

Hendra Gunawan¹Muhammad Yamin¹, Simon Salim¹, Angga Pudianto¹¹ Cardiovascular, Cipto Mangunkusumo Hospital, Indonesia**Target Lesion**

A case report of Coronary Artery Perforation (CAP) after PCI to the target vessel to LAD was reported.

Case Report

A 70-years old male was referred from urology department for atherosclerotic heart disease management. His chief complaint was dyspnea and typical chest pain. He had a history of hypertension on amlodipin 5 mg, Stage IV Renal Cell Carcinoma on Oral Chemotherapy (Pazopanib 400 mg bid), and >30 years of smoking history (2 cigarette sticks a day; last smoking on 2020). His Coronary Cardiac CT-Scan showed the presence of Coronary Artery Disease 3-Vessel Disease (LAD, LCX and RCA). His vital signs were hypertensive (150-160/80-90 mmHg), HR 80 bpm, RR 18/min, and SpO₂ 99% before procedure. His initial coronary angiography showed the presence of diffuse stenosis 70-80% with calcified plaque on proximal-mid LAD, diffuse stenosis 80-85% with calcified plaque on proximal-mid LCX, and Stenosis 30-40% on distal RCA. The initial medical decision was to perform staging PCI starting from LAD.

Percutaneous Coronary Intervention on LAD was conducted using EBU 3.5/6Fr from right radial artery access. Workhose wire was advanced to distal LAD, and operator predilated the lesion with Non-Compliant (NC) Balloon 3.0 x 12 mm at 12-16 atm for 10 seconds. Using a 3.5x33 mm DES, stent was implanted in the mid-proximal LAD at 12 atm for 15 seconds followed with post-dilation with NC balloon 4.5x8 mm inflated at 12 atm for 10 seconds. During evaluation a contrast extravasation was observed in mid LAD. During 30 minutes observation he complained shortness of breath, moderate intensity chest pain, and his vital signs rapidly deteriorated to 71/47 mmHg, HR 102-108 bpm, RR 25/min, SpO₂ 96% and echocardiography revealed the presence of moderate pericardial effusion.

Based on the findings, rescue pericardiocentesis was conducted and 314 ml of blood was evacuated. Angiography was conducted and revealed the presence of Ellis 3 CAP in the distal segment of stent in mid LAD. Therefore, prolonged balloon inflation with NC balloon 3.5x15 mm was conducted for 6 minutes, repeated one time with 2 minutes break, but the contrast extravasation still occurred. Then, cover stent (BEGRAFT) 3.5 x 15 mm was implanted at 14 atm for 20 seconds in the distal part of the mid LAD stent followed by prolonged balloon inflation using NC balloon 3.5x15 mm inflated at 8-10 atm for 6 minutes repeated 3 times, with 2 minutes break between each cycle to reduce ischemia time. Evaluation of angiography showed reduction of contrast extravasation. His vital sign improved to 130-140 mmHg, HR 96 bpm, RR 18/min, SpO₂ 98-99%, and he was admitted to ICCU.

After 3 hours observation, he complained shortness of breath, moderate intensity chest pain, and his vital signs deteriorated again to 96/84 mmHg, HR 87-113 bpm, RR 16-21/min, SpO₂ 100%. Echocardiography confirmed the presence of large pericardial effusion and 265 mL of blood was evacuated from the pigtail catheter. Therefore, he was admitted to catheterization laboratory again to have coronary angiography conducted. Angiography confirmed the presence of contrast extravasation consistent with Ellis 3 CAP. Because the first cover stent was implanted in the distal part of the stent, we decided that the perforation site was located in the proximal part of the stent. Therefore, balloon inflation with NC Balloon 3.5x15 mm was inflated in the proximal part of the stent for one minute. However, this time we injected contrast medium during inflation to ensure the location of the perforation and no contrast extravasation was observed during the balloon inflation. Based on the finding, we decided to implant the second cover stent 3.5x15 proximally from the first cover stent at 16 atm for 20 seconds. To ensure the perforation site was completely sealed, contrast medium was injected during second cover stent implantation and it revealed no contrast extravasation. After the second cover stent implantation, patients' vital sign improved to 135/85 mmHg, HR 80-86 bpm, RR 14-18/min, SpO₂ 100%. Evaluation with angiography confirmed the contrast extravasation reduced significantly and he was transferred back to ICCU. The patient's condition improved during the 3 days, and the blood drained from the pigtail catheter reduced significantly after the second cover stent implantation (300 mL in the next 24 hours and furtherly reduced to 40 mL in the 24-48 hours period). He was discharged in the 5th day of admission.

Conclusion

This case report reviews a case PCI complicated with coronary artery perforation. Locating the coronary artery perforation site can be challenging because of the rapid clinical deterioration of patient's condition requiring prompt and immediate response. Using contrast injection during prolonged balloon inflation and cover stent implantation is an alternative way to define to location of coronary artery perforation.