INTRODUCTION

Coronary artery perforation (CAP) is a rare and fatal complication of percutaneous coronary intervention (PCI) (1). CAP is classified according to its location into 3 categories: large vessel, distal vessel, and septal or epicardial collateral perforation (2). Early detection of CAP is very important to begin treatment. In this case report, we present the management of a patient who developed CAP during PCI.

CASE REPORT

A 76-year-old male patient with a history of coronary artery bypass graft was admitted to the emergency department with acute chest pain. Vital signs of the patient included a heart rate of 65 bpm, blood pressure 120/75 mm Hg, and spO2 97%. Electrocardiography showed Mobitz type 1 AV block with ST-segment elevation in the inferior leads (Fig. 1). Echocardiography revealed that the left ventricular ejection fraction was 35% with motion defects in the apex and inferior walls. The patient was taken to the catheter laboratory for PCI. Coronary angiography revealed total occlusion in the distal branches of the right coronary artery (RCA) (Fig. 2a). RCA distal branches were wired (Fig. 2b). Dilatation was performed to both the occluded branches with a 1.5×20 mm balloon. It was observed that there was extravasation in the distal part of the RCA owing to perforation (Fig. 2c, Supplementary Video 1). The balloon was inflated proximal to the area of the rupture, and distal blood flow was interrupted. It was observed that extravasation continued despite prolonged balloon inflation (PBI) (Fig. 2d). As we did not have a 2.5 mm diameter covered stent or coil, we decided to apply the modified cut balloon tech-
nique. The 1.5×20 mm monorail balloon was cut from proximal part of the balloon’s marker and delivered over the wire with its own shaft to the proximal part of the ruptured area. A balloon was inflated through the side branch to the ostium of the target branch (yellow arrow). The wire of the cut-balloon was taken back (yellow arrow). A stent was implanted to the side branch (yellow star), and part of the balloon was jailed between the stent and the vessel (yellow arrow). Final angiographic images showing no extravasation.

CONCLUSION

The cut balloon technique represents an effective and safe treatment option for the management of CAP during PCI. It can be easily applied with balloons and stents used in routine practice, and the patient may not need surgery.

REFERENCES

1. Shimony A, Joseph L, Mottillo S, Eisenberg MJ. Coronary artery perforation during percutaneous coronary intervention: a systematic review and meta-analysis. Can J Cardiol 2011; 27: 843-50. [Crossref]
2. Xenogiannis I, Brilakis ES. Advances in the treatment of coronary perforations. Catheter Cardiovasc Interv 2019; 93: 921-2. [Crossref]
3. Dash D. Complications encountered in coronary chronic total occlusion intervention: Prevention and bailout. Indian Heart J 2016; 68: 737-46. [Crossref]

4. Giannini F, Candilio L, Mitomo S, Ruparelia N, Chieffo A, Baldetti L, et al. A Practical Approach to the Management of Complications During Percutaneous Coronary Intervention. JACC Cardiovasc Interv 2018; 11: 1797-810. [Crossref]

5. Solomonica A, Kerner A, Feld Y, Yalonetsky S. Novel Technique for the Treatment of Coronary Artery Perforation. Can J Cardiol 2020; 36: 1326.e1-3. [Crossref]