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Intracoronary Imaging in PPCI :

Are All AMI caused by Atherosclerotic Plaques?

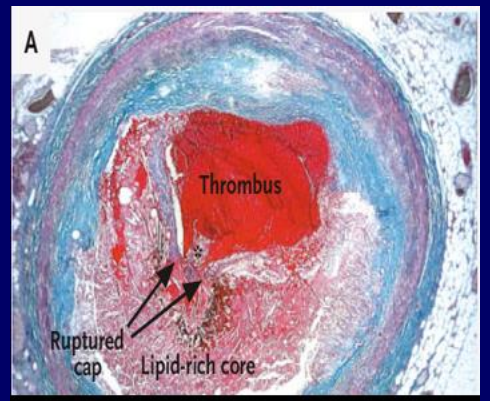
Jun Pu, MD, FACC, FESC, FSCAI

Disclosure Statement of Financial Interest

I DO NOT have a financial interest/arrangement or affiliation with one or more organizations that could be perceived as a real or apparent conflict of interest in the context of the subject of this presentation.

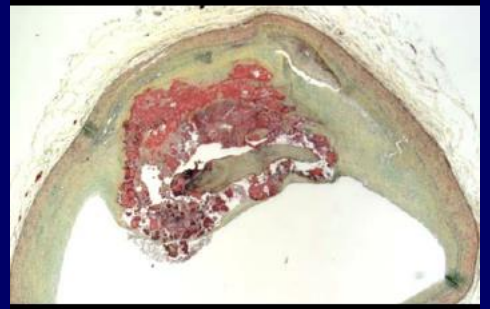
Acute Coronary Event

Vulnerable Plaque= "Volcano"



