A 67-year-old man presented with stable angina pectoris on exertion. He had a history of type 2 diabetes, severe peripheral vascular disease with bilateral above-knee amputations, renal insufficiency requiring dialysis, and arterial hypertension for more than 20 years.

Coronary angiography revealed a long, calcified 90% bifurcation lesion of the left anterior descending after the ostium of the second diagonal branch. Despite predilatation and marked effort, 2 drug-eluting stents, a 3.0×24 and a 3.0×12 mm Endeavor RX (Medtronic Vascular) failed to cross the lesion.

We assumed that major mechanical forces in the calcified vessel acting on both Endeavor RX stents cause polymer damage. Therefore, the entire accessible surface areas of both stents were examined in the expanded state using an environmental scanning electron microscope (XL30 ESEM, Philips).

The area of coating defects was nearly 20% in both stents related to the estimated total stent surface calculated by a quantitative analysis (arrows indicating scratched polymer presenting bare metal surface; Figure).

Few days later using a different technique, the lesion was covered with a 3.0×18 mm Cypher Select (Cordis, Johnson&Johnson) stent with a good final result.

Placement of drug-eluting stents in calcified vessels with challenging deliverability might cause severe polymer damage. It has to be assumed that this effect is even worse in smaller vessels. Polymer damage up to 20% of the surface might also have an impact on higher late lumen loss.

Disclosures

None.

Figure. A, Endeavor RX 3.0 × 24; B, Endeavor RX 3.0 × 12, expanded with arrows indicating scratched polymer presenting bare metal surface.
Major Polymer Damage of Drug-Eluting Stents
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Circ Cardiovasc Interv. 2008;1:154
doi: 10.1161/CIRCINTERVENTIONS.108.794818
Circulation: Cardiovascular Interventions is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 1941-7640. Online ISSN: 1941-7632

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