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Rowan-Virtua Research Day

23rd Annual Research Day

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May 2nd, 12:00 AM

### Coronary No-Reflow Following Percutaneous Intervention

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Khalid, Yaser D.O.; Patel, Harsh D.O.; and Levine, Adam D.O., "Coronary No-Reflow Following Percutaneous Intervention" (2019). *Rowan-Virtua Research Day*. 30.

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## INTRODUCTION

- Primary percutaneous coronary intervention (PPCI) is the gold standard of treatment of ST segment elevation myocardial infarction (STEMI).
- PPCI restores thrombolysis in myocardial infarction flow 3 (TIMI 3) in over 90% of patients [1].
- However, in rare instances, coronary revascularization does not lead to coronary reperfusion, instead there is a further decrease of coronary blood flow.
- The cause of no-reflow can be classified into four main pathogenetic components: distal athero-thrombotic embolization, ischemia-related and/or reperfusion-related injury, and the susceptibility of coronary microcirculation to injury.
- The purpose of this case report is to show early and clear identification of the no re-flow and follow its management. It can occur in up to 10% of cases of primary PCI and is associated with an increased 30 day mortality if not adequately treated (32% vs. 2.8%, p<.0. 001) [2].

## CASE REPORT

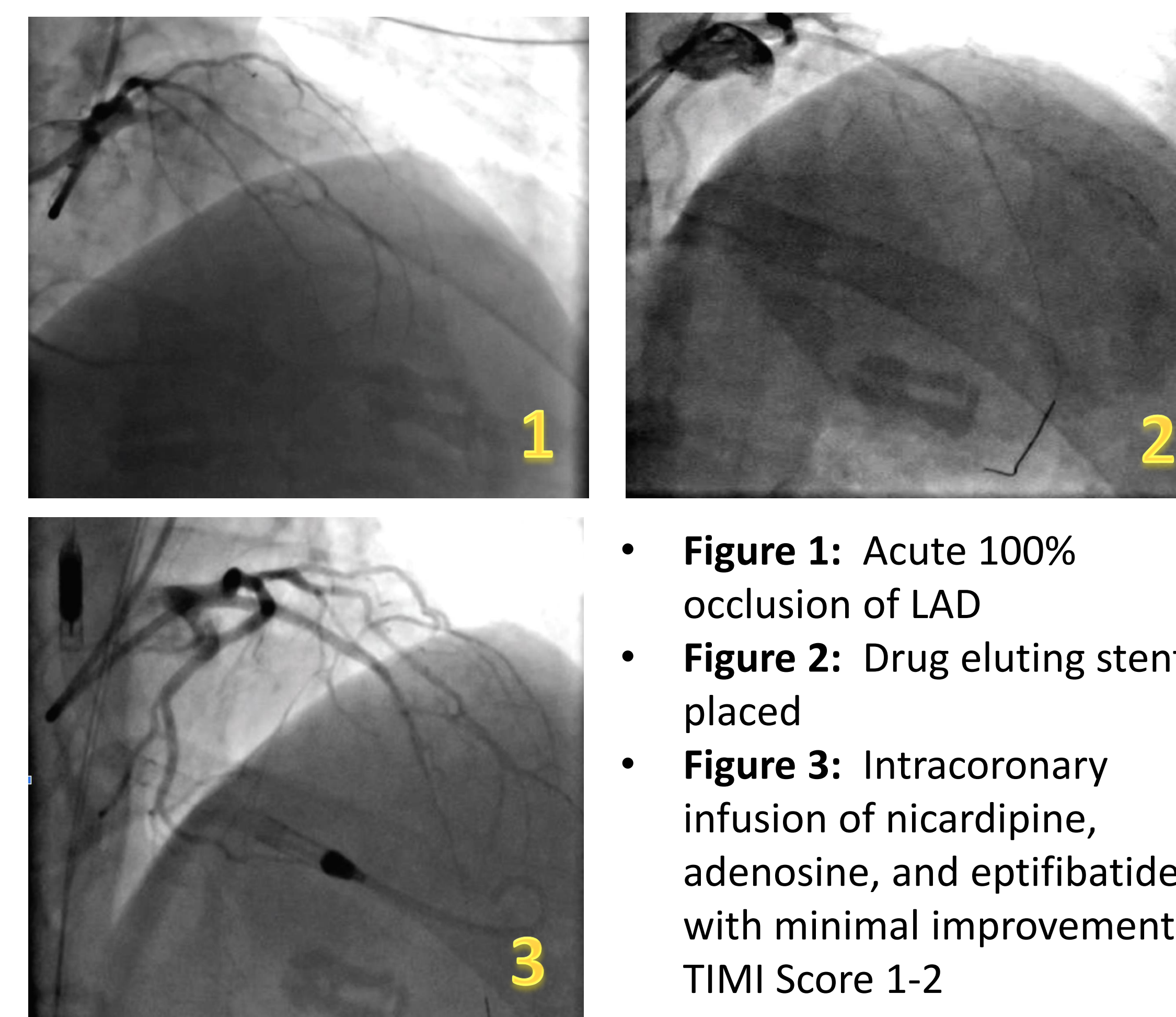
- A 76-yr-old female presented to the emergency department with new-onset substernal chest pain over 3 days.
- Her primary care physician initially diagnosed her with GERD, but then her chest pain acutely worsened and she developed dyspnea on exertion as well

