Ascending Hope: Case Study

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Chief Complaint

- 59-year-old man transferred urgently at night to our department (March 2023)
- Admitted 10-days prior for dysphagia and shortness of breath

Recent History

- **May 2022** - quadruple coronary artery bypass grafting surgery
- **Periprocedural complications**

  Surgical site bleeding

  post pericardiotomy syndrome

  mediastinitis requiring rewiring

- Poor wound healing
- Worsening lower limb edema

Prior History

- Ischemic heart disease
- Hypertension
- Diabetes mellitus type 2 treated with Diabetic Nephropathy
- Hyperlipidemia
- Obesity
- Poor compliance
- Nonsmoker

First Admission

- TTE - moderate decrease in left ventricular function and suspected anterior aortic pseudoaneurysm
- CT - anterior ascending aorta pseudoaneurysm measuring 11.5cm over 8.5cm with mass effect on the heart
- During his admission - slow deterioration in his clinical condition with increasing weakness and shortness of breath
- Rejected as a surgical candidate and Hadassah was approached for possible minimal invasive approach


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PORIA M.C SPECTRAL CT
Cardiac CTA, TAVI protocol, without coro
pseudoaneurysm
02/03/2023, 17:06:19

Iodine
LOC: ---
THK: 0.48 SP: ---
FFS
P
pseudoaneurysm
ct
HOST_10033
Z: 1.0
C: 204
W: 779
DFOV: 45.1x 24.2cm
IM: 3 SE: 50901
F
cm


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PORIA M.C SPECTRAL CT
Cardiac CTA, TAVI protocol, without coro
pseudoaneurysm
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DFOV: 45.1x 24.2cm
IM: 2 SE: 50901
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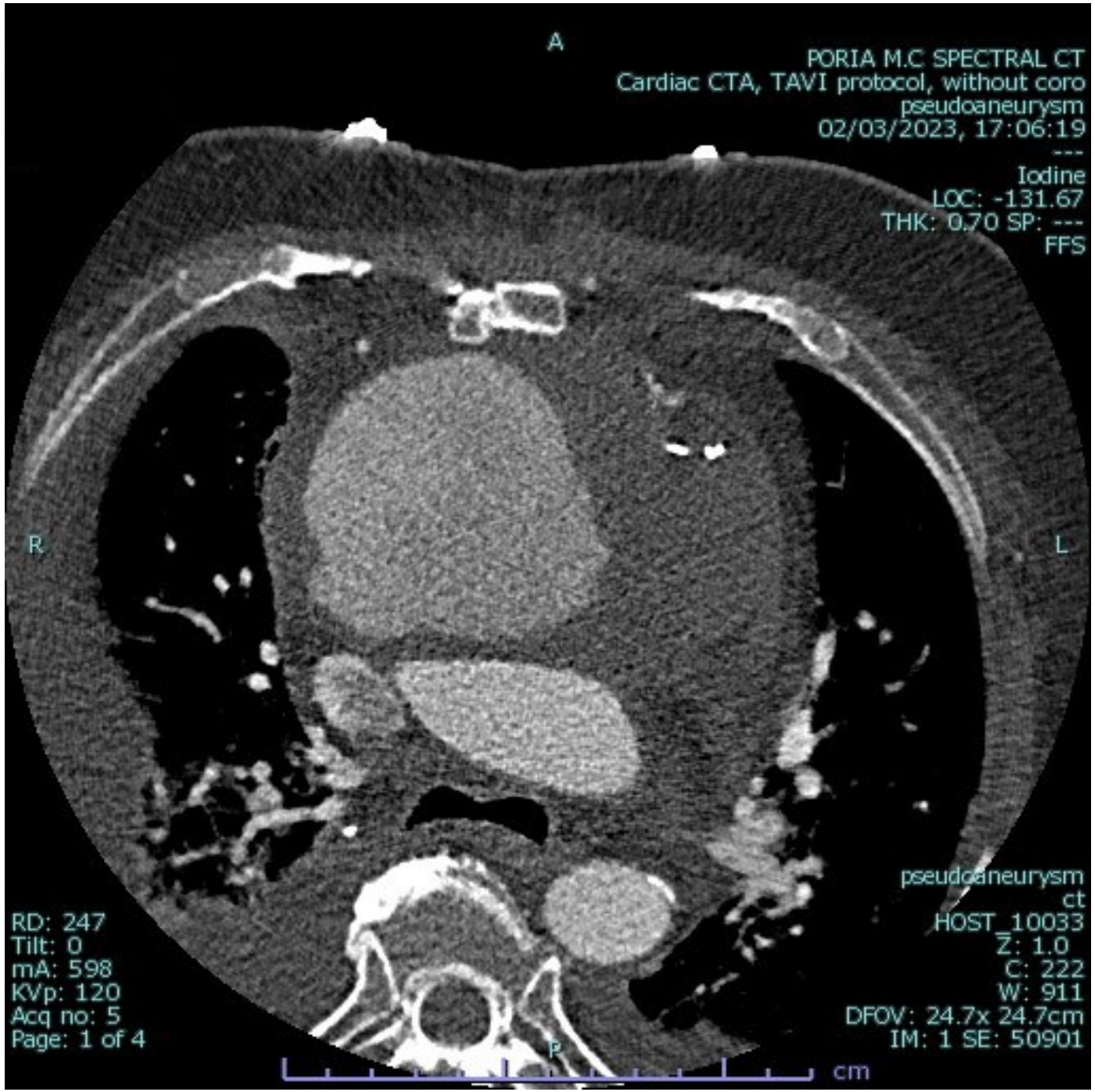
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Cardiac CTA, TAVI protocol, without coro
pseudoaneurysm
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FFS
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RD: 247
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mA: 598
KVp: 120
Acq no: 5
Page: 1 of 4
pseudoaneurysm
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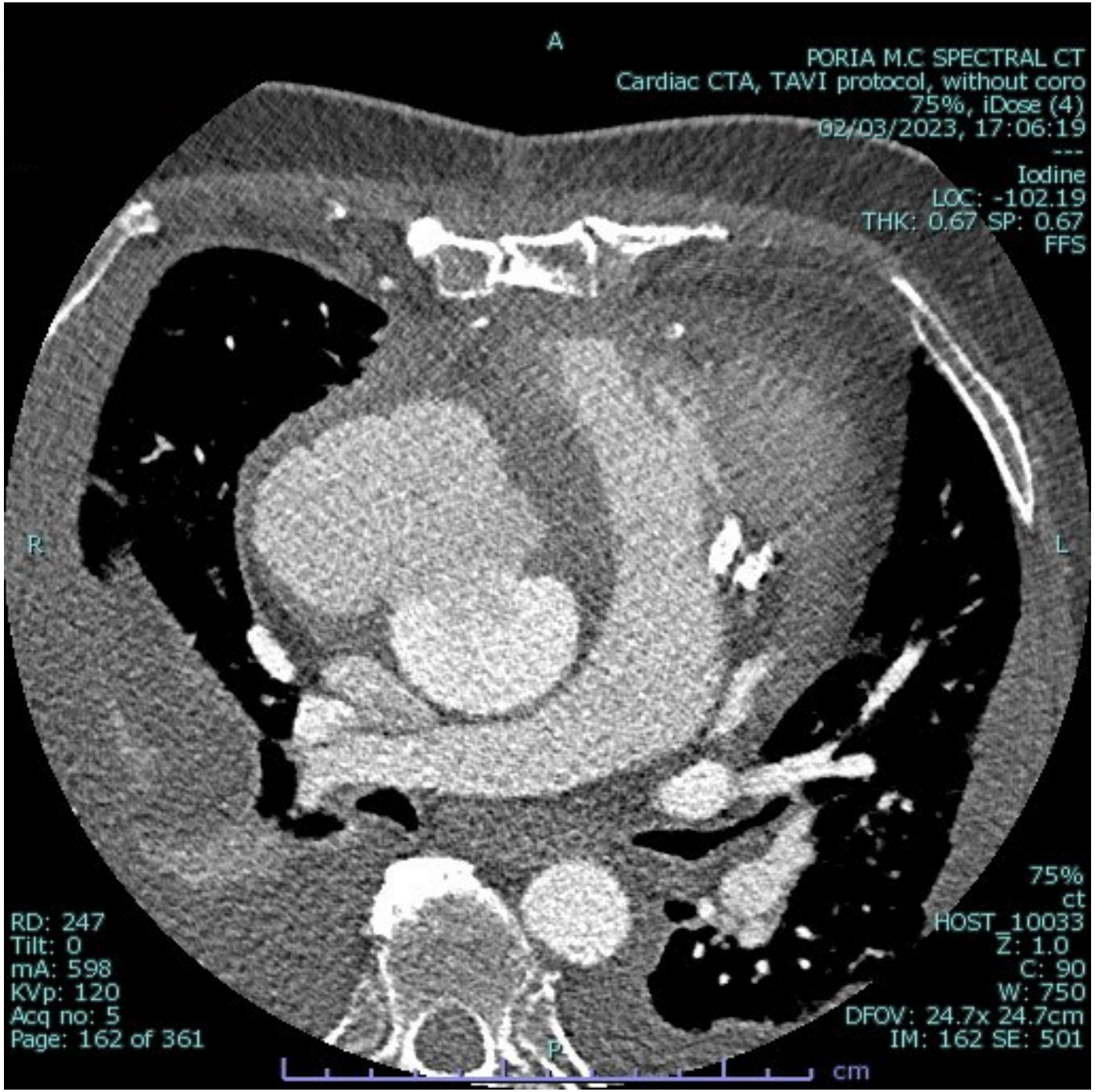
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Cardiac CTA, TAVI protocol, without coro
75%, iDose (4)
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FFS
R
L
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RD: 247
Tilt: 0
mA: 598
KVp: 120
Acq no: 5
Page: 162 of 361
75%
ct
HOST_10033
Z: 1.0
C: 90
W: 750
DFOV: 24.7x 24.7cm
IM: 162 SE: 501
cm

On Arrival

- Prior to transfer – short ACLS due to PEA with fast ROSC
- On arrival - the patient was lethargic, weak, and dyspneic.
- Stable on arrival on BP lowering IV drugs (labetalol, nitroprusside)
- PE – systolic murmur with no radiation, clear lungs, anasarca
- Labs – normal kidney functions, NT-Pro-BNP 2792 pg/mL, elevated lactic acid
- ECG - normal sinus rhythm, no ST segment changes, and no conduction abnormalities or arrhythmias

