

Bail-out Subclavian Artery Angioplasty in Acute Non-STEMI and Cardiogenic Shock in a Patient with Old Coronary Artery Bypass Grafting

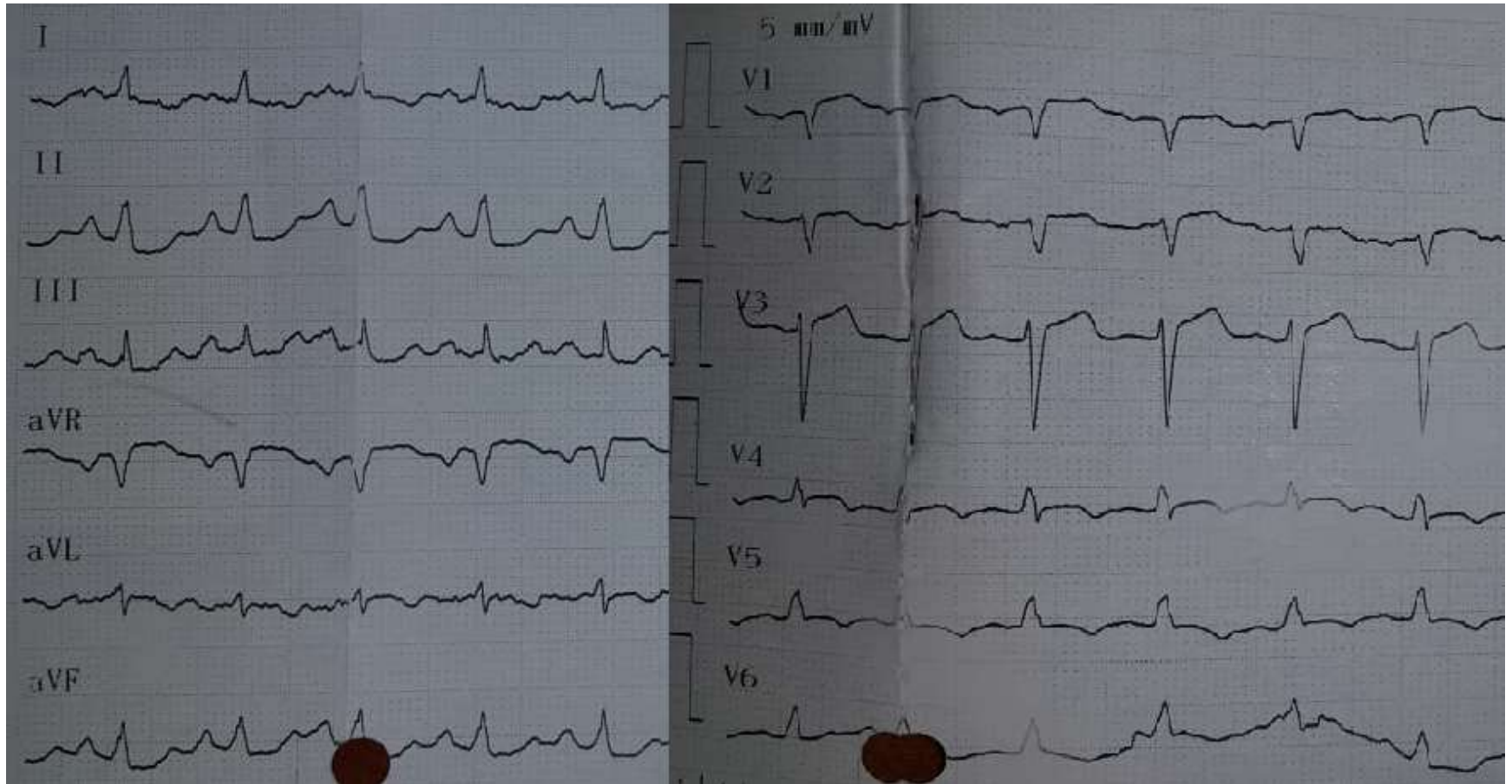
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Clinical History

- A 57-year-old male underwent coronary artery bypass surgery (CABG) 3 years ago.
- Two saphenous grafts to the right coronary artery (RCA) and the obtuse marginal branch of the left coronary artery (OM), and left internal mammarian artery graft (LIMA) to left anterior descending artery (LAD).
- No intervention has been performed so far. Recently, he has admitted to our hospital with rest angina.