PLAQUE RUPTURE
60-80%

PLAQUE EROSION
20-40%



CALCIFIED NODULE
2-7 %

Mt. St. Helens, WA, USA

Case 1: Patient Information

Baseline

- 58 year-old
- Male

Symptoms

- An AMI Survivor of Cardiac Arrest

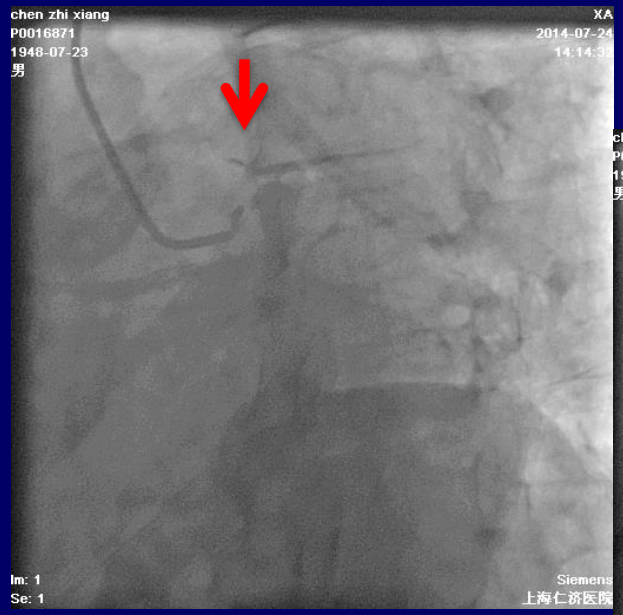
Risk factors

- HBP
- DM
- Smoke

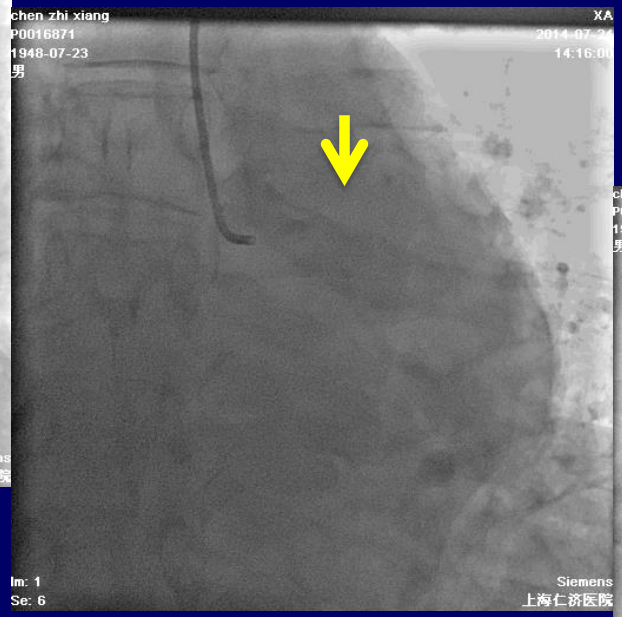
Lab test

- TNI ↑
- CK ↑

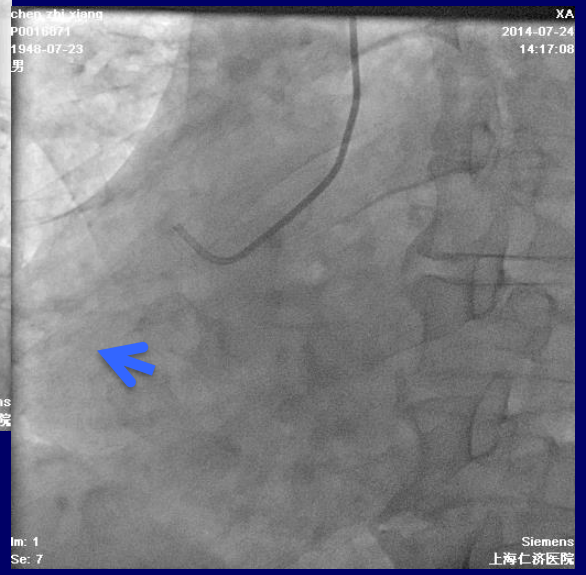
CAG



LAD



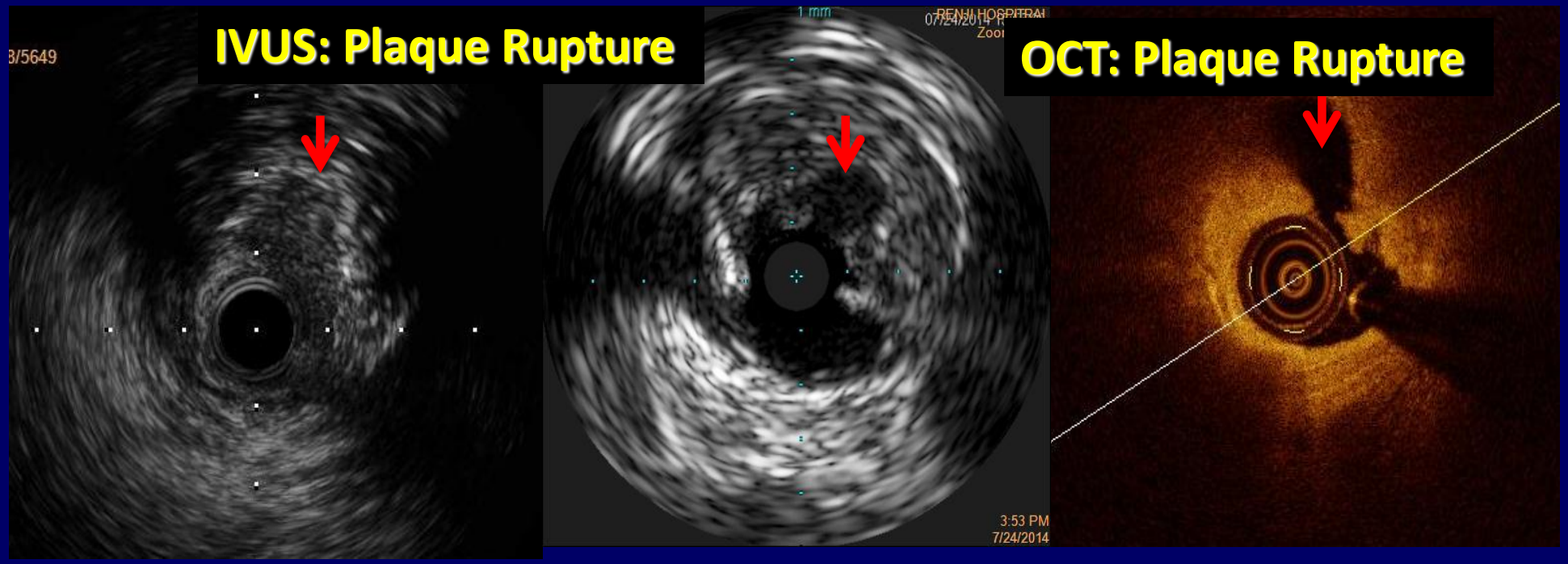
LM



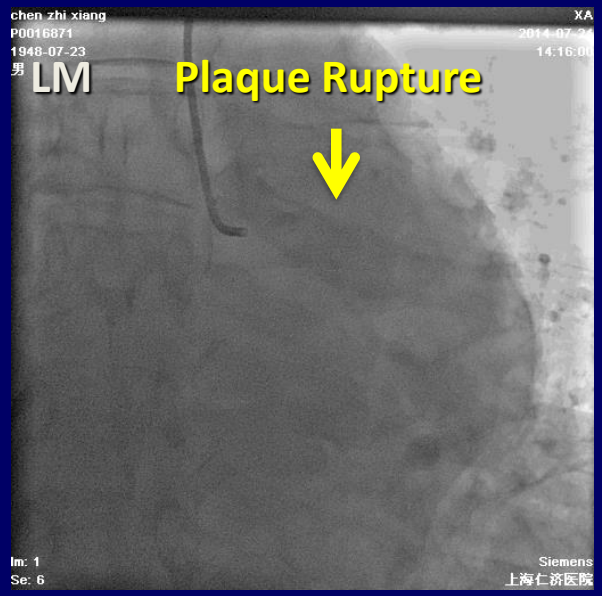
RCA

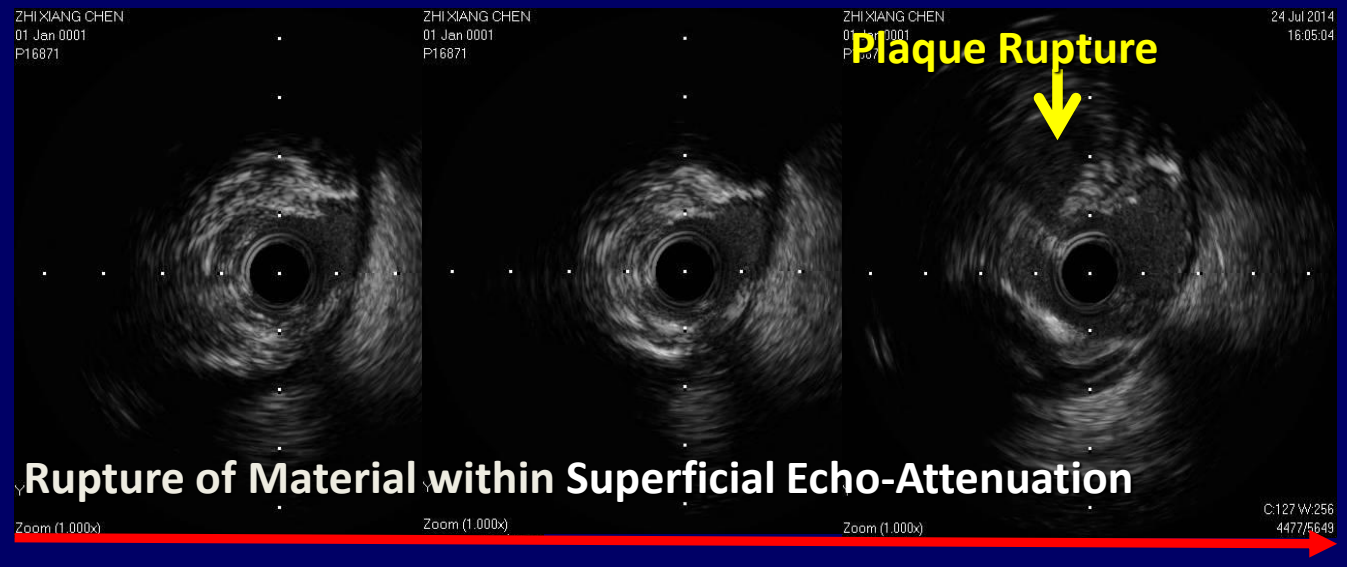
Plaque Rupture in LAD

IVUS(40 Hz) **IVUS (20 Hz)** **OCT**

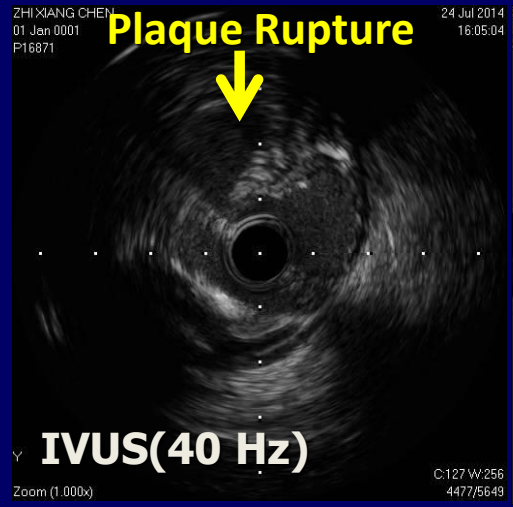


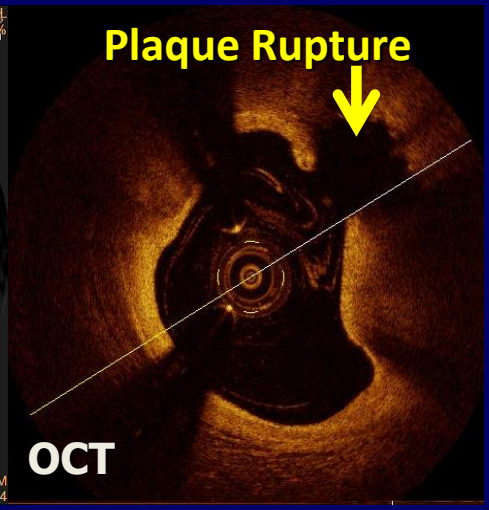
Plaque Rupture in LM



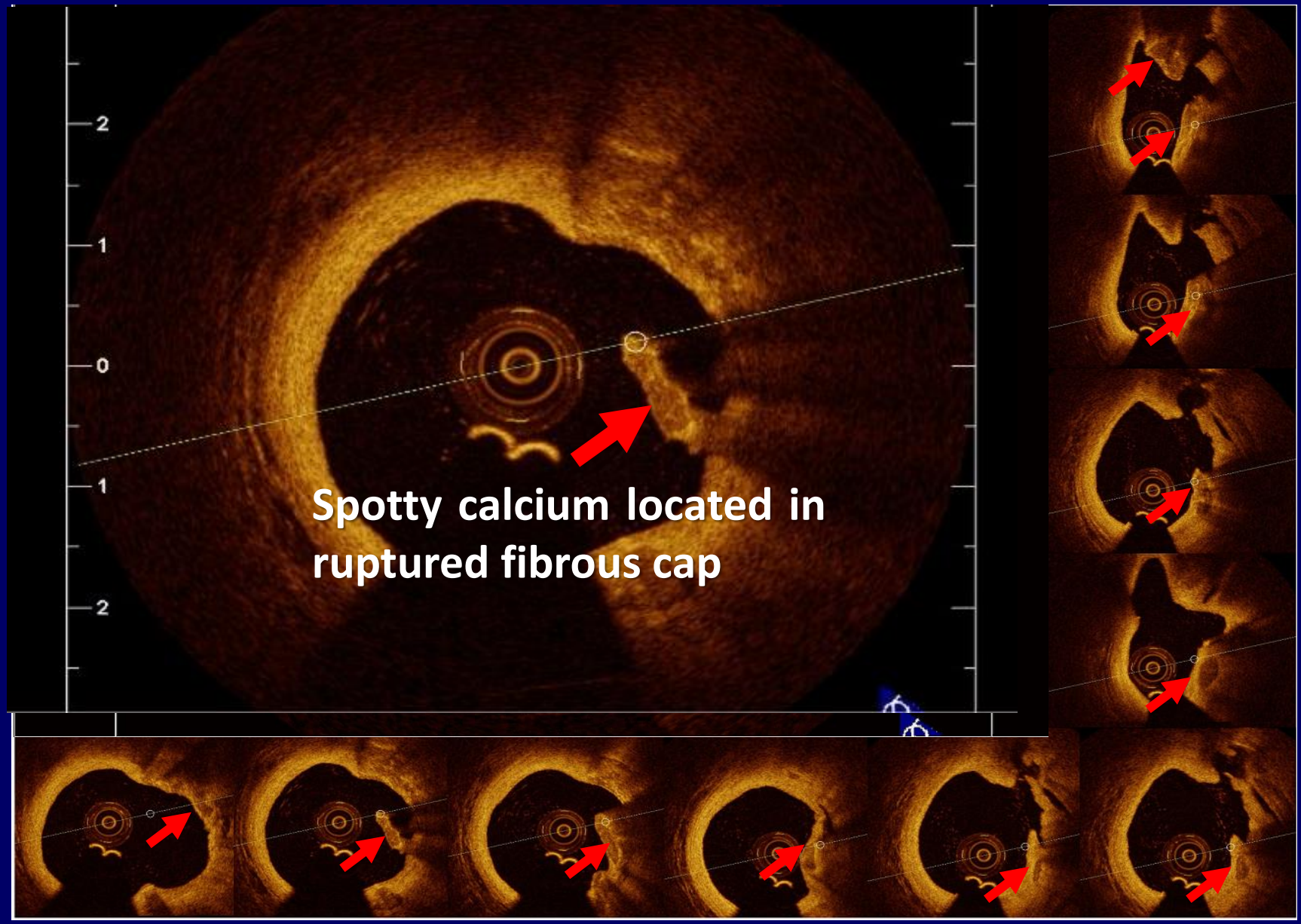


LM

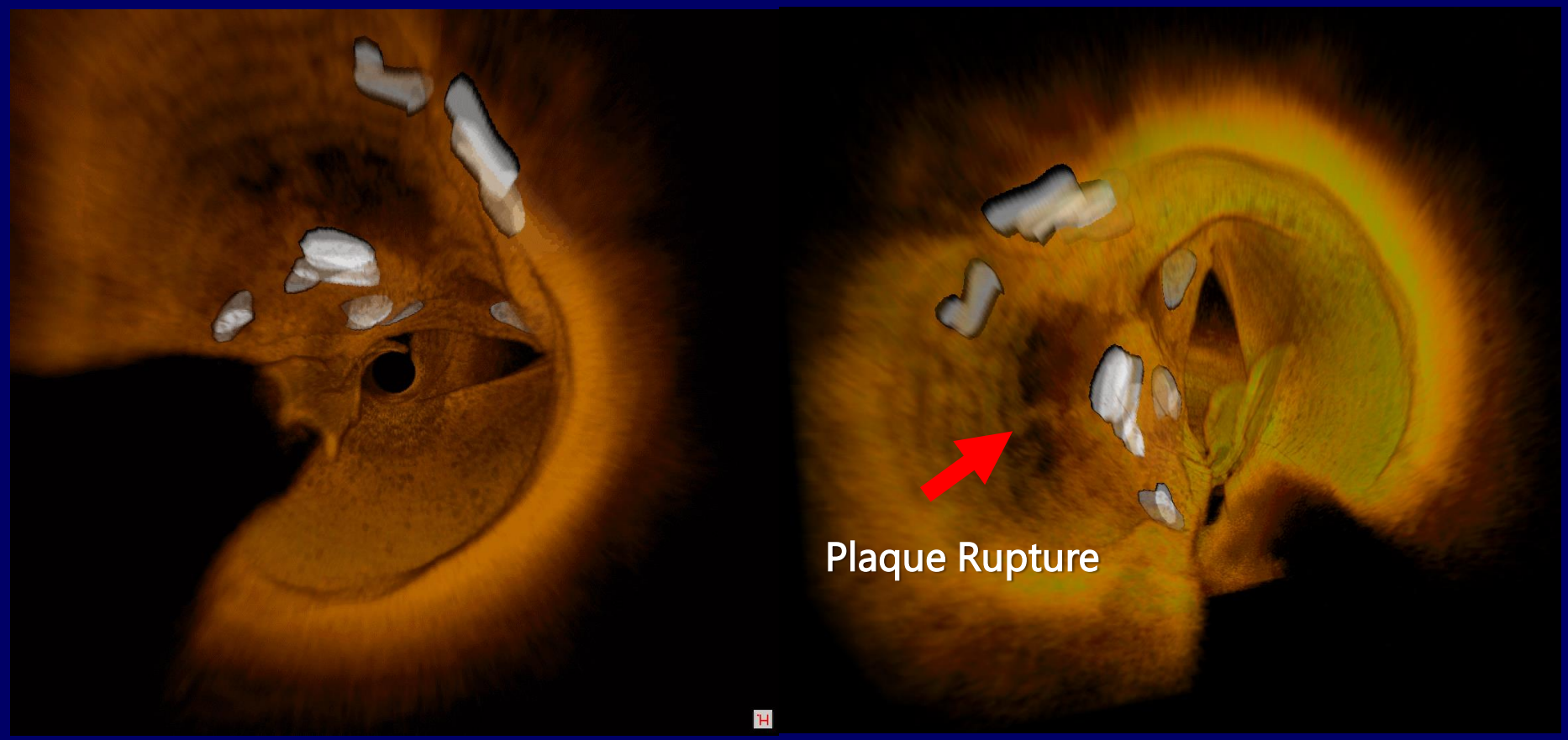




Multiple Rupture with Spotty Calcification



Multiple Rupture with Spotty Calcification



The Typical Etiology of AMI: Atherosclerotic Plaques

NO!!!

Case 2 : Patient Information

Baseline

- 58 year-old Female

Symptoms

- Acute chest pain for 12h

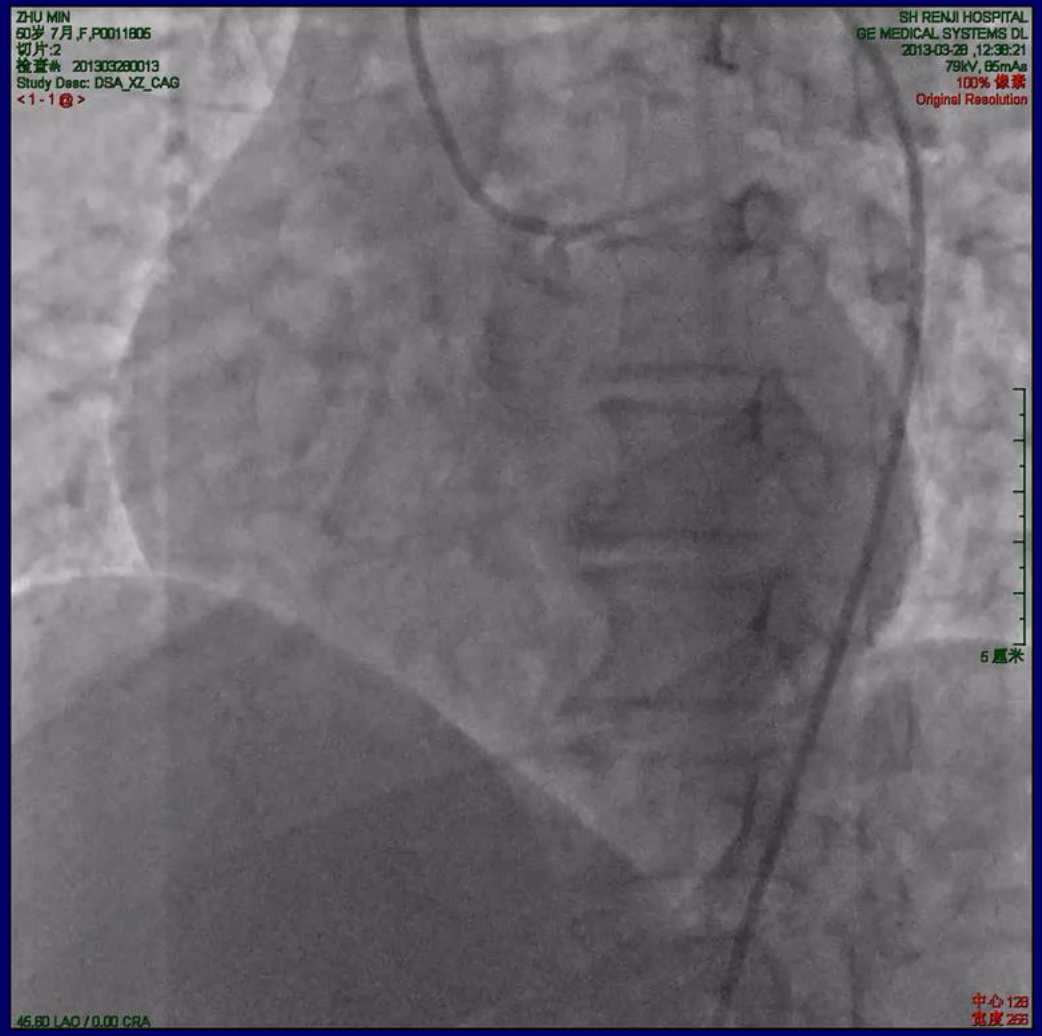
Risk factors

- None

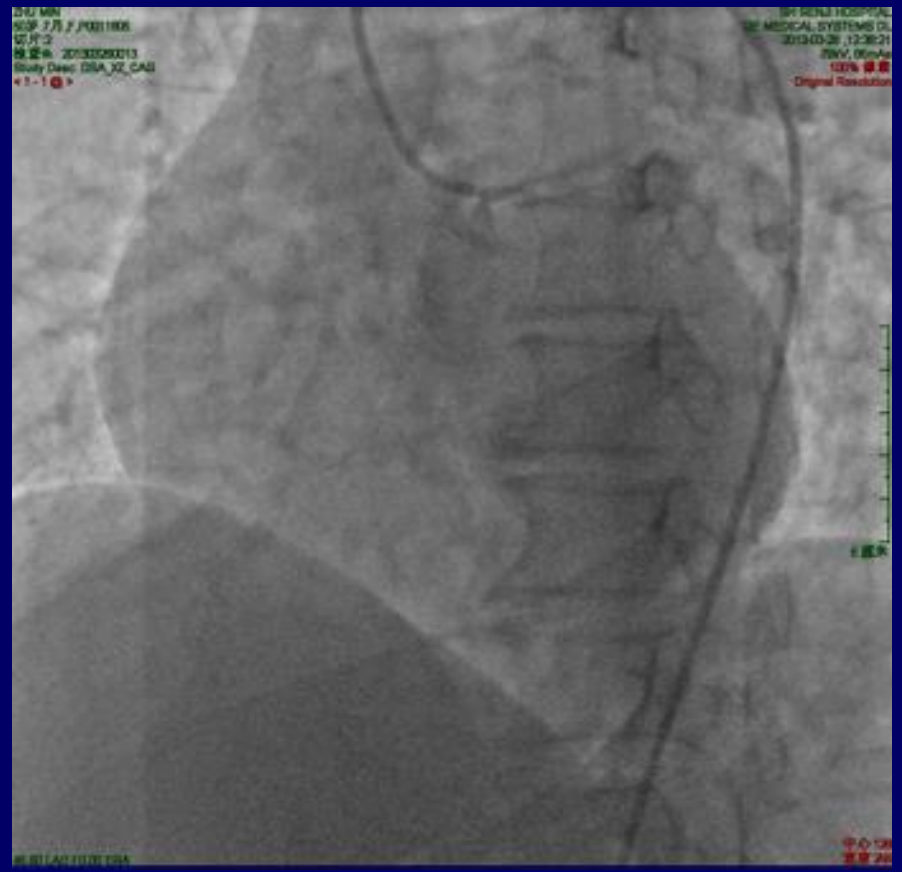
Diagnostic examination

- ECG : ST$^{\uparrow}$ in aVR$^{\uparrow}$
- Cardiac makers/TnI (+)

Emergency CAG

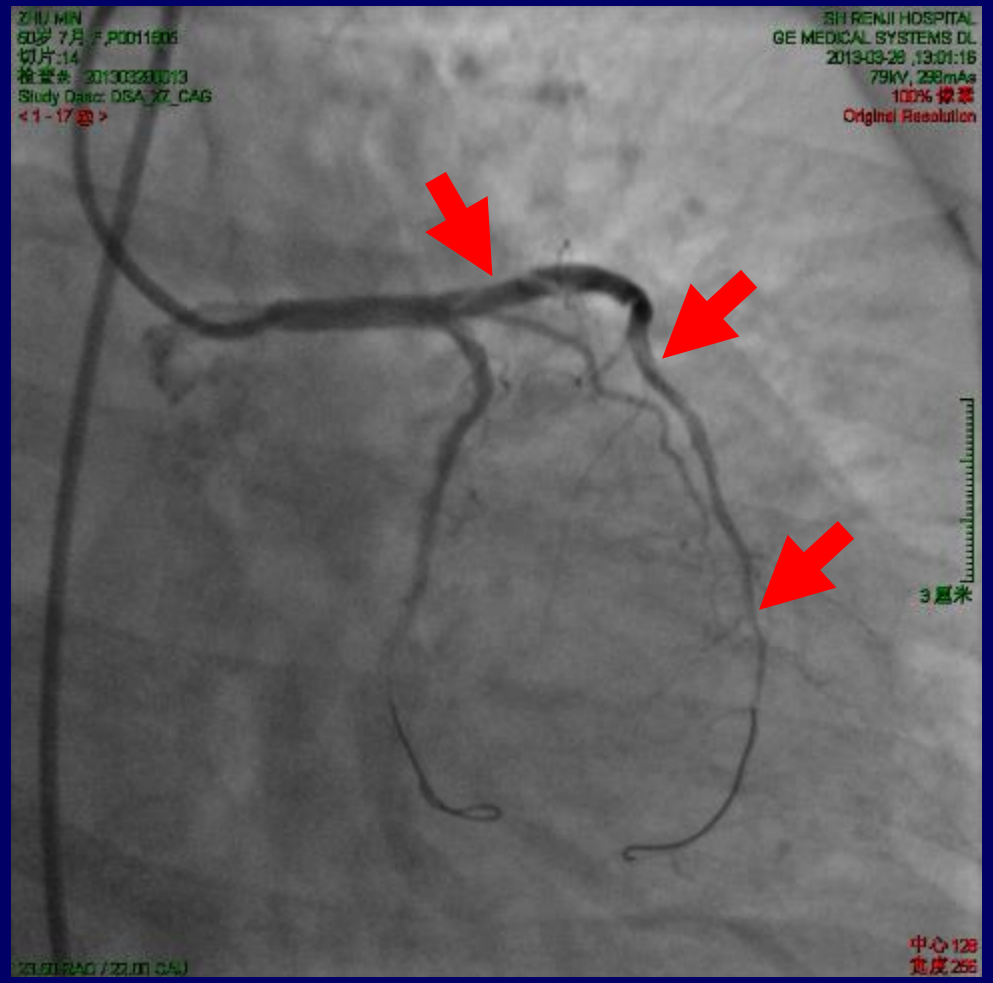


Emergency CAG

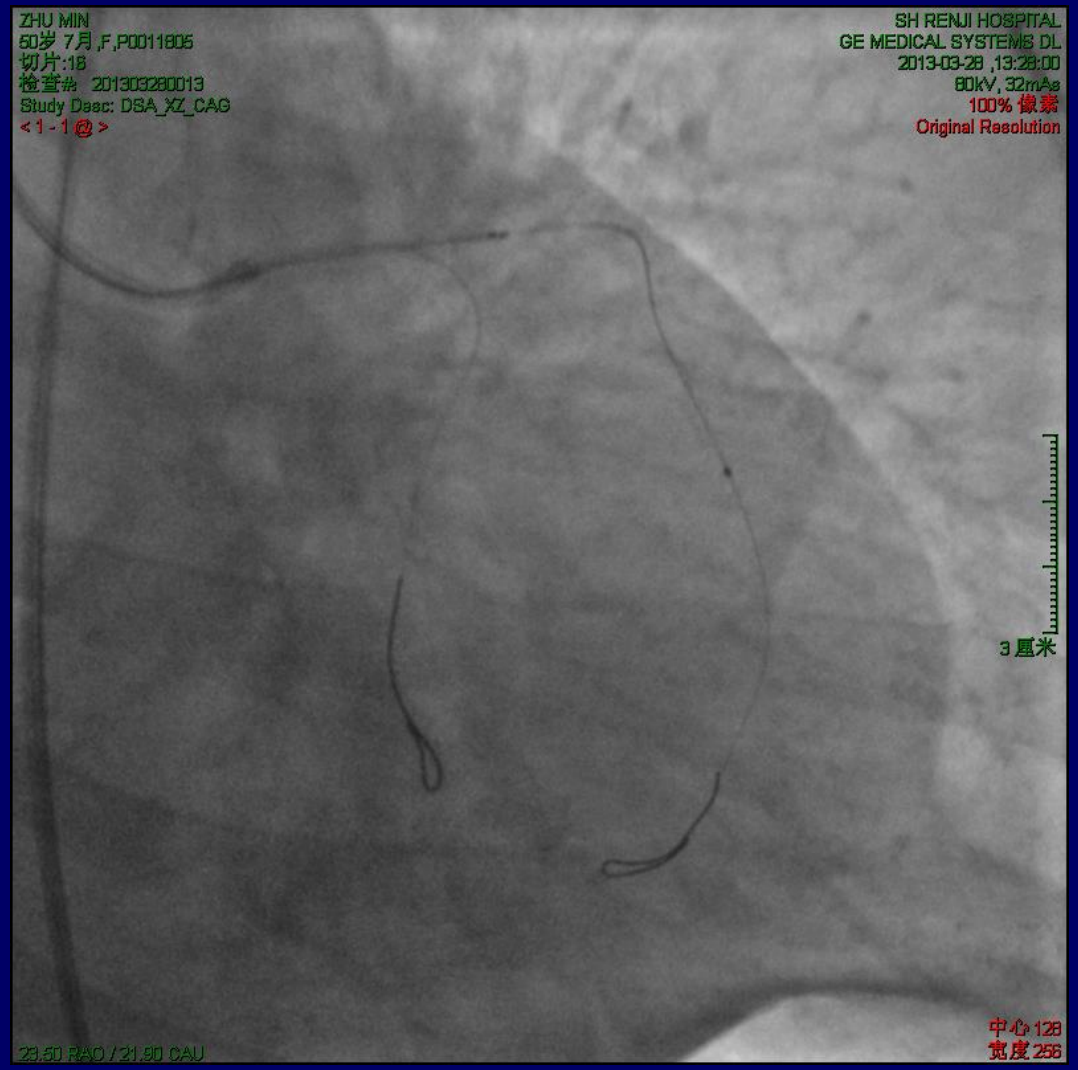


Collateral circulation development (RCA-LCA)

