Polytetrafluoroethylene Stent Deployment for a Left Anterior Descending Coronary Aneurysm Complicated by Late Acute Anterior Myocardial Infarction

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We report the case of a 66-year-old man with a left anterior descending (LAD) coronary artery aneurysm. Cigarette smoking and hepatitis C virus infection were in his clinical history. Coronary angiography performed in 2002 showed a LAD aneurysm, a 50% stenosis of the right coronary artery, and a 30% stenosis of the left main artery (Figure 1, a through c). The ECG in 2002 was normal (Figure 2b.i). In 2002, the patient underwent successful Jomed polytetrafluoroethylene (PTFE)-coated stenting (3.0×20 mm) to cover the aneurysm (Figure 1d). After stenting, the patient was discharged on ticlopidine 250 mg/d for 1 year, aspirin 100 mg/d, metoprolol 25 mg/d, and transdermal nitrates.

In May 2004, the patient had an acute ST-elevation anterior myocardial infarction. He was admitted to our hospital for rescue percutaneous coronary intervention (PCI) after failed intravenous thrombolysis (Figure 2bii). At admission, the global left ventricular ejection fraction was 40%, with apical akinesia and lateral/septal hypokinesia (Figure 2c). Emergency coronary angiography showed total occlusion of the LAD PTFE stent (TIMI 0) (Figure 2a). Coronary blood flow was promptly restored by rescue PCI, and an additional chromo-cobalt 3.0×24-mm stent was implanted in the previous PTFE stent because of a suboptimal result obtained with balloon angioplasty alone (Figure 2d). Because of the progression of atherosclerotic disease in the other vessels and the “off-label” use of a bare metal stent in a PTFE stent, the patient underwent a successful elective triple bypass surgery 1 month later. At the present time, the patient is asymptomatic with a negative stress test.

Although an excellent postprocedural angiography result was documented after PTFE stenting with aneurysm exclusion (Figure 1d), this case demonstrated that the long-term outcome of using this type of stent to treat LAD aneurysm might be complicated by late acute ST-elevation myocardial infarction. Although serial assessment of long-term stent patency could be performed with either stress tests or coronary angiography, an unexpected acute stent thrombosis may occur.

The optimal treatment of coronary aneurysms still remains controversial. Without treatment, coronary aneurysm can lead to ischemia, myocardial infarction, embolization due to thrombus formation within the aneurysm, calcification, fistula formation, and spontaneous rupture.1 Surgical therapy includes either off-pump or beating heart techniques, which are represented by coronary artery bypass graft surgery,2 total aneurysmal resection,3 proximal ligation and distal ligation,4 aneurysmectomy,5 and plication.6 Percutaneous treatment is an emerging strategy to treat coronary aneurysm and includes autologous vein graft–coated stents7 and PTFE-coated stents.8,9,10 However, this case report demonstrated that, even with an excellent short-term angiographic result and an excellent 2-year clinical outcome, late acute stent occlusion may occur.

References
Figure 1. LAD coronary artery aneurysm. 
a. Anterior-posterior cranial view. 
b. Left anterior oblique view with a magnification of coronary aneurysm. 
c. Anterior-posterior cranial view. 
d. Coronary angiography performed in 2002 after percutaneous treatment of LAD aneurysm with PTFE stent. Anterior-posterior cranial view.

Figure 2. 
b2. ECG 2 hours after intravenous thrombolysis showing persistent ST-segment elevation. 
c. Apical 4-chamber 2D ecocardiography at hospital admission after PTFE stent occlusion (2004) showing apical akinesia and lateral/septal hypokinesia. 
d. Coronary angiography performed after rescue PCI for failed thrombolysis with an optimal acute result of stenting the previous PTFE stent (TIMI III flow). Anterior-posterior cranial view.
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