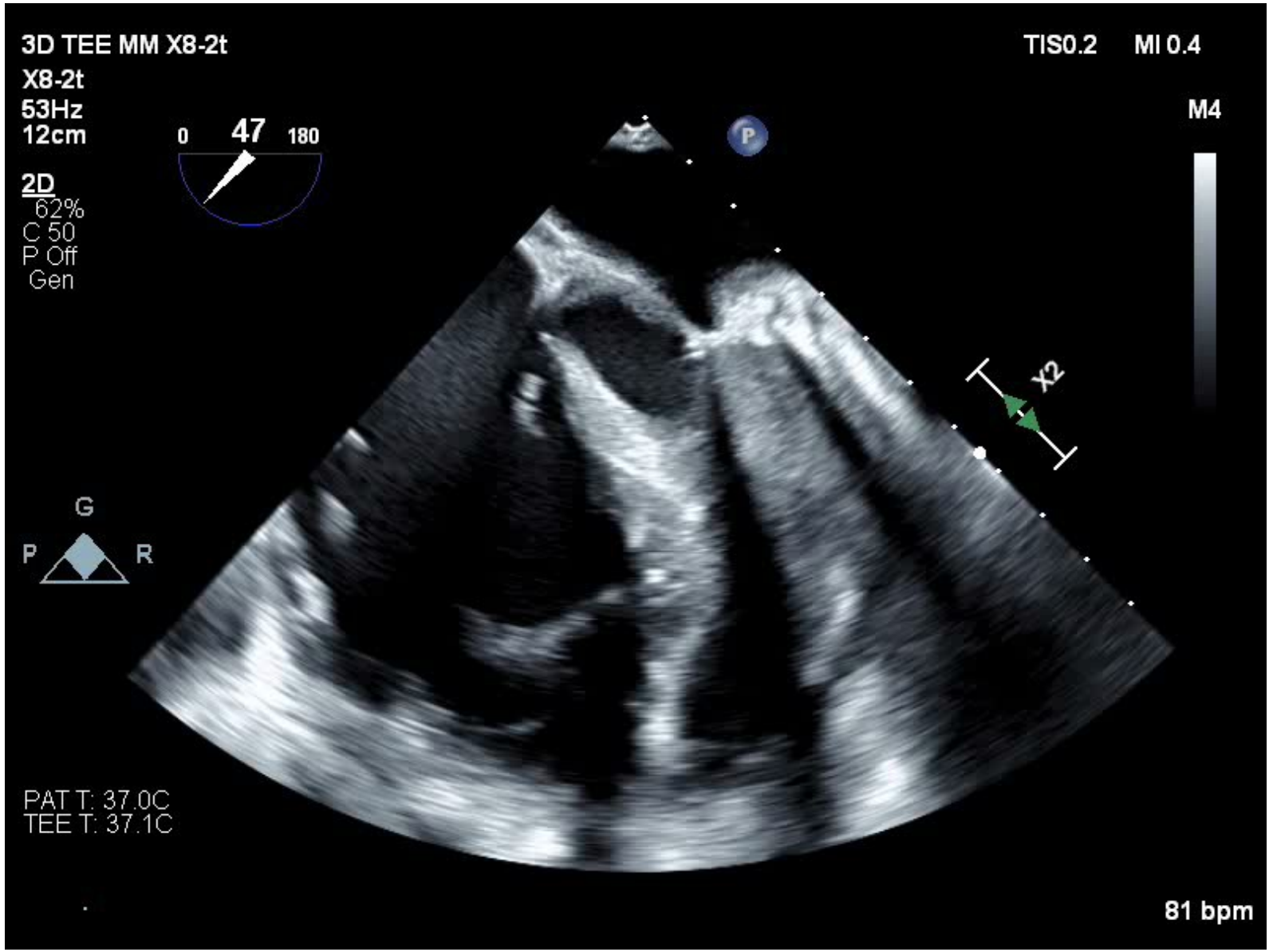
Initial Management

- 20 minutes after arrival, another PEA with fast ROSC
- The patient was sedated and intubated
- Senior interventional and diagnostic teams urgently called in
- Proctoring team from was also urgently called in
- The patient was transferred to the Cath lab with the anesthesiology team

Transesophageal Echocardiography

- The preparation and procedure were performed under complete transesophageal echocardiography (TEE) imaging
- Large pseudoaneurysm as described in prior imaging modalities
- Constrictive pattern
- Opening in the aorta into the pseudoaneurysm measuring 2cm
- The pseudoaneurysm had a mixed solid and liquid content

Transesophageal Echocardiography



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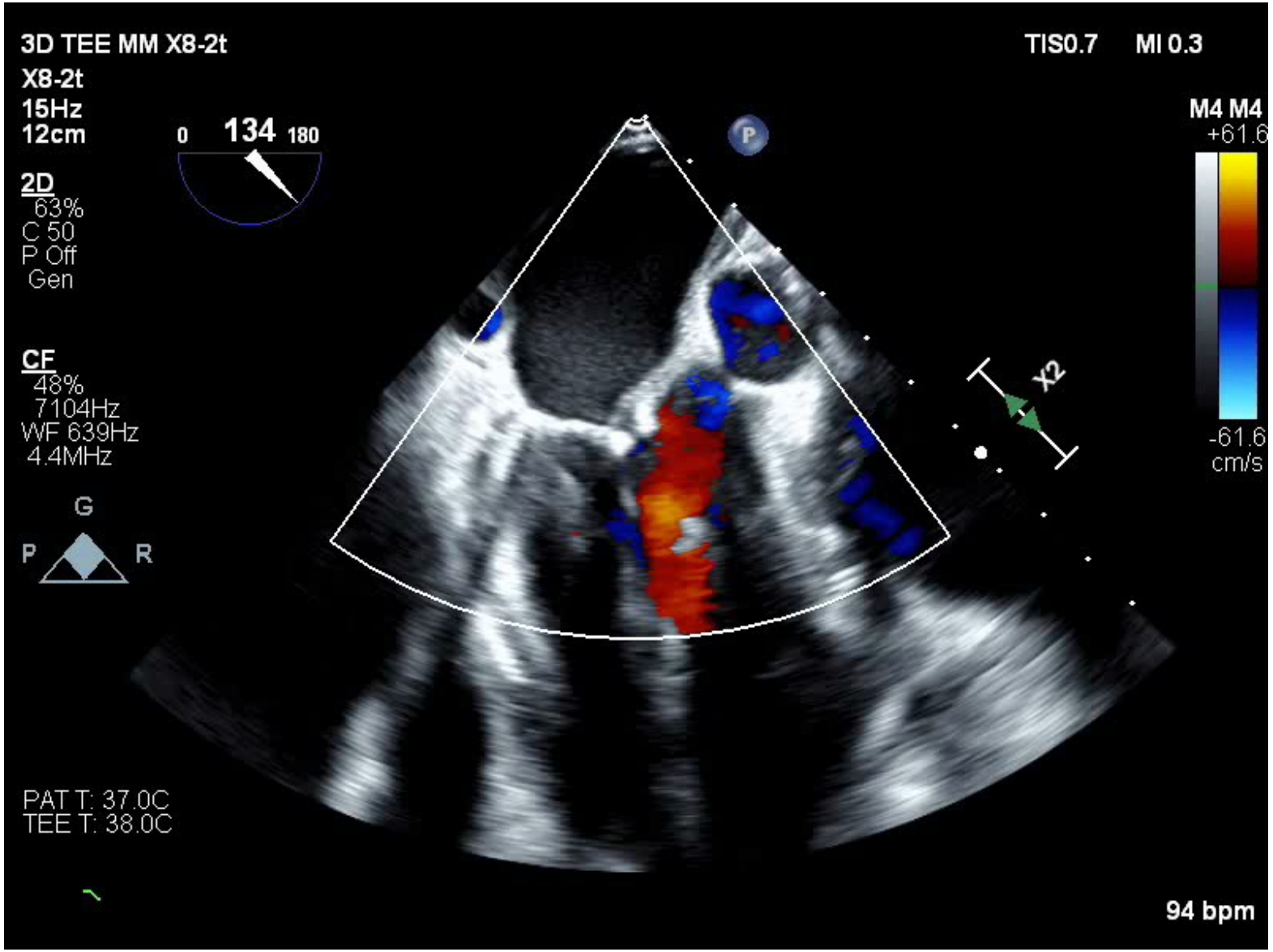

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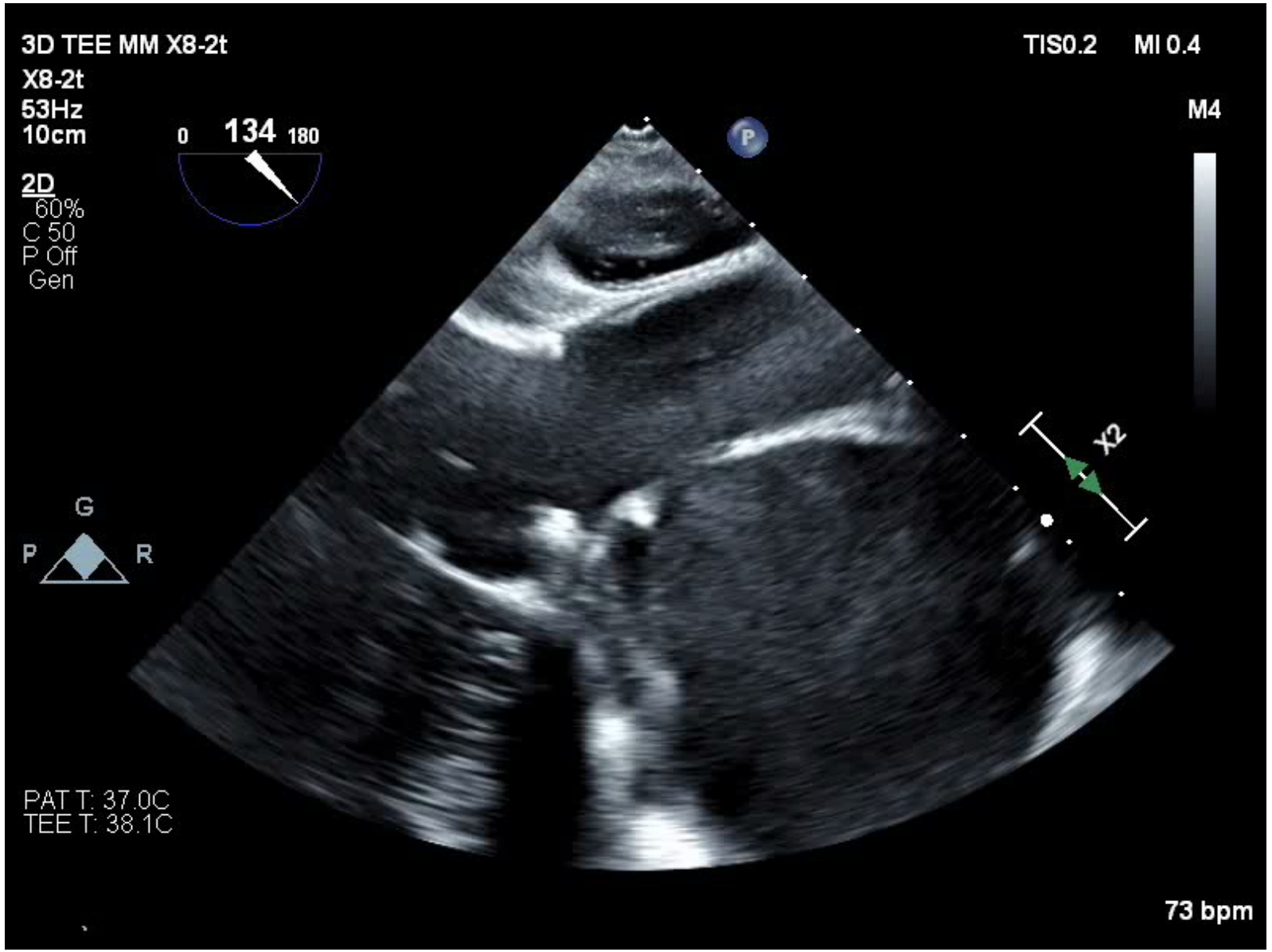

