Culprit or complete revascularization in AMI cardiogenic shock

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What Is Cardiogenic Shock?

A clinical condition of inadequate tissue (end-organ) perfusion due to the inability of the heart to pump an adequate amount of blood. The reduction in tissue perfusion results in decreased oxygen and nutrient delivery to the tissues and, if prolonged, potentially end-organ damage and multisystem failure.

When Does Cardiogenic Shock Occur?

The most common cause of cardiogenic shock is acute myocardial infarction.
Cardiogenic shock occurs in 5% to 10% of people with acute myocardial infarction.

What Is the Prognosis for Patients With Cardiogenic Shock After Acute Myocardial Infarction?

Thirty-day mortality is nearly 40% and approaches approximately 50% at 1 year.

Samsky MD et al. Cardiogenic Shock After Acute Myocardial Infarction: A Review. JAMA. 2021;326(18):1840-1850.

Diagnostic criteria for cardiogenic shock

Systolic blood pressure of less than 90 mmHg for longer than 30 minutes

or

Use of catecholamine therapy to maintain a systolic pressure of at least 90 mmHg

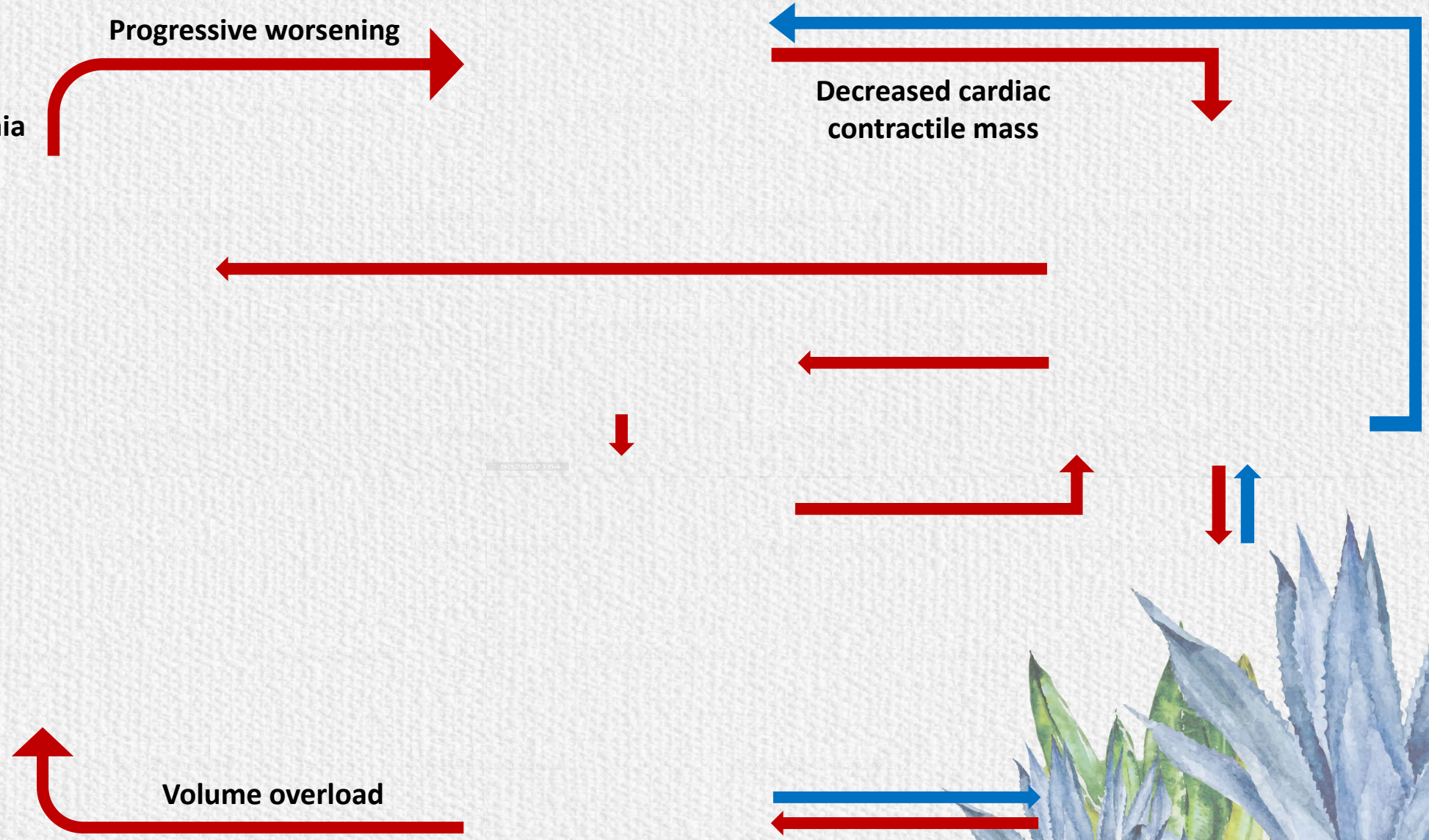
At least one of the following manifestations:

- altered mental status
- cold and clammy skin and limbs
- oliguria with a urine output of less than 30 mL per hour
- arterial lactate level of more than 2.0 mmoL per liter

CS associated with AMI can occur after STEMI or NSTEMI

Thiele H. et al. PCI Strategies in Patients with Acute Myocardial Infarction and Cardiogenic Shock. The New England Journal of Medicine. 2017;377(25):2419-2432

Pathophysiology



Samsky MD et al. Cardiogenic Shock After Acute Myocardial Infarction: A Review. JAMA. 2021;326(18):1840-1850.

Classification schema for CS by SCAI

Baran DA. et al.. Catheter Cardiovasc Interv. 2019.1;94(1):29-37

SHOCK (Should We Emergently Revascularize Occluded Coronaries for Cardiogenic Shock) trial

- Patients with AMI and cardiogenic shock were randomized to medical therapy (150 p) or emergency revascularization (152 p): 64% of patients were referred for PCI and 36% for CABG
- The primary end point was mortality from all causes at 30 days
- Despite lack of a signicant difference in the primary endpoint of mortality at 30 days, but emergency revascularization with either PCI or CABG reduced the mortality rate at 6 months

SHOCK (Should We Emergently Revascularize Occluded Coronaries for Cardiogenic Shock) trial

- The mortality benefit was maintained through 1 and 6 years.

CULPRIT-SHOCK trial

- 706 patients with multivessel disease, AMI, and cardiogenic shock were randomized to PCI only in the culprit artery (with the option of performing PCI in other arteries at a later date) or immediate PCI in all vessels with significant stenosis

- The primary objective was to assess the occurrence of death or severe renal failure requiring dialysis within 30 days after the procedure

CULPRIT-SHOCK trial

The culprit artery-only PCI strategy resulted in a lower rate of death or severe renal failure within 30 days compared with immediate multivessel PCI.

MACE in 30-day was lower in culprit-lesion-only PCI group

CULPRIT-SHOCK trial: limitations

- The study was not blinded, meaning that physicians knew which treatment each patient was receiving, which may have influenced clinical decisions

- A percentage of patients switched treatment groups, which may have affected the results

- The total contrast dose used was higher in the multivessel PCI group, which may have contributed to renal complications

- The study evaluated a limited time period (30 days), and it is unknown whether the results would have been different over a longer period

CULPRIT-SHOCK trial: 1 year of follow-up

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MEXICO CITY

SOLACI SOCIME '25
MEXICO CITY

SOLACI

SOCIME
SOCIEDAD DE CARDIOLOGIA INTERVENCIONISTA DE MEXICO

Clinical case

53-year-old woman

Cardiovascular risk factors: hypertension and current smoking

Acute myocardial infarction with inferior ST-segment elevation with 5h of evolution

Coming from another hospital (non–PCI-capable hospital) after having suffered 3 cardiorespiratory arrests

