1113 Successfully managed two catastrophic events in a patient with complex coronary artery disease

This case involves a 56 year-old patient who present with chest pain. Several years ago, he was admitted to other institution for the treatment for angina pectoris. Two coronary stents were implanted in the big diagonal branch and left circumflex artery (LCX). In addition, there was a chronic total occlusion (CTO) of the left anterior descending artery (LAD). Anterograde guidewire tracking was tried by single wire and parallel wire techniques but failed at that time. He was a hemo-dialysis patient with hypertension and dyslipidemia under treatment with ACE inhibitor and statin.

First catastrophic event :

Coronary artery disease was characterized by a critical occlusion of the right coronary artery (RCA) and a CTO of the LAD. The culprit lesion at the RCA segment was treated using a 3.0 x 18 mm coronary stent. A few days later, the patient complained of chest pain again and we realized that the thrombus in the distal RCA remained untreated. Stent positioning seemed to be difficult with a conventional guiding catheter. So, an AL-1 6 Fr guiding catheter was pushed further in the RCA ostium carefully. However, angiography revealed a dissection starting from the RCA ostium (catheter induced RCA dissection). At first, the decision was made to perform stent implantation for the thrombus lesion at the distal RCA, and balloon angioplasty was done with a 3.0 x 15 mm balloon. The patients developed severe chest pain radiating to shoulders, associated with diaphoresis. Since the dissection appeared to progress into the previously implanted stent and the delivery of stent into the thrombus lesion in the distal RCA, a 3.5 x 18 coronary stent was deployed. Subsequent angiography revealed that the dissection was not sealed completely and a flap was visible at the superior margin of the implanted stent. Therefore, two additional coronary stents were implanted for adequate coverage of the dissection’s entry. Follow up angiography revealed a patent RCA without evidence of further entry. The necessity for treating the distal RCA lesion was slated to be evaluated at follow up, although the thrombotic lesion was treated only using balloon angioplasty. The patient was discharged on the third day on dual anti-platelet agents along with routine post-angiography medication. On regular follow up, he was in good condition and did not report any symptoms.

Second catastrophic event :

Three months later, a cardiac MRI showed viable myocardium in the anterior territory, and he was admitted for an attempt to revascularize LAD-CTO. Bilateral simultaneous injection showed a contralateral retrograde filling of LAD from septal collaterals, originating from RCA. A retrograde approach was selected as the initial strategy, but, the guidewire-microcatheter combination was unable to make a retrograde crossing of the lesion. Therefore, antegrade approach for LAD-CTO was attempted again. To keep the true channel was too difficult and the guidewire reached the distal true lumen of LAD with the “subintimal tracking and reentry” (STAR) technique (Free movement of wire tip during rotation and lesser resistance to advance is a mark of subintimal position (the wire turns around the vessel lumen, giving the appearance of lengthening the tip curve).The wire is considered completely in the false lumen, when the resistance of the wire tip to advancement decreases. Once the wire enters into the subintimal space, it is hard to redirect it into the true lumen without dedicated re-entry techniques and/or technologies, because the resistance of the subintimal tissue against the wire tip is much lower than toward the true lumen. Furthermore, enlargement of subintimal space pushes the plaque toward distal true lumen, resulting in its collapse. Both of these situations lead to failure of cross wire and increase the risk of myocardial injury. However, unintentional guidewire manipulation occurred an extravasation of contrast material at the mid portion of the LAD-CTO. Detachable coils were implanted and the absence of extravasation was confirmed in repeat angiography. The, PCI of LAD with one DES implantation was first performed. Shortly afterwards, the patient showed sudden hypotension and dyspnea. Since echocardiogram showed a massive

pericardial effusion with tamponade, emergent pericardiocentesis was performed, yielding 300 ml of blood auto-transfused thereafter via femoral venous catheter. With the support of Extracorporeal Membrane Oxygenation (ECMO), coronary angiography was performed, again. It showed that there was no extravasation of contrast material around the LAD or the pericardium, but the implanted DES was collapsed due to vascular spasm and elastic recoil of the vessel. As the patient showed hemodynamically stability, we decided not to intervene the LAD. The in-hospital stay was uneventful and the patient was discharged after two weeks.