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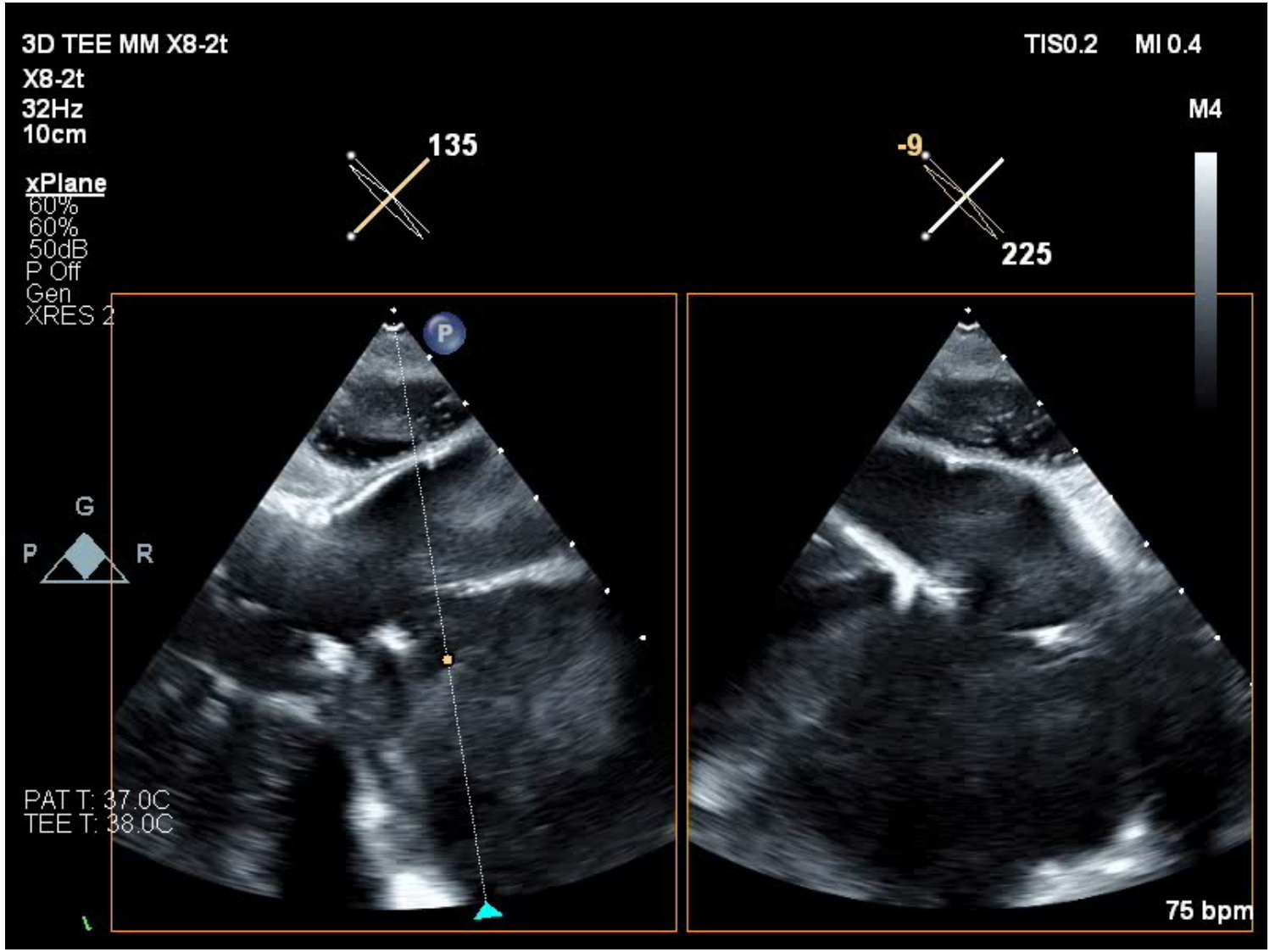

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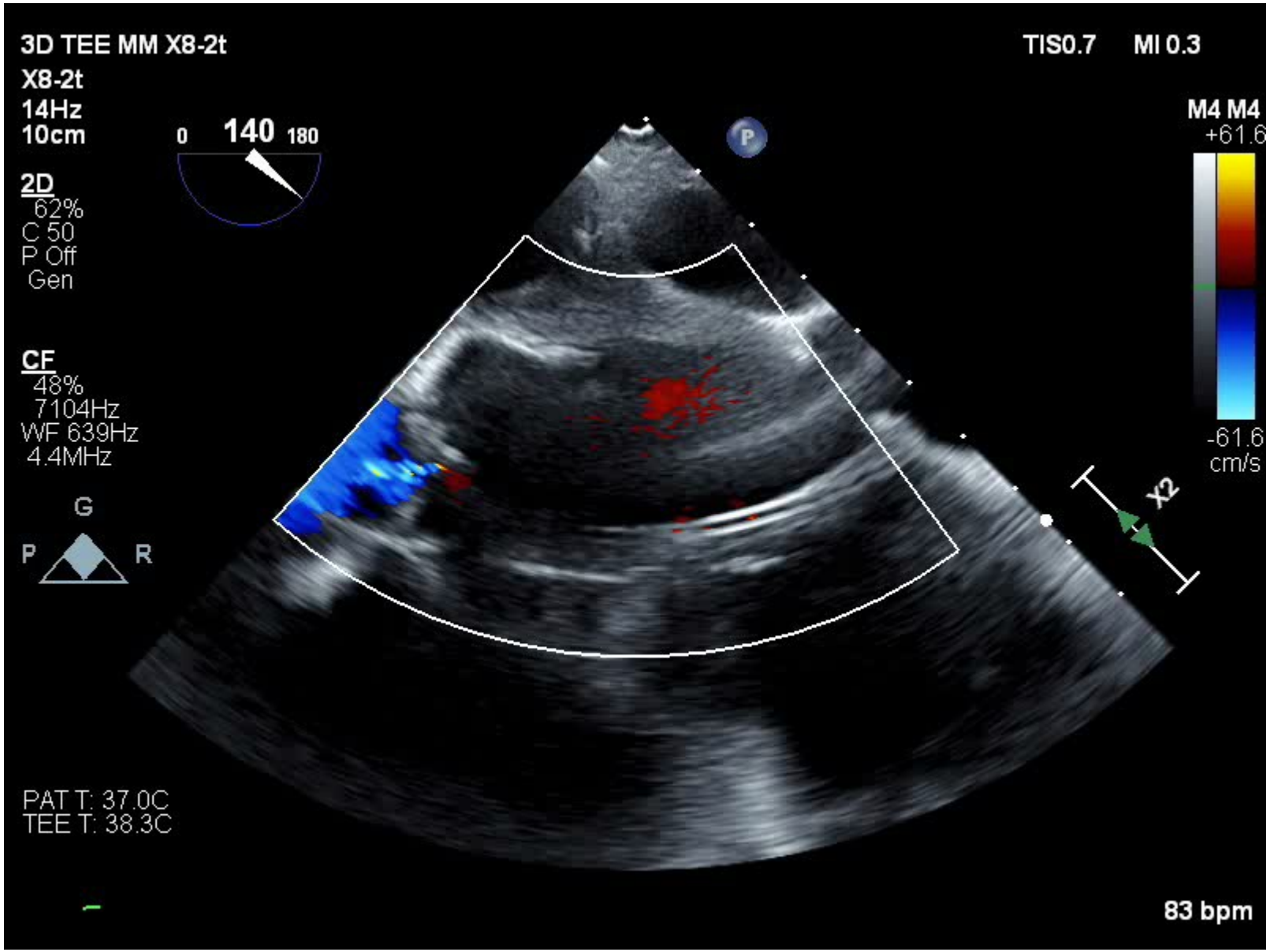

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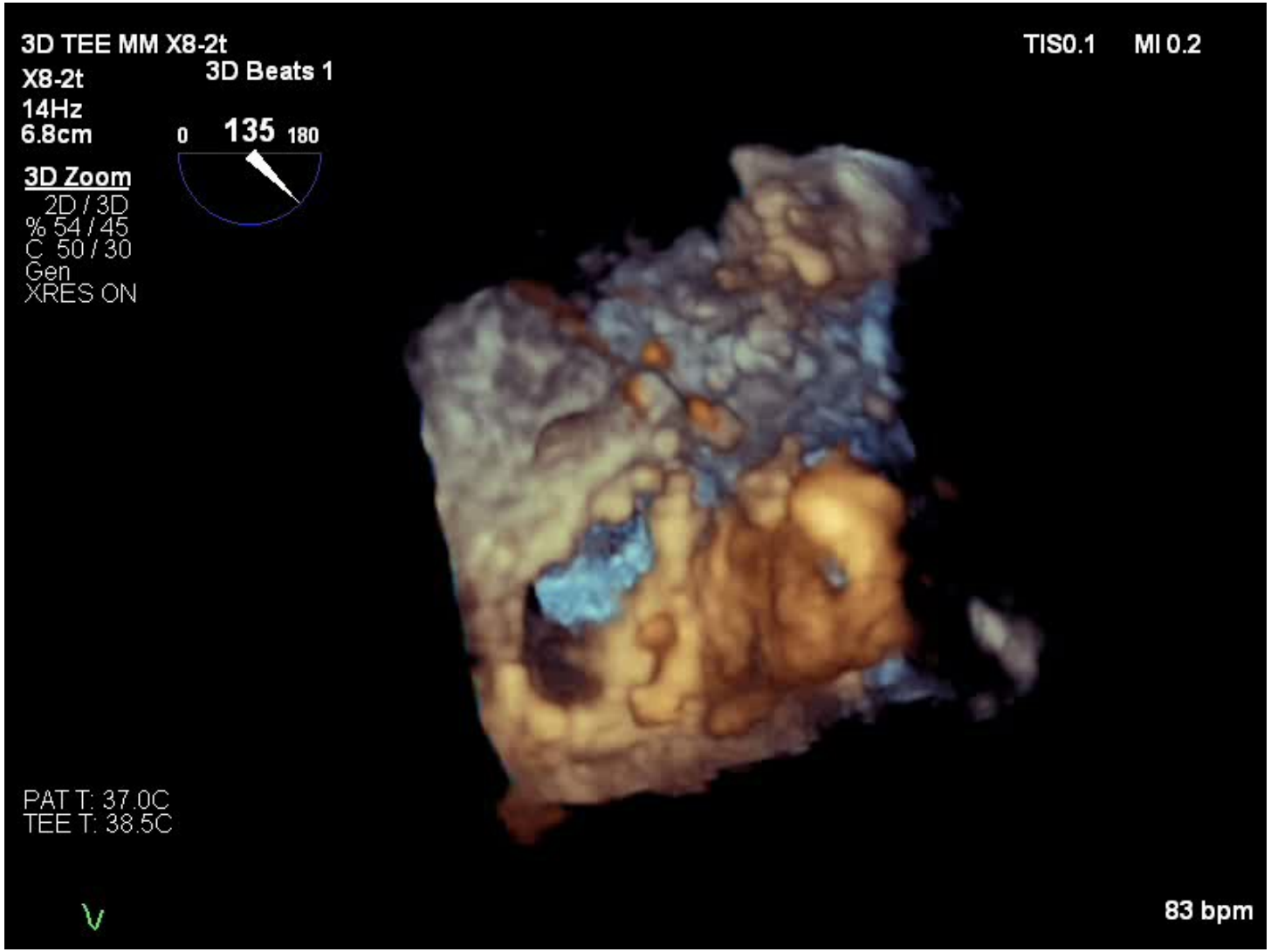


