—Photogravure—

Non-invasive Detection and Assessment of Coronary Artery Disease with Multidetector-row Computed Tomography

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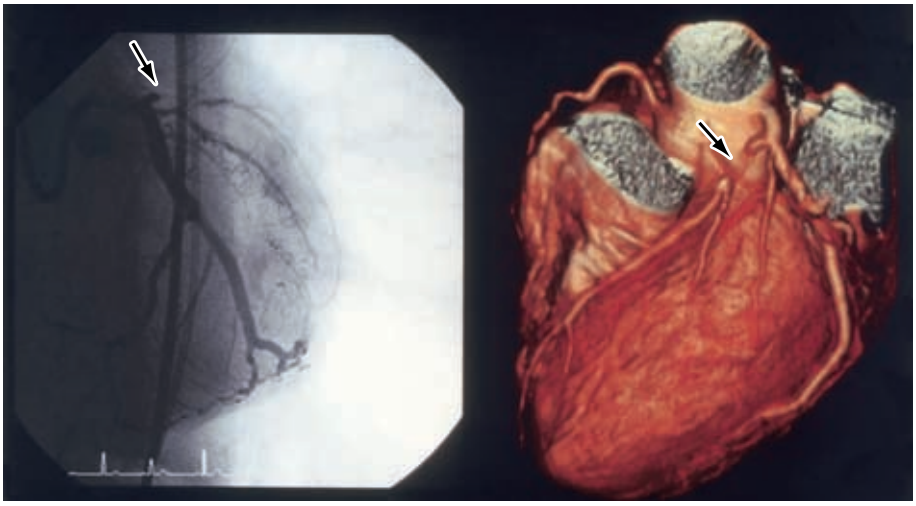
Fig. 1



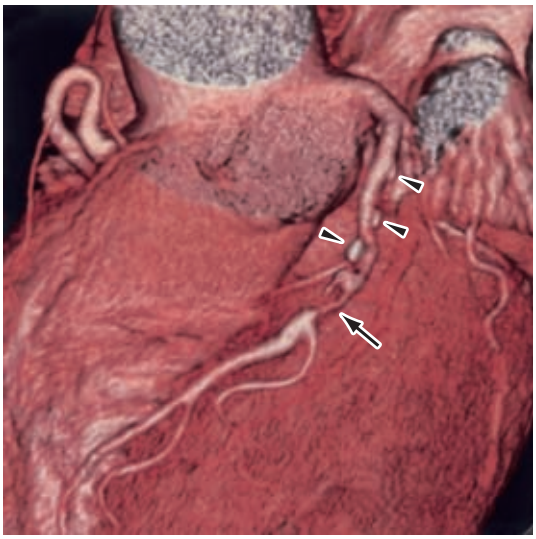


Fig. 2A

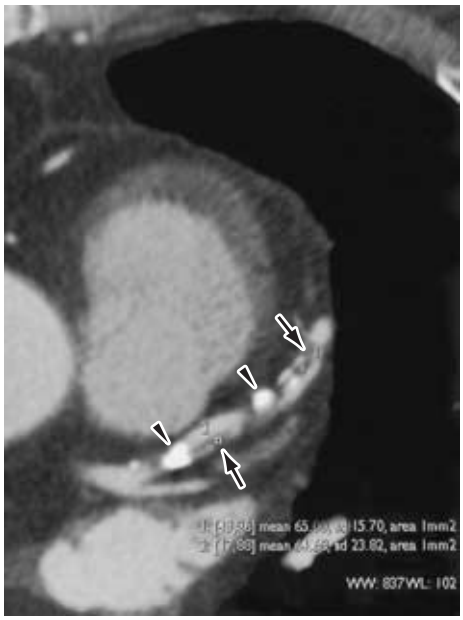


Fig. 2B

The fast volume coverage of retrospective ECG-gated multidetector-row helical CT (MDCT) arrows for acquisition of the entire heart volume with nearly isotropic spatial resolution (0.5×0.5×0.6 mm) within a single breath-hold. The sub-millimeter spatial resolution enables depiction of the major and also of peripheral coronary artery segments with lumen diameter down to 1 mm.

