

# Severe aortic stenosis and acute myocardial infarction complicated by cardiac arrest

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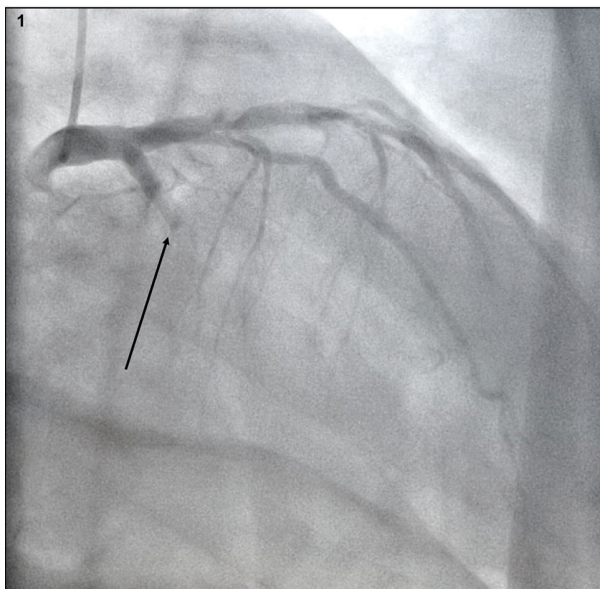
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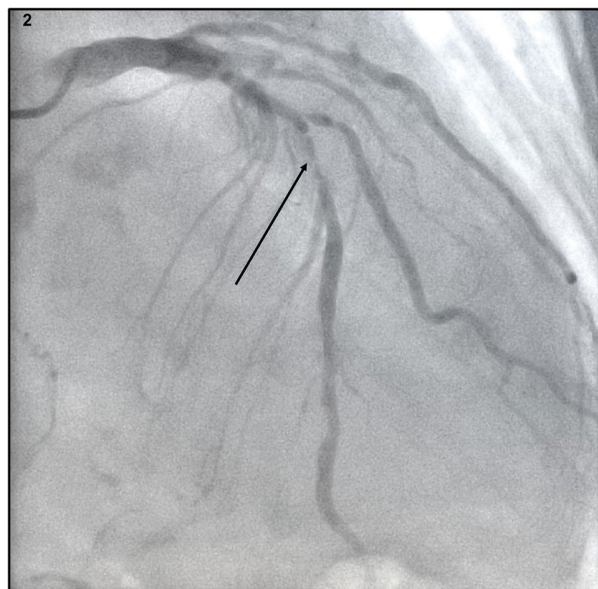
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**Introduction:** The management of severe aortic stenosis (AS) complicated by acute myocardial infarction (AMI) presents significant challenges and is associated with a high mortality rate<sup>1</sup>. The Impella device is emerging as an effective hemodynamic support in “high-risk” percutaneous coronary interventions (PCI) and in AMI complicated by cardiogenic shock<sup>2,3</sup>. However, evidence regarding the effectiveness of Impella in patients with concomitant severe AS is limited.

**Case report:** 83-year-old man with a history of arterial hypertension and atrial fibrillation was admitted to the Coronary Care Unit due to the posterior AMI. Initial bedside echocardiography revealed mildly reduced left ventricle global systolic function and severe AS. Urgent coronary angiography confirmed an occlusion of the proximal left circumflex artery (LCX), alongside severe calcified stenosis (90%) of the proximal to mid left anterior descending artery (LAD) (**Figures 1 and 2**), and a diffusely diseased



**FIGURE 1.** Coronary angiography, right anterior oblique caudal view. The arrow highlights the occlusion in the proximal left circumflex artery.



**FIGURE 2.** Coronary angiography, anteroposterior cranial view. The arrow highlights the severe calcified stenosis in the mid left anterior descending artery.

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right coronary artery (RCA). The decision of the “ad-hoc” Heart Team was to perform a primary PCI on the “culprit lesion.” However, during the procedure the patient suffered a cardiac arrest, prompting the immediate initiation of cardiopulmonary resuscitation (CPR). Return of spontaneous circulation was achieved after 10 minutes of CPR, although the patient remained hemodynamically and rhythmologically unstable. Consequently, urgent balloon aortic valvuloplasty (BAV) was performed, followed by the percutaneous implantation of the Impella CP which resulted in clinical improvement. A complex PCI of the LCX and LAD was then successfully performed, yielding optimal angiographic results (**Figures 3 and 4**). The next day, Impella was percutaneously removed in the catheterization laboratory, and the puncture site was closed using a vascular closure device. Upon discharge, the patient underwent computed tomography aortography and was scheduled for elective transcatheter aortic valve implantation.

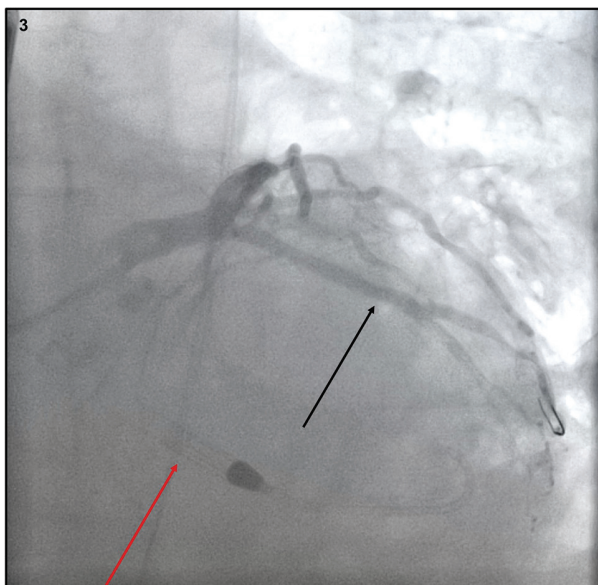


FIGURE 3. Coronary angiography following percutaneous coronary intervention of the left circumflex artery, left anterior oblique caudal view. The black arrow indicates the revascularized left circumflex artery, while the red arrow highlights the Impella device.

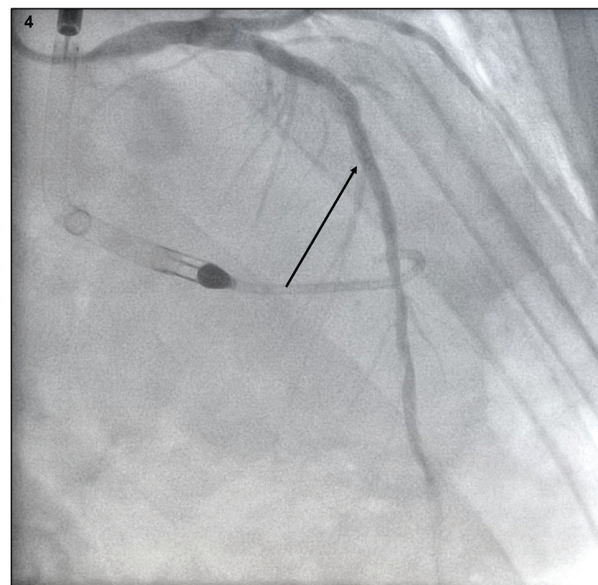


FIGURE 4. Coronary angiography following percutaneous coronary intervention of the left anterior descending artery, anteroposterior cranial view. The arrow indicates the revascularized left anterior descending artery.

**Conclusion:** In patients with concomitant severe AS and AMI complicated by cardiac arrest, performing emergent BAV followed by PCI with Impella support is a viable therapeutic option. Furthermore, if feasible, we recommend using bedside echocardiography before primary PCI, as it can impact the treatment strategy and clinical outcomes.

LITERATURE

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