Unusual evolution of an aneurysm of the proximal left anterior descending coronary artery 15 years after a Simpson atherectomy

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A 37-year-old woman presented in 1993 with unstable angina. She had a history of hypertension, hypercholesterolaemia, tobacco use and family history of cardiovascular disease. She underwent a coronary angiogram (CA) that revealed severe stenosis of the proximal left anterior descending (LAD) coronary artery. The lesion was treated successfully by balloon angioplasty. She presented 3 weeks later with recurrent angina and subsequently underwent a new CA that revealed diffuse restenosis of the proximal LAD coronary artery. The lesion was treated successfully by Simpson atherectomy (Fig. 1) and the patient was discharged with the following treatment: aspirin, atorvastatin, nifedipine and diltiazem, allowing optimal control of risk factors. In 1994, the patient underwent a systematic control CA that revealed an aneurysm of the proximal LAD (Fig. 2). Thereafter, she was followed clinically every year and remained asymptomatic for 15 years. During this period, the patient underwent repeated stress myocardial scintigraphy that remained negative.

In 2009, the patient complained of recurrent angina. Stress myocardial scintigraphy revealed a large anterior ischaemia. She consequently underwent a third CA that showed complete filling of the aneurysm with a critical, non-homogeneous and calcified restenosis (Fig. 3). An intravascular ultrasound (IVUS), performed before and after successful implantation of a drug-eluting stent, confirmed the presence of a large aneurysm measuring 6.8 × 7.4 mm and filled completely by a non-homogeneous material that looked both thrombotic and fibrotic (Fig. 4). It also showed severe calcifications. A 128-detector computed tomography (DLP = 251 mGy cm), performed to better analyse the aneurysm anatomy...
Figure 1. Coronary angiogram performed 3 weeks after initial balloon angioplasty. A. Early restenosis localized on the proximal left anterior descending coronary artery (arrow). B. Successful angioplasty using Simpson atherectomy of the proximal left anterior descending coronary artery (arrows).

(calcifications), confirmed the presence of the aneurysm with severe calcifications located all around the aneurysmal sac (Fig. 5).

Coronary artery aneurysm is defined as a localized dilatation exceeding the diameter of the adjacent normal segment by 50%. Atherosclerosis is the main cause of these anomalies in adults. However, mechanical damage to the arterial wall caused by Simpson atherectomy, angioplasty and/or stent placement may be an added factor. Its therapeutic management is still unclear, but is essentially driven by the patient’s symptoms and aneurysm size. The most severe consequences are formation of thrombus leading to distal embolization and vessel rupture. We report here an unusual evolution of an aneurysm that occurred after Simpson atherectomy, since the patient remained asymptomatic for 15 years and the restenosis occurred very late.

Figure 2. Coronary angiogram at 1 year revealing an aneurysm of the proximal left anterior descending coronary artery (arrow).

Figure 3. Coronary angiogram at 15 years revealing complete filling of the aneurysm of the proximal left anterior descending coronary artery with a critical, non-homogeneous and calcified restenosis. A. Incidence RAO 20° and caudal 20°: critical restenosis of the proximal left anterior descending coronary artery. B. Incidence Spider: critical restenosis of the proximal left anterior descending coronary artery. C. Incidence Spider and Stent Boost: severe calcifications of the aneurysmal sac.
Figure 4. Intravascular ultrasound (IVUS). A. IVUS performed before percutaneous coronary intervention (PCI) showing the presence of a large aneurysm measuring $6.8 \times 7.4\text{mm}$ and filled completely by a non-homogeneous material that looked both thrombotic and fibrotic. B. IVUS performed after PCI (implantation of TAXUS®, Boston Scientific Corp., Natick, Massachusetts, USA) drug-eluting stent: $3 \times 20\text{mm}$ showing the good result of the procedure.

Figure 5. Computed tomography scan performed after percutaneous coronary intervention. A and B. Reconstructions confirming the presence of a large aneurysm of the proximal left anterior descending coronary artery with severe calcifications surrounding the aneurysmal sac.

Conflict of interest statement

None.