Invasive Management

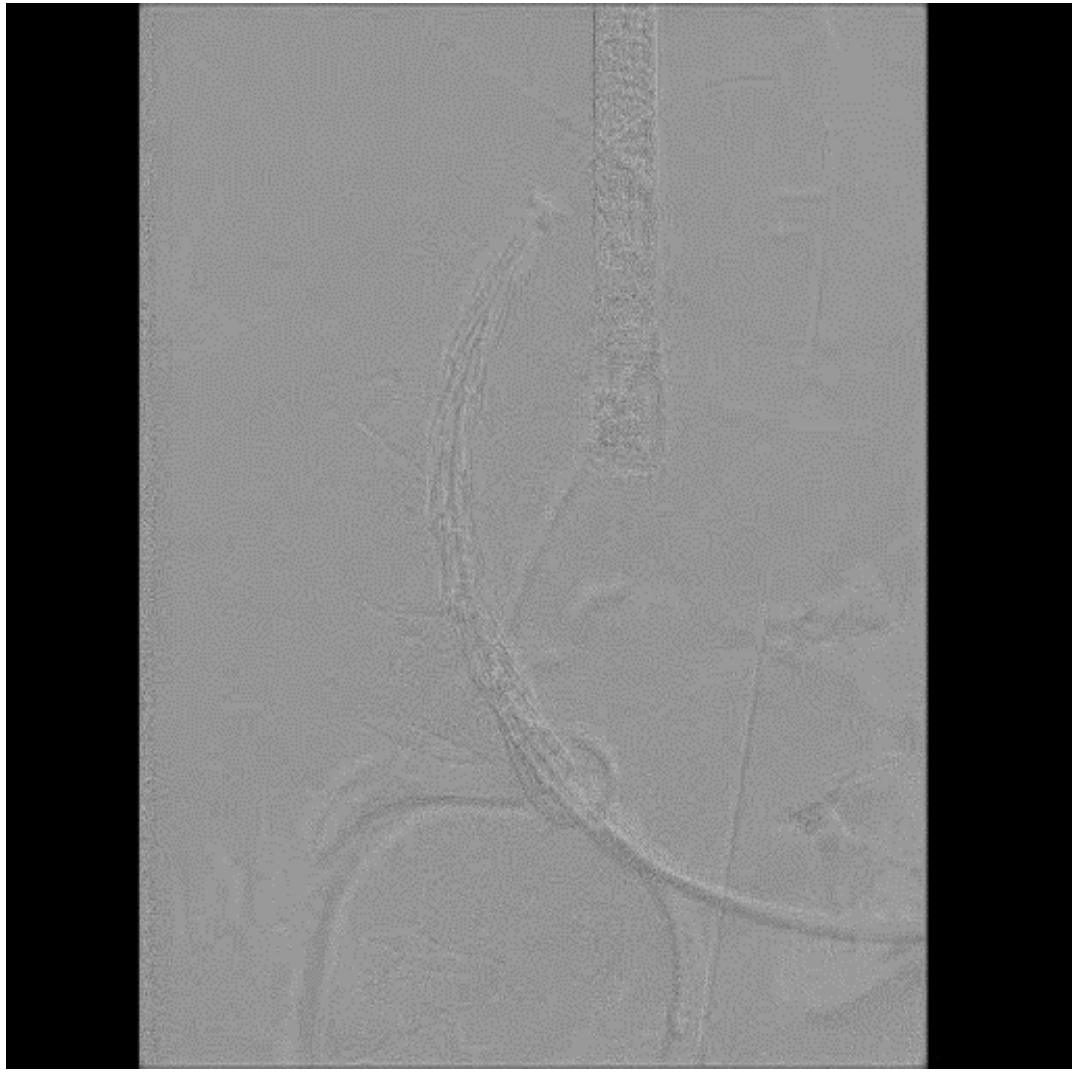
- Urgent minimal invasive approach was decided after HEART team discussion
- Under US imaging, left femoral artery (8F), and right femoral venous access (6F) for a temporary pacemaker was placed
- Left radial access placed pigtail catheter in the Sino tubular junction (STJ)

Invasive Management

- A stiff wire was advanced to the left ventricle
- Stent graft GORE TAG 40/100mm (W.L Gore@Associates.Inc)

  was placed 1mm from the STJ towards the innominate artery
- The stent graft sealed the opening, confirmed by angiography and TEE
- Improvement in left ventricular function was noticed shortly after the sealing
- He was transferred to the intensive cardiac care unit for further management

Invasive Management



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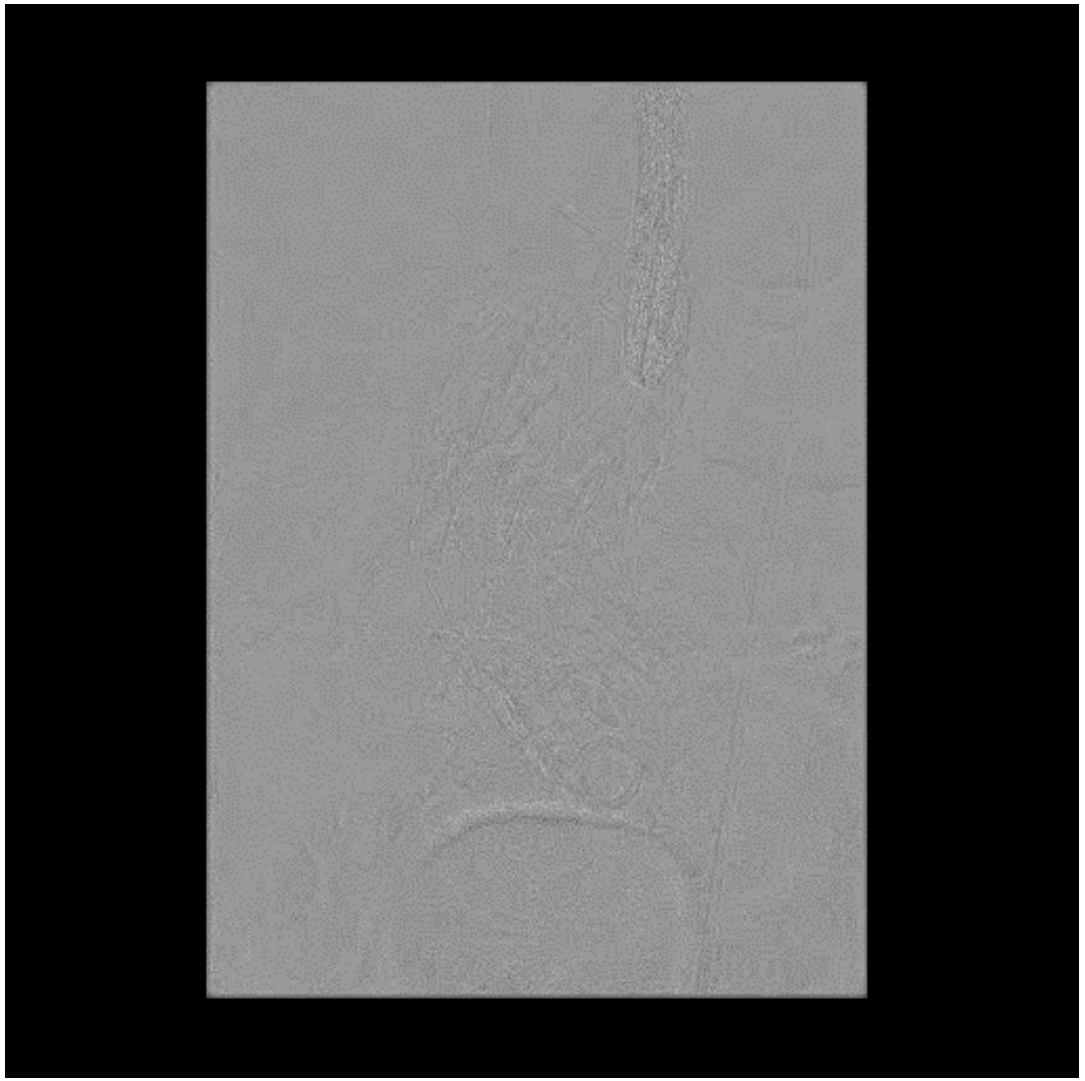
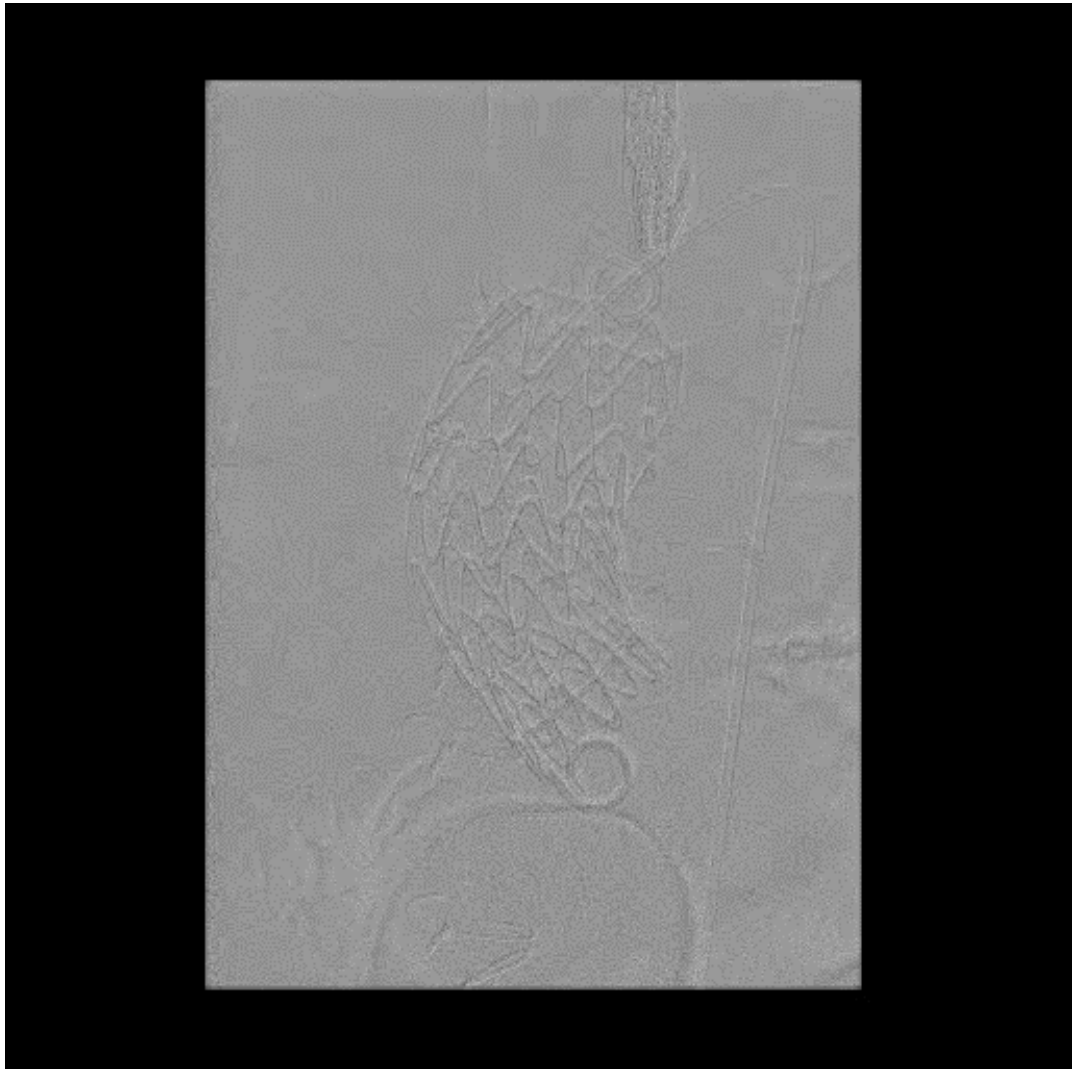


