Iatrogenic fistula between coronary artery bypass graft and cardiac venous system

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Case presentation

Coronary artery fistulas are coronary abnormalities in which blood is shunted into a cardiac chamber, great vessel, or other structure. To the best of our knowledge, cases of fistula between the coronary artery bypass graft and the cardiac venous system have not been described. We present the case of a 71-year-old male, with a previous coronary artery bypass graft surgery, who underwent an invasive coronary and graft angiography for a positive stress test. The patency of the left internal mammary artery on the left anterior descending artery and the presence of an aneurysmal dilatation of the vein graft (on first marginal branch and right coronary artery) were detected (Panel A). In order to confirm the diagnosis, a multidetector computed tomography (MDCT) was performed, showing a severe stenosis of the vein graft after the anastomosis with the first marginal branch (Panels B–D). Downstream of this stenosis, the graft appeared in connection with a rounded mass, with diameters of 64 × 61 mm, located in the posterior mediastinum, posteriorly to the left atrium (Panels C and D). A region of hyperdensity was also identified by MDCT at the level of the connection between the graft and the mass (Panel E) and was directly connected with the great cardiac vein. Around this region, the main portion of the mass showed low-density values, suggesting a chronic endoluminal thrombosis (Panel E). These findings were consistent with an iatrogenic fistula between the graft and the cardiac venous system. Closure of the fistula was obtained by positioning an occlusive stent on the vein graft (immediately after the first anastomosis). The good procedural result has been confirmed by MDCT (Panels F and G).

Panel A. Invasive angiography of the vein graft: aneurysmatic dilatation (arrow) of vein graft anastomosed on the first marginal branch and right coronary artery. M1, first marginal branch; VG, vein graft.

Panel B. Computed tomographic volume rendering reconstruction of the heart: the patency of LIMA and the presence of fistula between the VG and the cardiac venous system after anastomosis with M1. LIMA, left internal mammary artery; M1, first marginal branch; VG, vein graft.

Panel C. Computed tomographic volume rendering reconstruction of the heart: severe luminal narrowing of VG (arrow), followed by connection with the rounded mass (arrowheads) that contains a region of hyperdensity. M1, first marginal branch; VG, vein graft.

Panel D. Computed tomographic volume rendering reconstruction of the heart: the rounded mass seems directly connected with cardiac venous system. CS, coronary sinus; M1, first marginal branch; VG, vein graft.

Panel E. Computed tomographic axial plane. Region of hyperdensity (arrow) at the level of graft connection with the mass. CS, coronary sinus.

Panel F. Computed tomographic volume rendering reconstruction of the heart: occlusion of VG after anastomosis with first marginal branch by positioning of the occlusive stent (arrow). M1, first marginal branch; VG, vein graft.

Panel G. Computed tomographic axial plane post-occlusion of the vein graft after anastomosis with first marginal branch: disappearance of hyperdensity region inside the mass. CS, coronary sinus.

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