THE HEART SUMMIT 2018

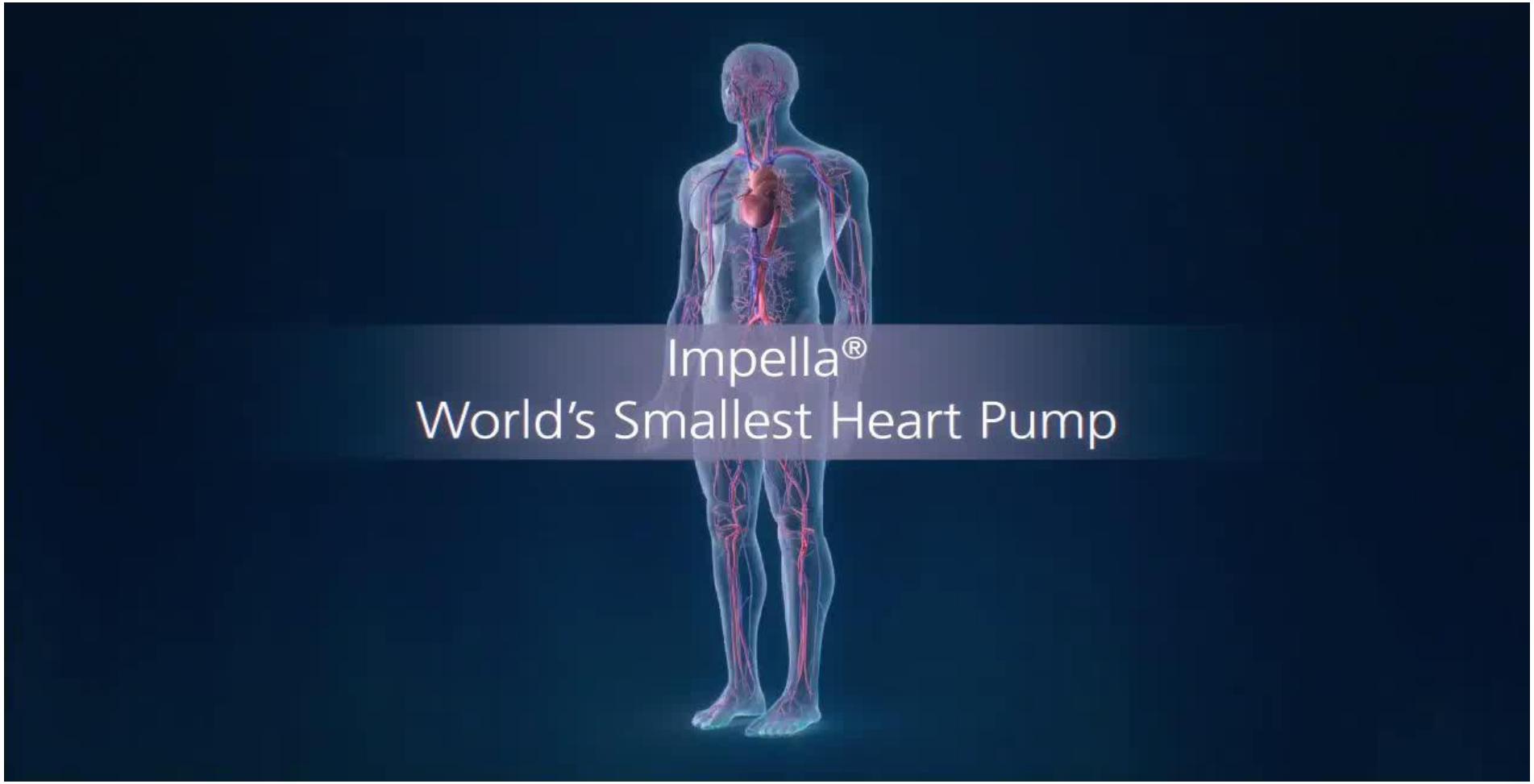
ARKANSAS HEART HOSPITAL®

PROTECTED PERCUTANEOUS CORONARY INTERVENTIONS WITH IMPELLA SUPPORT

PATTI HANSON, CHIP COORDINATOR

For COMPLEX HIGH RISK AND INDICATED PATIENTS

IMPELLA, WHAT IS IT?



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Heart Failure & Coronary Artery Disease (CAD)

Depressed Ejection Fraction

Elective PCI

Advanced Heart Failure
&
Coronary Artery Disease

Common Fatigue
Low Ejection Fraction
Poor Quality of Life
Inoperable or Surgery unlikely

Urgent PCI

Unstable Angina/NSTEMI
&
Coronary Artery Disease

Active Chest Pain
Low Ejection Fraction

New Treatment Option

Protected PCI
with the Impella® Heart Pump

Safe & Effective.

Better Quality of Life[1].

Home Faster[2].

1. O'Neill WW et al. Circulation. 2012 Oct 2:126(14):1717-27
2. Gregory D, et al. American Health & Drug Benefits 2013 Mar;6(2):88-99

ABIOMED
Recovering hearts. Saving lives.

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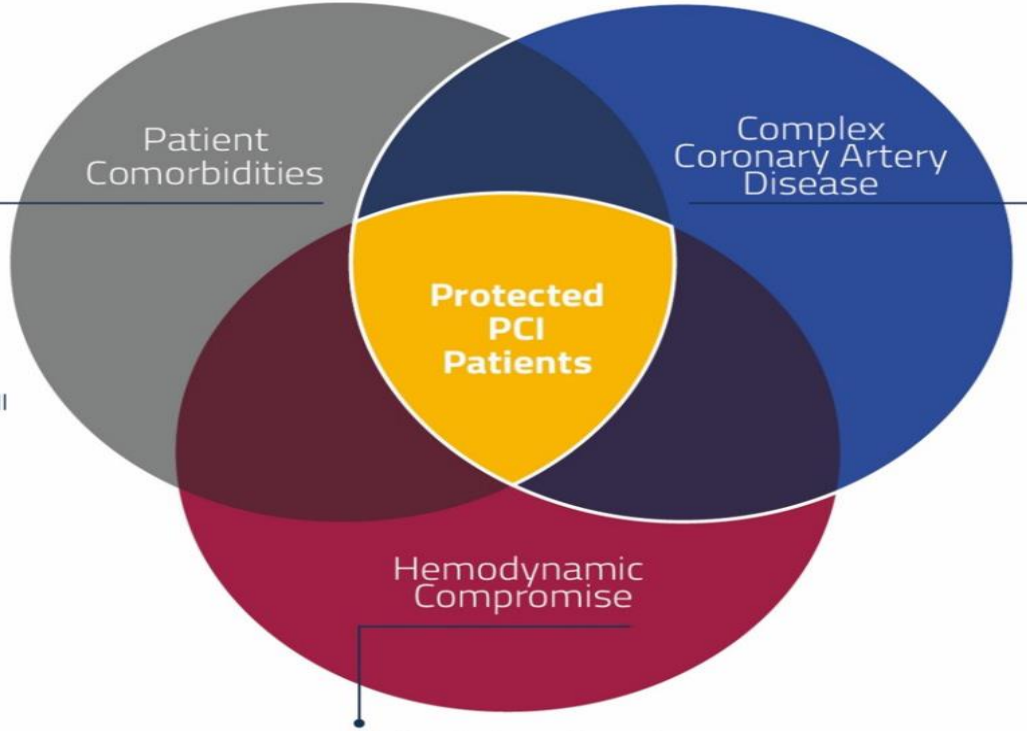
SWEET SPOT