Thrombus aspiration at LAD followed by Tirofiban intra-coronary injection

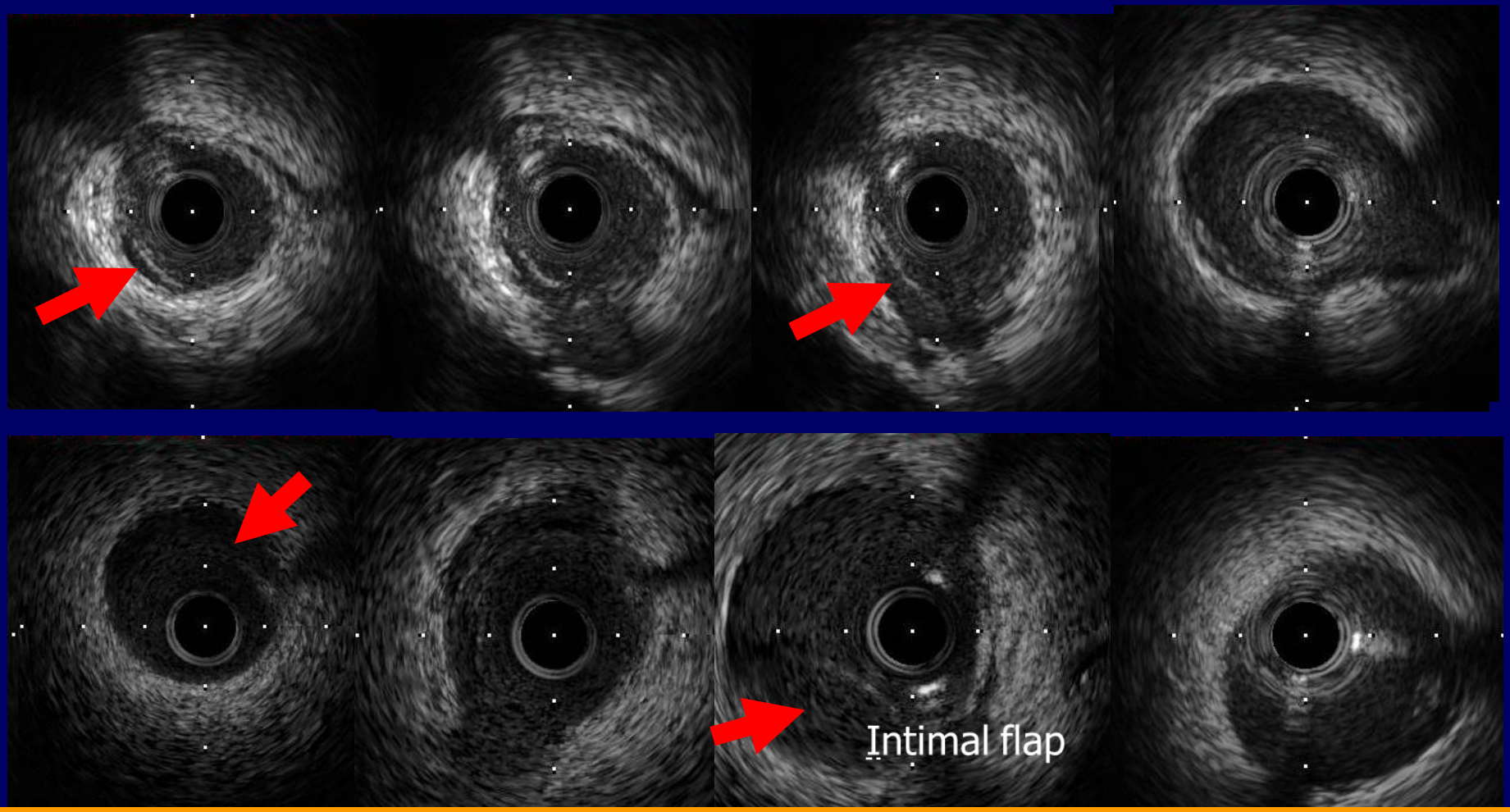


To investigate what happens -

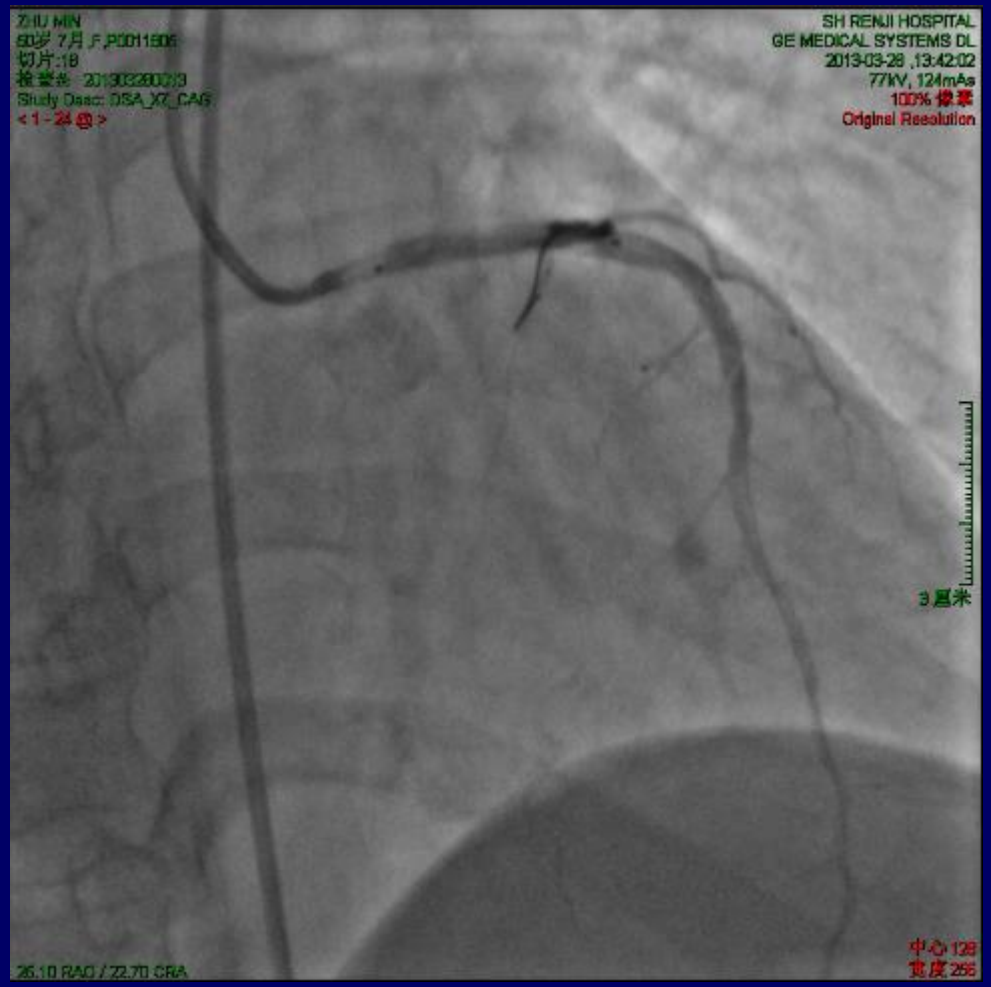


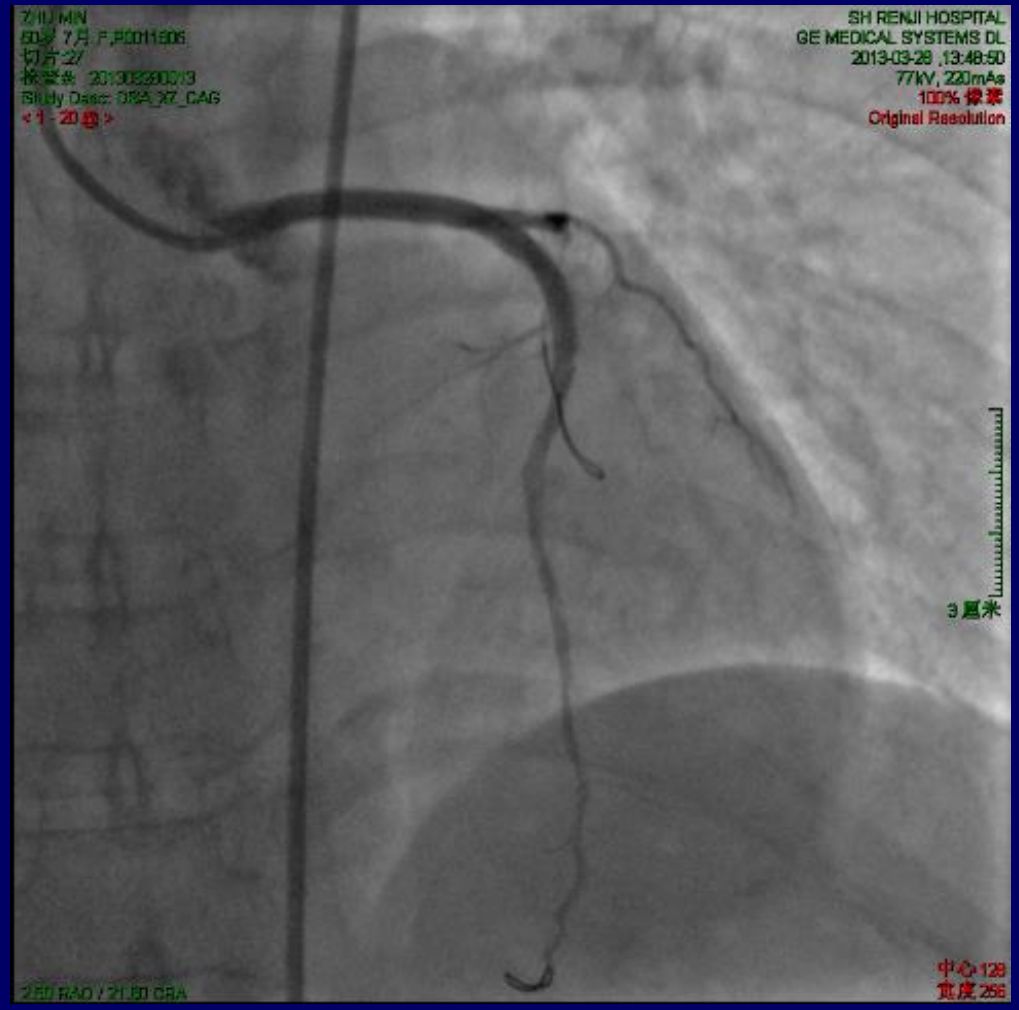
IVUS examination was performed

IVUS examination: Pre-PCI



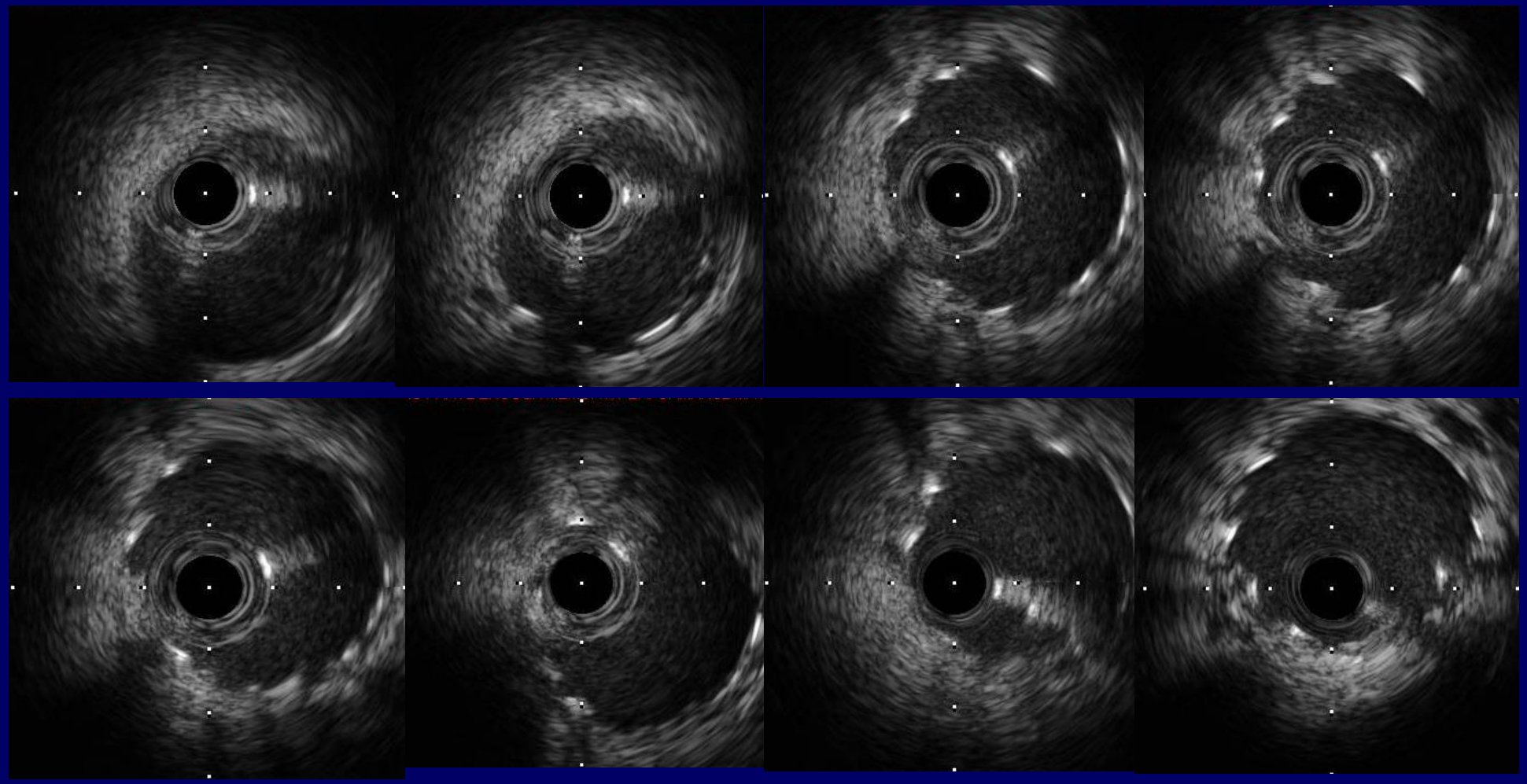
Spontaneous coronary artery dissection (SCAD)





