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IMAGES IN CARDIOLOGY

doi: 10.1136/hrt.2006.104190

Severe plaque prolapse after stenting a lesion with large areas of necrotic core

A 74-year-old male smoker with hypertension and dyslipidaemia was admitted to hospital because of unstable angina. Cardiac catheterisation showed a 90% discrete stenosis (panel A) in the distal right coronary artery (RCA) and minor disease in the left coronary artery. After balloon predilatation, a 3.0×18 mm drug-eluting stent was implanted in the distal RCA at 14 atmospheres. A large fixed intraluminal filling defect was then noted inside the stent and it extended proximally beyond the stent edge (panel A). Gray scale intravascular ultrasonography (IVUS) confirmed severe plaque prolapse through the stent struts (panel A). By virtual histology, large areas of necrotic core could be found in the stented lesion with heavy plaque load (panel B). Positive remodelling, marked plaque eccentricity and large areas of necrotic core were also noted in other part of the RCA (panel B). A second 3.5×30 mm drug-eluting stent was then deployed at 10 atmospheres to sandwich the prolapsed plaque between two layers of stent struts. The final angiogram (panel A) and IVUS showed a widely patent stent without significant intraluminal plaque prolapse.

This is an example of vulnerable plaque with marked eccentricity and unusually large areas of necrotic core in a positively remodelled vessel. Plaque compression and vessel wall stretching are the mechanism of regaining luminal area after stenting. However, an exaggerated plaque shift resulted after stenting in this case. Use of a distal protection device, low pressure inflation, and avoidance of an oversized stent might be a better strategy in this situation.

P-T Tsui, C-I Lau
tsuipt@netvigator.com