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Case Report

An unusual case of distant coronary artery perforation



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ABSTRACT

Coronary perforations are likely in complex lesions like calcified coronaries or chronic total occlusions. The management is challenging in the face of hemodynamic instability. We are reporting an unusual case of coronary artery perforation. After an unsuccessful attempt to pass a guide wire in chronically occluded branch of the diagonal artery, there was type II perforation which sealed off by itself. After the procedure the patient developed cardiac tamponade for which pericardiocentesis was done. After initial improvement in hemodynamics the patient developed signs of tamponade again with continuous drainage of blood from pericardial space. A check shoot, surprisingly showed a type III perforation in the distal LAD! No hardware had been passed into the distal LAD. Retrospectively it was thought that the cause was the pericardiocentesis needle which had nicked the LAD during pericardiocentesis.

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This is an unusual case of double coronary artery perforation at the site of CTO in diagonal and in the distal LAD.

1. Case report

A 51-year-old hypertensive gentleman presented with typical angina on exertion since 5 days. His ECG showed infero-lateral ischemic changes and his echocardiography showed hypokinesia of distal interventricular septum and apex, with an LV ejection fraction of 50%.

His coronary angiography was showed minor plaques in the left anterior descending artery (LAD) (Fig. 1). His first diagonal branch had a 70% stenosis in the mid segment. The diagonal divided in to an upper and lower branch, of which the lower branch had a chronic total occlusion (CTO), filling via ipsilateral collaterals. The left circumflex artery (LCx) was a non-dominant vessel and the first obtuse marginal branch (OM1) had a 70% tubular stenosis in the proximal part. The right coronary artery was dominant and normal (Video 1).

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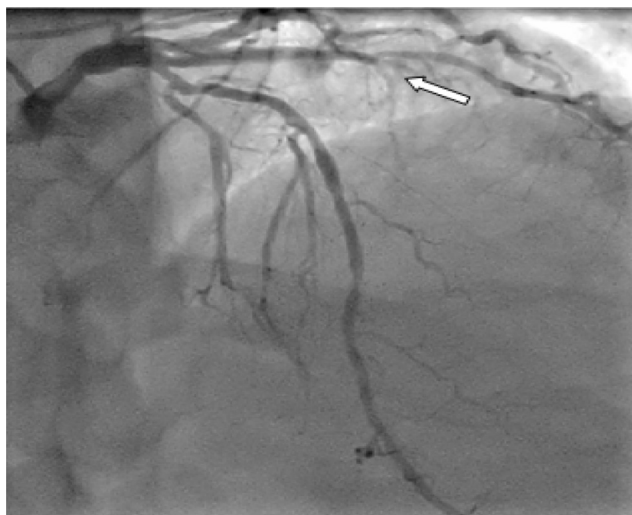


Fig. 1 – RAO cranial view angiography in showing stenosis upper branch of diagonal and CTO of lower diagonal branch.

Patient underwent angioplasty. The CTO of the lower branch of the diagonal was attempted initially. A Fielder FC guide and Ultimate 3 (Asahi Intecc Co, Ltd, Aichi, Japan) guide wires failed to cross the CTO. A Conquest pro 12 guide wire (Asahi Intecc Co, Ltd, Aichi, Japan) seemed to cross the lesion and fine cross microcatheter was advanced over the wire (Fig. 2).

To confirm the position of the microcatheter in the true lumen of the vessel, 2 cc of dye was injected into the microcatheter. This showed that the microcatheter was in the false lumen. There was staining of myocardium with dye indicating a type II coronary artery perforation. The wire and microcatheter were withdrawn.

Since the patient was hemodynamically stable, he was observed and check shoots were done few minutes later. After withdrawing the fine cross microcatheter, it did not show any dye staining or perforation. It was decided to abandon the

CTO and proceeded with stenting of the upper branch of the diagonal with 2.25×14 sirolimus eluting stent and the OM1 branch with a 2.25×14 sirolimus eluting stent. The result was excellent. There was no evidence of perforation or tamponade at the end of the procedure and the patient was shifted to the recovery room (Fig. 3).

Half an hour after the procedure, the patient developed hypotension and tachycardia. There were no ECG changes. The echocardiography showed a pericardial effusion with cardiac tamponade.

Patient immediately shifted back to cath lab and check angiography was done to look for the perforation. However, there was no evidence of coronary perforation on angiography. In view of tamponade and deteriorating hemodynamics, pericardiocentesis was done. A pigtail catheter was kept in the pericardium and 500 cc of blood was aspirated. His hemodynamics immediately improved. It was postulated that the initial attempt at opening the CTO lead to a perforation and tamponade which sealed off by itself. The rapid accumulation of fluid in the pericardial space resulted in hemodynamic collapse, which should have resolved after initial pericardiocentesis.

However, every time the pericardiocentesis was stopped for a few minutes, the patients hemodynamics deteriorated. The source of the continuous bleeding into the pericardium was elusive. Hence while continuing pericardial aspiration, an angiography was done again. This showed a type III perforation in the distal LAD which was the source of the recurring pericardial effusion and tamponade (Video 2). This was unusual since there had been no hardware passed into the LAD throughout the procedure. During the procedure heparin (70 u/kg bolus) was used for anticoagulation and targeted activated clotting time 250 s. Recorded ACT was 80 s during repeat angiography so reversal of anticoagulation not considered. A 2.0×12 mm semi compliant balloon was passed upto the perforation site and was inflated at 8 atm twice for 15 min each. The patients hemodynamics improved and pericardial aspiration ceased. However, repeat angiography showed persistence of the perforation. Hence a 2.5×18 mm pericardium covered stent (over and under pericardium

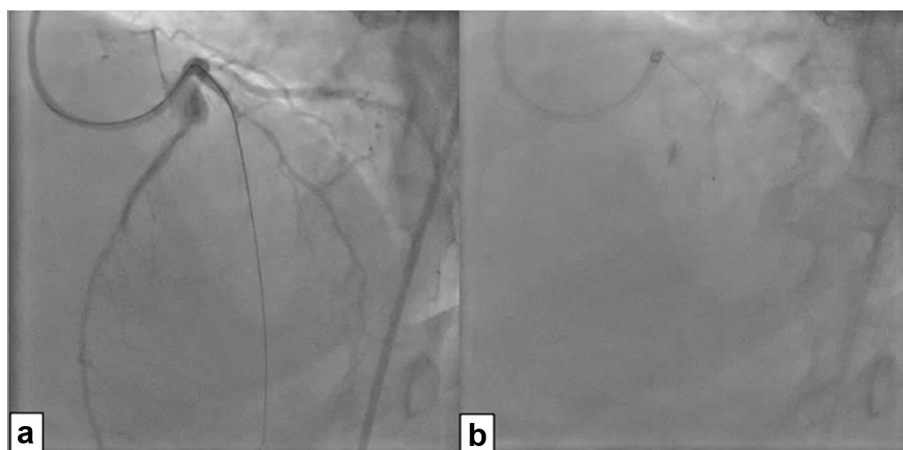


Fig. 2 – (a) Conquest pro guide wire was passed through the CTO of lower branch of diagonal (b) Check shoot of contrast through microcatheter showed that microcatheter was in falls lumen and dye staining suggestive of type II perforation.

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