An unusual complication due to a standard coronary angioplasty procedure: Intramyocardial dissecting hematoma

A 62-year-old male patient who suffered from progressive angina pectoris for the last 3 months was accepted for coronary angiography, and critical distal stenosis of the left circumflex artery (Cx) was detected (Fig. 1a). A 2.5×15 mm Xcience coronary stent (Abbott Med, Illinois, USA) was implanted, and the final angiographic imaging showed a small intramyocardial vessel perforation at the distal end of the obtuse marginal artery due to use of a 0.014-inch hydrophilic guidewire (Fielder, Asahi Med, Tokyo, Japan) (Fig. 1b; Video 1). No pericardial effusion was detected, and the patient was transferred to the coronary care unit for close follow-up of hemodynamic compromise and/or new pericardial effusion development. One hour after the angioplasty procedure, a small cystic cavity was observed inside the inferior wall of the left ventricle due to intramyocardial hematoma and a pigtail catheter was placed into the pericardial sac percutaneously from the subxiphoid approach (Fig. 1c, 1d; Video 2). Hemodynamic status of the patient ameliorated rapidly by pericardiocentesis, but 5 minutes later, a big thrombus (Fig. 1e; Video 3) was observed at the left main bifurcation, which was treated by T and Protrusion (TAP) stenting technique and final kissing dilatation by Nexgen bare metal stents (4.5×19 mm and 4.0×16 mm) (Meril Med, Mumbai, India) after intravenous administration of 70/kg unfractionated heparin (UFH) (Fig. 1f; Video 4). Calculated activated clotting time (ACT) was 280 seconds. At the 75th minute after the procedure, moderate pericardial effusion and long cystic cavity was observed inside the inferolateral wall of the left ventricle (Fig. 1g and 1h; Video 5). During the first shot of angiography, a bigger extravasation was observed in the distal Cx, and intravenous protamine 5000 IU was administered immediately. A 2.0×15 mm MiniTrek (Abbott Med, Illinois, USA) coronary balloon catheter was inflated at the distal part of the obtuse marginal artery. The blood was aspirated and re-administered to the circulation from the femoral vein introducer sheath. A Finecross microcatheter (Asahi Med, Tokyo, Japan) was advanced to the distal part of the obtuse marginal branch, but unfortunately, a pushable coil could not be advanced due to the steep angle of the Cx ostium originating from the left main coronary artery (LMCA). However, because of acute re-thrombosis of LMCA (Video 6) and reaccumulation of pericardial effusion, the patient had to undergo an emergent cardiac surgery. A saphenous vein graft was ligated to left anterior descending artery (LAD), and a big myocardial dissection and rupture area were observed at the inferolateral part of the left ventricle (Fig. 1i; Video 7). Despite successful repair being done and an intraaortic balloon pump being introduced, the patient could not be leaned from a heart–lung pump. The patient died due to cardiogenic shock and left ventricular failure.

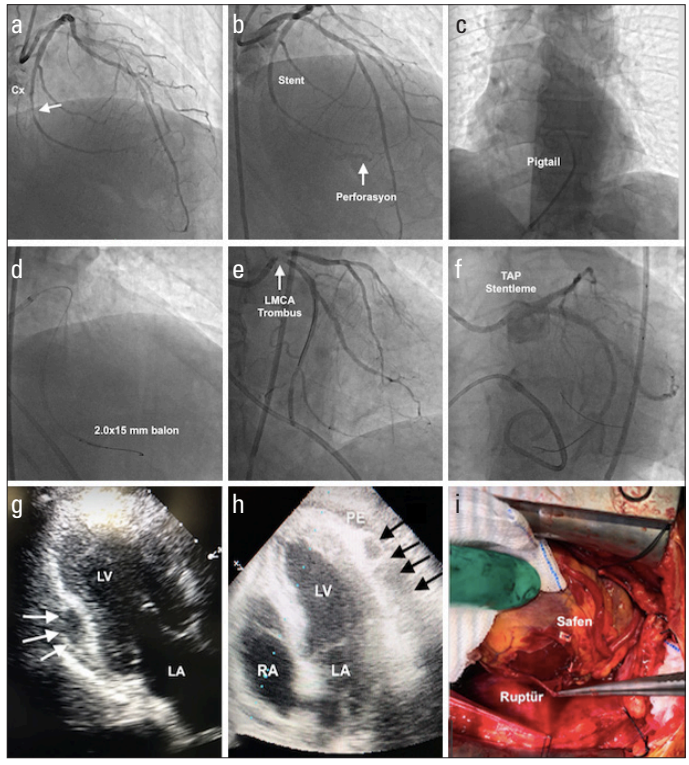

Figure 1. a. Critical stenosis at the distal part of the left circumflex artery. b. Small extravasation at the distal part of the obtuse marginal branch. c. Pigtail catheter, which was placed into the pericardial sac. d. Balloon dilatation at the distal part of the obtuse marginal branch. e. Coronary thrombosis at the left main coronary artery bifurcation. f. T and Protrusion technique and kissing balloon dilatation, which was performed at the left main coronary artery bifurcation. g. Small cystic cavity observed inside the inferior wall of the left ventricle (white arrows). h. Pericardial effusion and enlargement of the cystic cavity at the inferolateral wall of the left ventricle (black arrows). i. Intraoperative image of dissecting intramyocardial rupture and saphenous vein graft to LAD.

This case demonstrates the catastrophic complications during a routine angioplasty procedure (wire perforation, intramyocardial dissecting hematoma, pericardial tamponade, and acute coronary thrombosis), which was triggered by perforation of a coronary artery distal branch due to use of a hydrophilic guidewire.

Informed consent: Written informed consent was taken from the patient.

Video 1. Final angiographic imaging showed a small intramyocardial vessel perforation at the distal end of the obtuse marginal artery due to use of a 0.014-inch hydrophilic guidewire (Fielder, Asahi Med, Tokyo, Japan).

Video 2. A pigtail catheter was placed into the pericardial sac percutaneously using the subxiphoid approach.

Video 3. Hemodynamic status of the patient ameliorated rapidly by pericardiocentesis, but 5 minutes later, a big thrombus was observed at the left main bifurcation.

Video 4. Left main thrombus was treated by T and Protrusion stenting and final kissing dilatation by Nexgen bare metal stents (4.5 × 19 mm and 4.0 × 16 mm) (Meril Med, Mumbai, India) after intravenous administration of 70/kg UFH (calculated ACT was 280 seconds).

Video 5. At the 75th minute after the procedure, moderate pericardial effusion and long cystic cavity were observed inside the inferolateral wall of the left ventricle.

Video 6. Acute re-thrombosis of the left main coronary artery.

Video 7. A big myocardial dissection and rupture area was observed at the inferolateral part of the left ventricle during cardiac surgery.

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