Successful bailout T-stenting for iatrogenic coronary dissection involving left main stem bifurcation: "first, do no harm"

Authors: George Kassimis, Konstantinos C. Theodoropoulos, Nestoras Kontogiannis, Tushar Raina

Article type: Clinical vignette

Received: April 29, 2020.

Accepted: August 3, 2020.

Published online: August 13, 2020.

ISSN: 0022-9032
e-ISSN: 1897-4279

This is an Open Access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives 4.0 International License (CC BY-NC-ND 4.0), allowing third parties to download articles and share them with others, provided the original work is properly cited, not changed in any way, distributed under the same license, and used for noncommercial purposes only. For commercial use, please contact the journal office at kardiologiapolska@ptkardio.pl.
Successful bailout T-stenting for iatrogenic coronary dissection involving left main stem bifurcation: "first, do no harm"

George Kassimis¹,², Konstantinos C. Theodoropoulos², Nestoras Kontogiannis¹*, Tushar Raina¹

¹Department of Cardiology, Cheltenham General Hospital, Gloucestershire Hospitals NHS Foundation Trust, Cheltenham, United Kingdom.

²2nd Cardiology Department, Hippokration Hospital, Medical School, Aristotle University of Thessaloniki, Greece

Address for correspondence*: Nestoras Kontogiannis MD

Consultant Interventional Cardiologist

Department of Cardiology

Cheltenham General Hospital

Gloucestershire Hospitals NHS Foundation Trust

Cheltenham, GL53 7AN

United Kingdom

Email: kontonest@gmail.com, tel: 0300 422 2222

Short title: Iatrogenic left main dissection
A 58-year-old woman with a background of hypertension and hyperlipidaemia was admitted to our non-surgical centre due to an acute coronary syndrome. Transradial coronary angiography (CA) revealed a normal dominant right coronary artery. The left coronary system was engaged with a diagnostic 6Fr Judkins Left 3.5 catheter. The initial views (Supplementary material, Video S1-2, Figure 1A) showed a normal left main stem (LMS) with unobstructed left anterior descending (LAD) and left circumflex (LCx) arteries. However, a subsequent contrast injection demonstrated an iatrogenic LMS dissection mimicking complete proximal occlusion of the LMS branches (Supplementary material, Video S3, Figure 1B). The patient developed severe chest pain, ST-segment elevation on ECG and a significant blood pressure drop. Analgesia, oxygen, fluid resuscitation and inotropic support were administered immediately. Bailout percutaneous coronary intervention (PCI) was decided since coronary artery bypass graft surgery (CABG) was not an available prompt option. A 6 Fr Judkins Left 3.5 guide catheter was used and two Balance Middle Weight (BMW) guidewires (Abbott Cardiovascular, CA, USA) were advanced through the intraluminal LCX and LAD branches, while the second operator was setting an intra-aortic balloon pump (IABP) (Supplementary material, Video S4, Figure 1C). A Resolute Onyx 3.5x26mm (Medtronic, USA) drug eluting stent (DES) was deployed distally to seal the dissection (white arrow, Figure 1C) in the LCx. Then, a second Resolute Onyx 4.0x30mm DES (Supplementary material, Video S5) was deployed from LMS ostium into the proximal LCx (Figure 1D). Both stents were post-dilated at 20 atm with non-compliant (NC) balloons. Following proximal optimisation technique (POT) of LMS stent with a 4.0x15mm NC balloon, we successfully managed to cross a Sion blue guidewire (Asahi Intecc, Seto-shi, Aichi, Japan) into the “true lumen” LAD through the distal LMS stent struts (Supplementary material, Video S6-7). A Resolute Onyx 3.5x15mm DES was deployed in proximal LAD extending up to the LAD ostium (Figure 1E). A residual dissection in mid-LAD
(Supplementary material, Video S8) was sealed with a further Resolute Onyx 2.75x38mm DES. Final kissing balloon inflation (FKBI) with two NC 3.5x12mm balloons was performed at 12 atm with good final flow in all branches (Supplementary material, Video S9, Figure 1F). The patient had a good recovery. Six months later a stress cardiac magnetic resonance showed no evidence of inducible myocardial ischemia.

Iatrogenic LMS dissection is a potentially lethal complication of CA with a reported incidence of less than 0.1% [1, 2]. Catheter manipulations, vigorous contrast injection or unskilled wiring are the main causes [1-3]. In our case, one can remark that the catheter tip is directed towards the roof of the LMS (Supplementary material, Video S2), which might have caused a hydraulic dissection during injection, rapidly extended to LAD and LCX arteries. Prompt bailout PCI or emergency CABG are the treatment options for iatrogenic LMS dissection [3]. When PCI is scheduled, wiring the true lumen is paramount, as wiring and stenting of the false lumen could be catastrophic leading to patient’s death. In case of uncertainty, intravascular ultrasound (IVUS) can be extremely helpful to confirm true lumen wiring [1]. In our case, IVUS imaging was not performed due to the haemodynamic instability of the patient.

Acknowledgements

None
References


A: Unobstructed left main stem (LMS), left anterior descending (LAD) and left circumflex (LCx) coronary arteries.

B: Proximal occlusion of LAD and LCx coronary arteries due to iatrogenic LMS dissection.

C: A Resolute Onyx 3.5x26mm (Medtronic, USA) drug eluting stent (DES) was deployed distally to seal the dissection (white arrow) in the LCx.

D: A second Resolute Onyx 4.0x30mm DES was deployed from LMS ostium into the proximal LCx.

E: A Resolute Onyx 3.5x15mm DES was deployed in proximal LAD extending up to the LAD ostium.

F: Good final angiographic result.

IABP: Intra-aortic balloon pump