A Growing Population Appropriate for PCI



- Surgical Ineligibility
- Prior Cardiac Surgery
- Heart Failure
- Diabetes
- Advanced Age
- Unstable Angina/NSTEMI
- Renal Insufficiency

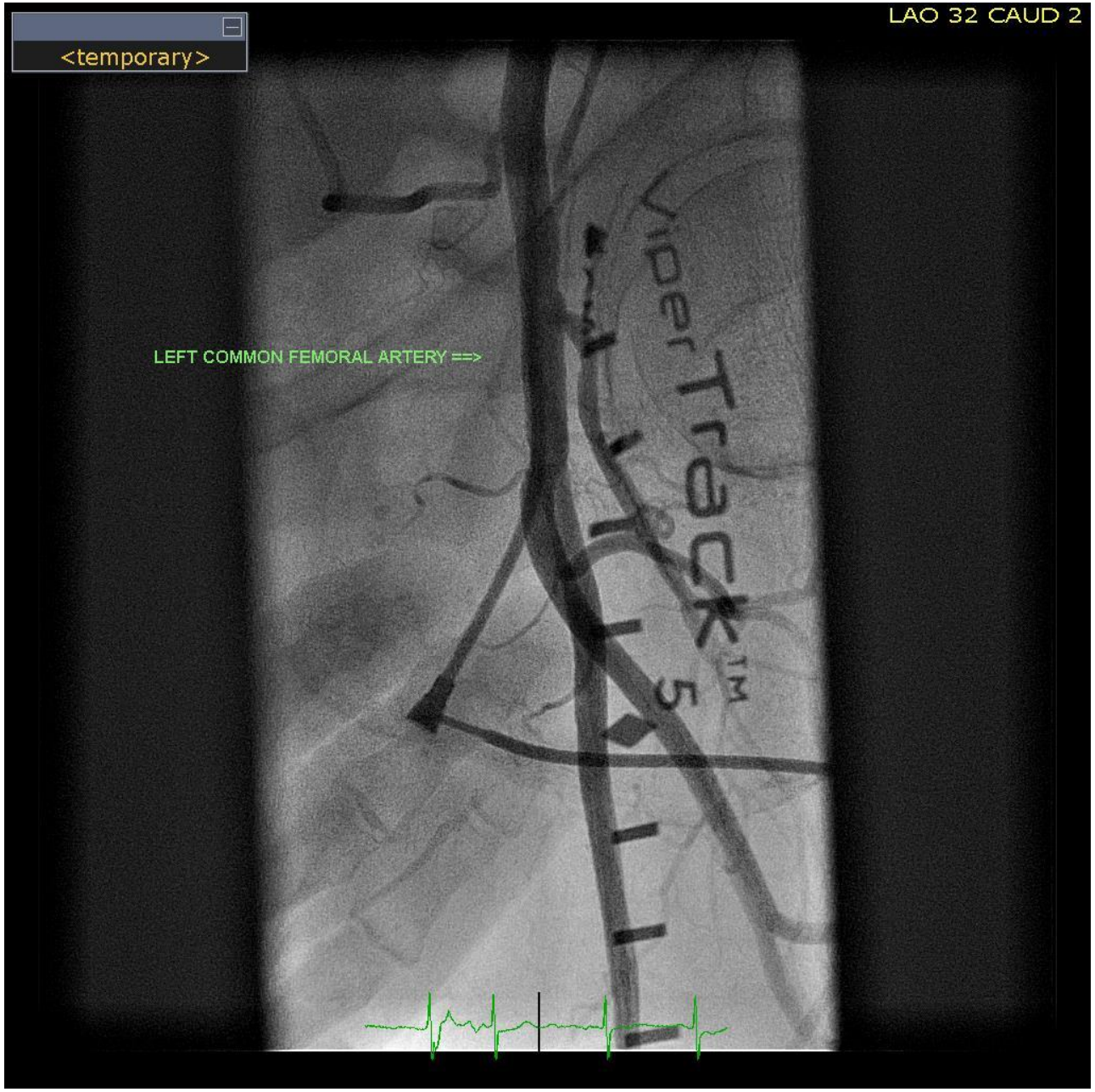
- Multi-Vessel Disease
- Distal Left Main Disease
- Complex Lesions (Bifurcation, Calcification)
- CTO Retrograde

- Mild, Moderate, Severely Depressed Ejection Fraction
- High LVEDP

ABIOMED
Recovering hearts. Saving lives.

CASE STUDY

- 80 YEAR OLD FEMALE
- SIGNIFICANT HISTORY OF COMPLEX CAD
- COPD
- ACUTE KIDNEY FAILURE
- HYPERTENSION
- ACUTE ON CHRONIC DIASTOLIC CONGESTIVE HEART FAILURE
- NON ST ELEVATION MYOCARDIAL INFARCTION
- HEAVILY CALCIFIED LEFT MAIN STENOSIS
- SURGICAL TURNDOWN FOR CABG