ECG at admission



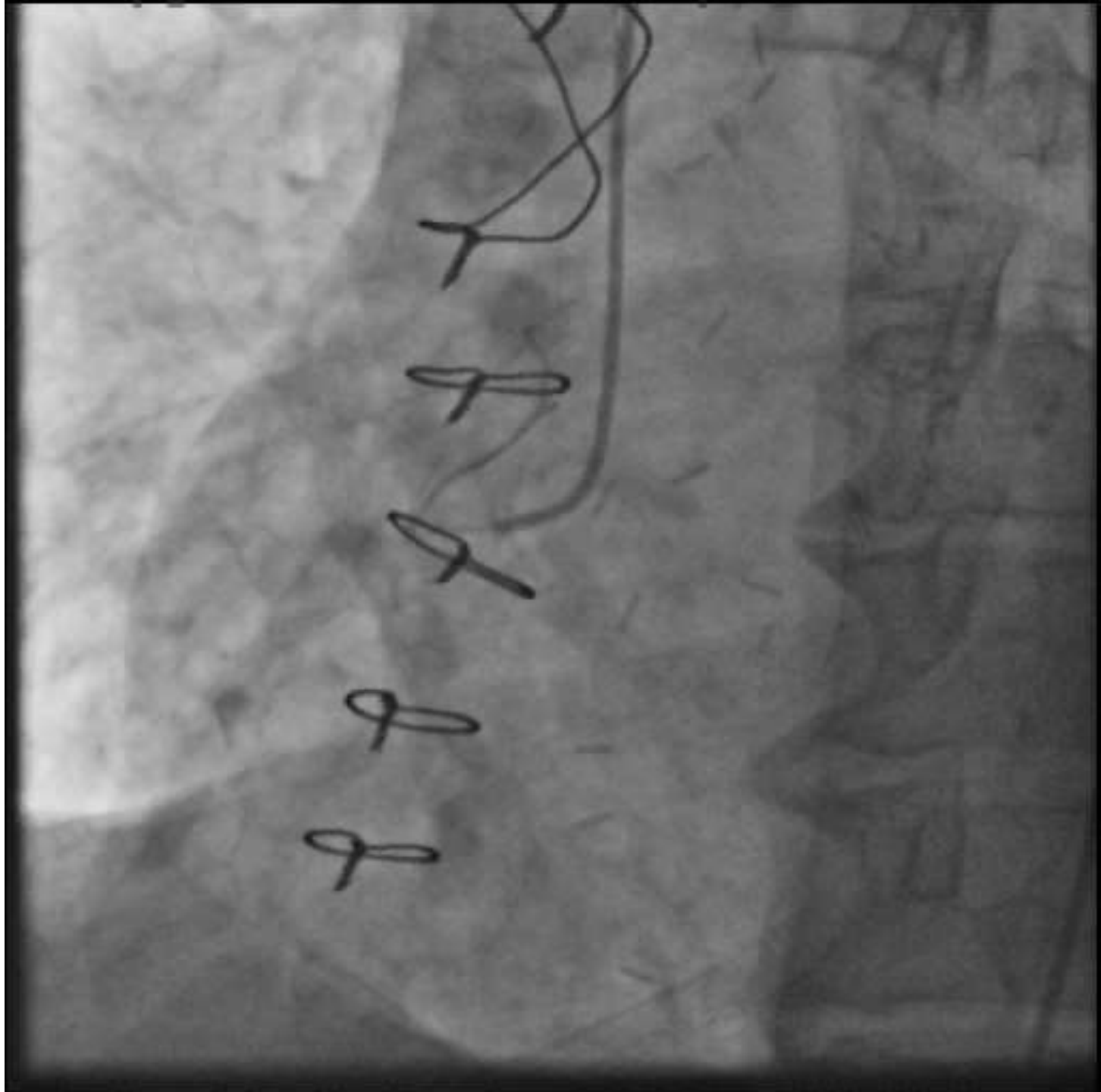
ECG and Lab. findings

- On ECG, 1st degree A-V blok, 1-2 mm horizontal and down-sloping ST depressions and incomplete left bundle branch blockage were observed.
- Cardiac markers were also elevated. An emergent coronary angiography was indicated in case of non-STEMI, impaired left ventricular function (EF=0.30), refractory angina.