Clinical case

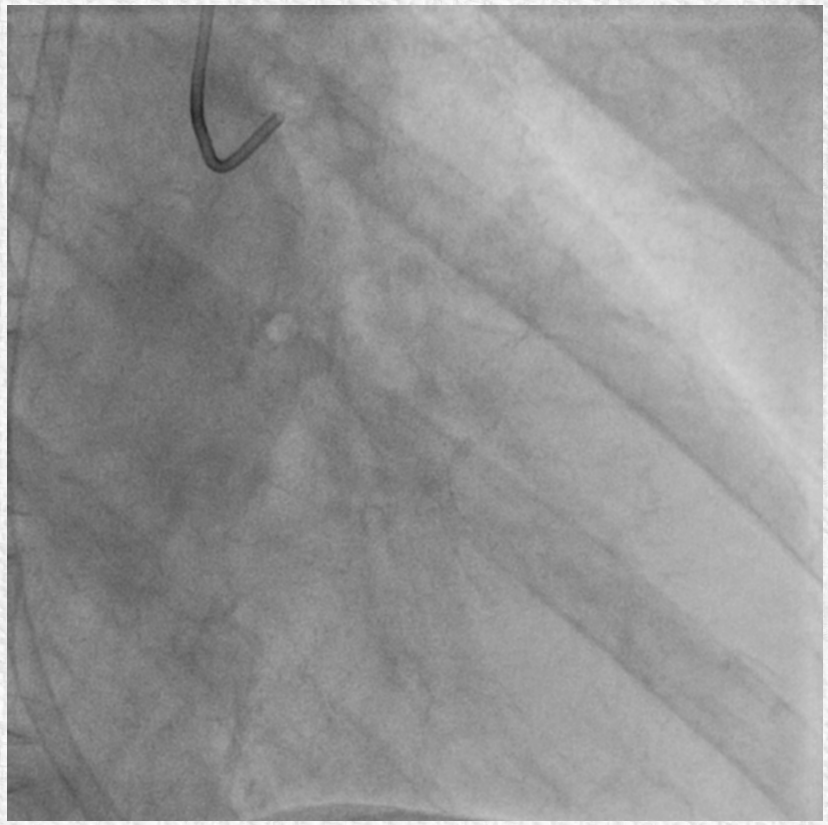
Cardiogenic shock

Intubation + ventilation + vasopressor + inotrope

Referred to the interventional cardiology department for coronary angiography with a view to PCI

