Clinical vignette

Coronary artery perforation complicated by cardiac rupture during conventional PCI

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A 65-year-old female hypertensive, hypercholesterolaemic patient on medical therapy for stable angina presented with worsening symptoms. Coronary angiography revealed a left coronary artery (LCA) with a 50% stenosis and a right coronary artery (RCA) subocclusion (Panel A). The patient underwent RCA angioplasty.

The RCA subocclusion was crossed with guide wire, and multiple dilations were performed using 2.0/18 and 2.5/20 mm balloons (Maverick, Boston Scientific). Two driver stents (24/3.5 and 30/4.0 mm, Medtronic) were deployed. On angiogram, there was evidence of extravasation of contrast in the pericardium (Panel B). Afterwards, the patient presented ventricular fibrillation, cardiogenic shock, and cardiac tamponade requiring cardiopulmonary resuscitation and pericardiocentesis. Two GraftMaster polytetrafluoroethylene-coated stents (12/3.0 and 19/4.0 mm, Abbott Laboratories) were deployed to seal the rupture. Because severe blood extravasation still persisted, an occlusive coronary balloon was inflated and an intra-aortic balloon pump (IABP) was inserted (Panel C). The patient underwent emergency cardiac surgery operation.

Active bleeding from the RCA in the atrioventricular groove was documented and coronary bypass was started. The vessel's wall presented an extensive defect exposing a covered stent (Panel D). The stent was removed (Panel E) but the wall damage was too extensive to be repaired. A right ventricular tear was identified and repaired. The proximal and distal ends of the coronary rupture were ligated and a saphenous vein bypass graft to the posterior interventricular artery was performed. With difficulty, the patient was weaned from cardiopulmonary bypass with inotropic drugs and IABP support. She could not be recovered from severe right ventricular failure and died after 48 h.

Panel A. Coronary angiography shows multiple severe stenosis in the middle portion of the right coronary artery.

Panel B. Coronary angiography shows the site of rupture after balloon dilatation and multiple stenting of the RCA with bare metal stents and two covered stents.

Panel C. Coronary angiography shows the right coronary artery occluded by an angioplasty balloon and a left coronary artery with a 50% stenosis of middle portion lesion.

Panel D. Intra-operative image showing the right coronary artery rupture exposing one of the covered stents.

Panel E. The covered stent removed with pieces of bare metal stent inside.