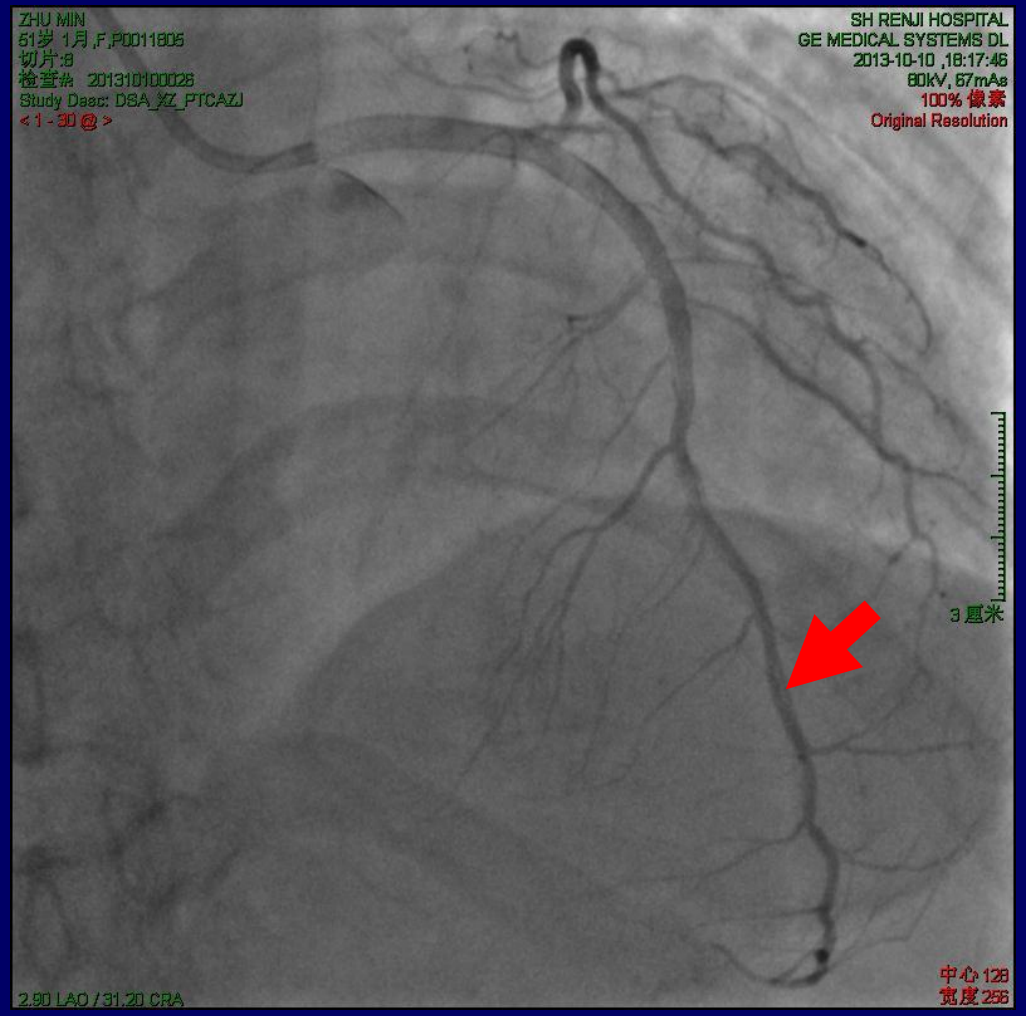
Stent 3.5*32mm to LM/LAD

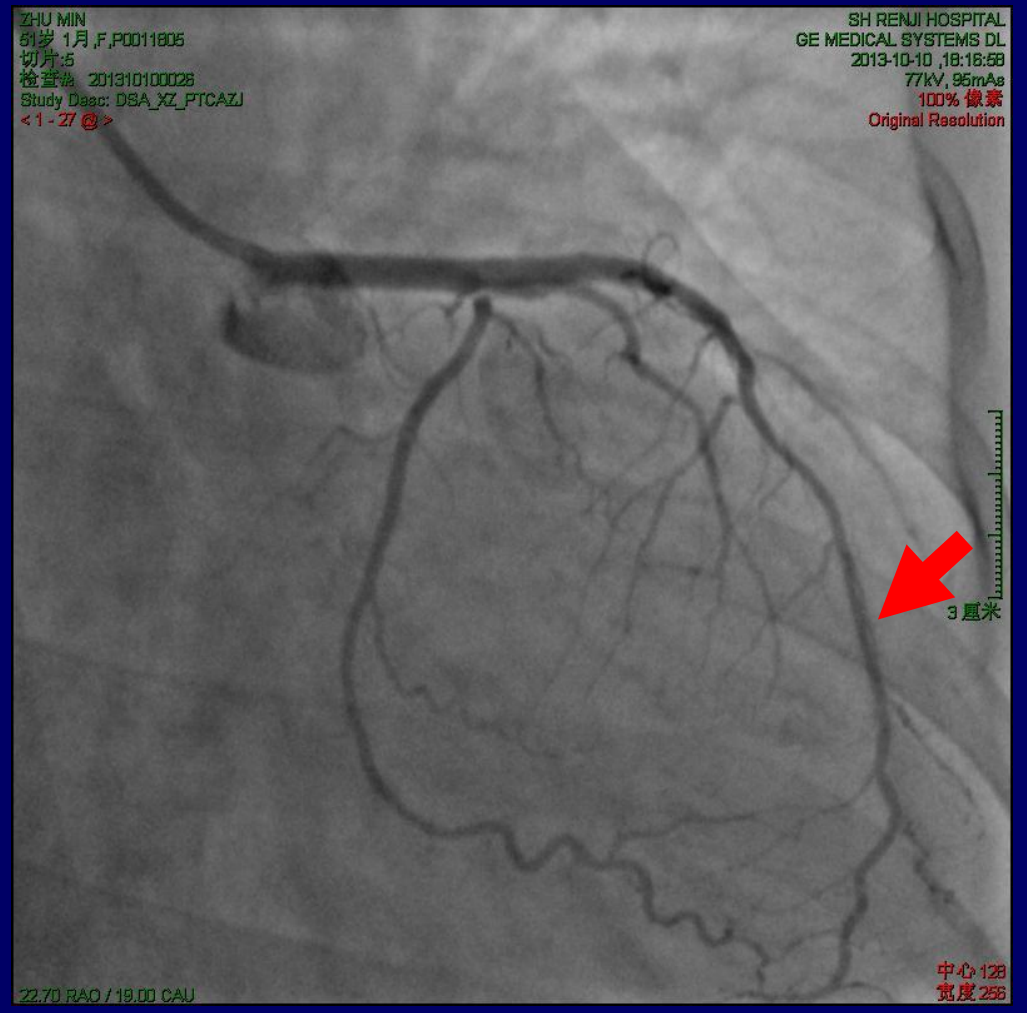
IVUS examination: Post-PCI



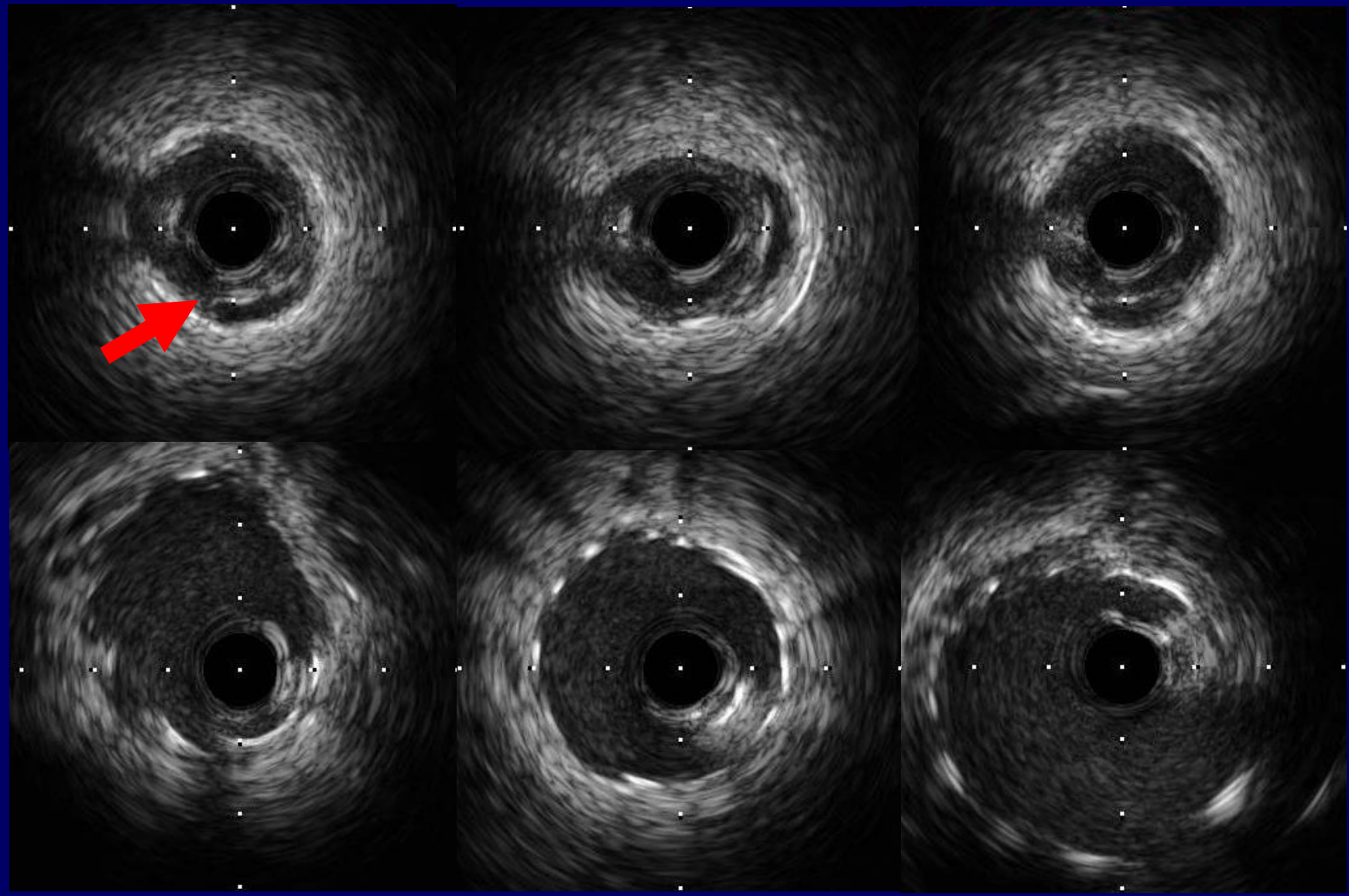
Followed-up : Angiogram (6 month)

Coronary healing @ prox-mid LAD





Followed-up: IVUS examination (6 month)

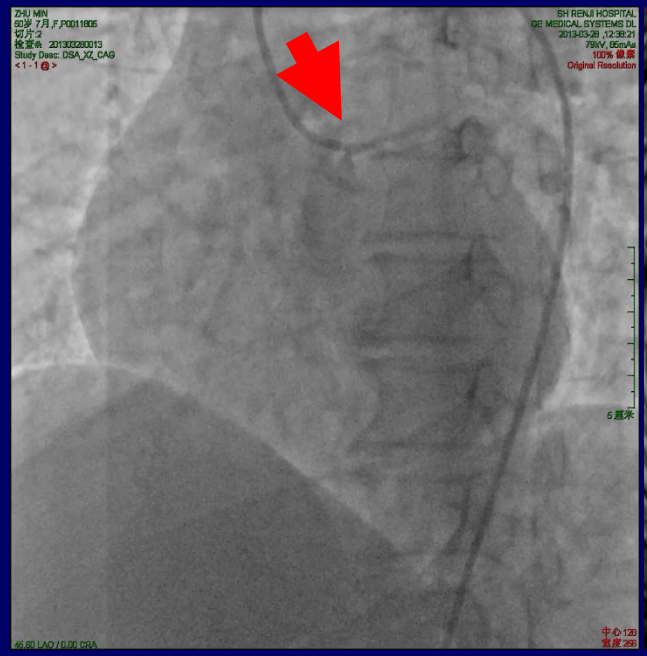


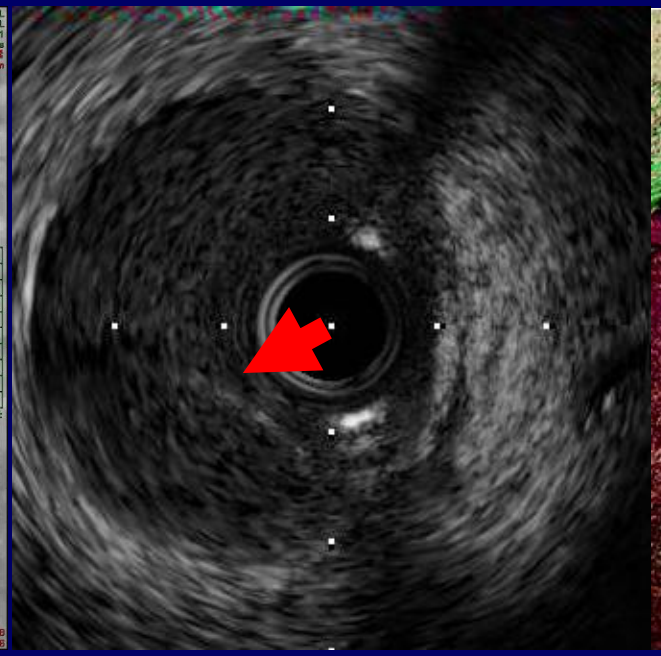
Beak-like LM ostium lesion is caused by SCAD

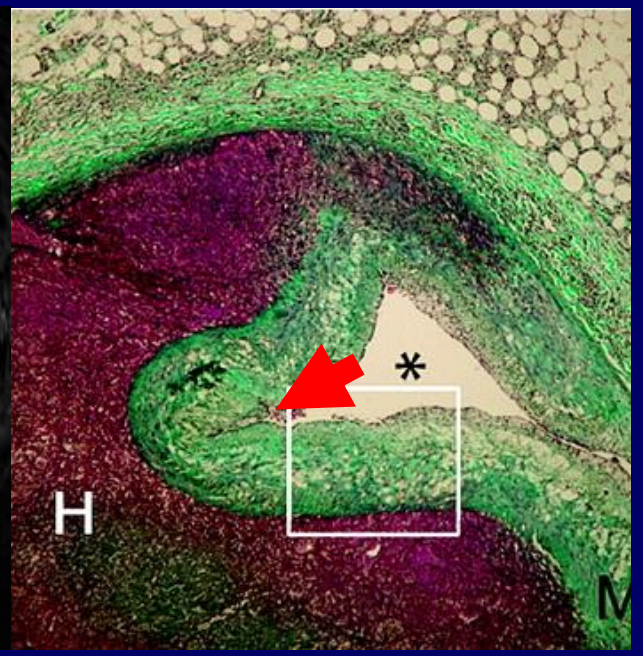
Lessons

Characteristic of LM lesion caused by SCAD：

- **Most SCAD patients present with an AMI without atherosclerotic plaques**
- **Intracoronary imaging (ie, IVUS) could be considered for diagnosis**
- **No specific management guidelines exists and decisions must be individualized!**







Case 3 : Patient Information

Baseline

- 28 year-old Female

Symptoms

- Acute chest pain for 6 hours

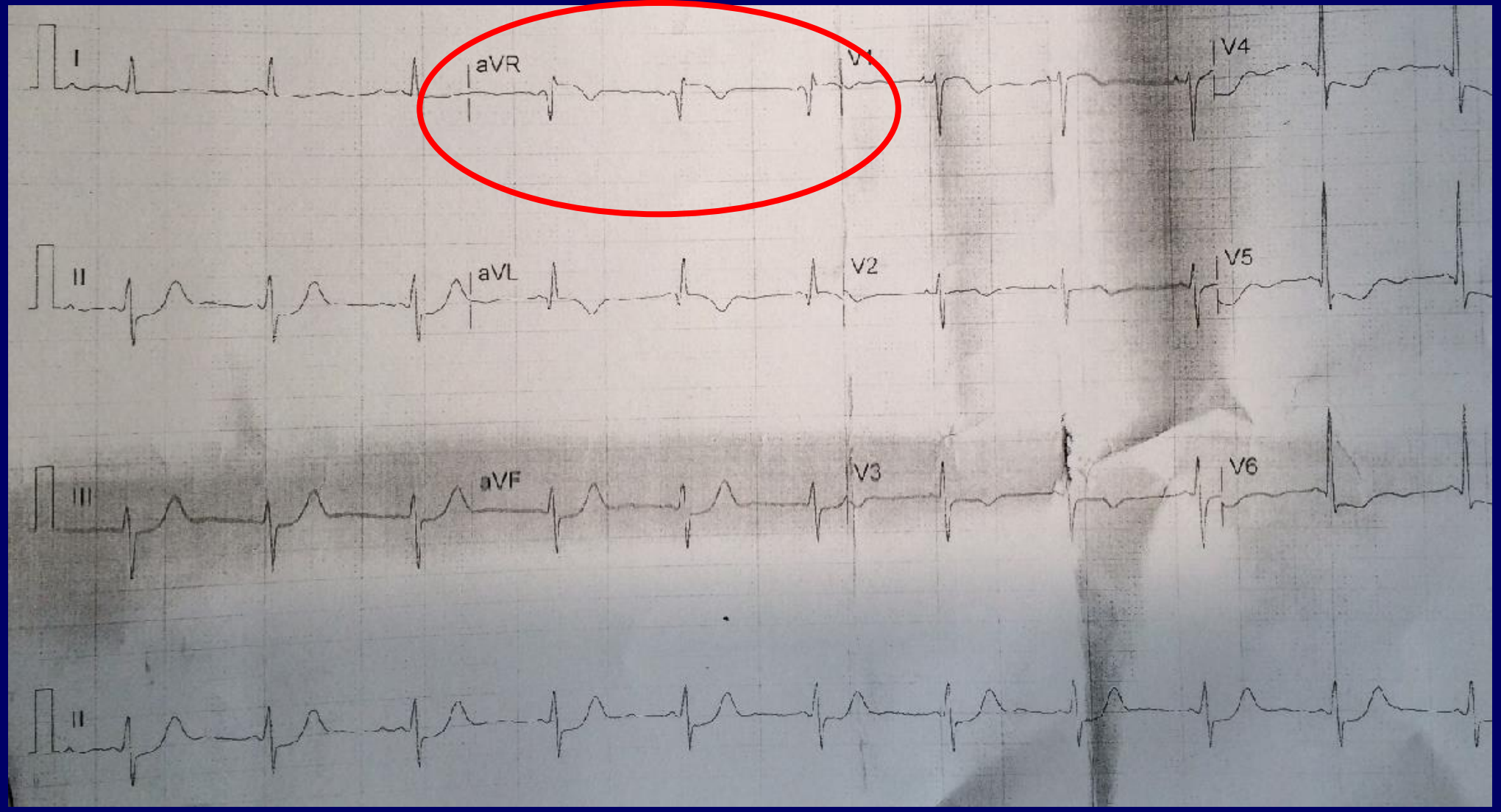
Risk factors

- No

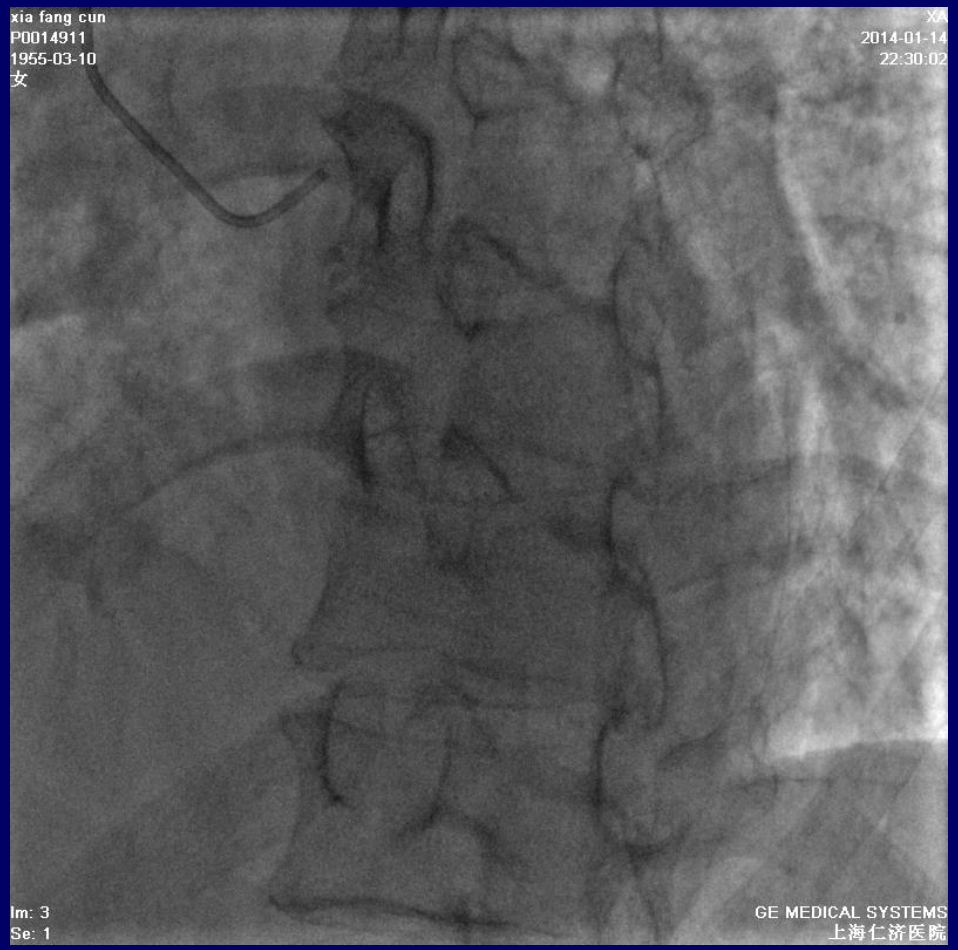
Diagnostic examination

- ECG : ST ↑ in aVR ↑
- Cardiac makers/TnI (+)

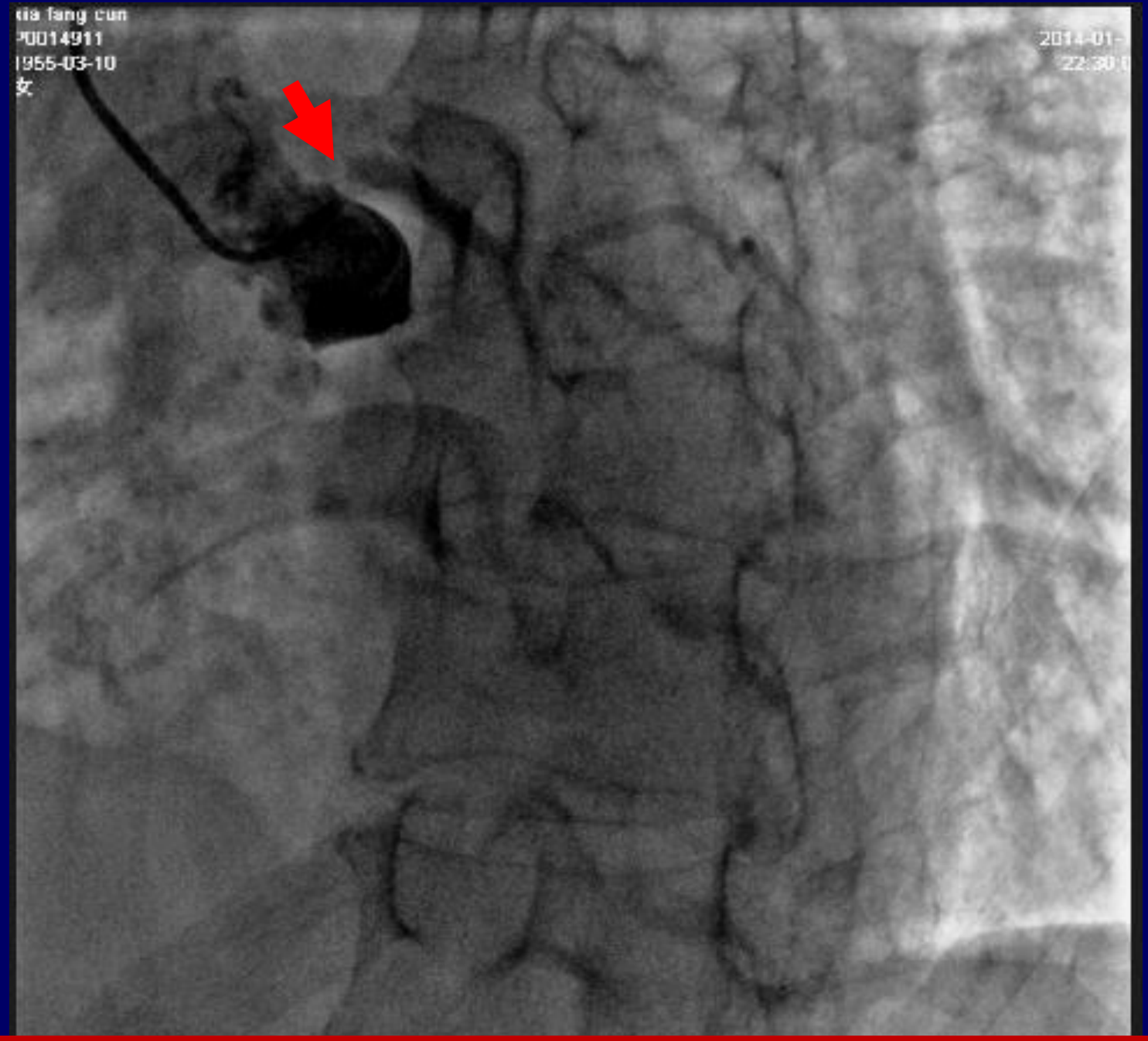
ECG :ST-elevation in aVR



Emergency CAG (left coronary)