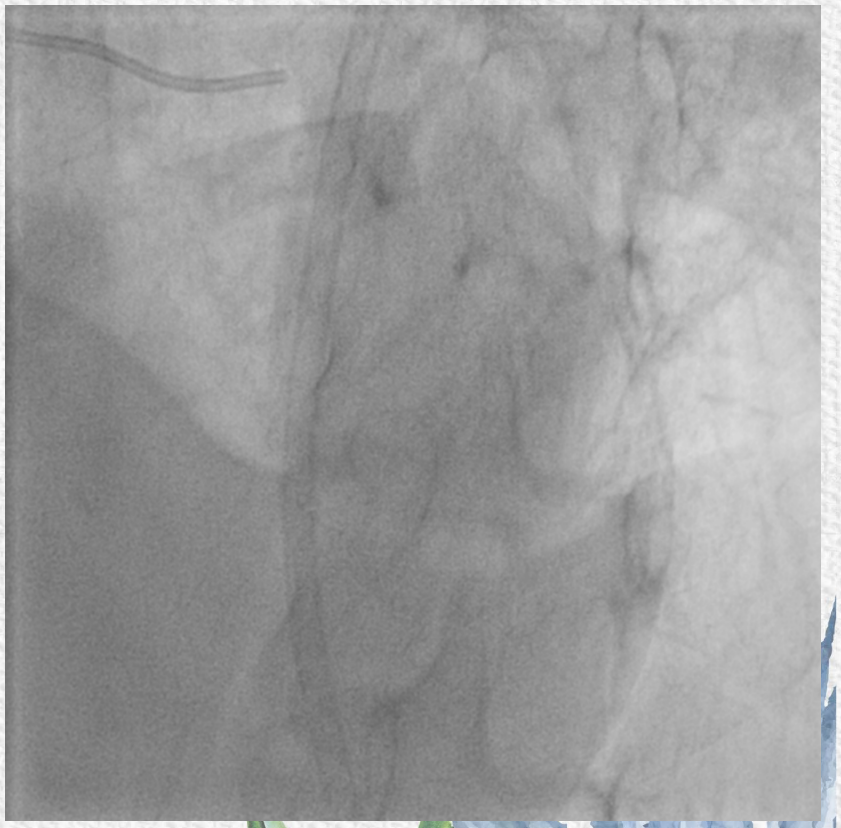
Coronary angiography

Right radial access



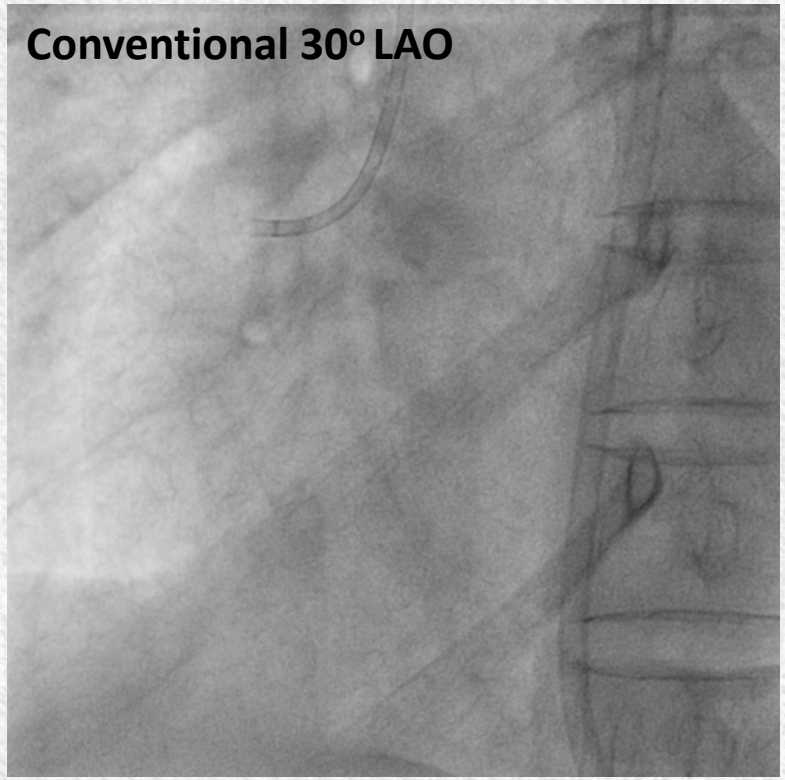
Straight 30º RAO
Obtuse marginal: 50% proximal obstruction

