Case report - Coronary

Development of a saphenous vein coronary artery bypass graft pseudoaneurysm

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Abstract
This report shows the long-term development of a saphenous vein bypass pseudoaneurysm that is a rare complication after bypass surgery. The patient underwent CABG procedure in 1986 because of three vessel coronary artery disease. Initial signs of venous wall disturbances were observed first time in 1996. At the present admission the patient complained of angina pectoris probably resulting from progression of coronary artery disease. Angiography revealed an approximately 15 × 8 mm enlarged venous graft pseudoaneurysm. Subsequently, the entrance was successfully occluded by a covered stent graft. Six month follow-up was uneventful; angiography showed a still sufficiently occluded pseudoaneurysm.

Keywords: Coronary bypass graft; Aneurysm; CABG

1. Introduction
Development of saphenous vein graft pseudoaneurysms is a rare late occurring complication after coronary artery bypass grafting (CABG) [1]. Typically, complaints due to an increasing aneurysm could conceal angina pectoris. Because of potential aneurysm rupture the prognosis is severe [2] and sufficient interventional or surgical treatment is required.

2. Case report
A 73-year-old patient presented with unstable angina pectoris due to suspected acute coronary syndrome. Coronary artery disease was known since 1986 when saphenous vein bypasses had been grafted to the left anterior descending (LAD), the second marginal branch and the distal right coronary artery (RCA). Angiography from 1986 had revealed patent grafts (Fig. 1A: vein graft to RCA). Because of progressive dyspnoea (NYHA III) resulting from mitral valve insufficiency valve replacement was performed in 1996. Preoperative angiography had shown a very small aneurysm of the RCA vein bypass (Fig. 1B) estimated not to necessitate intervention. At the present admission a culprit lesion of the coronary syndrome was found in the vein graft connected to the LAD that was treated by angioplasty including stent implantation. Angiography of the RCA vein graft showed an approximately 15 × 8 mm enlarged pseudoaneurysm (Fig. 2A). The entrance was successfully occluded by a covered stent graft (JOMED 4.0 × 12 mm). Subsequently, there was no evidence for a persistent flow into the aneurysm, only a residual contrast medium deposit was present (Fig. 2B). Control angiography 6 months later showed a still sufficient occlusion of the former pseudoaneurysm (Fig. 2C).

3. Conclusion
This report shows the long-term development of a saphenous vein coronary artery bypass pseudoaneurysm that is a rare complication after bypass surgery usually occurring 10–20 years after CABG procedure [1,3,4]. More common than this type of pseudoaneurysm localized at the centre of the venous graft are pseudoaneurysms adjacent to anastomoses that potentially derive from procedural problems, e.g. suture line disruptions due to technical
failure or infections [2]. In contrast, true aneurysms are usually associated with sclerotic lesions. Both types of aneurysms could grow to marked dimensions. Because of potential similar morphological findings, definite classification requires resection and histopathological examination.

Initial signs of venous graft wall disorder from the macroscopic view by angiography occurred one decade after bypass surgery in this case. Because of increasing wall stress in square relation to the diameter, a rapid progress had to be expected. Onset of the patients’ complaints 6 h before hospital admission seems to be attributed to the coronary syndrome of the LAD graft, but also complaints concealing angina pectoris are relatable to an ongoing dilation of bypass graft aneurysms. In addition, extended aneurysms are sufficient to cause myocardial ischemia, e.g. by local compression of coronary arteries or neighbouring venous grafts [5].

This report is a reminder that every new onset of angina pectoris several years after CABG procedure is not necessarily related to progression of coronary artery disease or bypass graft failure, it could also derive from development of bypass graft aneurysms or pseudoaneurysms. Coronary angiography is the standard method to diagnose bypass graft aneurysms. Dependent on the aneurysm extension and localization, non-invasive methods, e.g. echocardiography, computed tomography or magnetic resonance imaging, could contribute to the diagnosis [1,4]. A percutaneous interventional therapeutic approach is described in a few cases. Thus, implantation of covered stent grafts is a usable method to occlude the entrance of pseudoaneurysms [6,7]. In addition, coil embolization of the aneurysm itself is described [8]. But also unsuccessful single events after percutaneous occlusion of pseudoaneurysms are known [9]. Surgical resection seems to be required for aneurysms presenting an extended entrance not qualifying for interventional closure or that kind of aneurysms that is related to anastomoses [10].

References