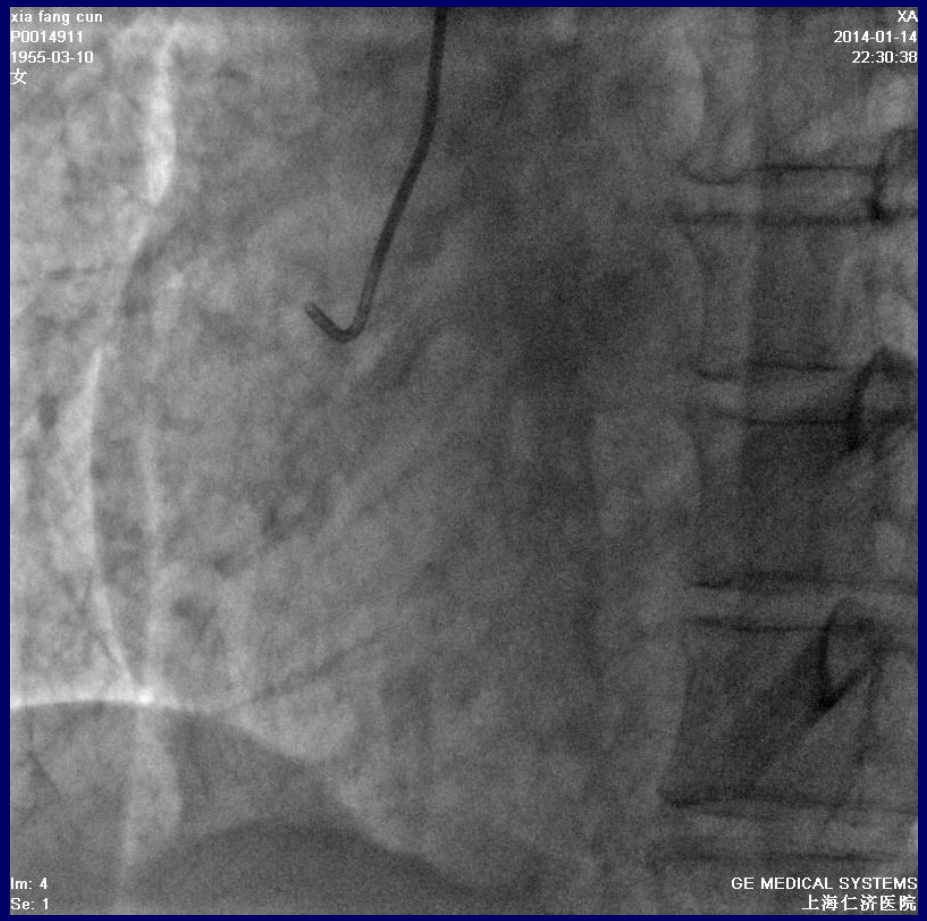


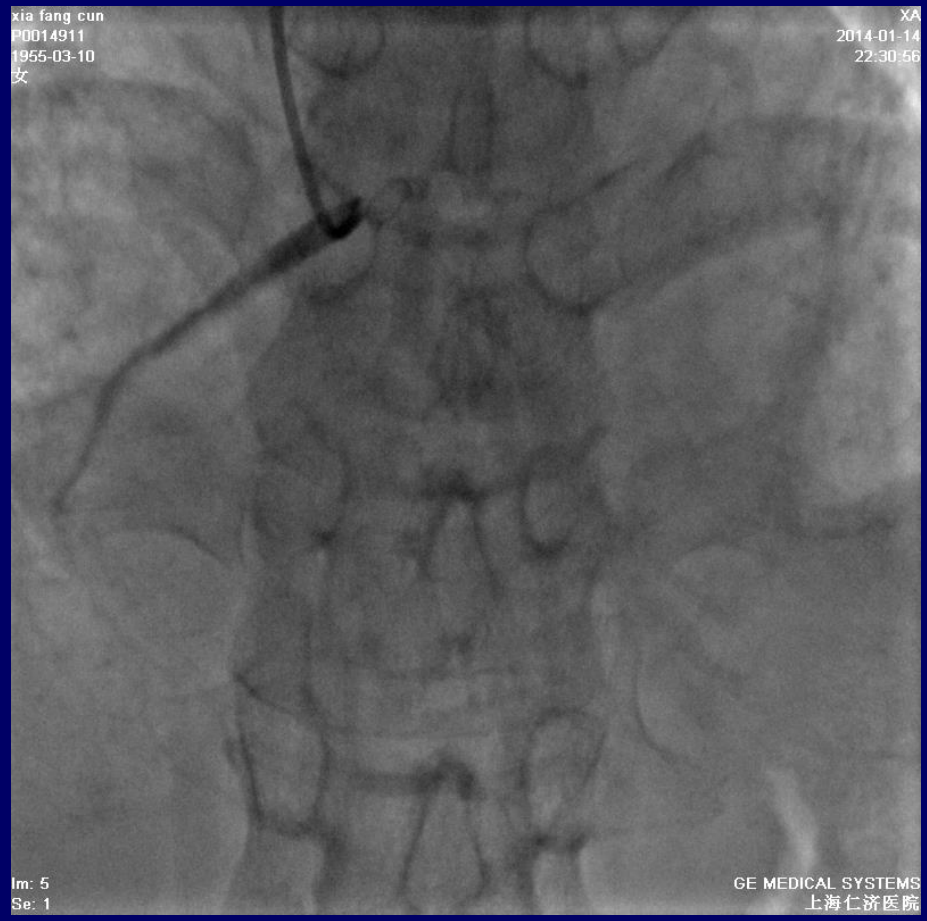
Beak-like lesion involving only the LM ostium



Beak-like lesion involving only the LM ostium

Emergency CAG (Right coronary)



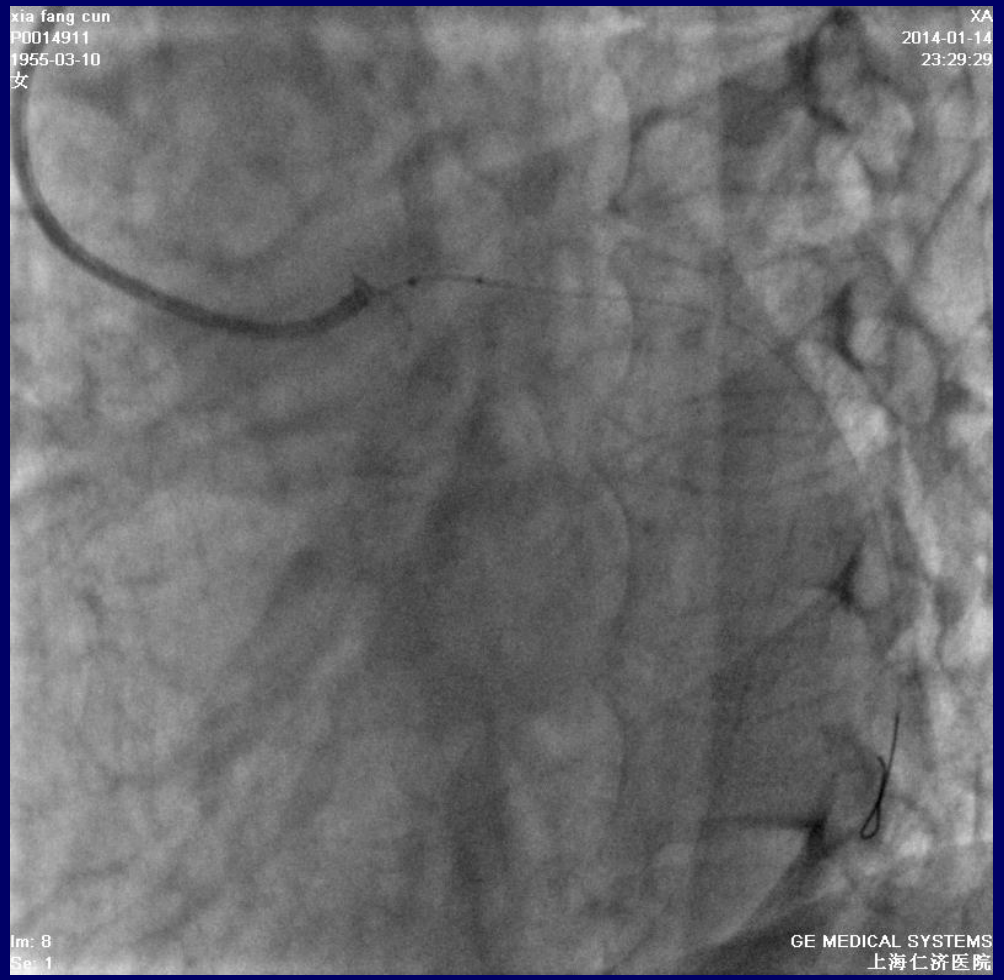


Collateral circulation development

PCI

Pressure Down : Fishing technology for wire

Try to pre-dilate the lesion, but:

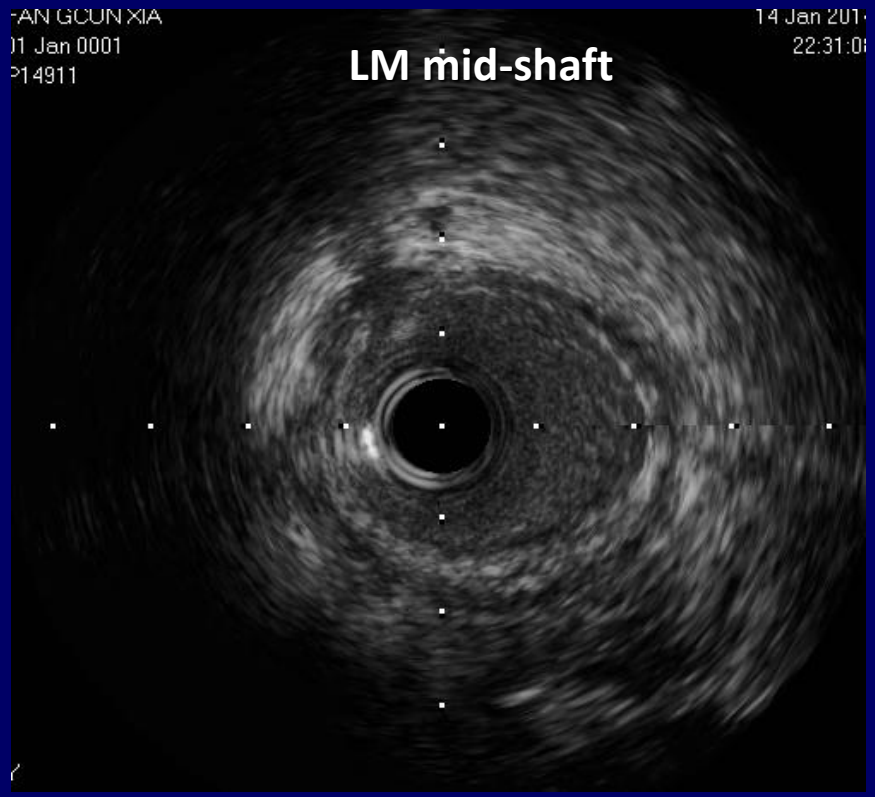


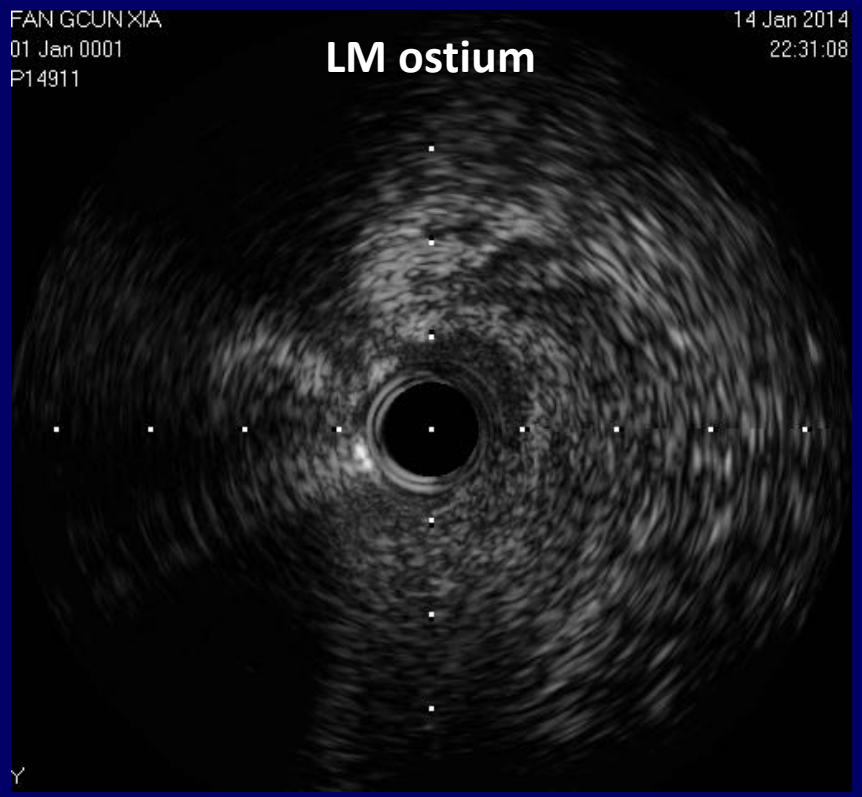
The predilation balloon cannot be fixed@lesion position

Elastic retraction of lesion after pre-dilation！

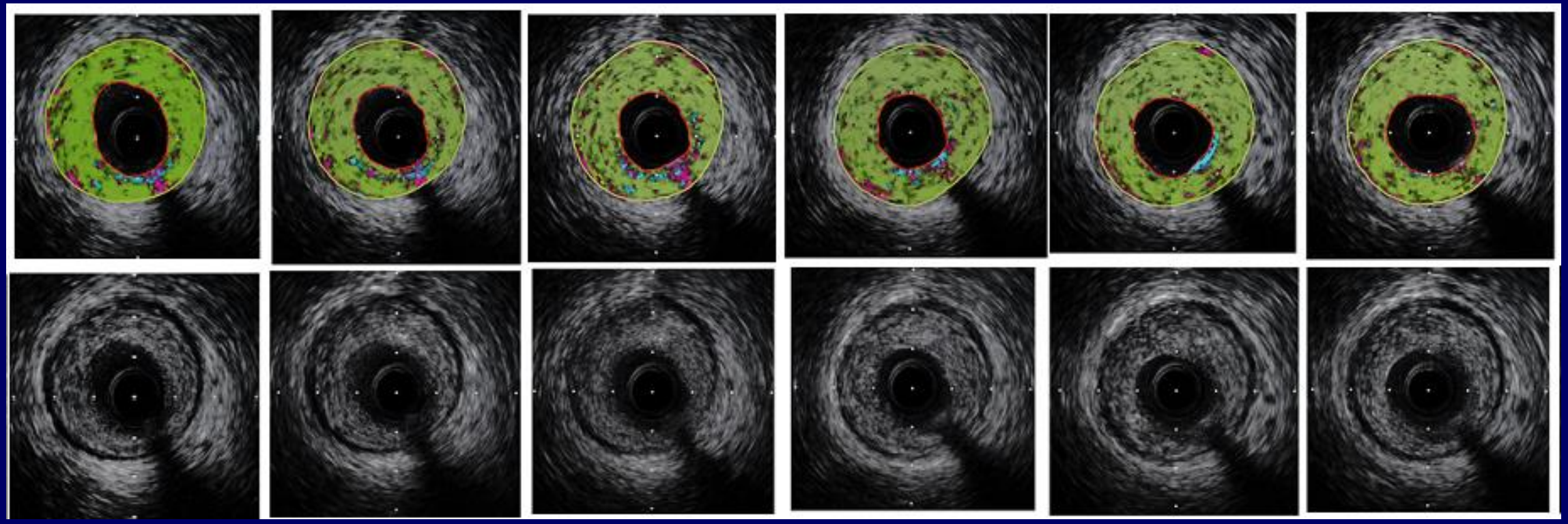
To investigate what happens -

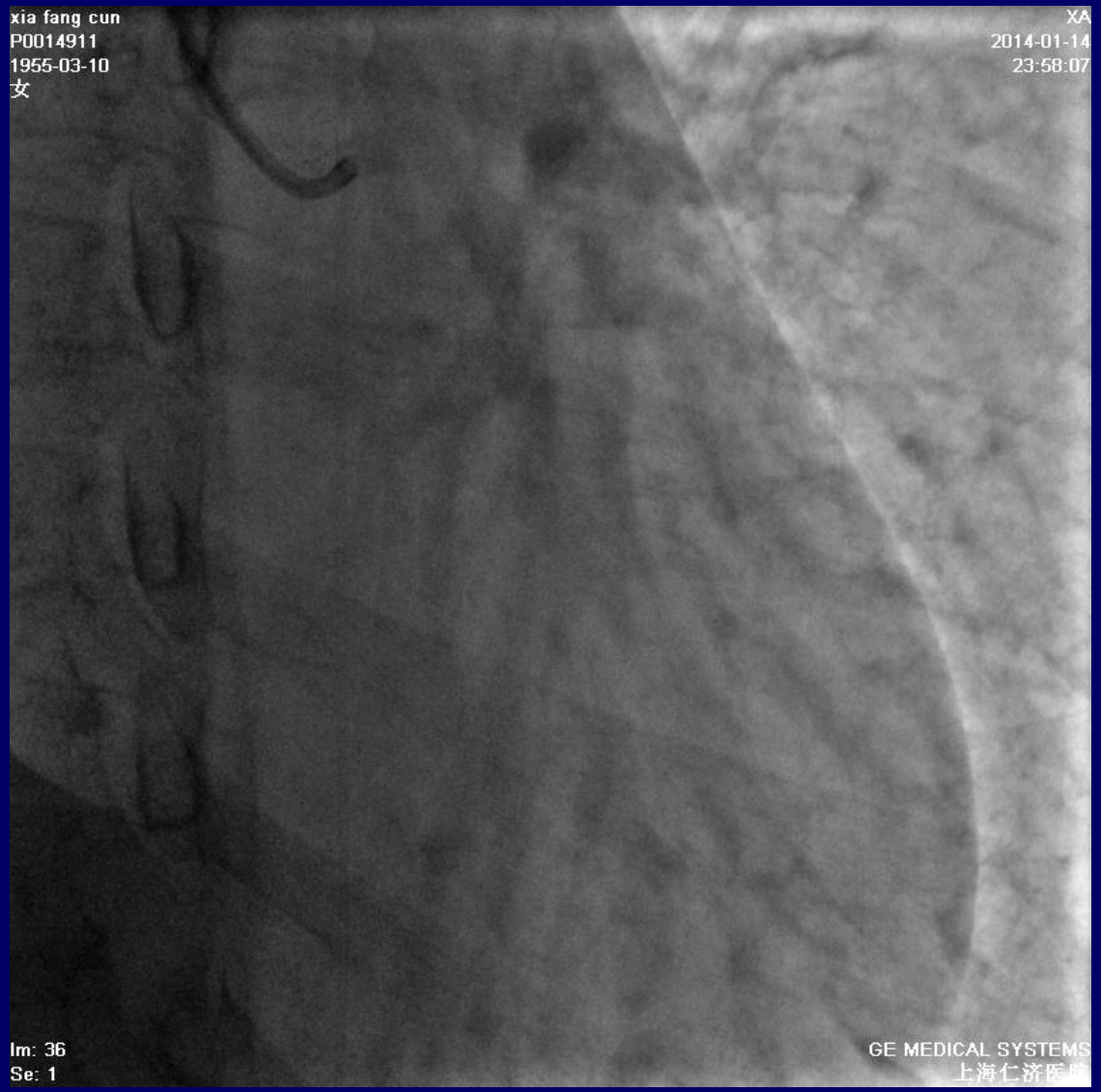
Annular stenosis of LM ostium





VH-IVUS: Fibrous plaque without NC





Cutting balloon

Promus stent 3.5*12MM to LM

CCU

Syphilis test (+)