PA cranial
LAD: 70% mid obstruction



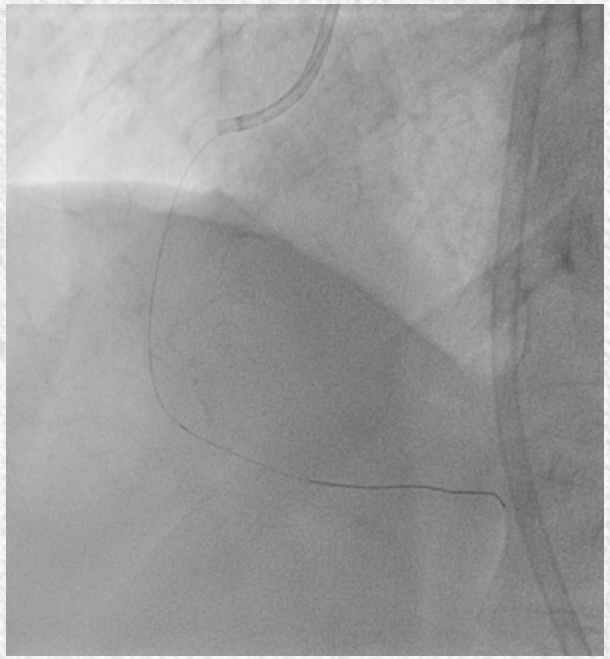
LAO cranial
LAD: 70% mid obstruction

Coronary intervention

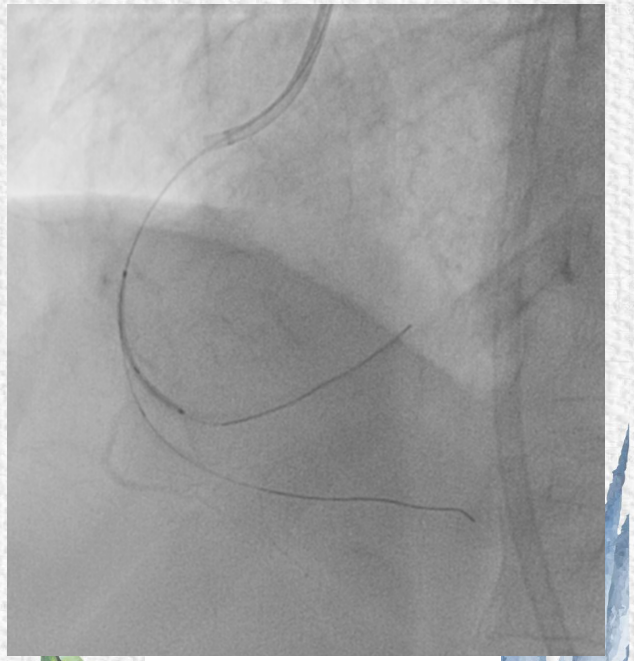


RCA: 100% mid obstruction

Wiring and predilatation

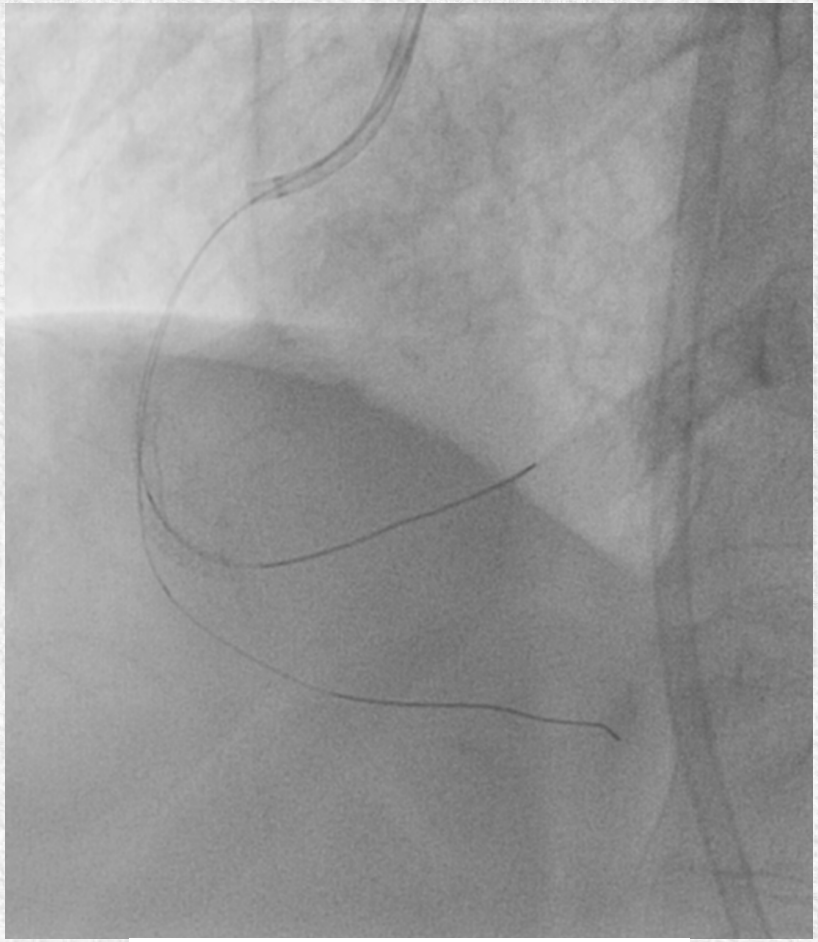


Angiography after predilation

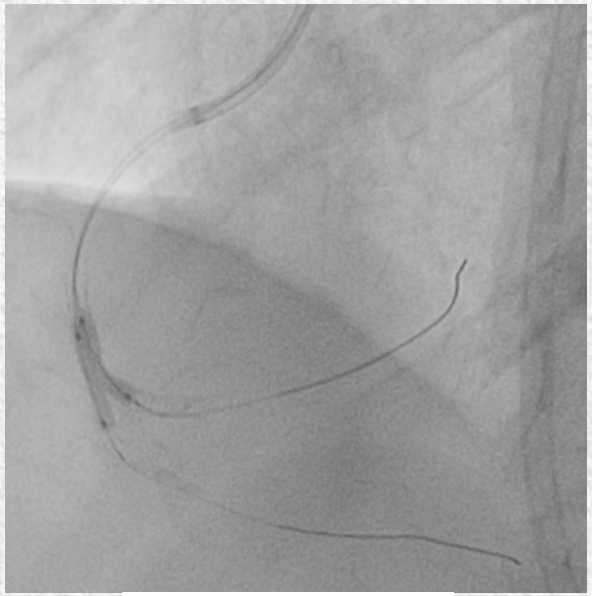


Kissing wire and stenting

Coronary intervention



Immediately after stenting

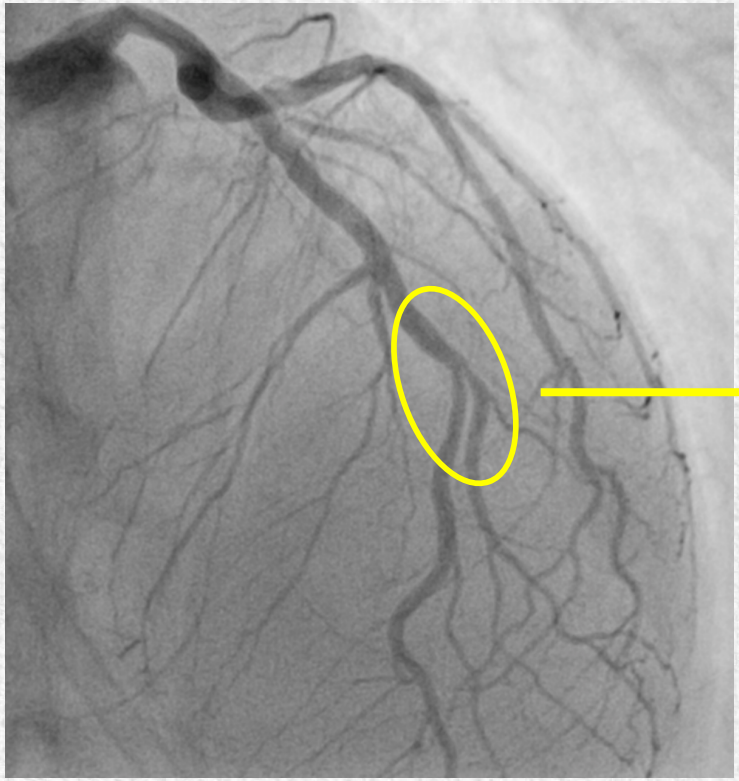


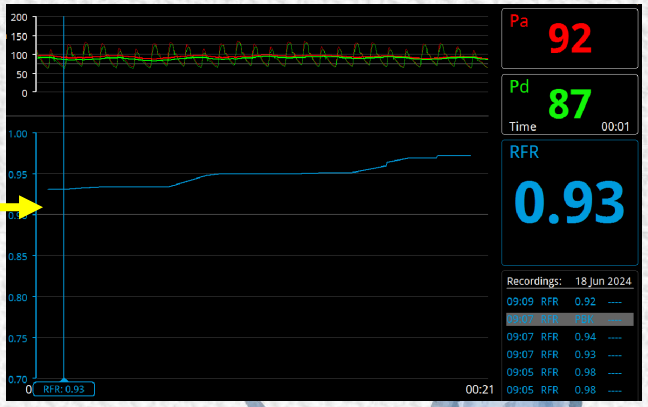
Kissing balloon

Final result

Coronary intervention: second stage

- After the acute condition resolved, she returned to the cath lab to address the 70% medial lesion in the LAD, the non-culprit artery
- We performed invasive physiology, RFR, a non-hyperemic method
- The LAD RFR=0.93, remained under clinical treatment





Take-Home Messages

- CS associated with AMI can occur after STEMI or NSTEMI;
- Emergency revascularization of the infarct-related artery remains the mainstay of treatment and is the only therapy that has significantly reduced mortality in CS in the CULPRIT-SHOCK trial;
- SHOCK TRIAL: reduced 30-day mortality from 51.6% to 43.3%
- Benefit maintained at 1 and 6 years

Samsky MD et al. Cardiogenic Shock After Acute Myocardial Infarction: A Review. JAMA. 2021;326(18):1840-1850.