.7 mSv
k-factor: 0.014*

SilverBeam CT Chest

Exposure: 120 kV, ^{SURE}Exposure
CTDIvol: 0.5 mGy
DLP: 17.1 mGy-cm
Effective Dose: 0.2 mSv
k-factor: 0.014*

* American Association of Physicists in Medicine (AAPM) Report 96, 2008.

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