Elective percutaneous coronary intervention complicated by coronary rupture

Intervenção coronária percutânea eletiva complicada por rotura coronária

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Received 2 July 2014; accepted 3 November 2014
Available online 20 February 2015

Coronary artery rupture is a rare but potentially fatal complication of percutaneous coronary intervention (PCI) that can result in life-threatening cardiac tamponade.

A 69-year-old man was referred for PCI of a 90% calcified lesion in the mid left anterior descending artery (LAD) involving the second diagonal branch (D2; Figure 1, arrow). After the left coronary ostium was cannulated and crossed with two BMW® wires, one to the LAD and other to the D2, predilation with a 2.5 mm×15 mm Trek® balloon was performed and an unsuccessful attempt was made to cross the stenosis with a 2.75 mm×22 mm Resolute Integrity® drug-eluting stent. Predilation was repeated with a 2.75 mm×15 mm Trek® non-compliant balloon at high pressure. Suddenly, balloon rupture was detected and the angiogram showed LAD rupture with extensive contrast extravasation into the pericardium (Figure 2, arrows; Video 1). Protamine sulfate was used to reverse the effect of heparin and the drug-eluting stent was deployed with balloon inflation for 10 minutes to seal the type III perforation but, as dye extravasation persisted, a 3.0 mm×19 mm GraftMaster® covered stent was superimposed, followed by rapid cessation of contrast leakage (Video 2). The D2 branch was lost (Figure 3, arrows), and periprocedural myocardial infarction occurred. The final image showed pericardial effusion (Figure 4; Video 3). The echocardiogram excluded tamponade. Forty-eight hours later, atrial fibrillation occurred with hemodynamic deterioration. Pericardiocentesis was performed and 50 ml of serosanguineous fluid was drained. Sinus rhythm was restored, with favorable evolution thereafter.

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http://dx.doi.org/10.1016/j.repc.2014.11.006
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Treating calcified bifurcated lesions with balloons at high pressure must be performed with caution. If grade III perforation occurs, a standard stent can be used to save the side branch, although this is only successful in a minority of patients.