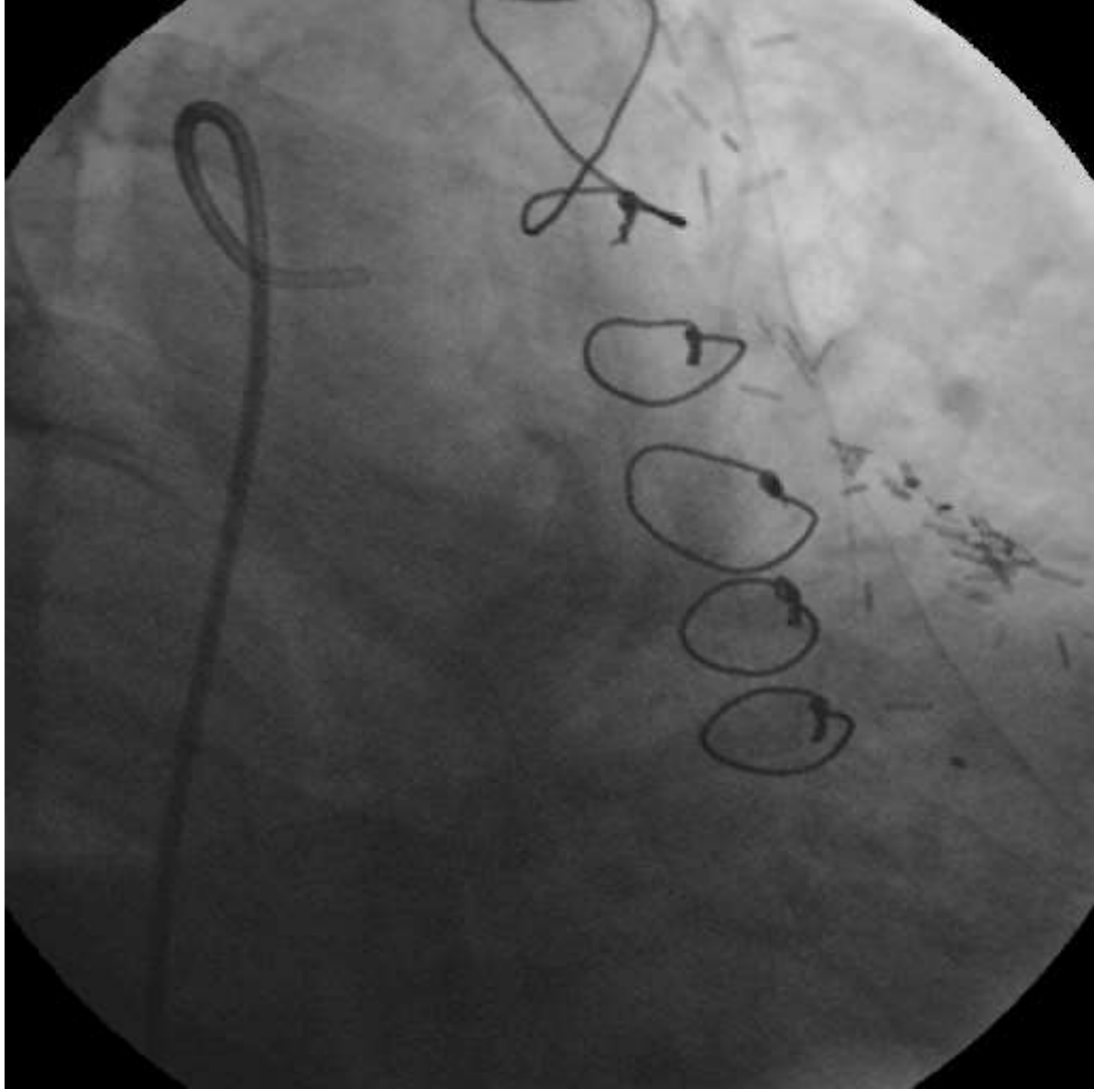
Left system
angio-
graphy



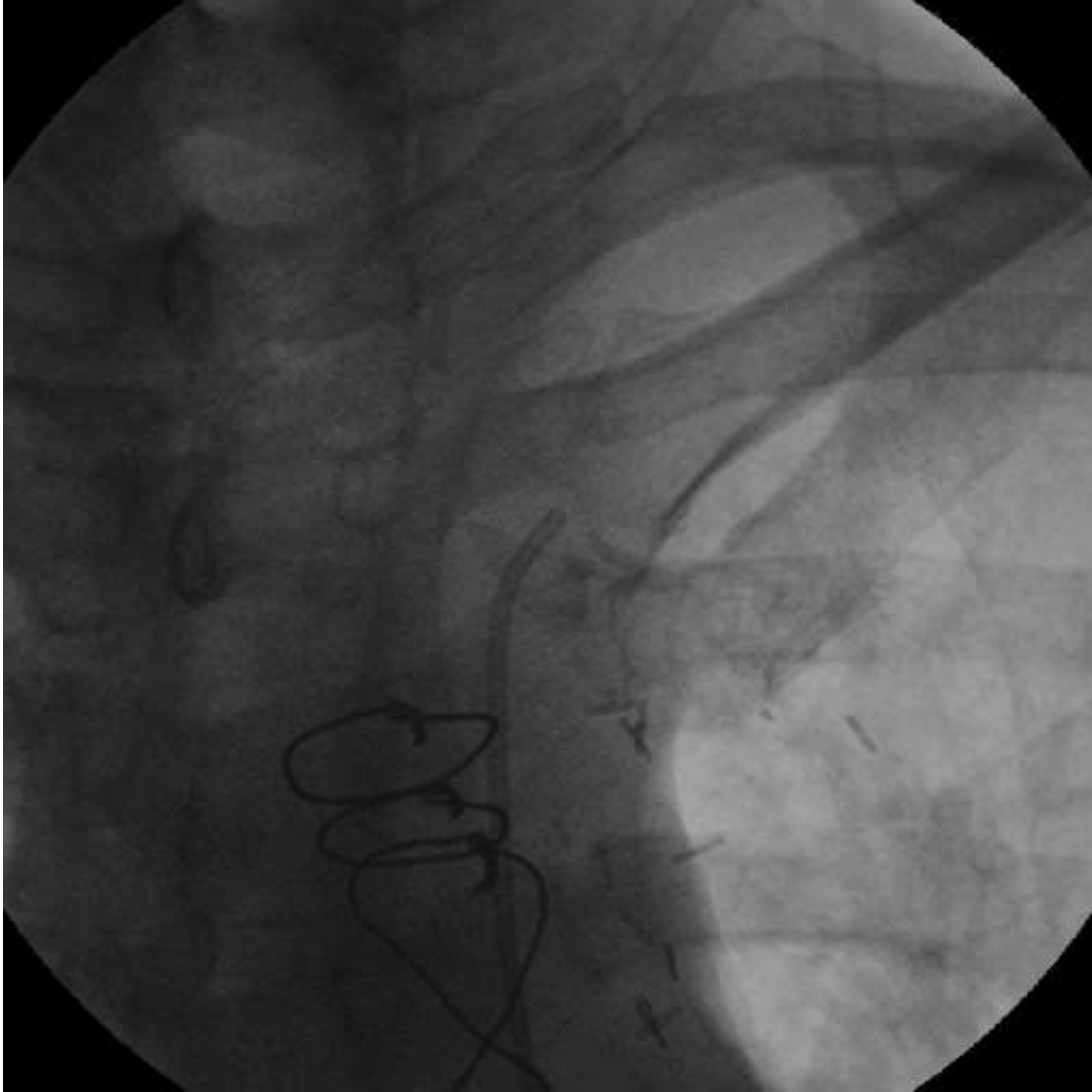
RCA has a
CTO lesion



Ao-OM
showed
mildly
diseased
saphenous
vein graft
and severe
stenoses
after
anastomosis.
Ao-PDA is
occluded.