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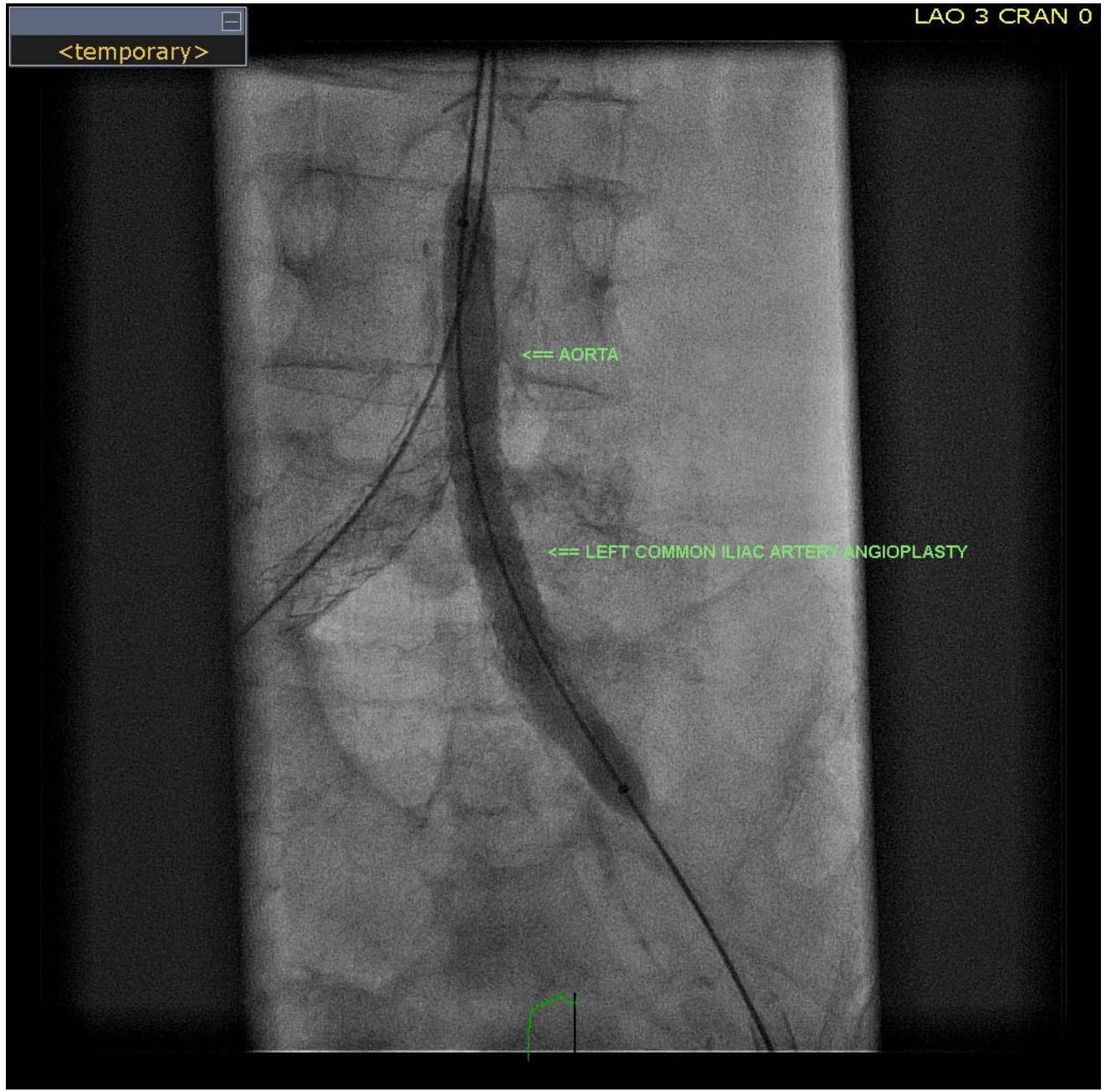

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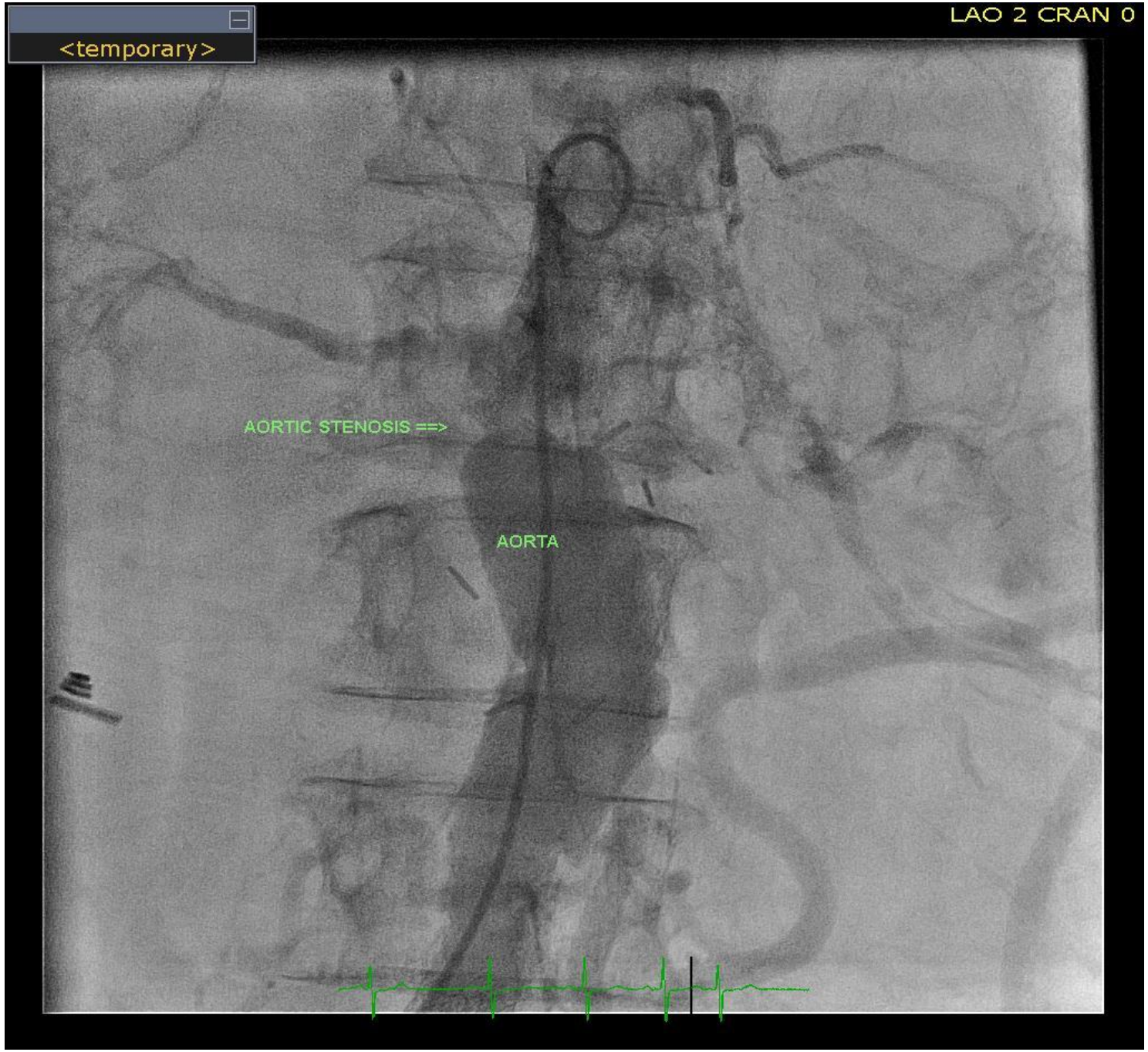

