

1083 Does metallic stent ablation by rotational atherectomy influence on the coronary microcirculation?

An 80-year-old man underwent percutaneous coronary intervention (PCI) with a bare metal stent for a severe stenosis at proximal left anterior descending (LAD) coronary artery 13 years ago. In-stent restenosis was treated by a drug-eluting stent (DES) 1 year later. The patient recently presented with recurrent chest pain. Emergent coronary angiography revealed subtotal occlusion at left circumflex artery and severe stenosis at distal LAD, both of which were simultaneously treated. Intravascular ultrasound presented under-expansion of the aforementioned metallic stents at the proximal LAD due to the circumferential calcification. Optical coherence tomography (OCT) indicated minimum lumen and stent areas of 2.51 mm² and 2.71 mm², respectively. We performed rotational atherectomy (Boston Scientific RotablatorTM system, burr size 1.75 mm; 180,000 rpm) to ablate the under-expanded metallic stent and underlying calcification, followed by DES implantation. OCT 3-dimensional reconstruction clearly demonstrated the ablated struts at the distal part of the stent.

We examined influence of metallic stent ablation on the coronary microcirculation by index of microcirculatory resistance (IMR). The IMR increased after rotational atherectomy from 19 to 31, resulting in the deteriorated coronary flow reserve (CFR) despite the improved fractional flow reserve (FFR). Creatine kinase (-MB) peaked at 373 (35) U/L 1 day after the procedure, which did not fulfill the criteria of periprocedural myocardial infarction according to the ARC definition. One-month later, the IMR eventually recovered to 13 while CFR also improved.

The present case would be the first report to show the successful recovery of temporary microcirculatory deterioration after metallic stent ablation by rotational atherectomy. Several case reports and case series indicated some controversial insights into the safety of stent ablation. The present case demonstrated that the influence of stent ablation on the coronary microcirculation was limited and temporary, if imaging-guided appropriate procedure can be performed.