Invasive Management



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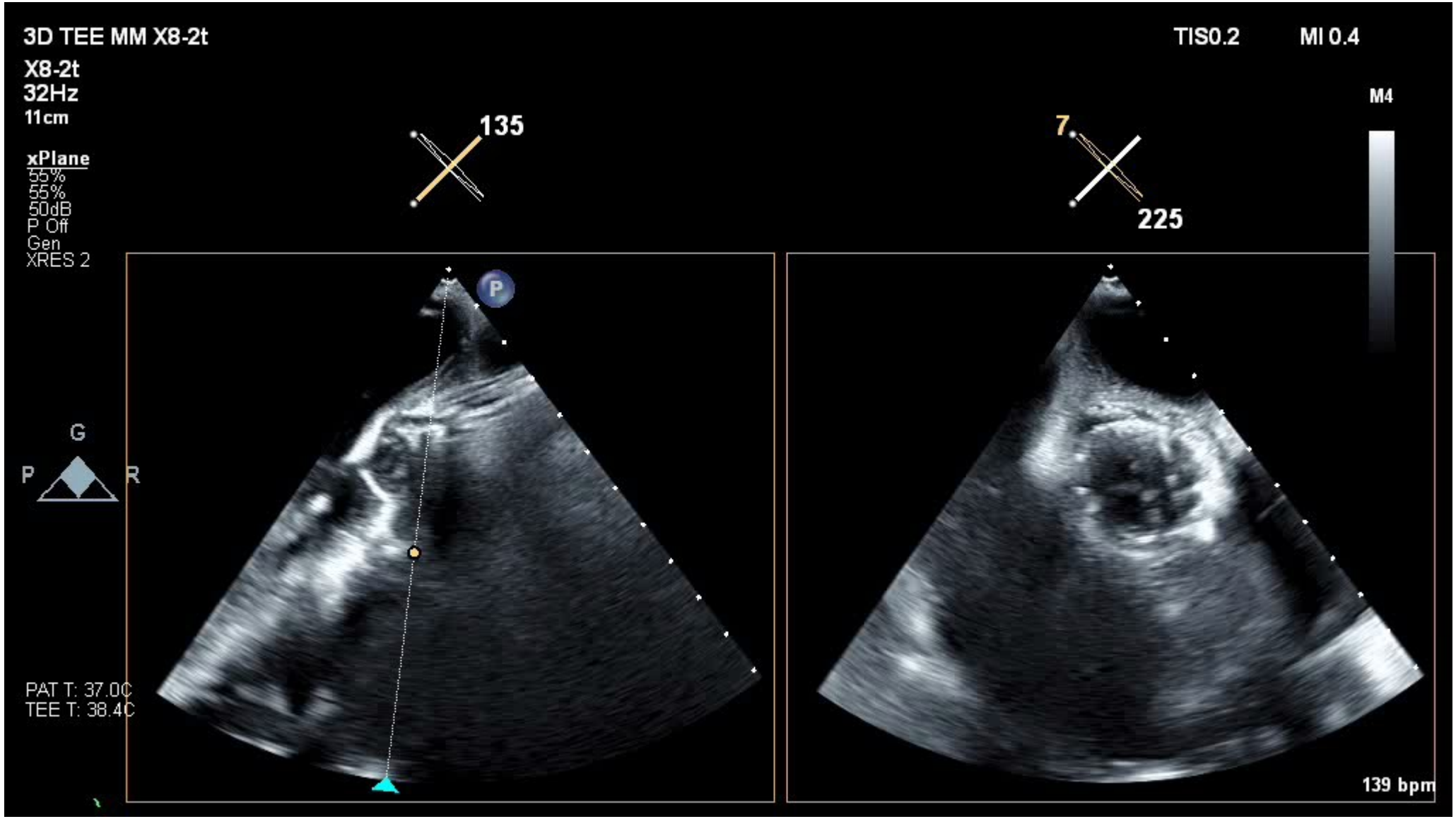

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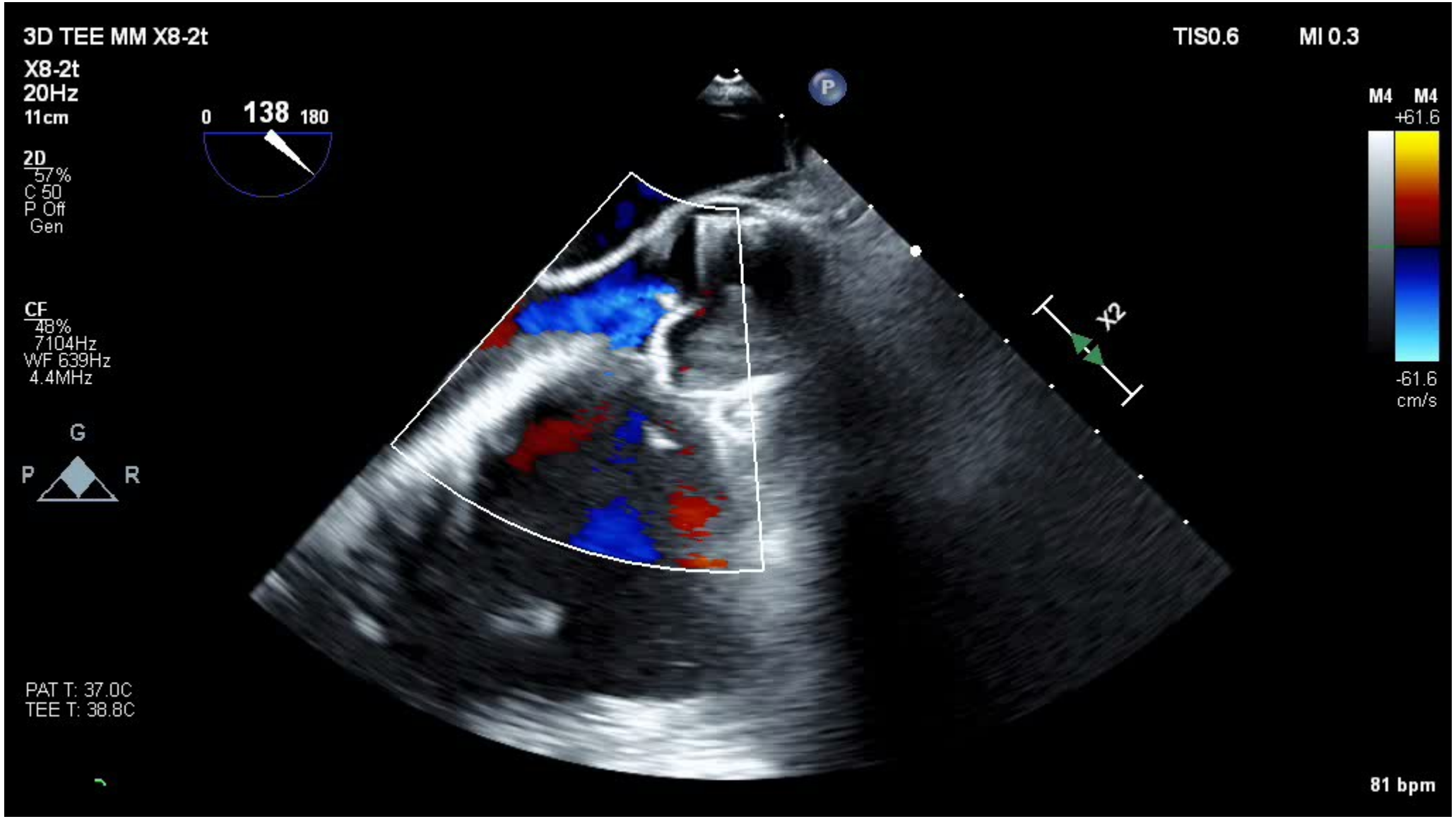

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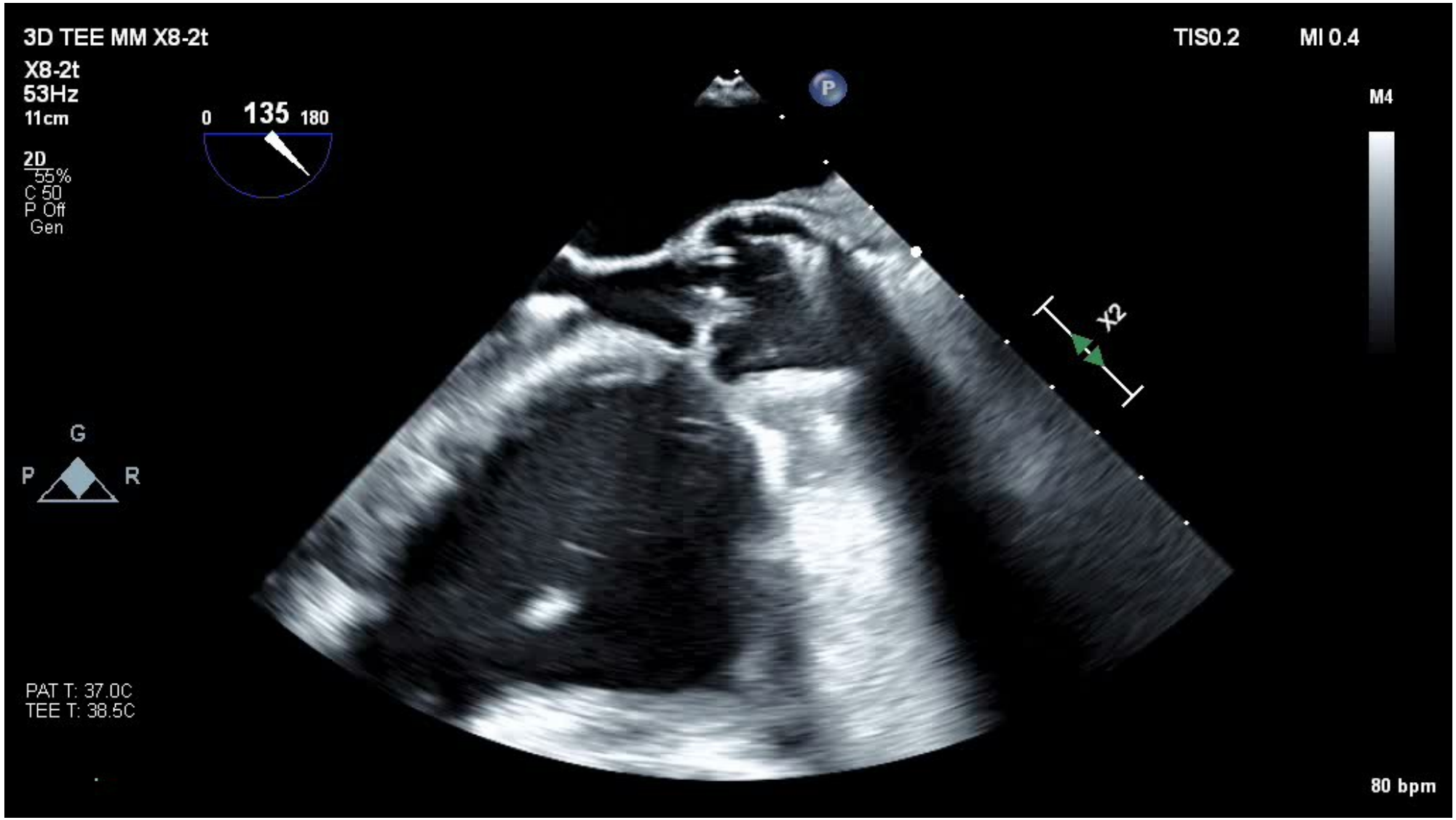