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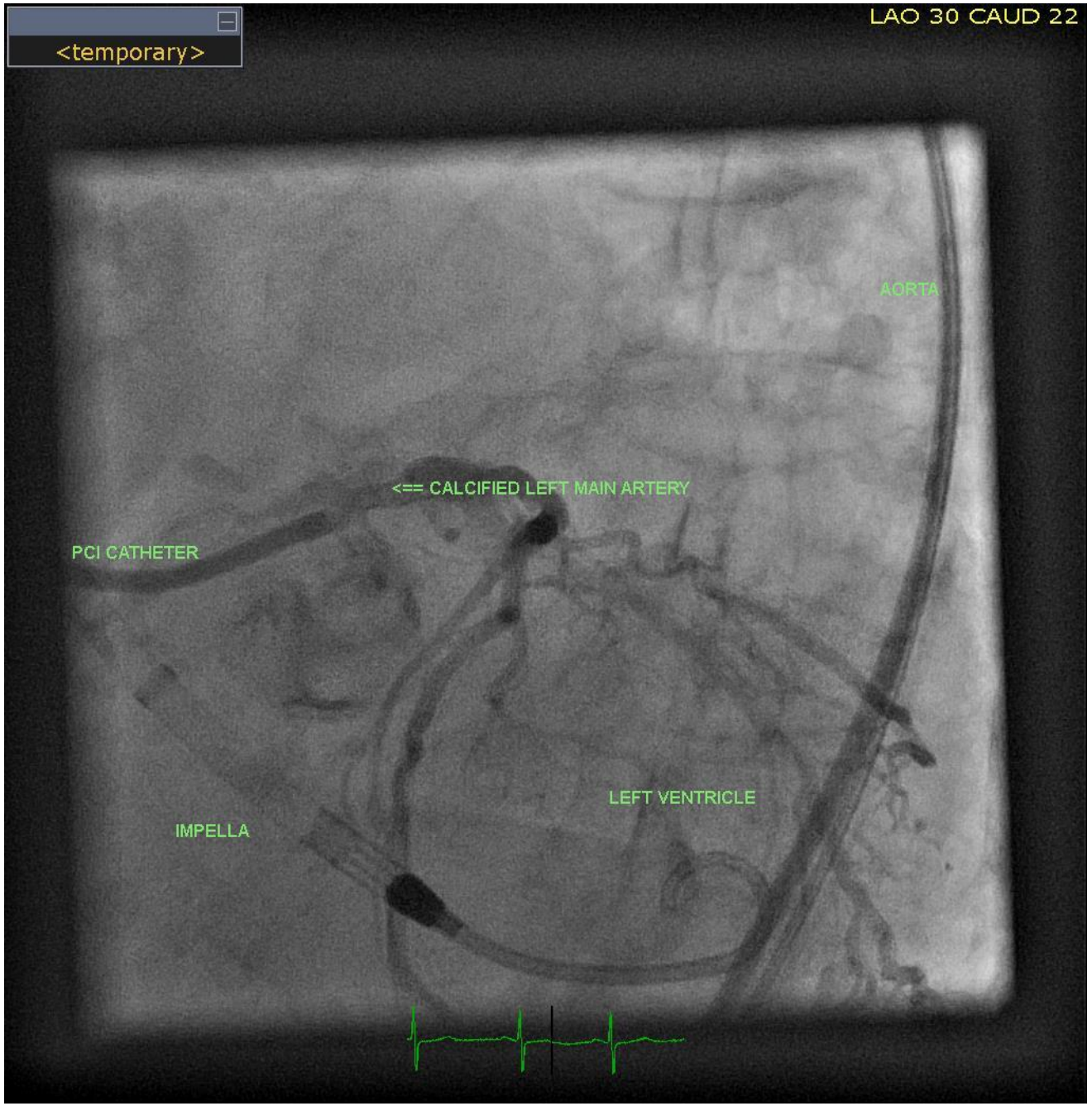

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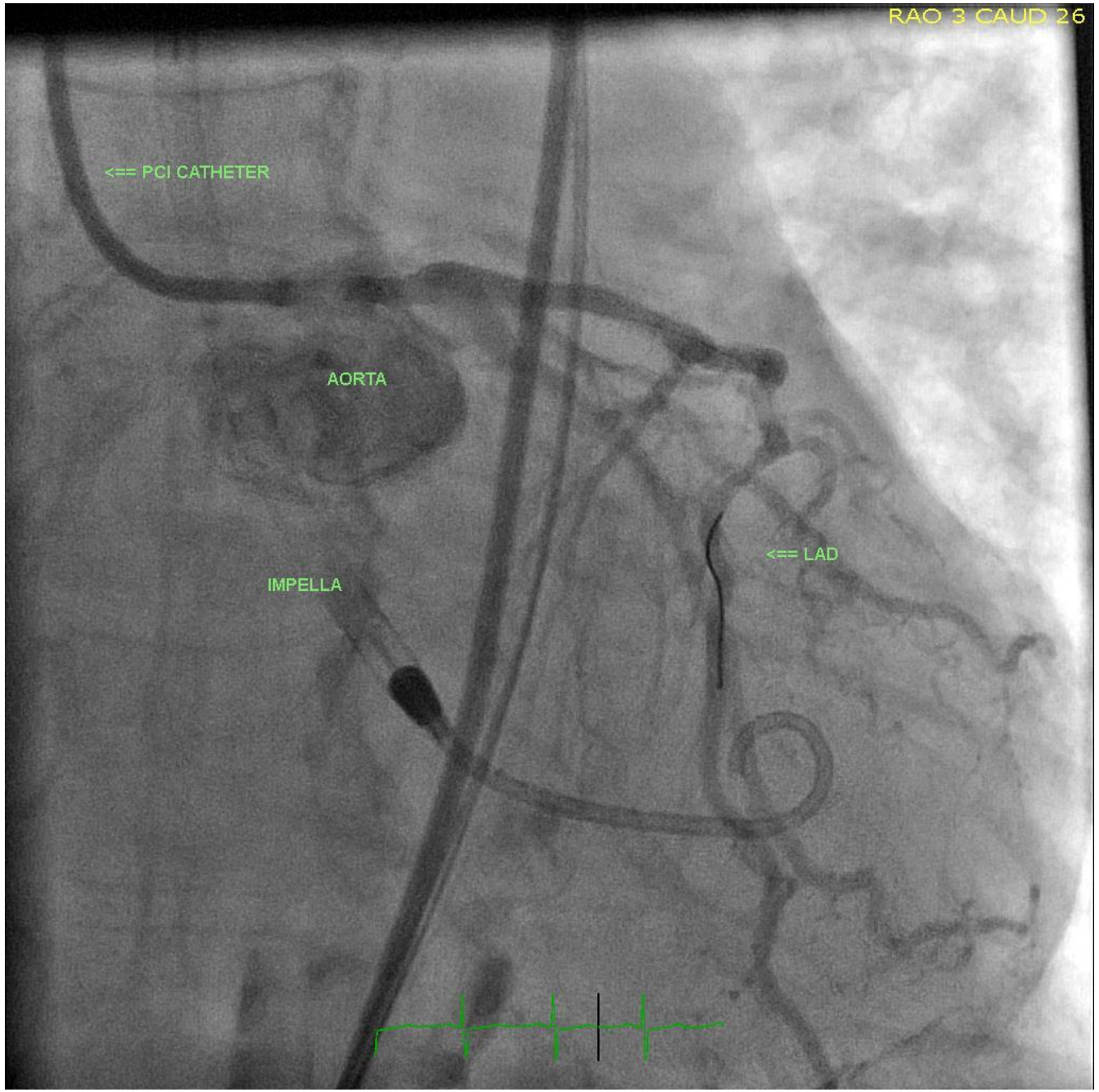

