

Iatrogenic coronary artery perforation resulting in intramyocardial haematoma and ventricular pseudoaneurysm

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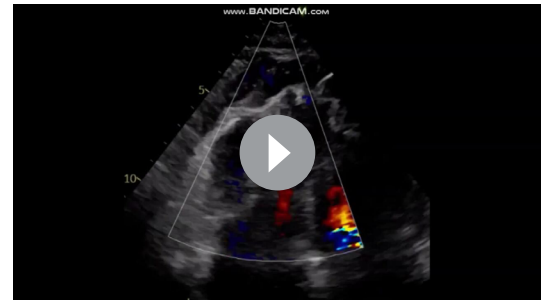
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DESCRIPTION

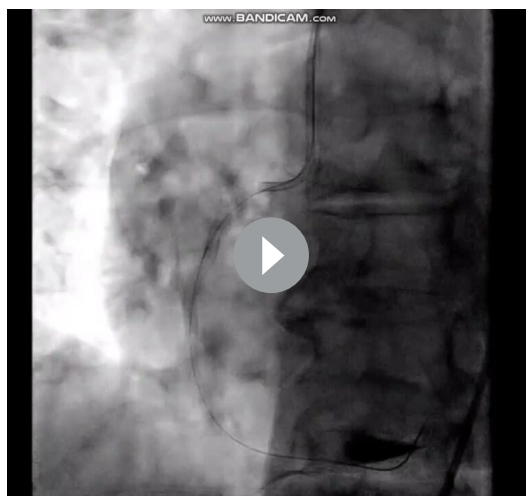
A woman in her 60s with history of hypertension presented with typical left-sided chest pain for 2 hours. The pain radiated to her left jaw and was associated with diaphoresis. On presentation, her vital signs were stable and physical examination was unremarkable. Laboratory evaluation revealed elevated troponin-I levels (2.7 ng/mL) and an initial ECG showed ST-segment elevation in inferior leads. The patient was taken for immediate coronary angiography which revealed 75% occlusion of proximal-right coronary artery (RCA) and a 90% occlusion of mid-RCA. The latter lesion was heavily calcified necessitating utilisation of rotational atherectomy. Atherectomy was performed with a 1.25 burr over a floppy wire. Thereafter, a self-contained RCA perforation was visualised distally; likely secondary to the floppy wire (video 1). Three drug-eluting stents were placed in the RCA and the patient remained haemodynamically stable throughout the percutaneous coronary intervention (PCI). She was then transferred to the intensive care unit for monitoring. The next day, patient exhibited persistent hypotension with a mean arterial pressure of 55 mm Hg and was initiated on norepinephrine drip. Transthoracic echocardiography showed development of a 6 cm × 3 cm haematoma in right ventricular (RV) wall and an extremely thin apical wall concerning for RV pseudoaneurysm (video 2). The haematoma was noted to be completely collapsing RV cavity. The patient



Video 2 Transthoracic echocardiography (four-chamber view; focused on right ventricle) showing development of a haematoma in right ventricular (RV) free wall and an extremely thin apical wall concerning for RV pseudoaneurysm.

was started on a high-rate infusion of intravenous normal saline (150 mL/hour) to increase preload. This resulted in improvement of blood pressure and patient was able to be weaned from norepinephrine drip. Clopidogrel was chosen as the antiplatelet of choice to minimise risk of bleeding. Our patient was monitored for a few more days to ensure haemodynamic stability before being discharged.

Iatrogenic coronary artery perforation (CAP) is a rare but fatal complication of PCI with an incidence of 0.43% according to one study.¹ Use of atheroablative procedures for complex coronary artery lesions is a common aetiology for CAP.² This can lead to development of cardiac haematomas (subepicardial, intramyocardial) which have a high fatality rate.³ These haematomas can either be treated to offset any haemodynamic compromise or monitored till they resolve.⁴ Our case is unique in that we present both intramyocardial haematoma and ventricular pseudoaneurysm as potential complications of iatrogenic CAP. We further demonstrate how high rate of intravenous fluid administration improves right-sided filling pressure in a scenario of a haematoma compressing RV cavity.



Video 1 A self-contained distal right coronary artery perforation can be visualised.



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Learning points

- ▶ Rotational atherectomy is an important risk factor for iatrogenic coronary artery perforation.
- ▶ Right ventricular haematoma and pseudoaneurysm are potential complications of right coronary artery perforation.
- ▶ Aggressive fluid administration should be undertaken in the setting of hypotension as these patients are preload dependent.

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

REFERENCES

- 1 Shimony A, Joseph L, Mottillo S, *et al.* Coronary artery perforation during percutaneous coronary intervention: a systematic review and meta-analysis. *Can J Cardiol* 2011;27:843–50.
- 2 Gunning MG, Williams IL, Jewitt DE, *et al.* Coronary artery perforation during percutaneous intervention: incidence and outcome. *Heart* 2002;88:495–8.
- 3 Jegatheeswaran A, Cohen MS, Gaynor JW, *et al.* Extracorporeal membrane oxygenation as a novel management strategy for interventricular septal hematoma following ventricular septal defect repair. *J Thorac Cardiovasc Surg* 2020;159:1936–40.
- 4 Corona S, Sirbu V, Perforation CA. Coronary artery perforation, subepicardial hematoma, and cardiac tamponade after complex percutaneous coronary intervention. *JACC Case Rep* 2021;3:1594–8.

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