

IMAGES IN INTERVENTION

Intra-Aortic Coronary Stent Fracture Revealed by Stent Boost Imaging and Confirmed by Multislice Computed Tomography

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A 77-year-old man was admitted with unstable angina. He had a history of 2-vessel coronary artery bypass grafting and percutaneous coronary intervention of each anastomosis. The proximal anastomosis of the marginal branch (circumflex) bypass grafting was directly stented with a TITAN-2 3.5 × 19-mm bare-metal stent (BMS) (Hexacath, Paris, France), 2 months before.

the first inflation with a SAPHIRE 3.0 × 20 mm balloon (OrbusNeich, Wanchai, Hong Kong) to 16 atm, a stent fracture was suspected and confirmed by stent boost imaging, showing incomplete stent fracture (Fig. 1). A drug-eluting stent (DES) was implanted at the proximal bypass with aortic protrusion and an angiographically adequate result (Figs. 2 and 3).

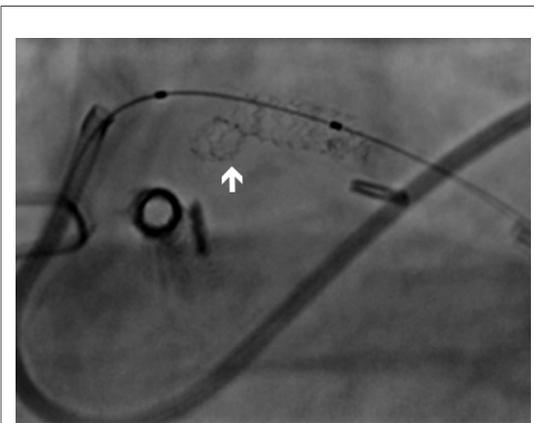


Figure 1. Stent Boost Immediately After Balloon Inflation

The proximal edge of the stent is fractured, as indicated by the arrow.

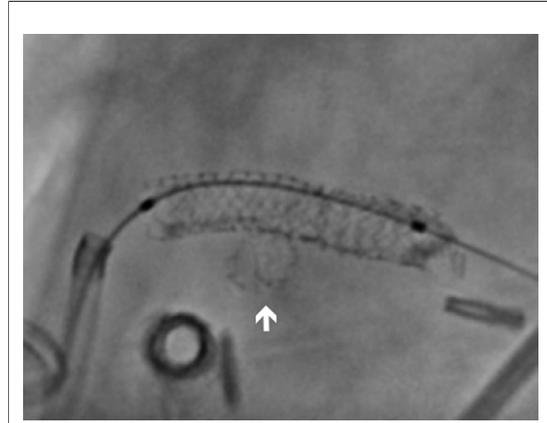


Figure 2. Stent Boost Immediately After DES Implantation

The proximal edge (arrow) of the fractured stent is still attached. DES = drug-eluting stent.

The new angiography showed severe in-stent restenosis of the recently implanted BMS. In this case of aortic stent protrusion, repeat catheterization of the ostium was difficult. Moreover, the marginal bypass was located at the level of the aortic arch, and the probe launcher was positioned without good support and was not selective. After

The most likely mechanism of this fracture is balloon inflation through a stent strut. Multislice computed tomography (MSCT) revealed the DES position with aortic protrusion and a slight under-expansion, and confirmed the BMS fracture with a proximal edge positioned against the aortic wall and still attached to the other side (Figs. 4 and 5, Online Video 1). The patient remained asymptomatic at 6-month follow-up.

In stent follow-up, stent fracture can be easily recognized by MSCT (1), but is hardly recognized by coronary angiography (2,3). To our knowledge, this is the first case of an intra-aortic stent fracture

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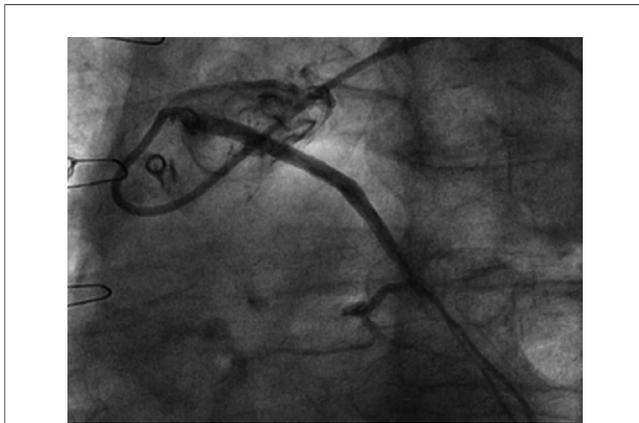


Figure 3. Conventional Angiography of the Marginal Bypass

Angiography showed an adequate final result with no angiographic residual stenosis and Thrombolysis In Myocardial Infarction grade 3 flow.

detected by stent boost imaging (4), which allows the enhancement of the radiological edge of the stent. In the case of restenosis and aortic stent protrusion, intravascular ultrasound guidance may have been useful to assess the guidewire position.

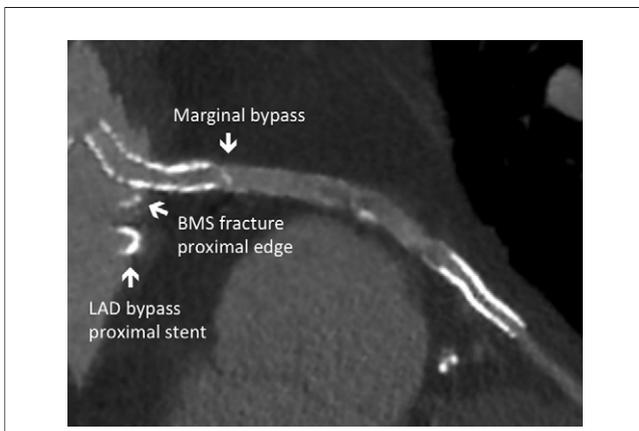


Figure 4. MSCT Curved Reconstruction of the Marginal Bypass

Multislice computed tomography (MSCT) curved reconstruction confirmed the drug-eluting stent (DES) slight underexpansion with aortic protrusion and the bare-metal stent (BMS) fracture with a proximal edge positioned against the aortic wall. This view also showed the proximal stent of the left anterior descending (LAD) bypass (Online Video 1).

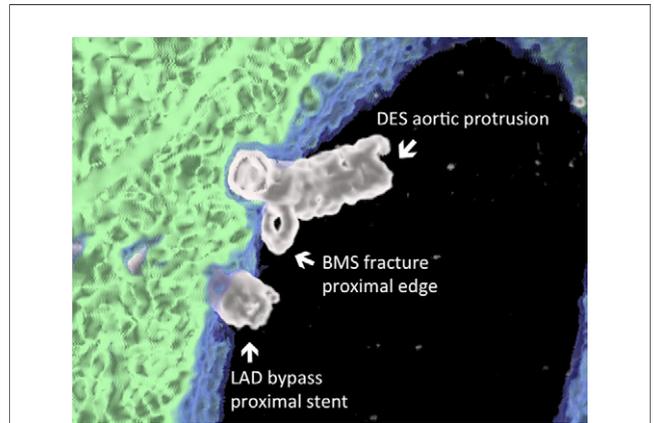


Figure 5. MSCT Volume Rendering Reconstruction of the Marginal Bypass

MSCT volume rendering confirmed the DES aortic protrusion and the BMS fracture with a proximal edge positioned against the aortic wall. This view also showed the proximal stent of the LAD bypass. Abbreviations as in Figure 4.

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Key Words: multislice computed tomography ■ stent boost ■ stent fracture.