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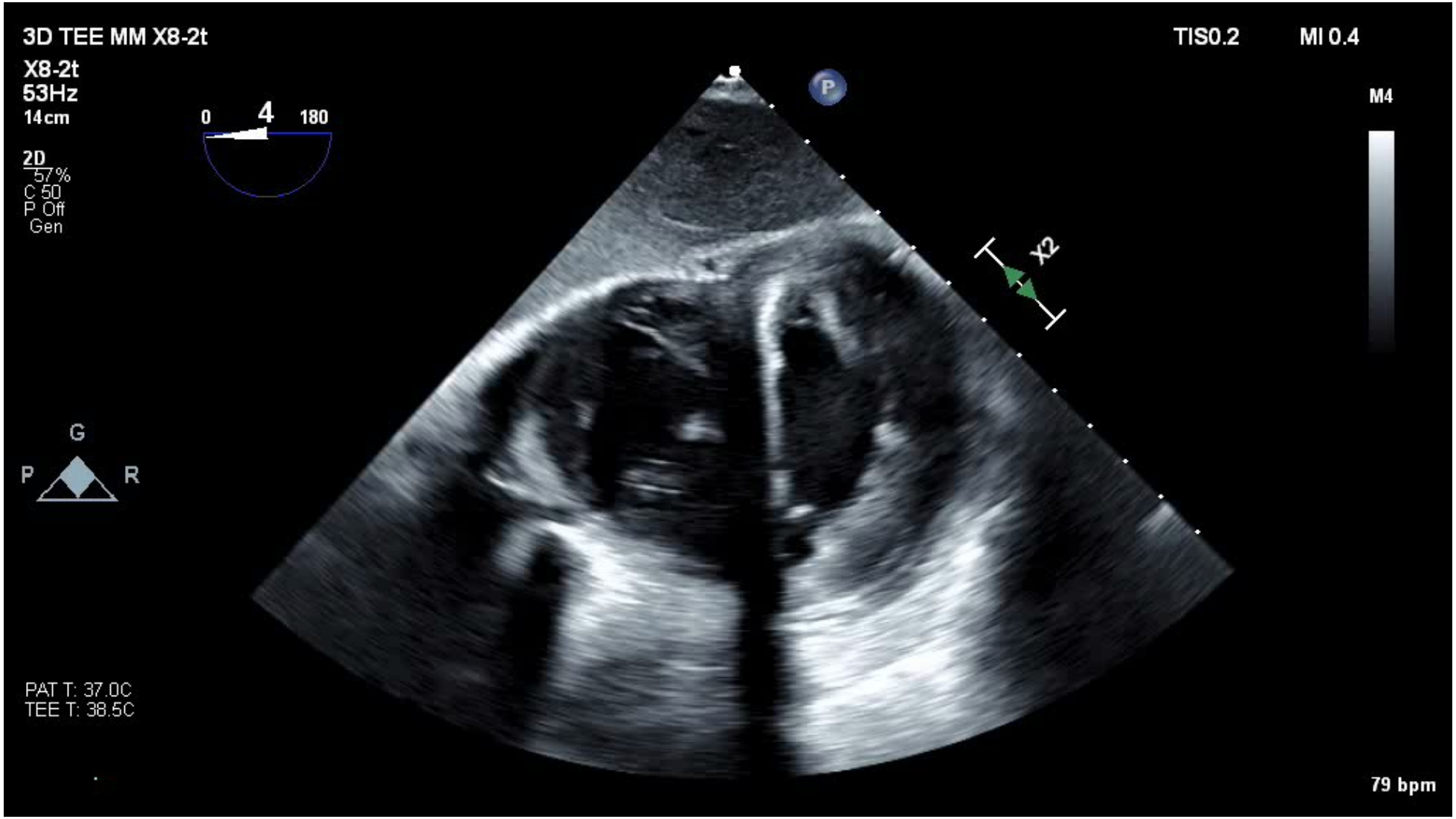

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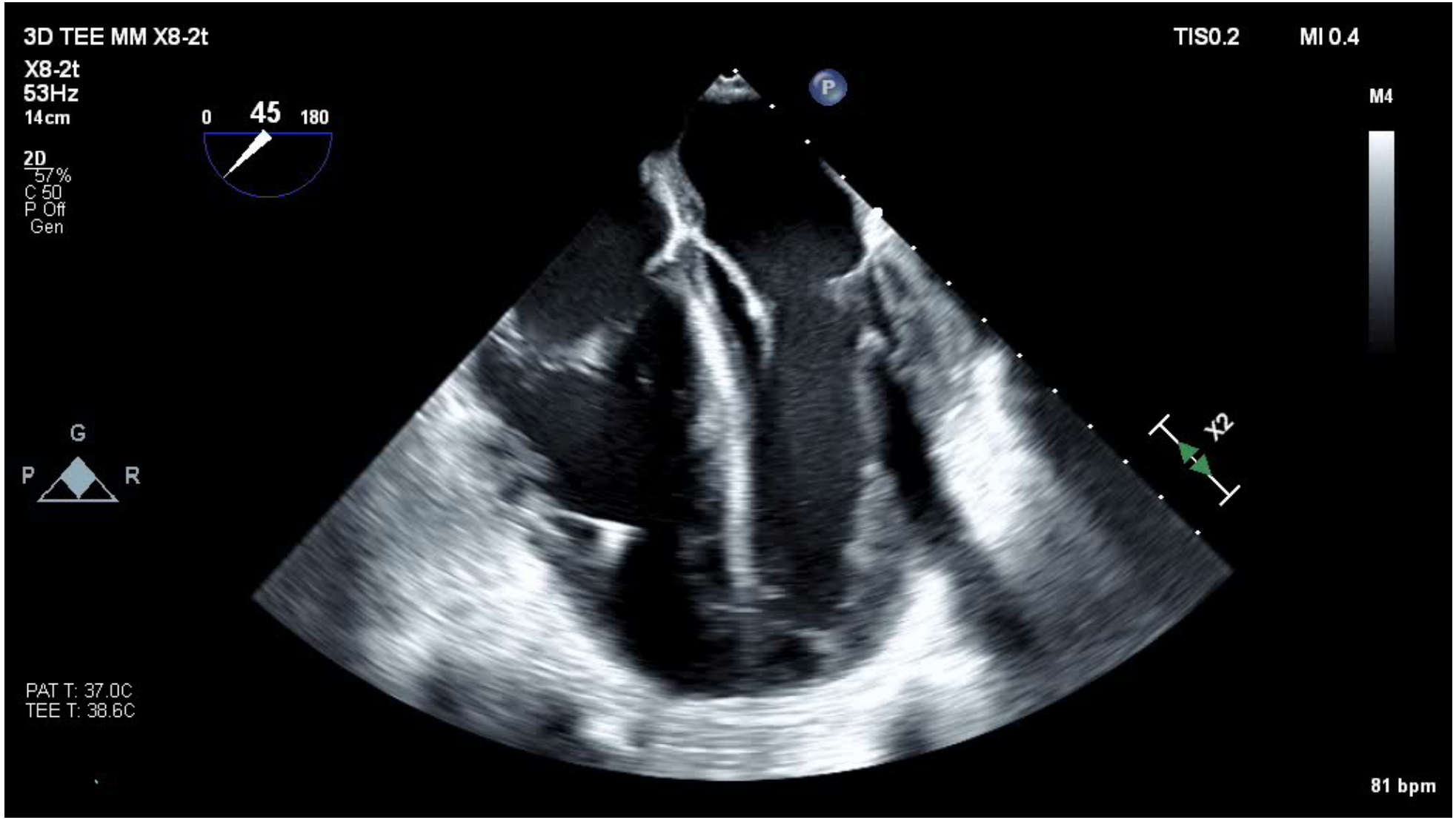

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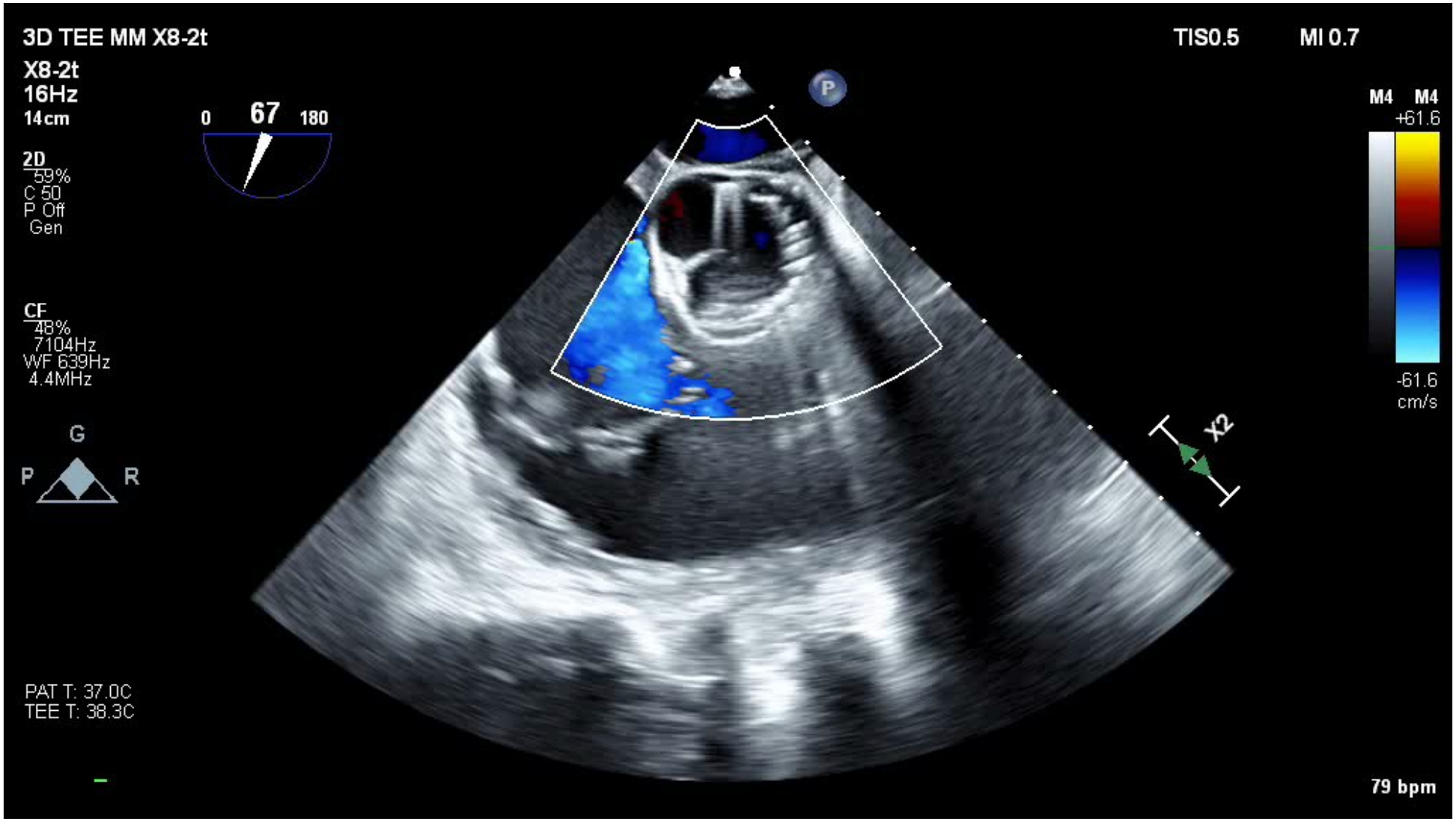