- **PMH:** hypertension, hyperlipidemia, type 2 diabetes mellitus, Raynaud's disease, rheumatoid arthritis, degenerative joint disease, and Sjogren's disease.
- **Vital Signs:** blood pressure 52/44, pulse of 122, respiratory rate of 20, temperature 36.8 C, and SpO2 100% on room air.
- **Physical Exam:** findings were unremarkable.
- **EKG:** On admission showed an anterolateral wall ST-elevation myocardial infarction (STEMI) for which she had to be taken emergently for left heart catheterization.
- **Hospital Course:** During PCI, she had a drug-eluting stent (DES) placed to 100% lesion of the proximal LAD but there was no re-flow following placement.
- The patient became bradycardic, hypotensive, and agonal; within a few minutes she had two episodes of cardiac arrest with return of spontaneous circulation (ROSC) achieved with CPR, epinephrine, and atropine.
- She then had to be sedated and intubated, started on a norepinephrine bitartrate drip for hypotension.
- For her no re-flow after stenting and coronary vasospasm, she was treated with intracardiac nicardipine, adenosine, and eptifibatide.
- There was subsequent placement of IABP

which was upgraded to a right femoral artery Impella®. Unfortunately, there was subsequent development of Impella® site bleeding and a right groin hematoma.

- On Day 2 of hospitalization, the patient's MAP dropped below 65 with increasing pressor requirements. CBC showed Hb 5.5 following 8 units of pRBC, which was concerning for acute blood loss, and patient's right groin hematoma was expanding to the abdominal wall and down her right thigh.
- At this point, the patient was urgently transferred to University of Pennsylvania for further evaluation.

## IMAGING



- **Figure 1:** Acute 100% occlusion of LAD
- **Figure 2:** Drug eluting stent placed
- **Figure 3:** Intracoronary infusion of nicardipine, adenosine, and eptifibatide, with minimal improvement. TIMI Score 1-2

## DISCUSSION

- For our patient, PCI did not lead to the usual and expected restoration of coronary blood flow.
- She had evidence of angiographic

no-reflow phenomenon characterized by evidence of slow-flow in the affected vessel (TIMI flow equal to or less than 2) and lack of contrast uptake "blush" by the subtended myocardium, leading to a potential dissociation between coronary revascularization and myocardial perfusion in STEMI [3]. "

- There are several treatment options for no re-flow, although it is not known which treatment is best
- Current medical treatment options are the following: injection of adenosine (dilator of arteries and arterioles), nitroprusside sodium (relaxes arteries and veins), and verapamil (smooth muscle dilator) [2, 3].

## CONCLUSION

- The prognosis and presentation of patients with coronary no re-flow can vary.
- For the last few decades, treatment of no re-flow has been mostly pharmacotherapy-based, without much success. There is a poor prognostic effect of no-reflow causing an increase in five-year mortality from 9.5 to 18.2 percent
- This case depicts why it is important to recognize coronary no re-flow early and to continue exploring treatment options.

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