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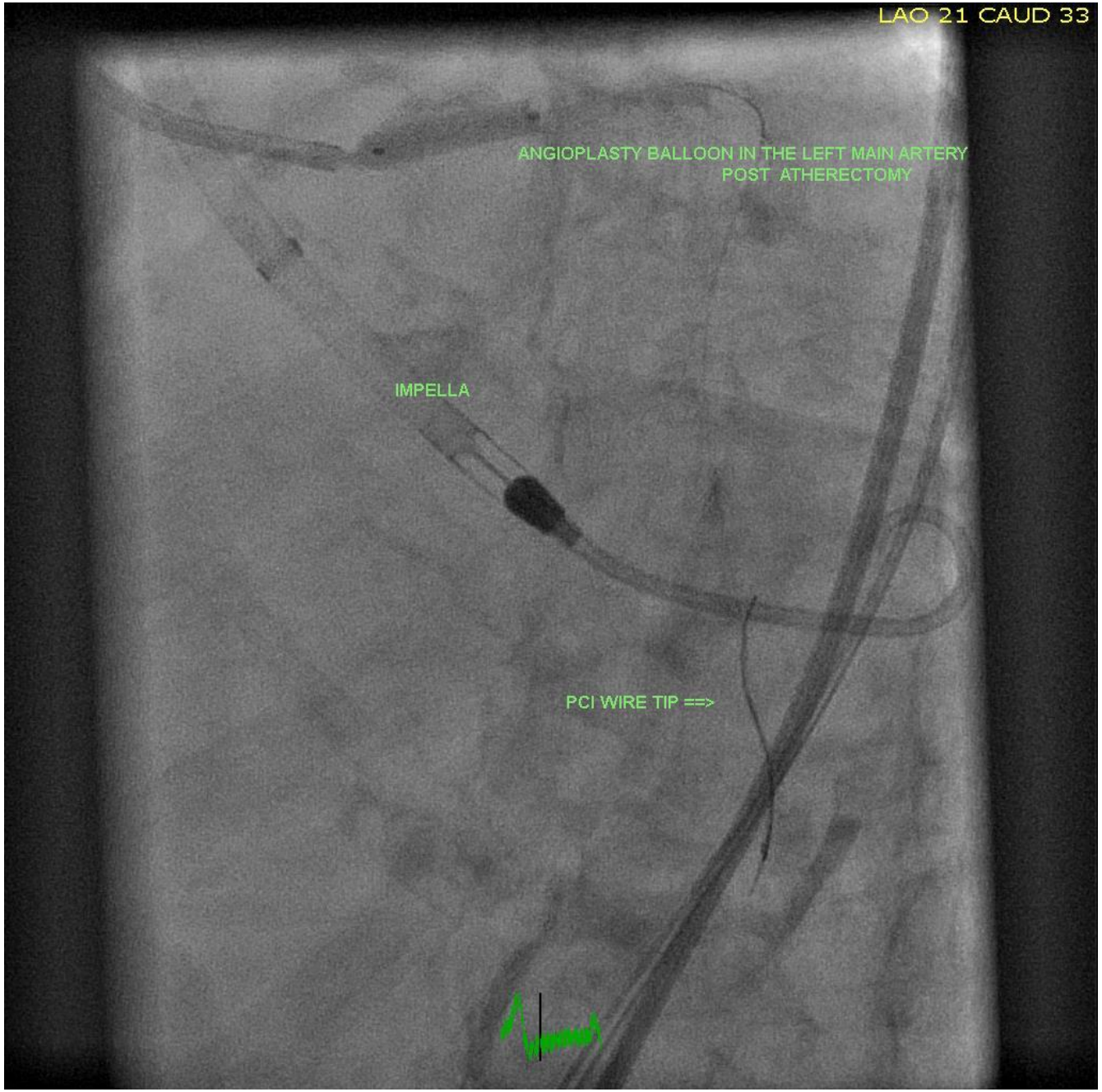

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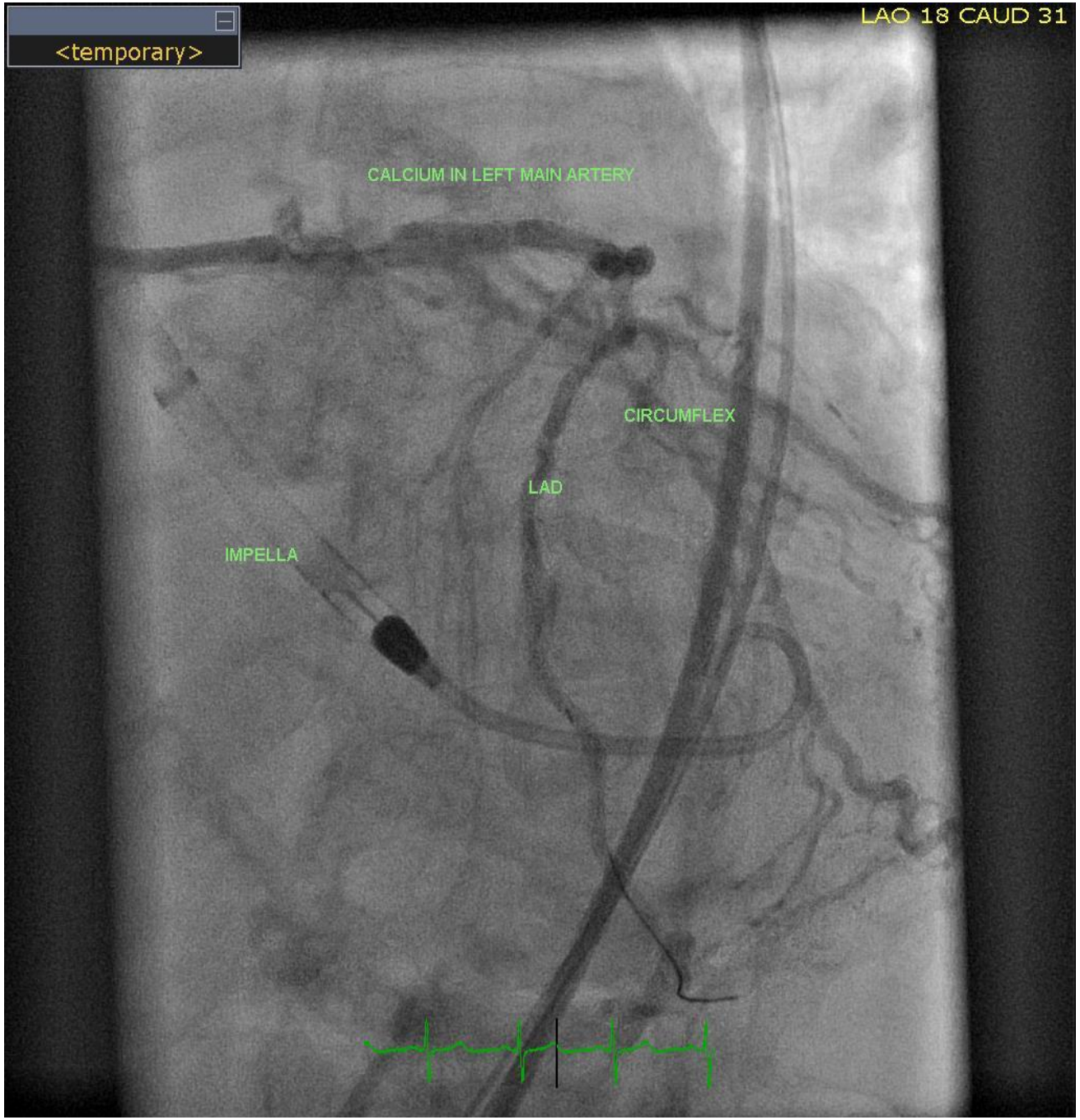