Severe left
subclavian
artery
stenosis



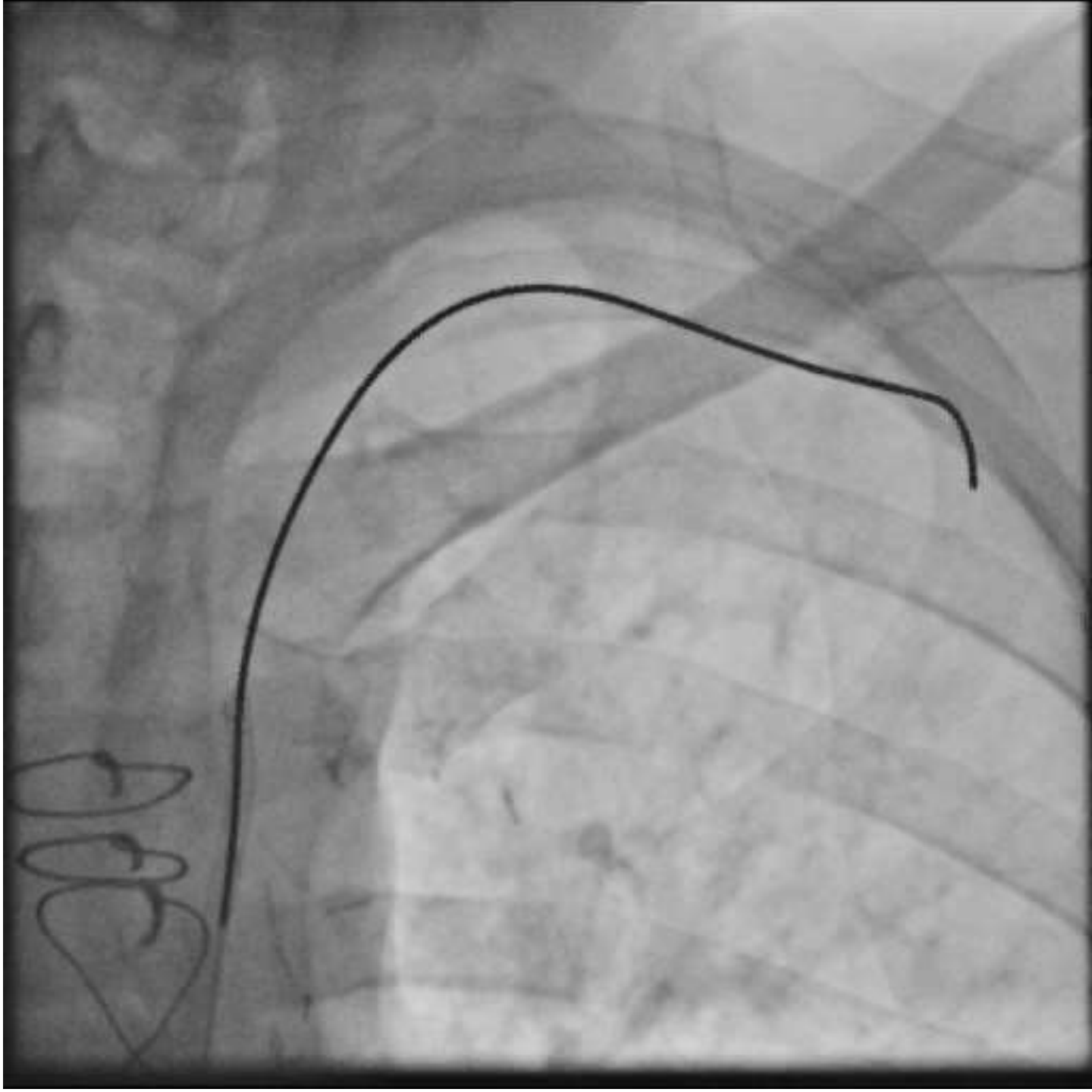
Which is the target vessel?

- Native RCA revealed a CTO lesion at the mid portion with occlusion of saphenous graft.
- Although saphenous graft to the OM was patent, it was small in caliber and had diffuse disease after anastomosis.
- Left main (LM) was severely diseased and followed with proximal LAD CTO and ostial LCX ISR CTO with only minor flow in the left coronary system.
- Left ventricle was mainly supplied by the LIMA, but there was severe stenosis in left subclavian artery.