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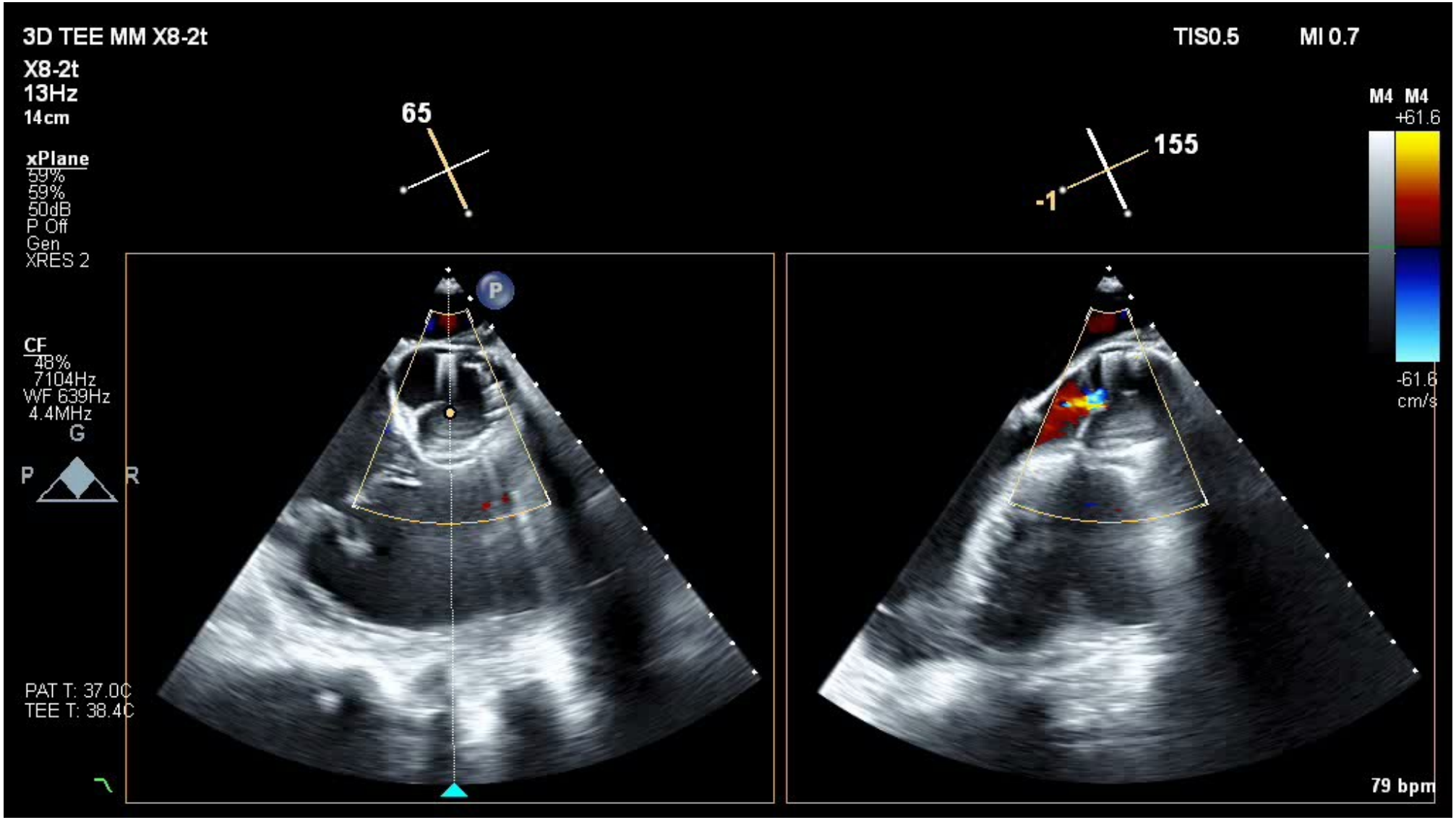

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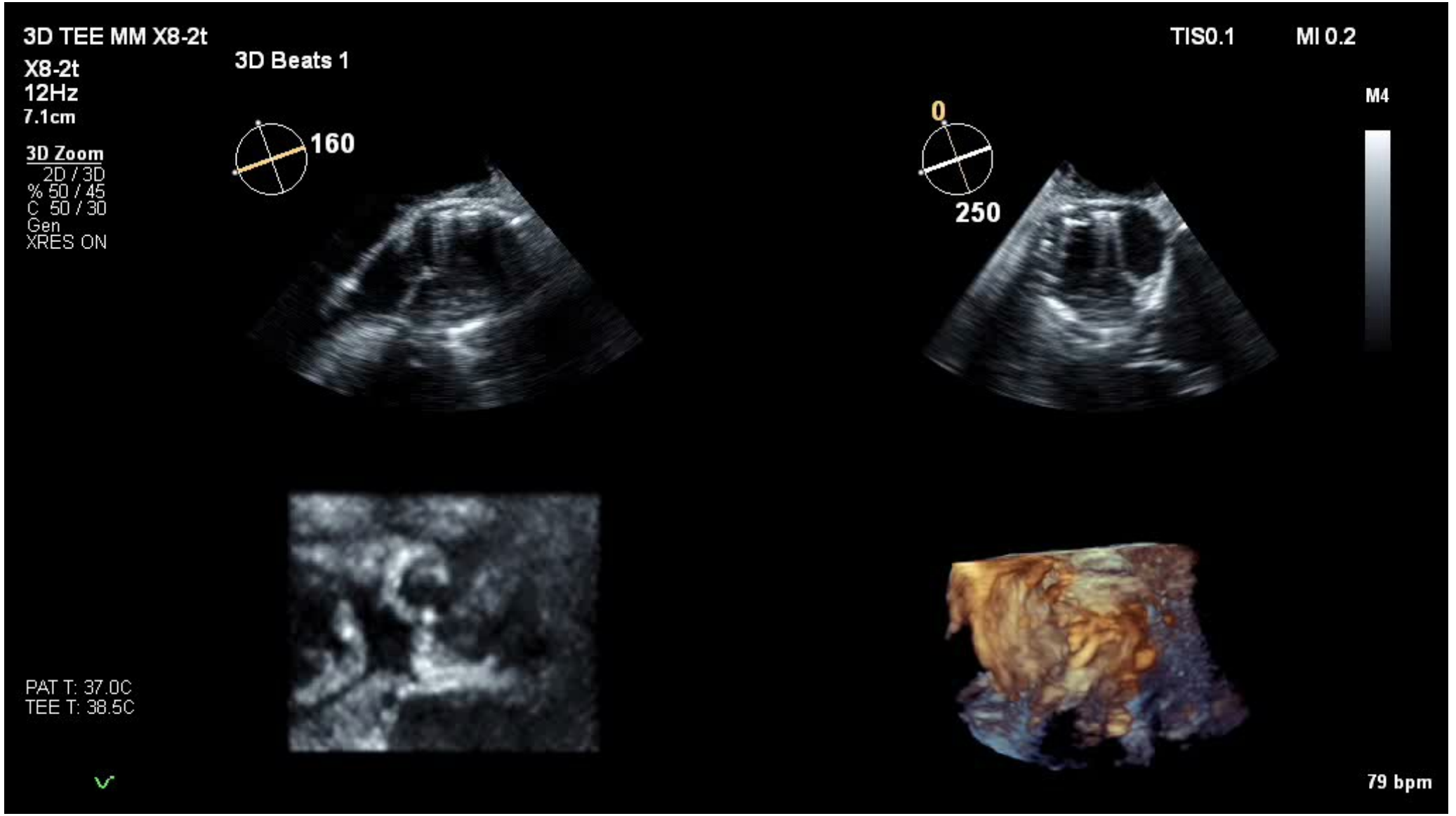

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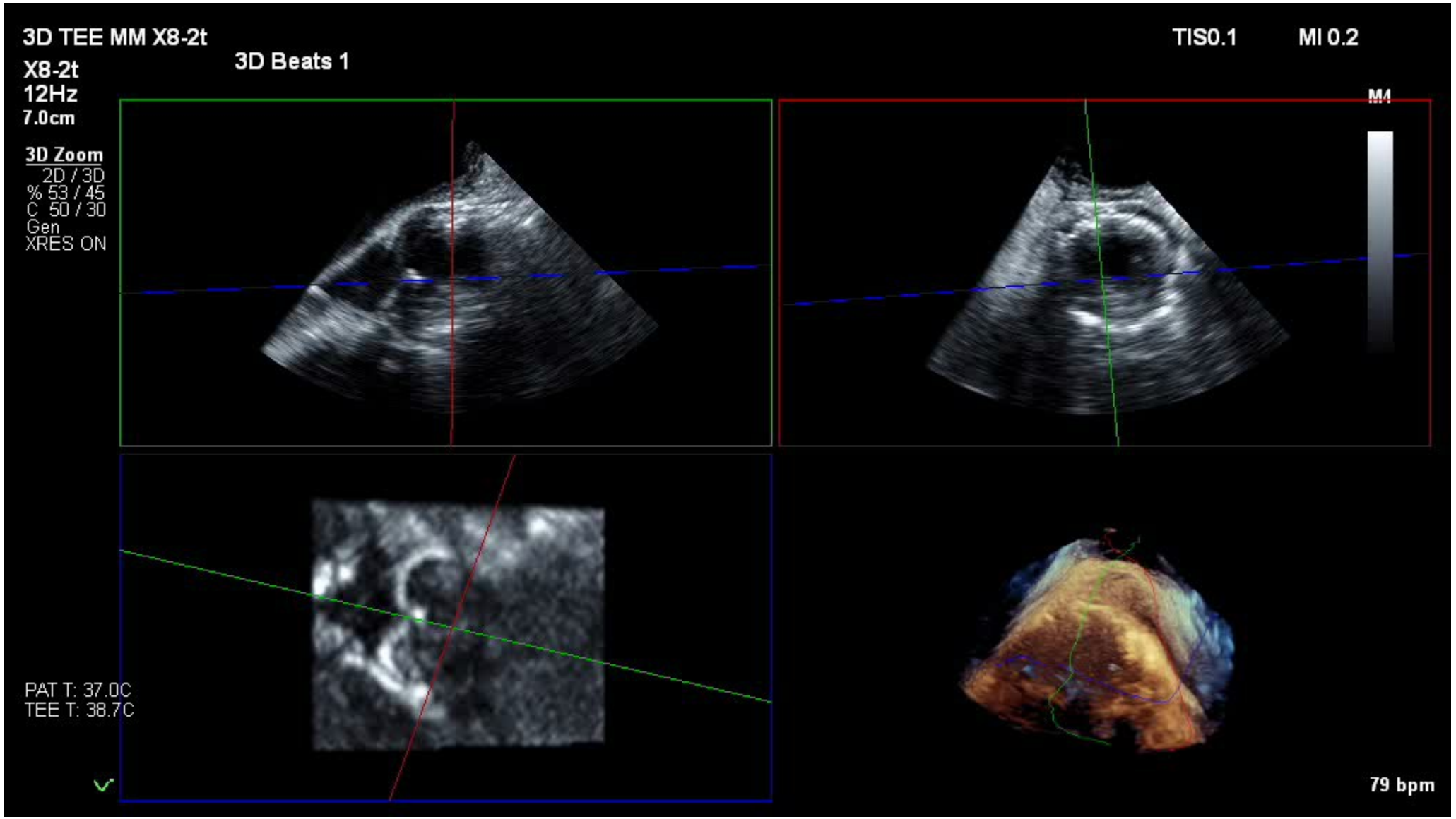