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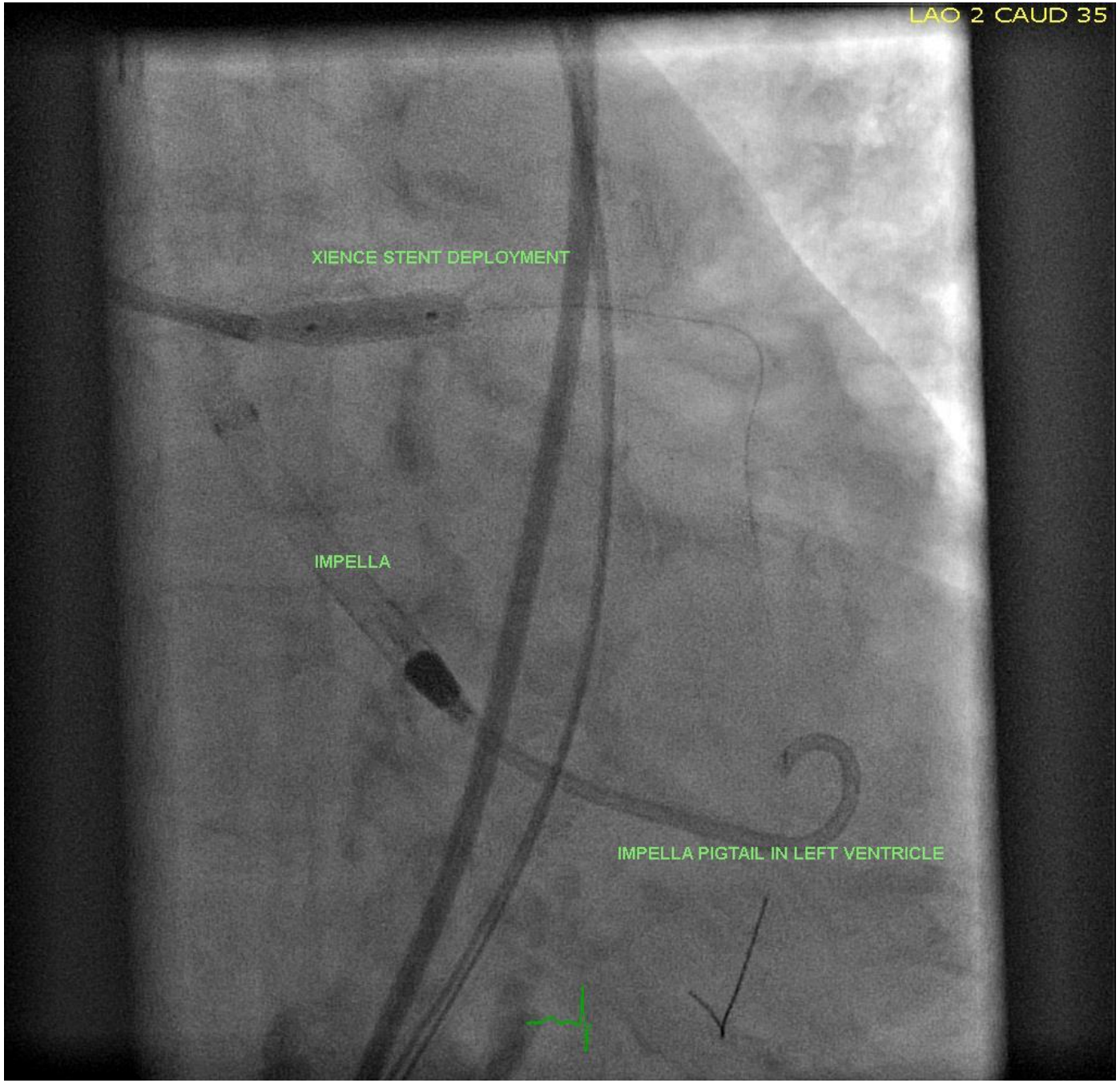