The results of studies of stenosis detection have shown that coronary CT angiography can reliably detect and exclude high-grade stenosis>50%[1]. In addition, preliminary data indicate that MDCT angiography might arrow detection and evaluation of atherosclerotic plaques in different stages. The differentiation of lipid-rich, fibrous and calcified plaques using coronary CT angiography correlates well with the intracoronary ultrasound results based on measurement of the mean HU-value in the lesion[2]. Non-invasive follow-up after

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Fig. 3A

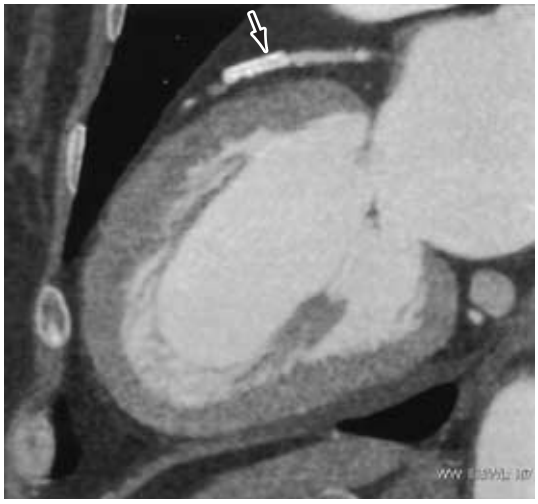

Fig. 3B

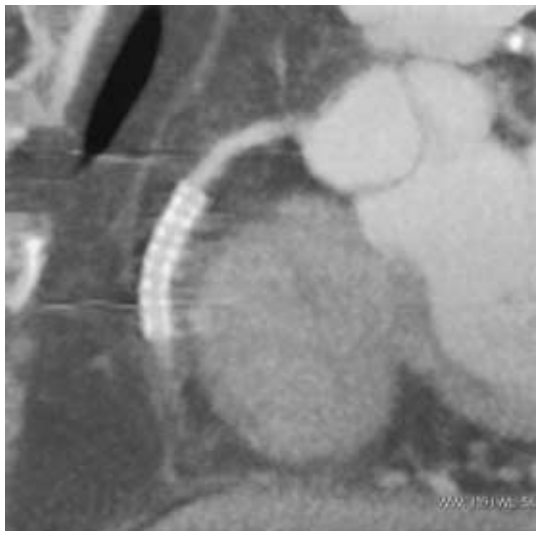

Fig. 4

percutaneus coronary intervention or coronary bypass surgery with ECG-gated coronary CT angiography can be an important tool for post-interventional patency confirmation or for early detection of restenosis.

The development of MDCT creates exciting opportunities for diagnostic imaging. In the future, MDCT might play an important part in extended plaque scoring for risk stratification for acute coronary events.

Fig. 1 Coronary angiography (left) and coronary CT angiography (right) in patient with angina pectoris
The proximal left descending artery is totally occluded (**arrow**). Coronary CT angiography clearly demonstrates the distal part of the left descending artery.

Fig. 2 Coronary CT angiography in patient with angina pectoris
A: The severe stenosis of the left descending artery is nicely depicted (**arrow**). Calcified plaques are also demonstrated (**arrowheads**).
B: Calcified (**arrowheads**) and fibrous plaques (**arrows**) are clearly visualized.

Fig. 3 Coronary CT angiography in patients with unstable angina after stent insertion
A: Diffuse arterial wall thickening with soft plaque (mean HU number: 28) is depicted (**arrow**).
B: Stent patency can be qualitatively assessed (**arrow**).

Fig. 4 Follow-up examination after stent insertion with coronary CT angiography
The inner-stent lumen can be visualized.

〔**References**〕

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2. Kopp A: Heart and coronary arteries. Multidetector Computed Tomography Technology: Advanced in Imaging Techniques (Bonomo L, Foley DW, Imhof H, Rubin GD, eds), 2003; pp 57–78, Royal Society of Medicine Press, London.