Multiple stent fractures detected by multislice computed tomography after full metal jacket stents

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A 78-year-old man was referred for 64-slice multislice computed tomography (MSCT) 1 year after percutaneous coronary intervention with three overlapped sirolimus-eluting stents (3.0 × 33, 3.0 × 33, and 2.5 × 28 mm) in the right coronary artery (Panel A). Compared with fluoroscopy (Panel B), volume-rendering images by MSCT clearly depicted stent overlaps (arrow-heads) and stent fractures (arrows) defined as complete or partial gaps upon visual inspection with Hounsfield units (HU) <300 (the lowest HU in the stent area) at the site of separation. Coronary angiography showed in-stent restenosis at the site of stent fracture (Panel C).

Coronary stent fracture has been suggested as a cause of cardiac events such as in-stent restenosis and stent thrombosis and can be a problem related to prognosis of patients with stents. Thus, detection of coronary stent fracture can be important for risk stratification of patients with coronary stents. In general, fluoroscopy is used to diagnose stent fractures. However, stent fractures can be underdiagnosed in many cases because coronary stents are small and it is hard to depict stent struts using fluoroscopy which cannot assess stents three-dimensionally.

Recently, MSCT is widely available to assess coronary artery disease as a less invasive technique and several reports have demonstrated that MSCT can diagnose in-stent restenosis with high accuracy. MSCT can depict not only in-stent lumens, but also the configuration of stent struts three-dimensionally with inherent high-contrast resolution as well as detect stent fractures easily, as shown in the figure. MSCT has the potential to be a useful modality to evaluate patients with coronary stents.

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