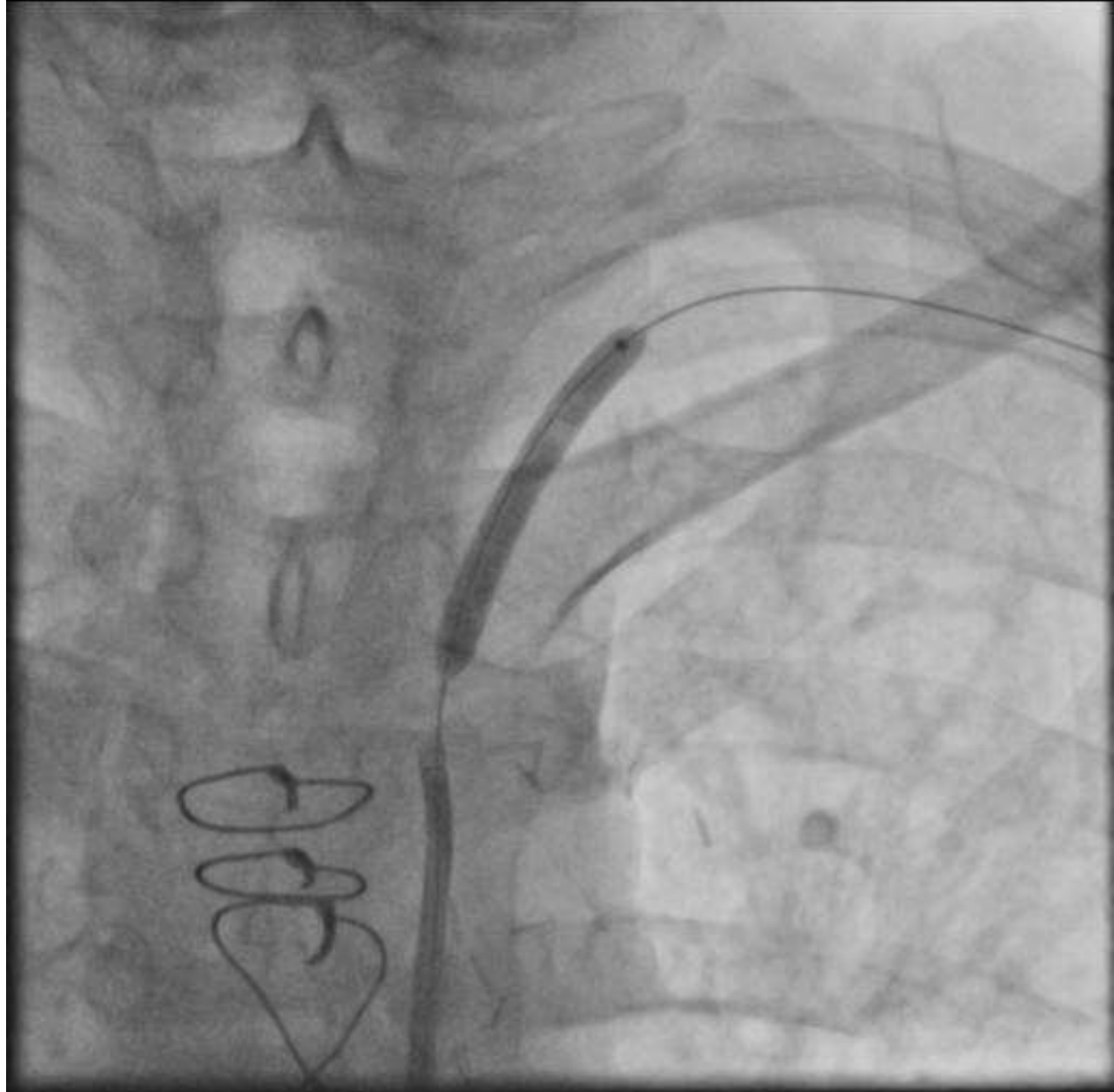
Tx in CCU

- Although bail-out subclavian artery angioplasty was first indicated to improve LIMA perfusion which mainly supplies left ventricle, we needed some time to prepare necessary equipments.
- During that time, the patient had been followed in coronary care unite (CCU) for a few hours. In the CCU, he had pulmonary edema which had been treated with O₂ inhalation and i.v. furosemide. In addition, refractory hypotension, worsening renal function (elevation in creatinin level from 0.8 to 1.6 mg/dL) and hypoxia (sO₂ <0.90) despite nasal O₂ 5 l/min were evident.
- Our plan: Bail-out subclavian artery angioplasty would have been followed with a CTO PCI for RCA and/or Ao-OM respectively at the same session if hemodynamical instability persisted. After a few hours, we performed peripheral PTA and stenting.

After wiring, an additional decrease was observed in blood flow of left subclavian artery



5x40
mm
balloon
at 6 atm



9.0x40
mm
balloon
expand-
able
stent at
10 atm



Final
result



Tips and Result

- Contrast density in the indeflator had been decreased to limit deflation time of the equipments to prevent a hemodynamic collapse.
- Fortunately, the procedure resulted in improvements in vital and hemodynamical parameters together with relief of angina. The patient was discharged 5 days later. We planned medical therapy alone for the OM lesions and to perform CTO PCI for the RCA at another session.

Conclusions

- Patients with old CABG using LIMA should be diagnosed from the view of narrowing within the subclavian artery.
- A bail-out subclavian artery angioplasty in patients with LIMA-to-LAD graft is a safe procedure and can result in a dramatical improvement of clinical condition especially in case of acute myocardial infarction and cardiogenic shock.

Take home messages...

- Cardiogenic shock in the course of an acute coronary syndrome is not always coronary in patients who underwent CABG.
- As a result, peripheral angioplasty equipments should be available in the cath. lab. Waiting for the equipment might result in unnecessary risks. If there is a difficulty in stabilization of the patients, PTA alone might work which only needs a big size balloon.
- To decrease inflation and deflation time in such a critical situation, dilution of the contrast in the inflator is important.