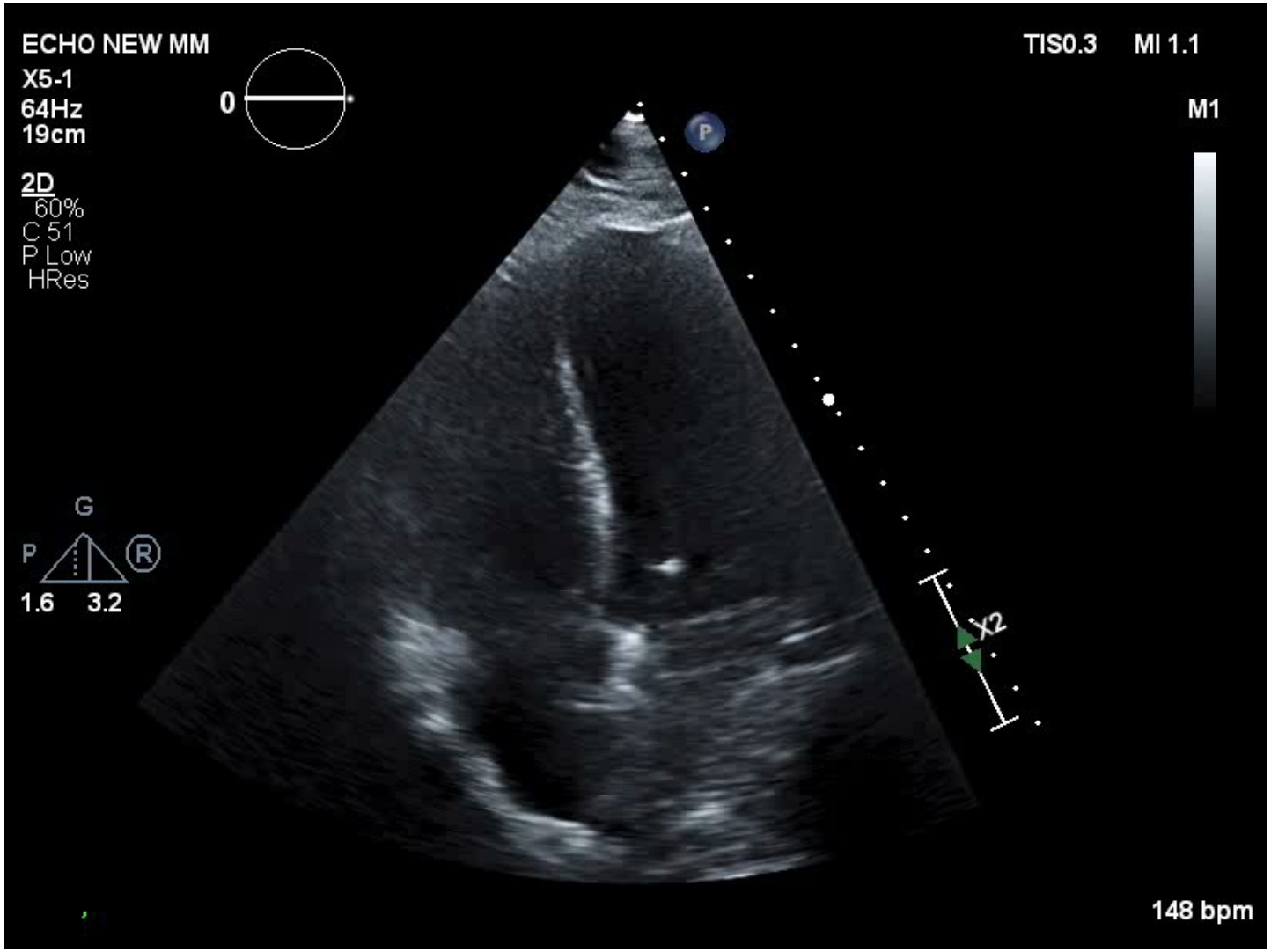
Periprocedural Management

- Blood pressure was unstable, and he was put on noradrenaline and antibiotics
- Was extubated successfully a few hours post procedure
- On the next day, right transudative pleural effusion was drained with a chest tube
- Acute kidney injury developed with oliguria and creatinine up to 2.7 mg/dL and was treated with normal saline and diuretics and improved
- There was no need for dialysis

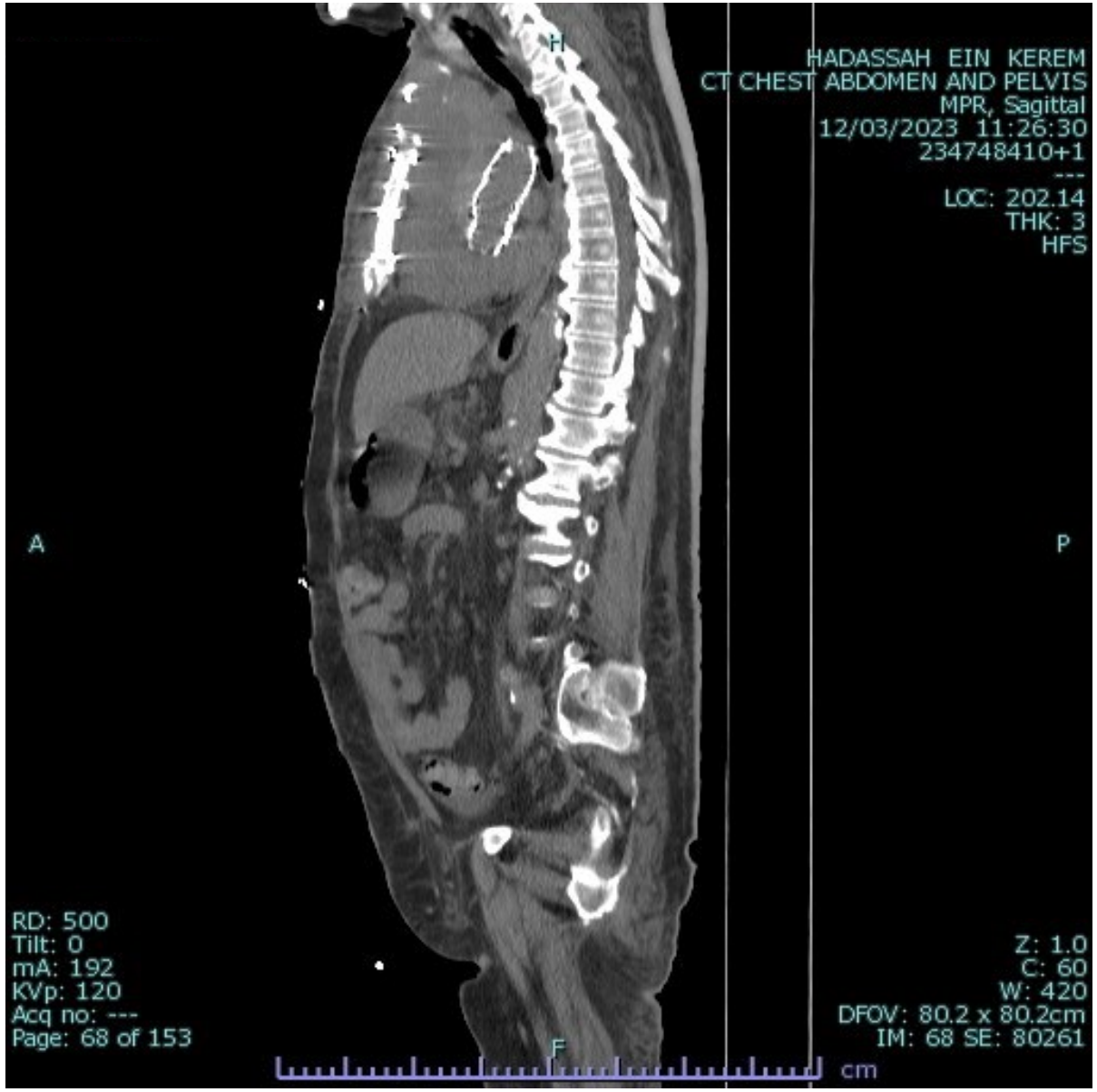
Postprocedural Imaging

- After improving kidney function, a triphasic CT angiography was performed
- No endoleak was shown but a large hematoma in the anterior mediastinum
- Repeat echocardiography still showed constrictive physiology

Postprocedural Imaging



Postprocedural Imaging



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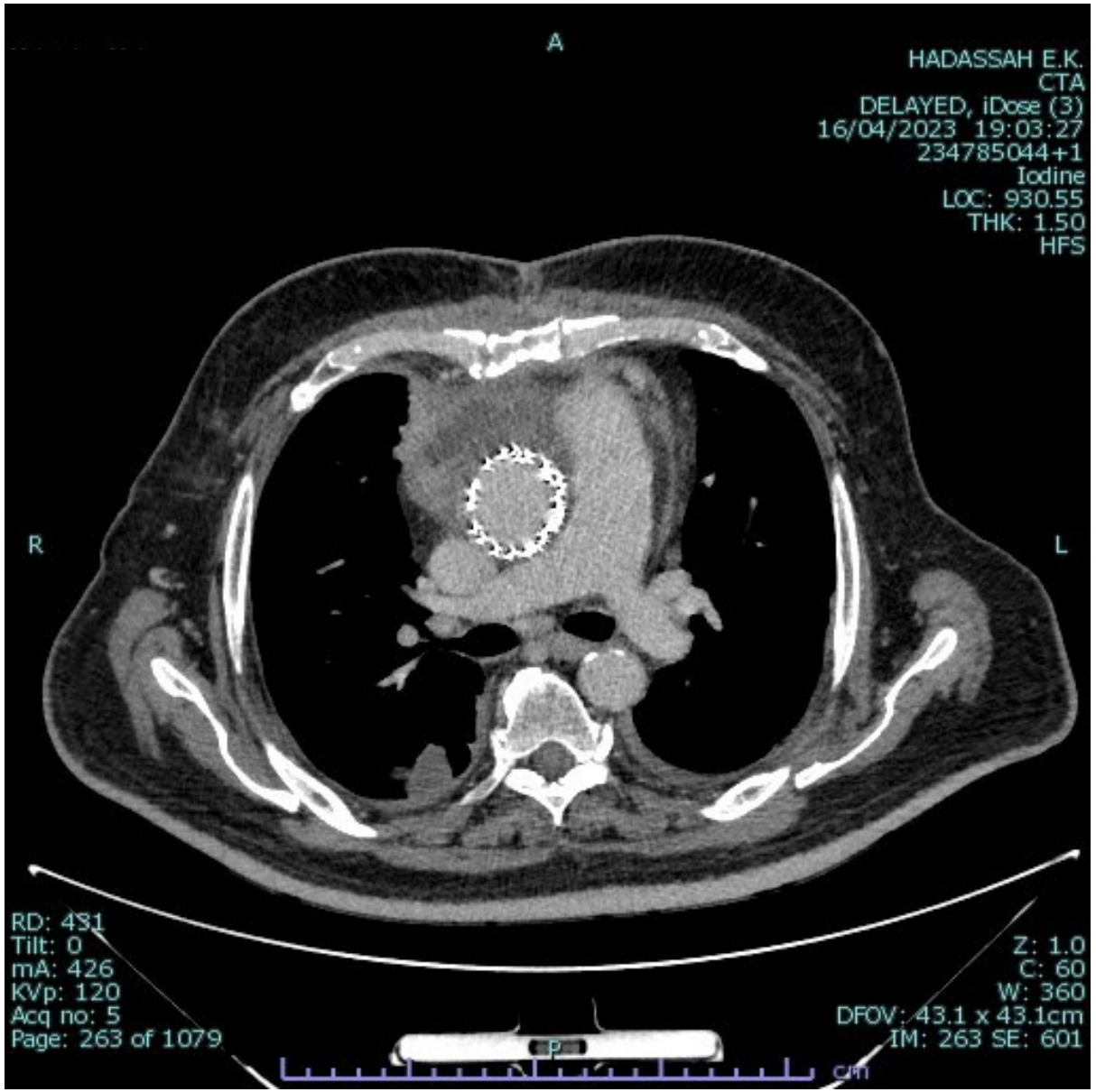

Definitive Treatment

- Multidisciplinary discussion with a cardiothoracic department team – surgical treatment
- In the operating room, a partial upper sternotomy was performed
- Anterior mediastinum was cleared of blood clots until exposure to the ascending aorta
- The stent graft was visible with the exposed aorta opening ~2cm above the STJ
- Mild bleeding was noticed from the lower end of the aortic opening and was patched with pericardium.
- Central venous pressure dropped from 23 mmHg to 13 mmHg post-procedure

Definitive Treatment

Post Operative Treatment

- The patient was extubated a few hours later and chest tube removed
- Sterile cultures from clots were removed during the surgery
- Left pleural effusion was treated with a pigtail catheter that was placed for two days
- The patient was discharged home three weeks after admission with normal left and right ventricular function

Fin