Progressive Intermittent Complete Balloon Occlusion In Ruptured Coronary Artery

10

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Rupture of coronary artery secondary to high pressure balloon dilatation, is a life threatening complication of percutaneous coronary intervention (PCI) especially for complex coronary artery disease. We would like to report a case of 72-year-old lady presenting with stable angina on effort despite optimal medical therapy. Her initial angiogram revealed left main and triple vessel disease which was also heavily calcified. Since she refused bypass surgery, PCI was undertaken and RCA was first opened successfully.

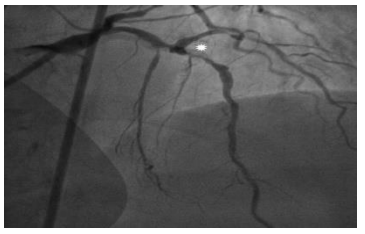

Figure 1 Heavily calcified LAD with critical proximal stenosis

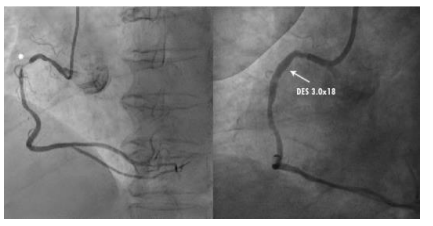

Figure 2(A) Proximal subtotal occlusion of RCA

(B) Successful reopening of RCA with DES Combo 3.0x18

After that LAD was approached and even after repeated balloon dilatation using scoring and non-compliant balloon as means of lesion preparation, the stent cannot be delivered to proximal LAD. Therefore Guide Extension Catheter had to be used to deliver the stent. Finally POT was done at proximal part with NC Sapphire 4.0 x 10 upto 20 atm, this damaged and caused the LAD to rupture, with majority of blood spilling into right ventricular outflow tract and some into the pericardium with subsequent development of pericardial tamponade.

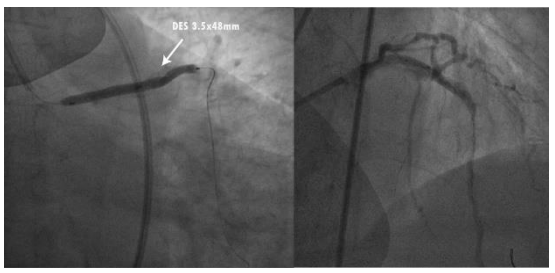

Figure 3 Deployment of DES Xience Xepedition

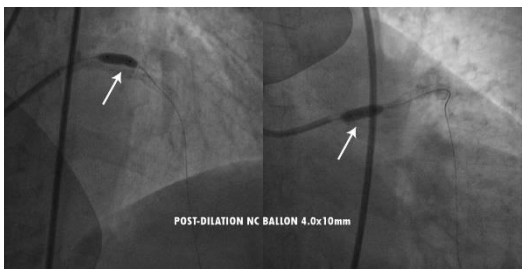

Figure 4 Dilatation with NC Sapphire® 4.0x 10 at proximal LAD

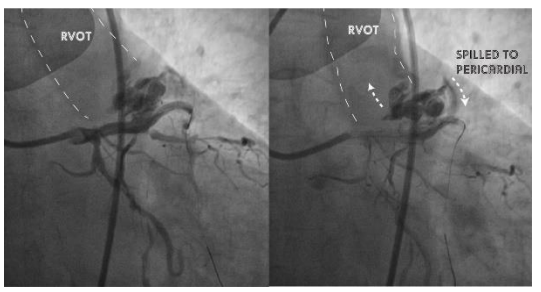

Figure 5. Jet flow of contrast into RVOT and to pericardium

Progressive complete balloon occlusion was done with Sapphire II 3.5x15 repeated for seven cycles of occlusion followed by one minute of deflation, the time of occlusion started from 3 minutes and progressively increased to maximum of five minutes. When performing angiogram to check the vessel status, dislodgement of the small clot acting as plug on the ruptured vessel was noted possibly due to forceful contrast injection. Accordingly repeated angiogram was decided to be deferred until after 30 minutes which when done showed the jet to be reduced to 1 mm. After further occlusion of 5 minutes the last angiogram revealed that the site of rupture was completely sealed. The most important thing in the event of perforation is to remain calm during the crisis. The pericardiocentesis should be initiated simultaneously by well-coordinated team in the presence of tamponade. Reversal of anticoagulation may not always be essential. Monitoring and supporting of the vital signs is equally important.

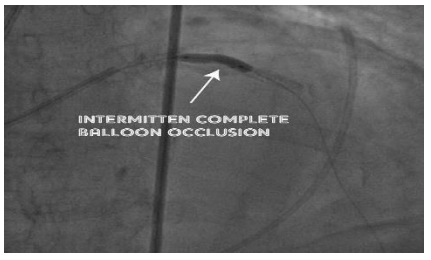

Figure 6 Intermittent complete balloon occlusion at the site of perforation

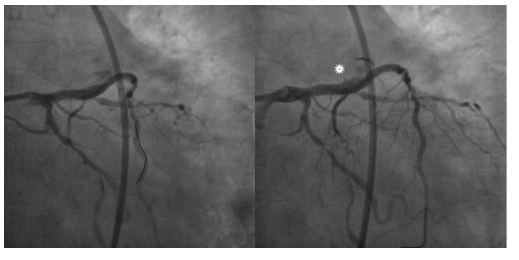

Figure 7. Dislodgment of small clot due to forceful contrast injection

Figure 8 Perforation successfully sealed with no more contrast extravasation

Conclusion : Balloon occlusion method if applied properly for adequate duration is a very safe procedure which is in a position to make the use of cover stent which is not readily available, bulky to deliver and associated with increased risk of restenosis as a late complication.