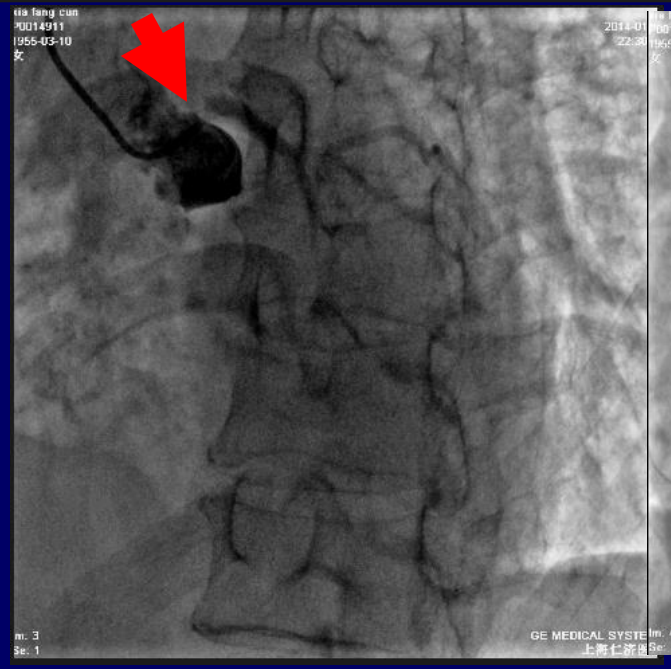
项	目	简	称	结	果	单	位	
1	快速血浆反应素试验(RPR初筛)	RPR		阳性				阴性
2	快速血浆反应素试验(RPR滴度)	RPRDD		1：32				
3	梅毒螺旋体特异抗体测定（TPPA初	TPPA		阳性				阴性
4	梅毒螺旋体特异抗体测定（TPPA滴	TPPADD		1：2560				

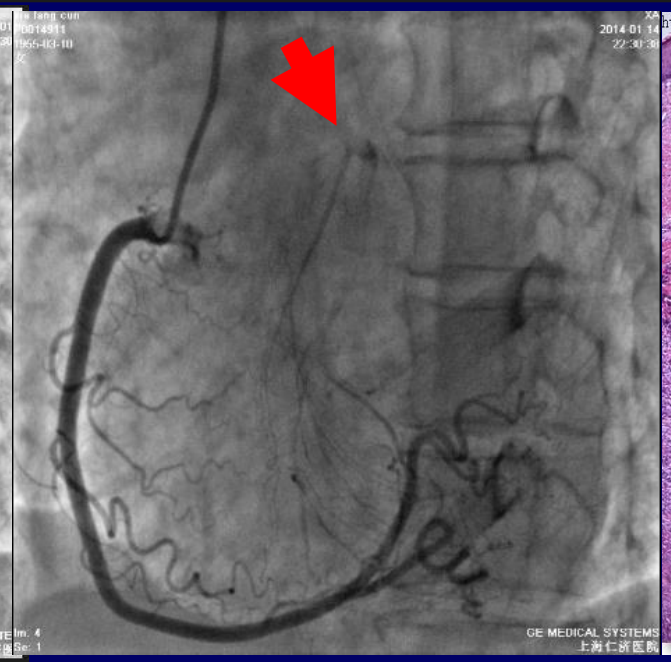
Beak-like LM ostium lesion is caused by syphilis

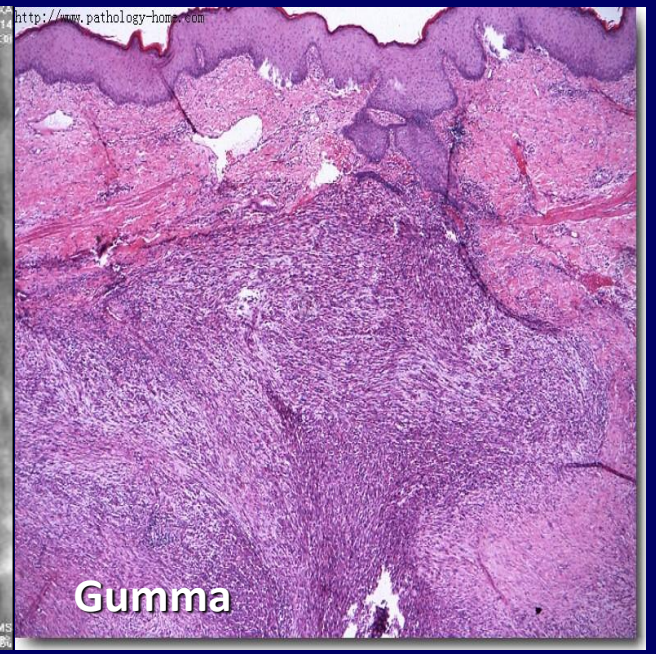
Lessons

Characteristic of coronary lesion caused by syphilis：

- **Beak-like lesions Involving only the LM ostium**
- **No lipid/necrotic core**
- **Chronic collateral circulation development**
- **Combined aortic valve disease**

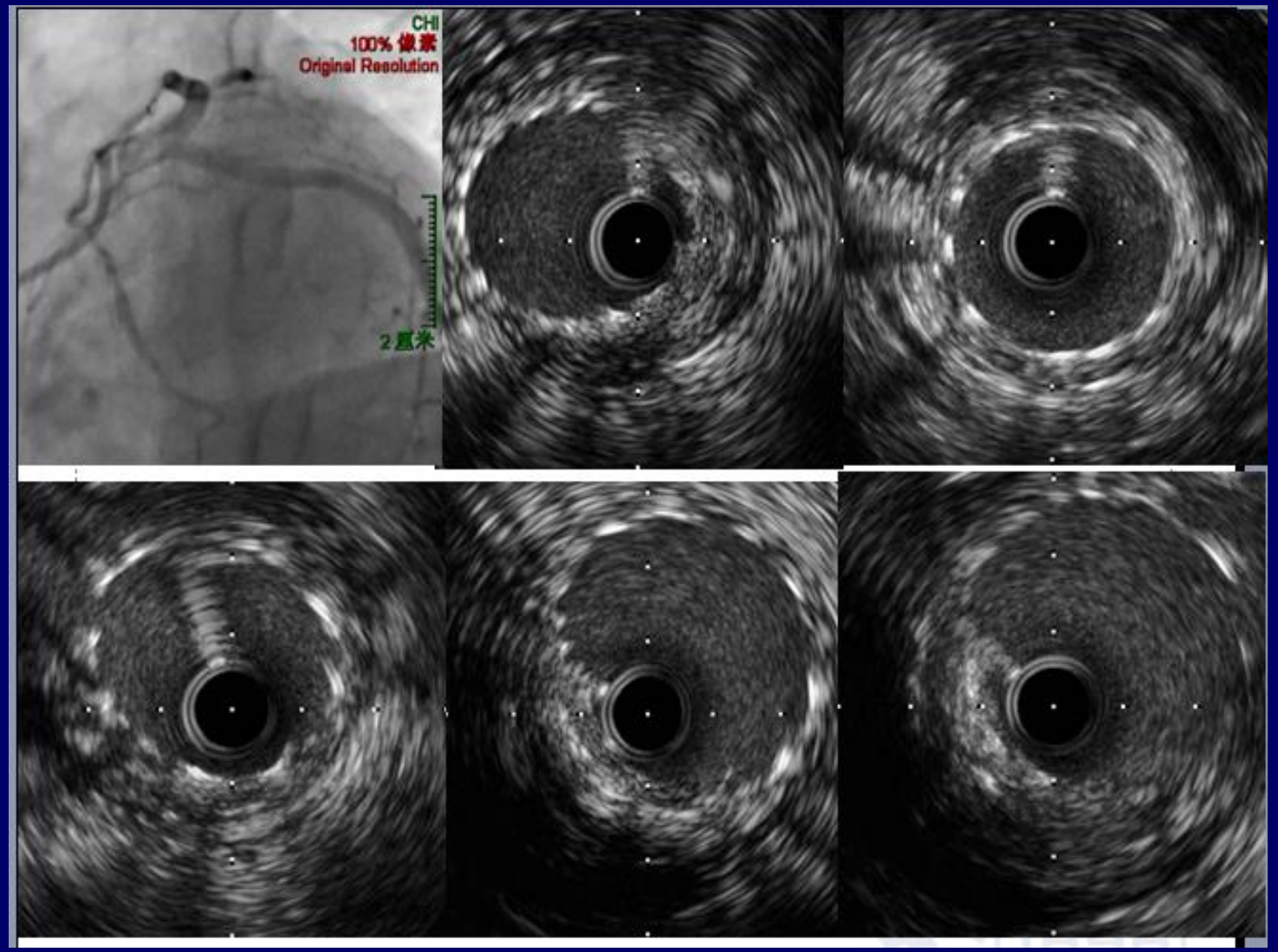






Post PCI: Anti-Syphilis Treatment+DAPT+Statin

Follow-up @ 1 year



Clinical FL:

No cardiac events

IVUS :

little intimal hyperplasia

Case 4 Patient Information

Baseline

- 21 year-old Female

Symptoms

- Acute onset chest pain for 3 hours

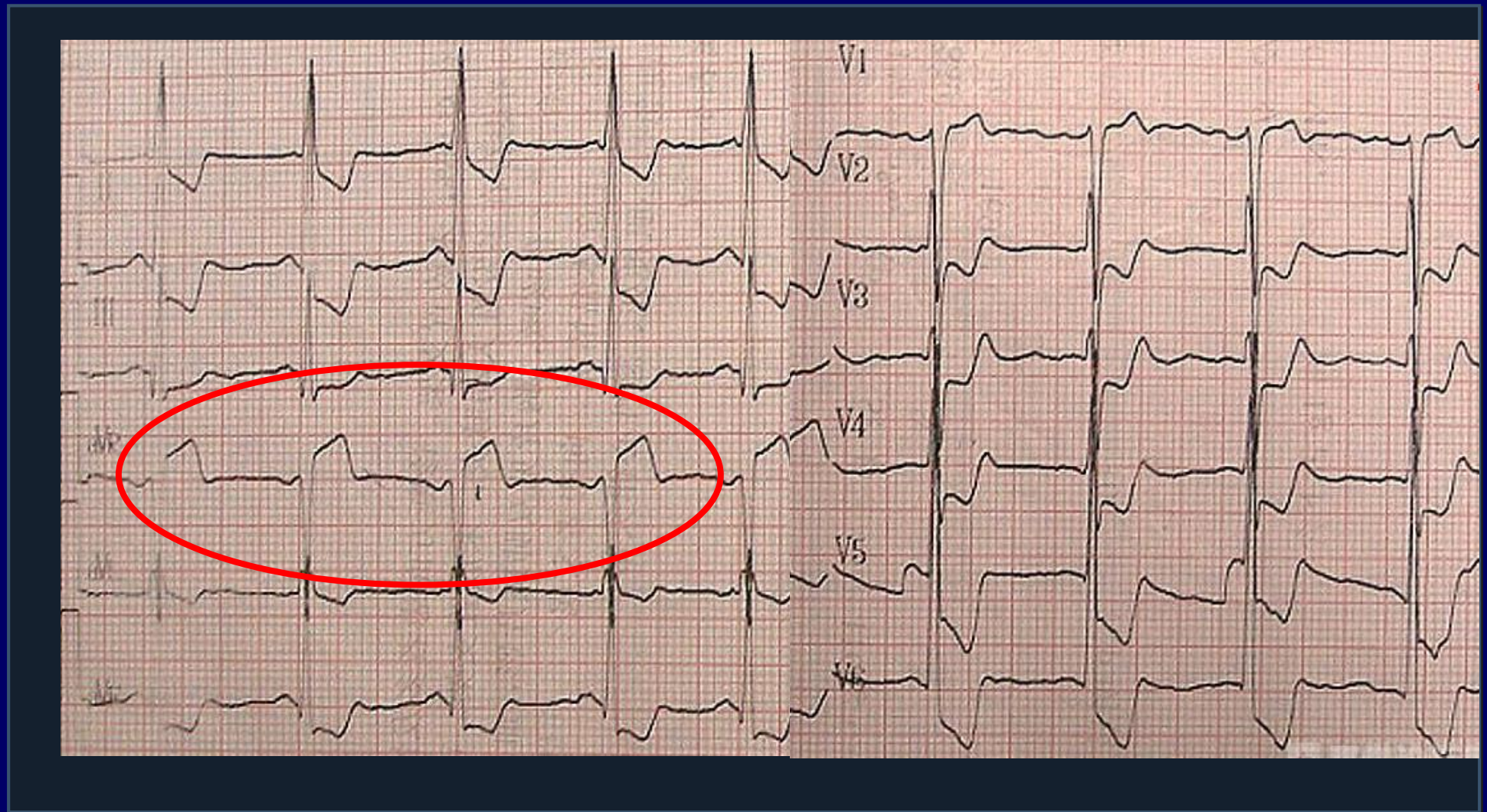
Risk factors

- No

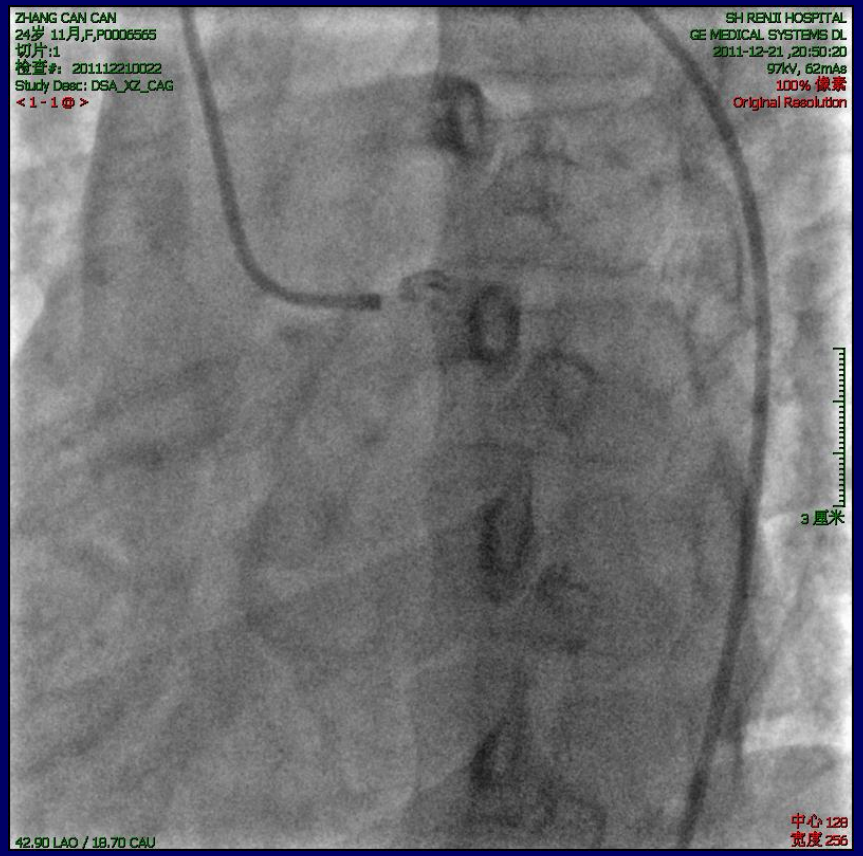
Diagnostic examination

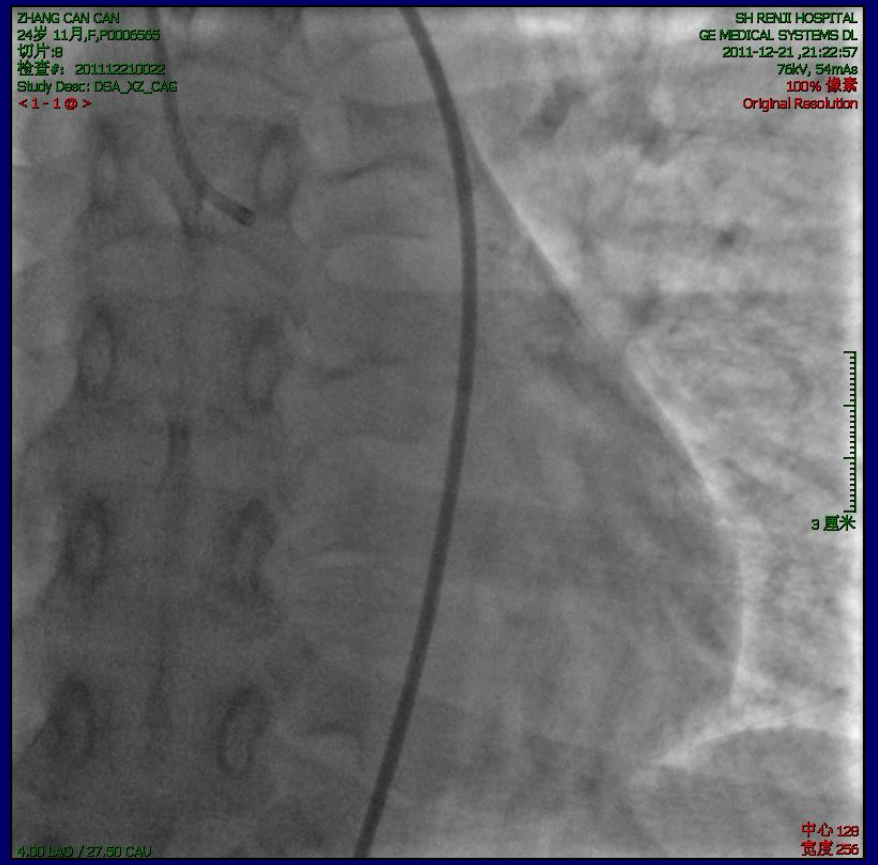
- ECG : ST in aVR
- Cardiac makers/TnI (+)