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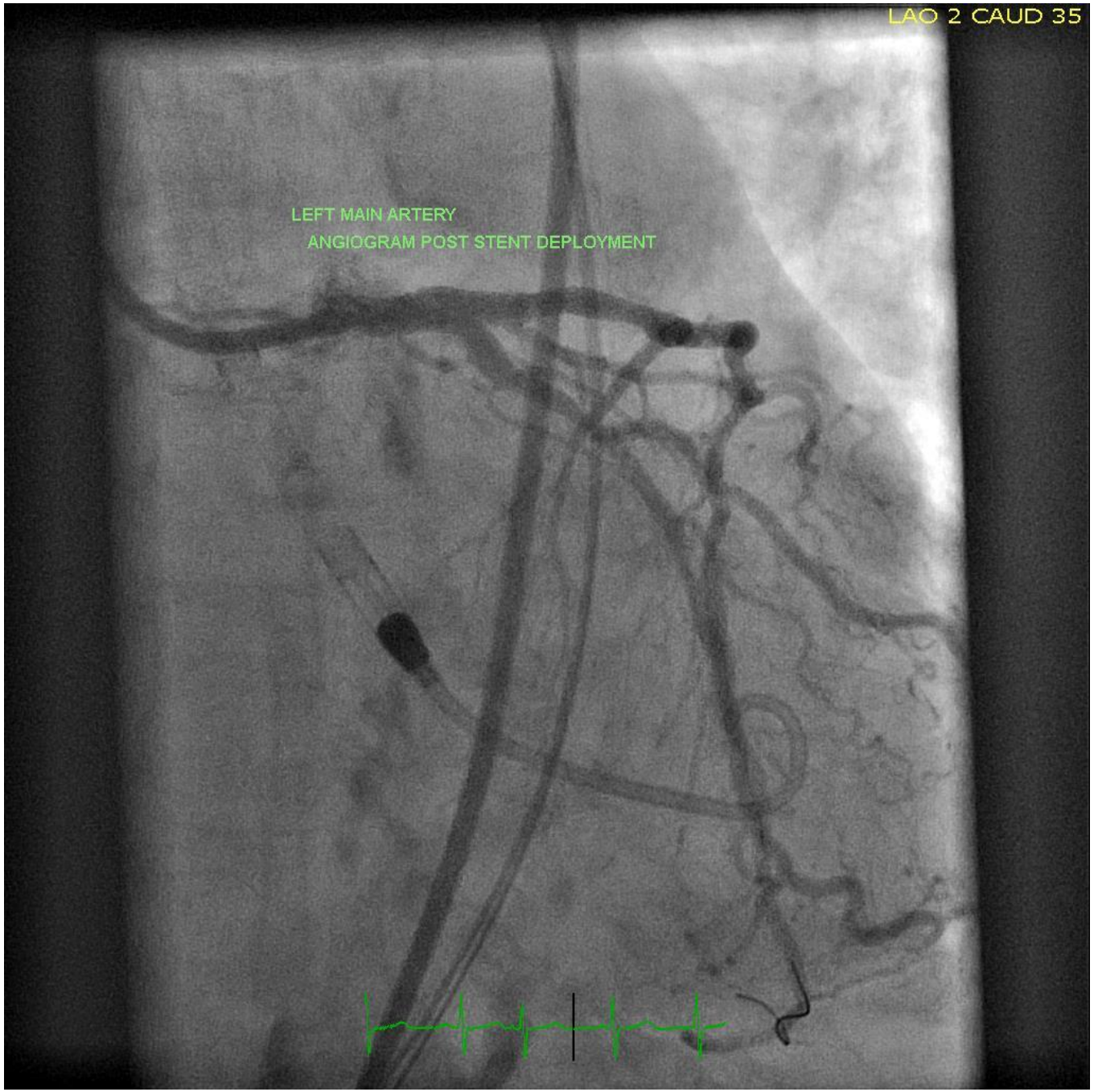

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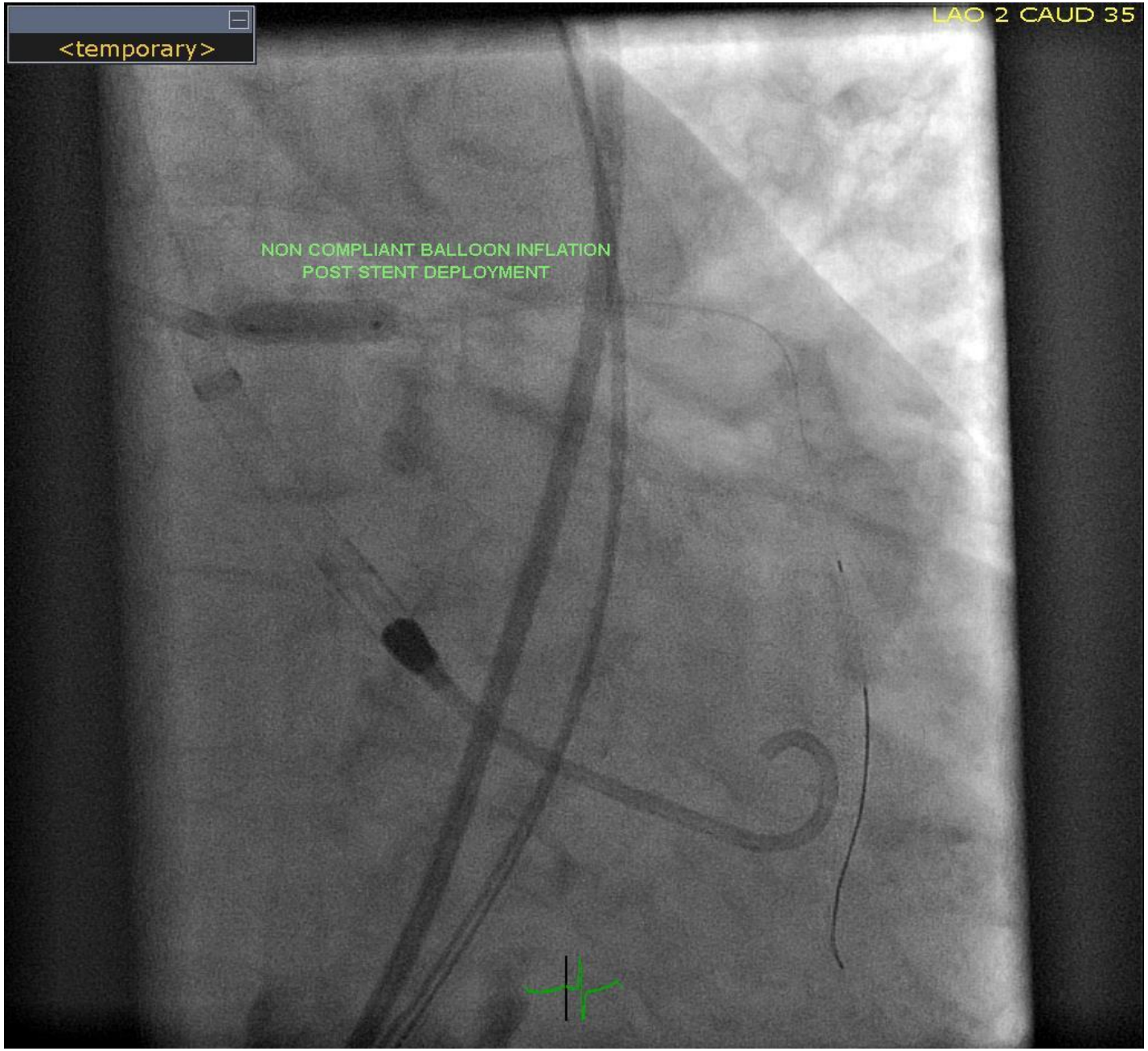

