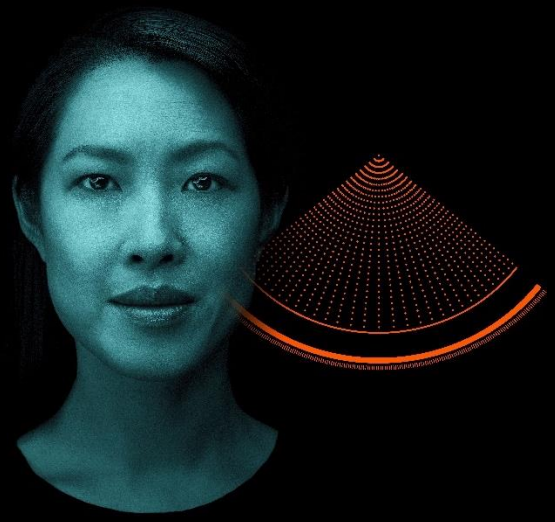
Virtual calcium removal in calcified coronary arteries with photon-counting detector CT—first in-vivo experience

NAEOTOM Alpha
Publication Summary



Photon-counting is NAEOTOM

Key findings of the case study

"In this study, 30 patients with 81 coronary stenoses from calcified plaques underwent CCTA with PCD-CT and invasive coronary angiography."

"VNCa images showed similar diameter stenosis quantification to 3D-QCA, while VMI overestimated stenoses by −10%."

"Virtual calcium removal (VNCa) was feasible in 88% of the stenoses and showed better stenosis categorization compared to conventional images, with overestimation in only 8% of cases. The VNCa algorithm improved quantification accuracy by reducing calcium blooming artifacts that commonly affect conventional CCTA images."

*"Photon-counting detector CT with virtual non-calcium (VNCa) images **significantly improves the accuracy** of calcified coronary stenosis quantification by effectively removing calcium blooming artifacts, offering **more precise assessments** compared to conventional CCTA imaging."*

Authors: Mergen, V. et al., International Journal of Cardiovascular Imaging 2024

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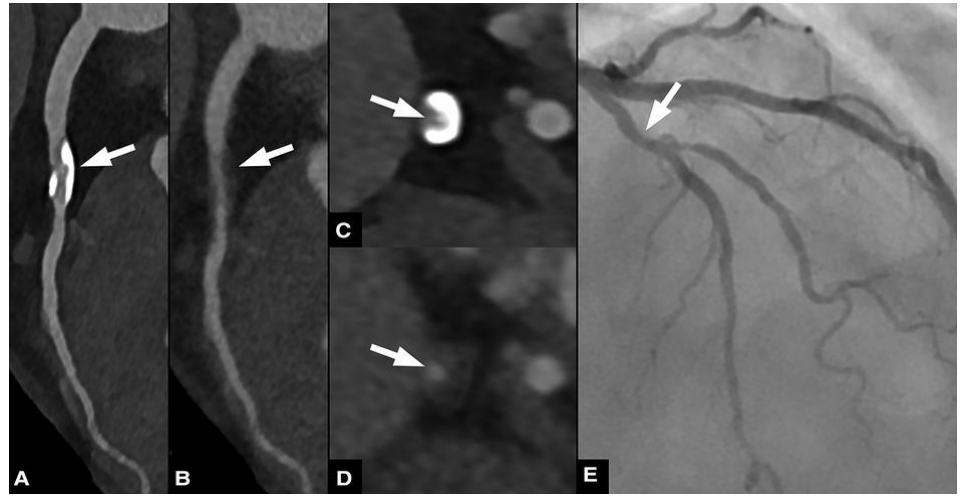

Conventional (**A**) and virtual non-calcium (VNCa) images (**B**) show calcified and subtracted calcified plaques, respectively,. Corresponding axial images show the calcified plaque (**C**) and the vessel lumen after subtraction (arrow) (**D**) invasive coronary angiography (**E**) confirmed the presence of a moderate stenosis in the proximal LAD.

CCTA: Coronary CT angiopgraphy
PCD-CT: Photon-counting detector CT
VMI: Virtual monoenergetic imaging VNCa: Virtual Non-calcium LAD: Left anterior descending

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