EKG: ST elevation in aVR

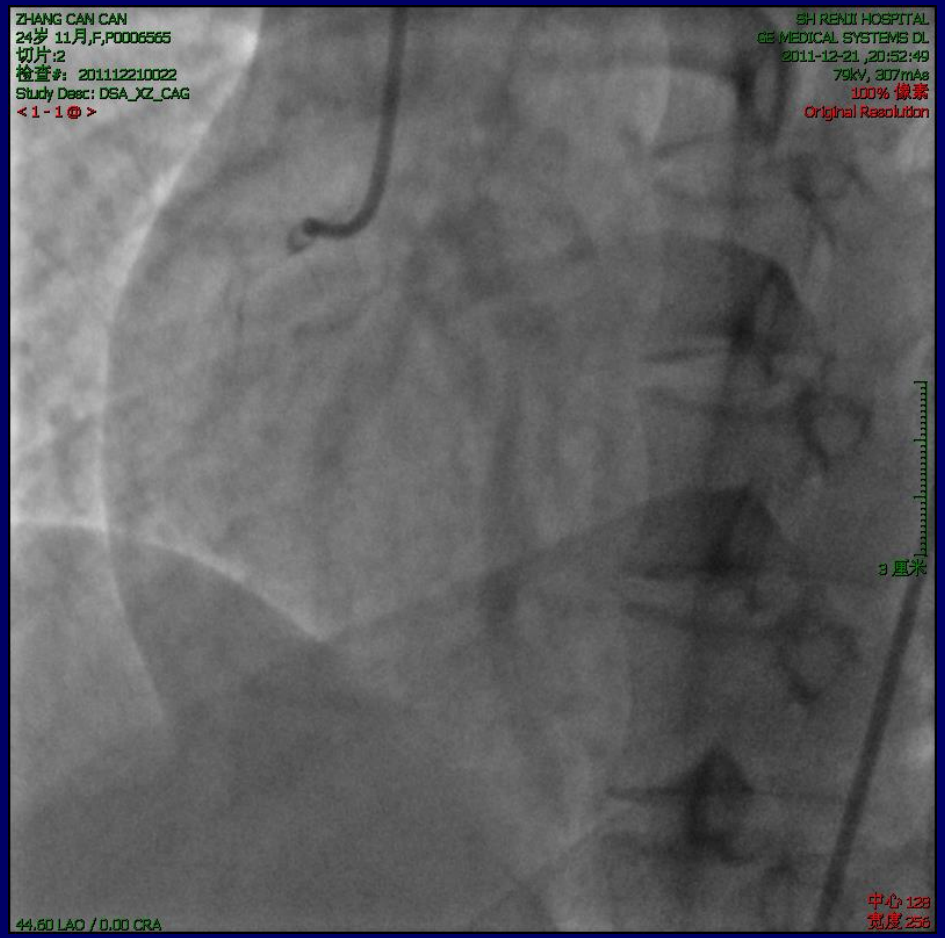


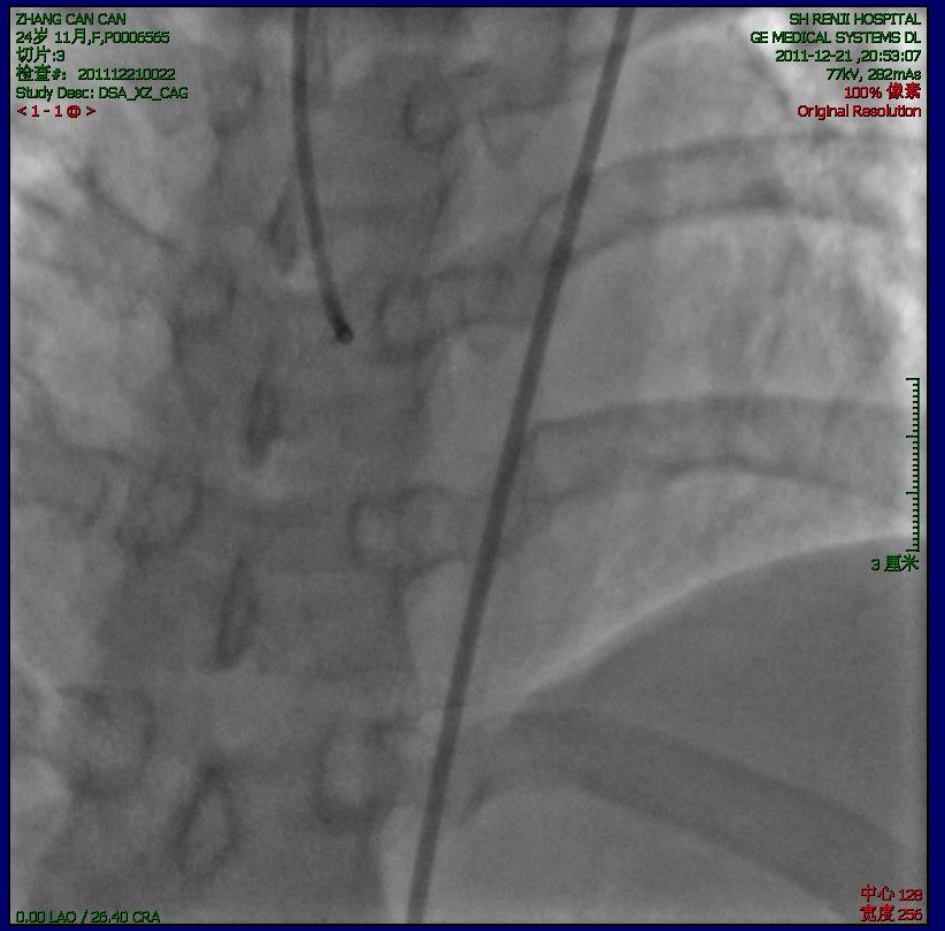
Emergency CAG (left coronary)

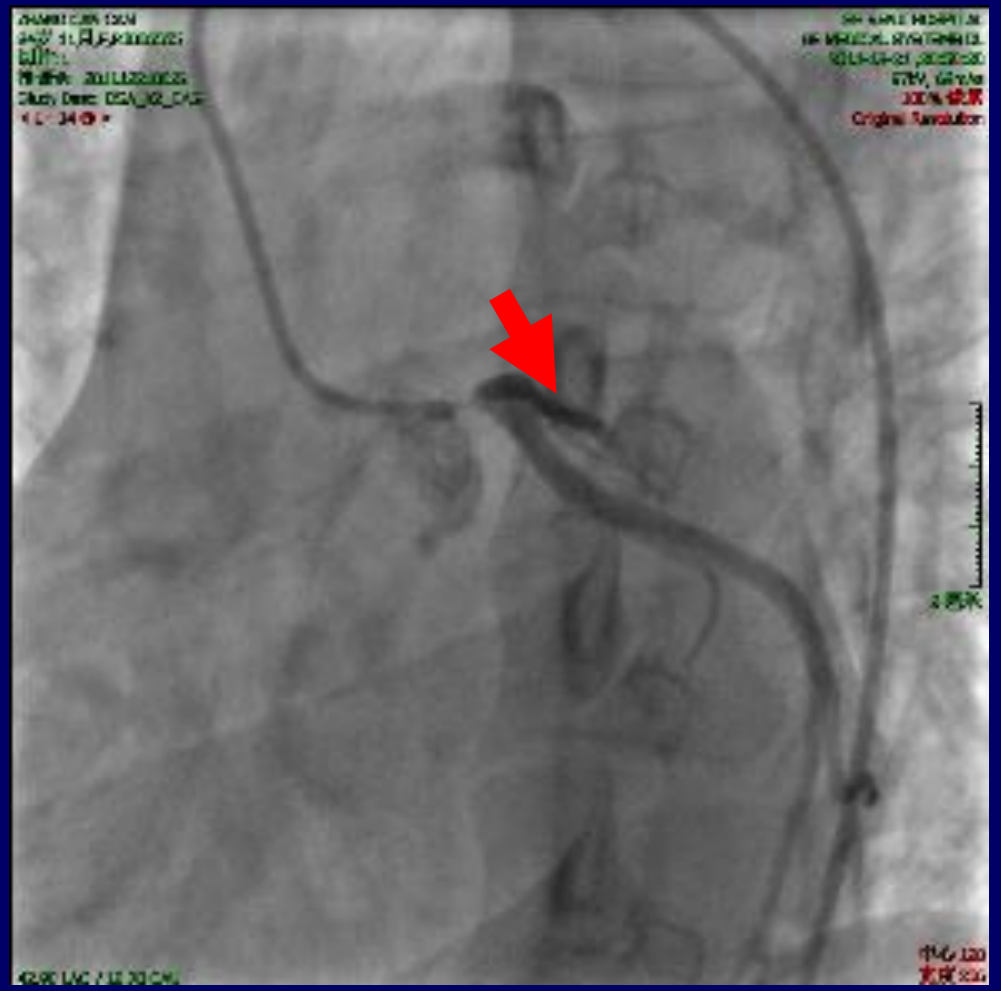




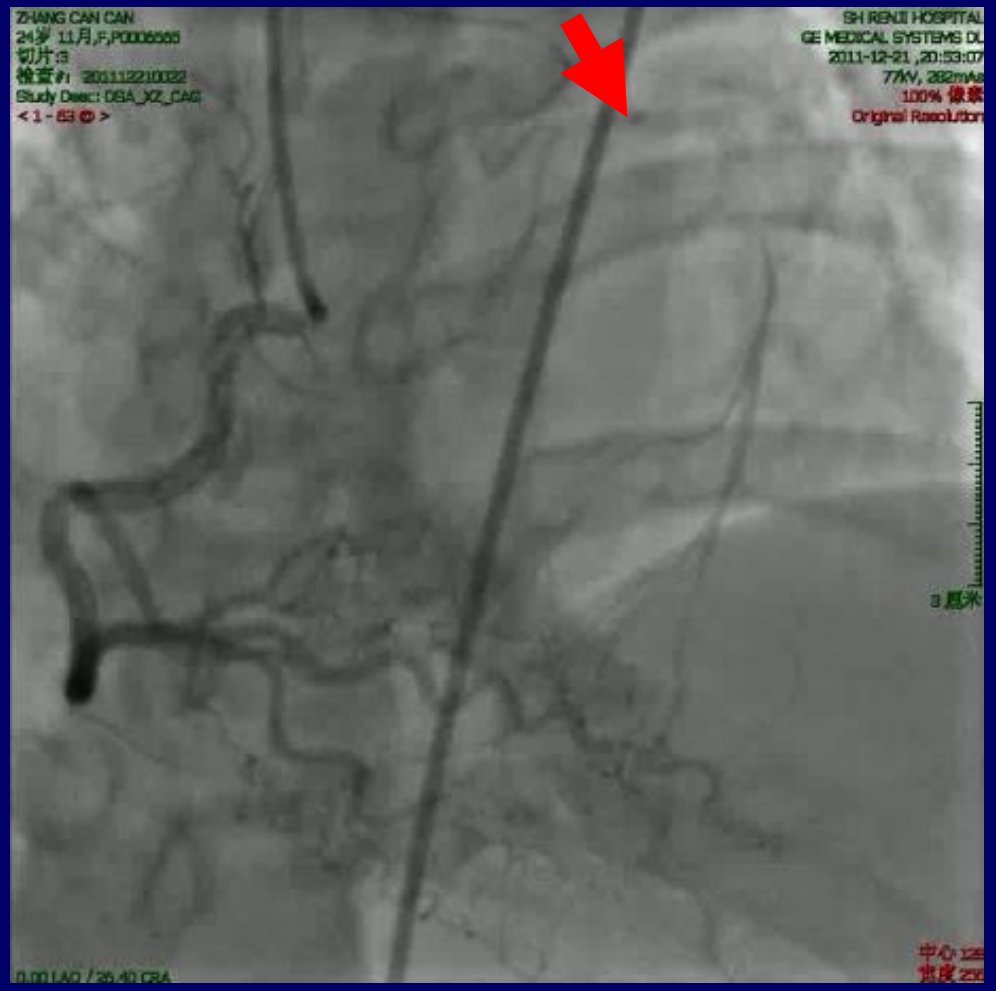
Emergency CAG (Right coronary)