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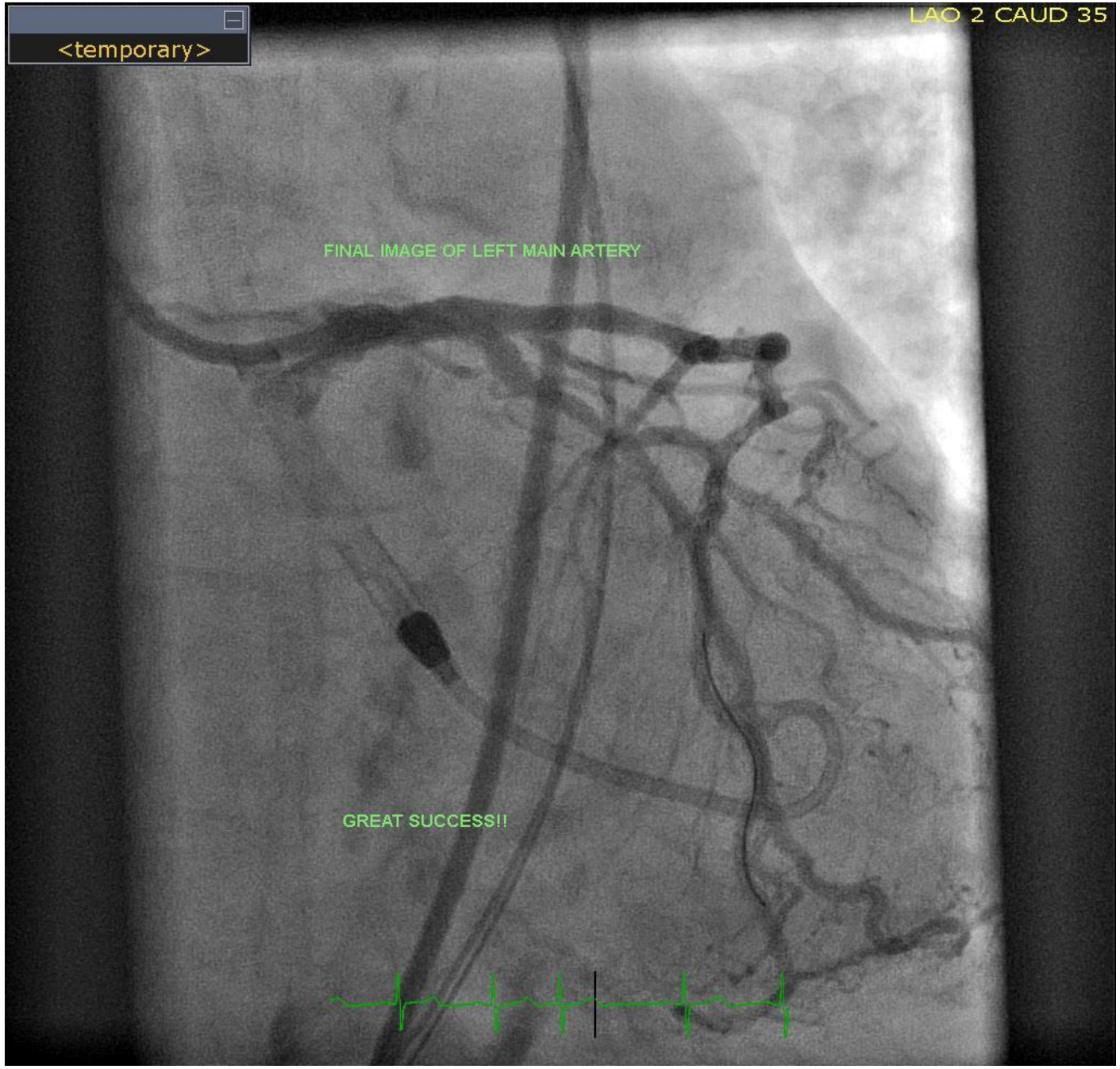

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National Cardiogenic Shock Initiative Algorithm

INCLUSION CRITERIA

Acute Myocardial Infarction
- Ischemic Symptoms
- EKG and/or biomarker evidence of AMI (STEMI or NSTEMI)

Cardiogenic Shock
- Hypotension (<90/60) or the need for vasopressors or inotropes to maintain systolic blood pressure >90
- Evidence of end organ hypoperfusion (cool extremities, oliguria, lactic acidosis)

EXCLUSION CRITERIA
- Evidence of Anoxic Brain Injury
- Witnessed out of hospital cardiac arrest or any cardiac arrest in which ROSC is not achieved in 30 minutes
- IABP placed prior to Impella
- Septic, anaphylactic, hemorrhagic, and neurologic causes of shock
- Non-ischemic causes of shock/hypotension *(Pulmonary Embolism, Pneumothorax, Myocarditis, Tamponade, etc.)*
- Active Bleeding
- Recent major surgery
- Mechanical Complications of AMI
- Known left ventricular thrombus
- Patient who did not receive revascularization
- Mechanical aortic valve

ACTIVATE CATH LAB

ACCESS & SUPPORT
- Obtain femoral arterial access (via direct visualization with use of ultrasound and fluoroscopy)
- Obtain venous access (Femoral or Internal Jugular)
- Obtain either Fick calculated cardiac index or LVEDP

IF LVEDP >15 or Cardiac Index < 2.2 AND anatomy suitable, place IMPELLA

Coronary Angiography & PCI
- Attempt to provide TIMI III flow in all major epicardial vessels other than CTO
- If unable to obtain TIMI III flow, consider administration of intra-coronary vasodilators

Perform Post-PCI Hemodynamic Calculations

1. Cardiac Power Output (CPO): $\frac{MAP \times CO}{451}$

2. Pulmonary Artery Pulsatility Index (PAPI): $\frac{sPAP - dPAP}{RA}$

Wean OFF Vasopressors and Inotropes

If CPO is >0.6 and PAPI >0.9, operators should wean vasopressors and inotropes and determine if Impella can be weaned and removed in the Cath Lab or left in place with transfer to ICU.

Escalation of Support

If CPO remains <0.6 operators should consider the following options:
- PAPI is <0.9 consider right sided hemodynamic support
- PAPI >0.9 consideration for additional hemodynamic support

Local practice patterns should dictate the next steps:
- Placement of more robust MCS device(s)
- Transfer to LVAD/Transplant center

If CPO is >0.6 and PAPI <0.9 consider providing right sided hemodynamic support if clinical suspicion for RV dysfunction/failure

Vascular Assessment
- Prior to discharge from the Cath Lab, a detailed vascular exam should be performed including femoral angiogram and Doppler assessment of the affected limb.
- If indicated, external bypass should be performed.

ICU Care
- Daily hemodynamic assessments should be performed, including detailed vascular assessment
- Monitor for signs of hemolysis and adjust Impella position as indicated

Device Weaning

Impella should only be considered for explantation once the following criteria are met:
- Weaning off from all inotropes and vasopressors
- CPO >0.6, and PAPI > 0.9

Bridge to Decision

Patients who do not regain myocardial recovery within 3-5 days, as clinically indicated, should be transferred to an LVAD/Transplant center. If patients are not candidates, palliative care options should be considered.

**** QUALITY MEASURES ****
- Door to Support Time < 90 minutes
- Establish TIMI III Flow
- Wean off Vasopressors & Inotropes
- Maintain CPO >0.6 W
- Improve survival to discharge to >80%

NATIONAL CARDIOGENIC SHOCK INITIATIVE

NatoinalCSI@hfhs.org

www.henryford.com/cardiogenicshock

NationalCSI – Algorithm – v1.0 – September 2017

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- **Call or text 501-515-1017**

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