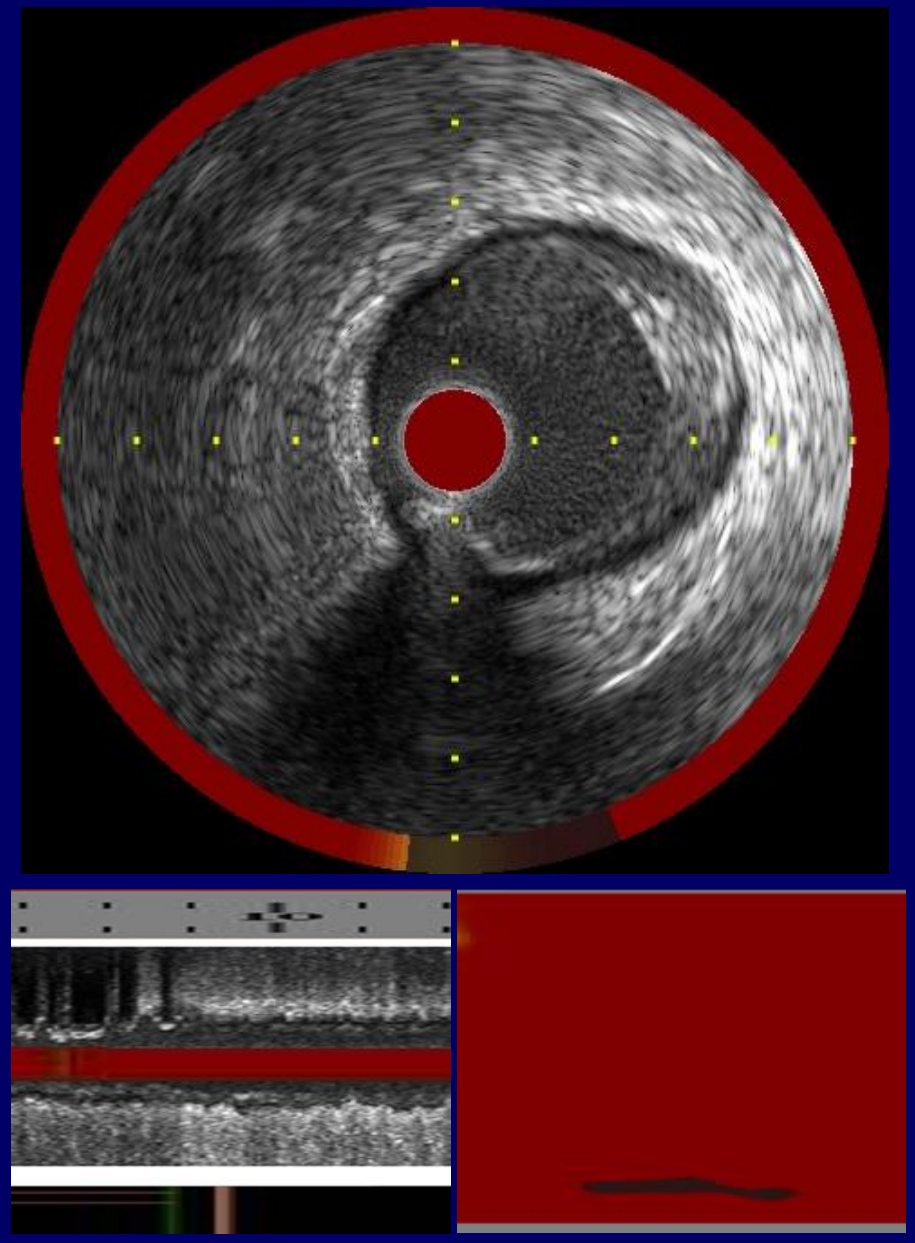




Beak-like lesion involving only the LM ostium

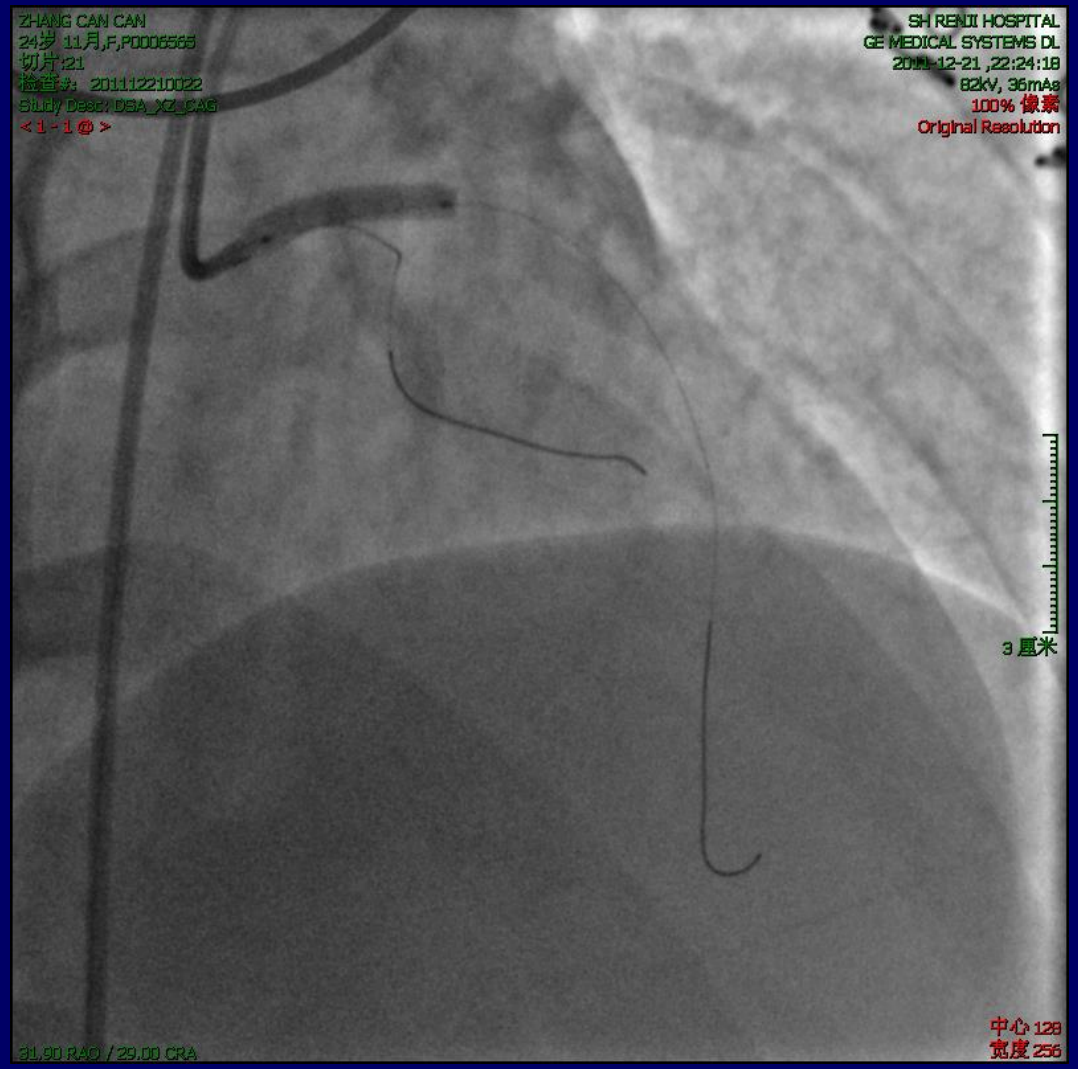


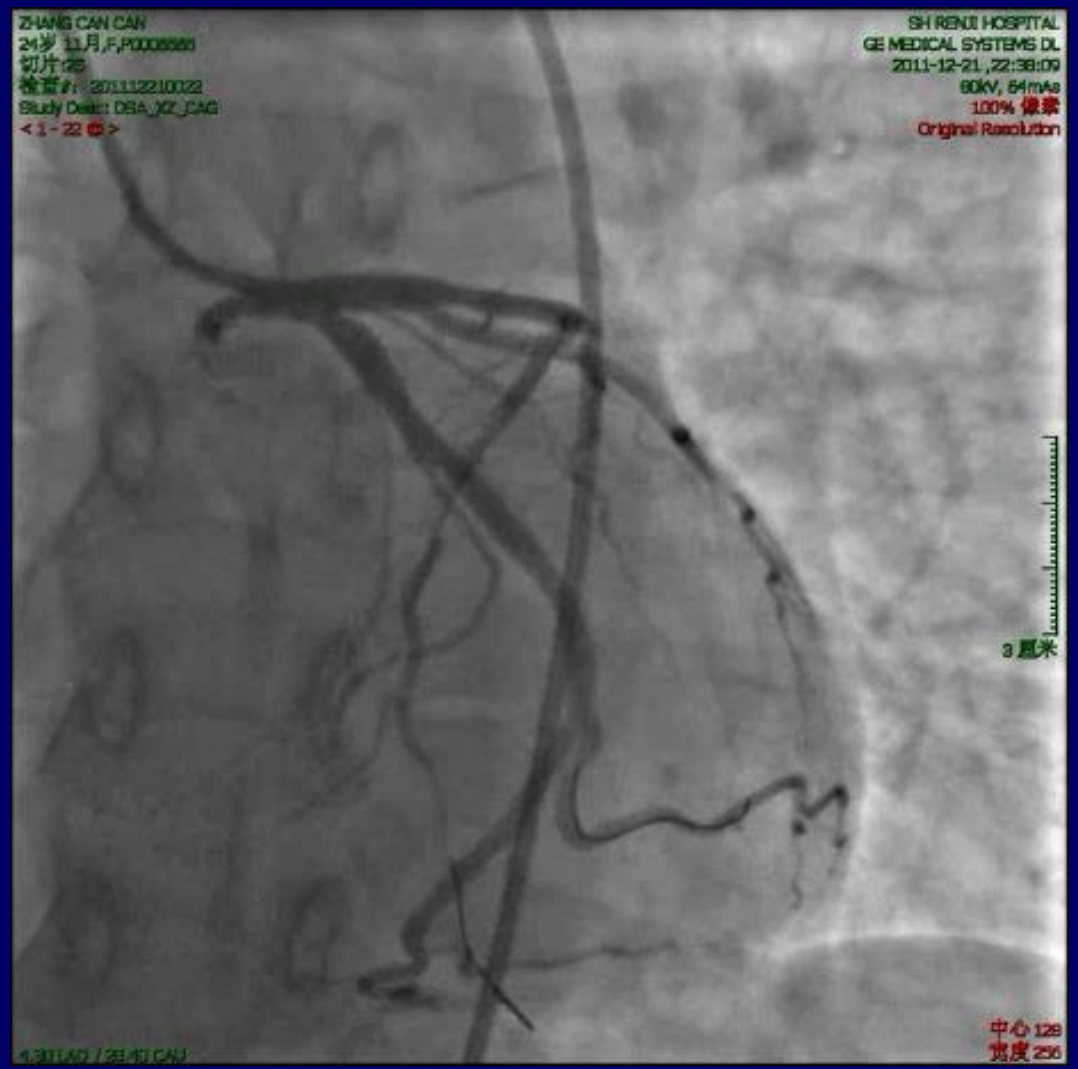
Chronic collateral circulation development



NIRS-IVUS

Plaque without LCP but with small calcium deposit





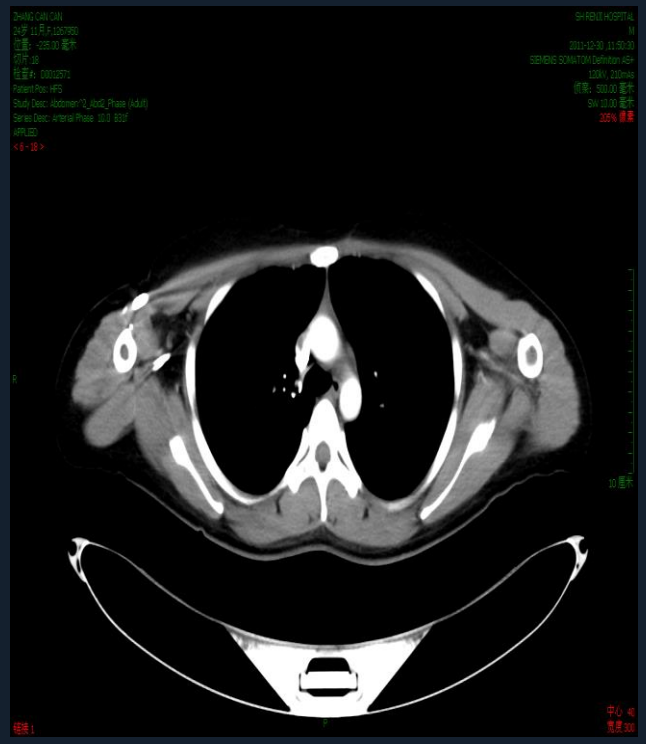
Cutting balloon

DES 3.5*12MM to LM

CCU

- PE: BP readings were lower in the left arm than in the right arm (90/60mmHg vs. 120/70 mmHg) Murmur @ Left subclavian artery
- ESR: 89mm/h, CRP: 91
- Blood Rt： WBC 9.15X10^9/L， N↑% 70.8%， Hb 98g/L

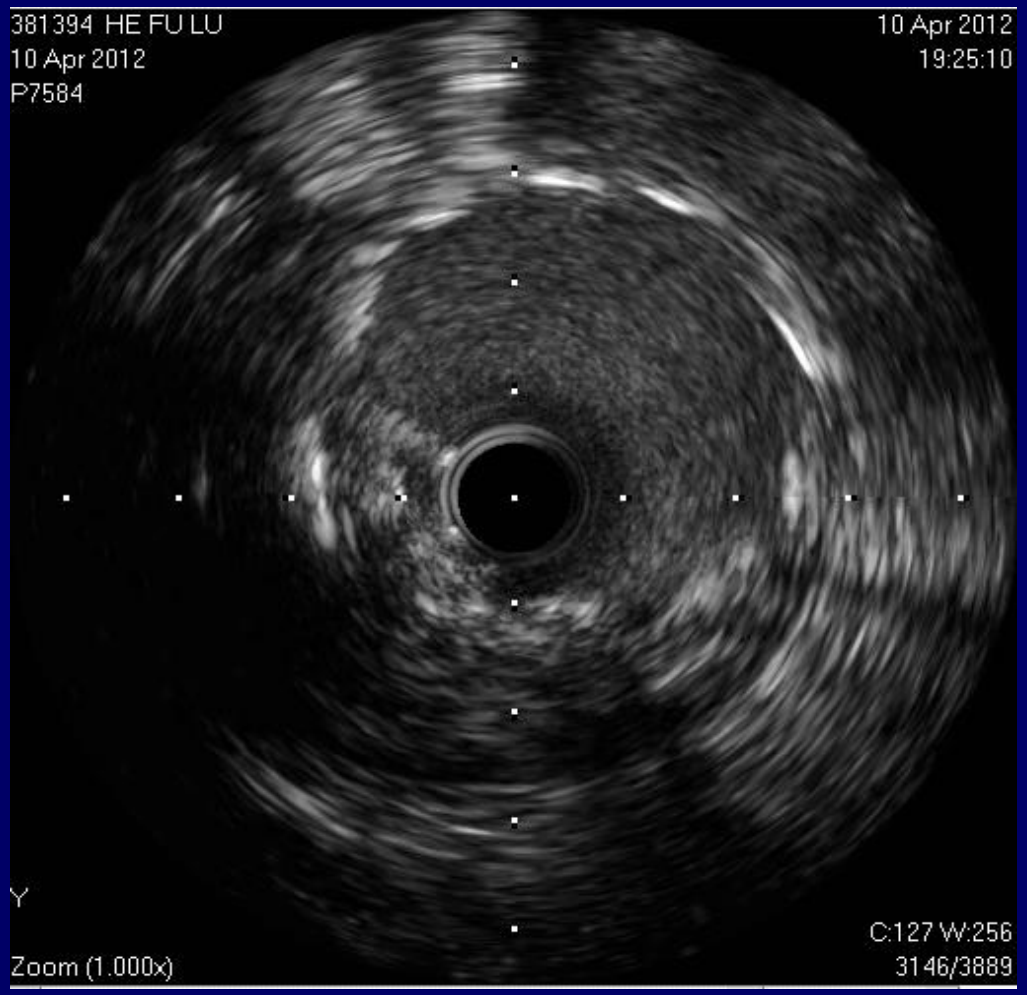
CT/MRI



Annular stenosis of ostium of carotid artery, and three major branches of aortic arch

Post PCI: Anti-Takayasu+DAPT+Statin

Follow-up @ 1.5 Year



Clinical FL:

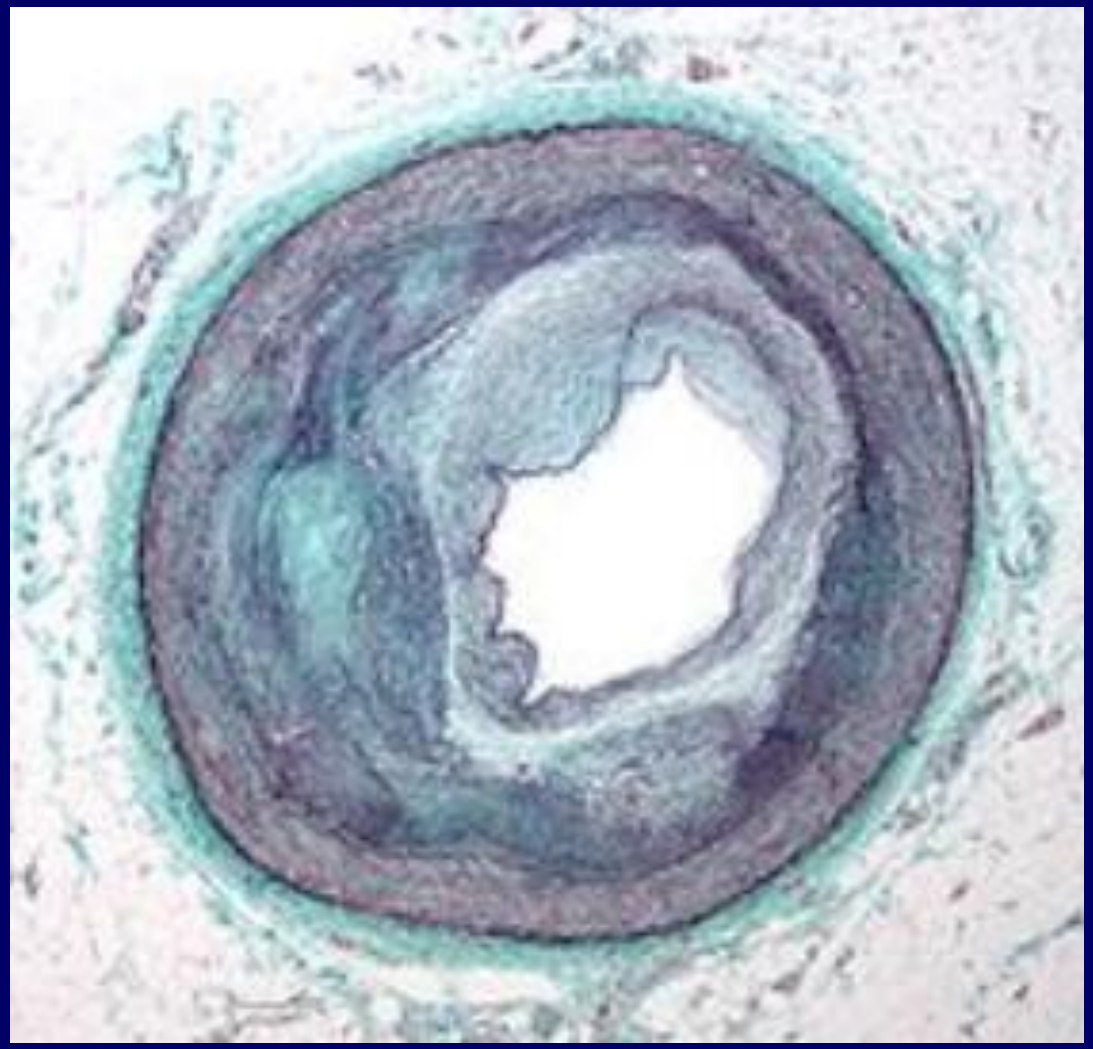
No cardiac events

IVUS :

little intimal hyperplasia

Beak-like LM ostium lesion is caused by Takayasu

Lessons: Patho-mechanism of Takayasu

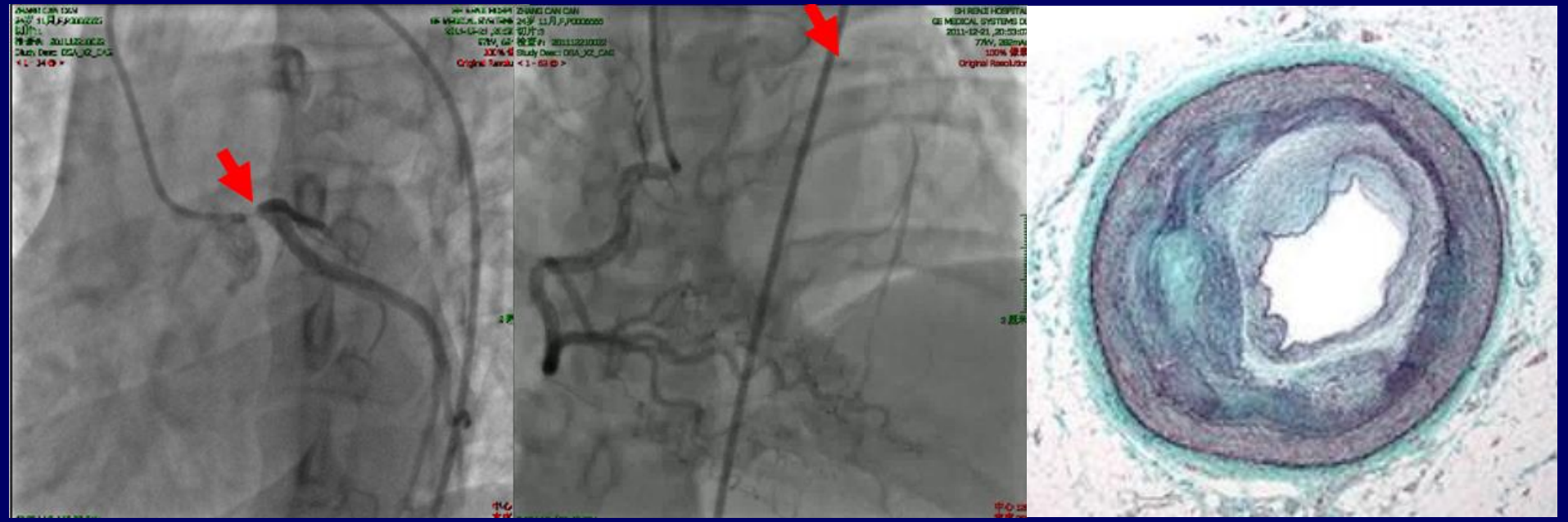


Inflammation-induced intimal Proliferation, fibrous composition with calcium deposit

Lessons

Characteristic of coronary lesion caused by Takayasu：

- **The beak-like lesions involving only the ostium of LM**
- **No lipid/necrotic core**
- **Chronic collateral circulation development**
- **Stenosis in upper limb vessel pathway**



Lessons

- High procedure risk in active stage of Takayasu: Not recommend
- For this case, AMI: The time was not permitted after the drug control
- Post-PCI： Anti- Takayasu Treatment; DAPT+ Statin
- High ISR in BMS, DES ???

SUMMARY

Any acute coronary event in young female patients without conventional risk factors should raise the suspicion for special reason : i.e., SCD, Syphilis, Takayasu…


GREAT WORKS ARE
PERFORMED NOT BY STRENGTH
BUT BY PERSEVERANCE. SAMUEL JOHNSON

Thank You