Confusion about the treatments for in-stent restenosis

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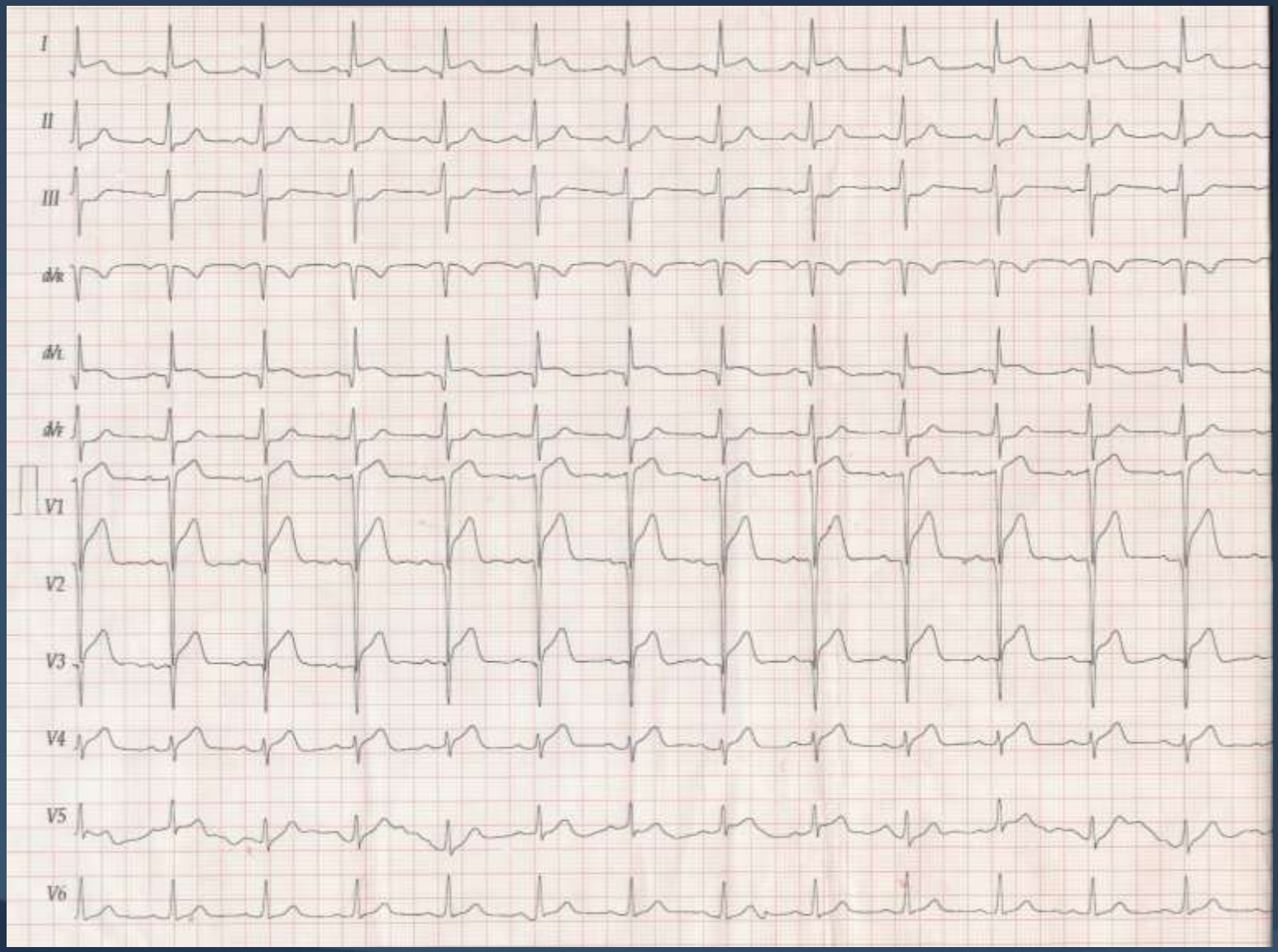
Medical History

- Male, 48 yr.
- Paroxysmal throat discomfort 5 years, aggravated for 10 days
- 5 years ago, DES was implanted in the proximal LAD because of AMI.
- 3 years ago, follow-up angiography showed that 30% restenosis in LAD and 95% stenosis in the proximal LCX,one more DES was implanted in the LCX.
- 10 days ago, the patient suffered from throat discomfort again , lasted for 3 hour, ST elevated in leads I, aVL and V1-V4.

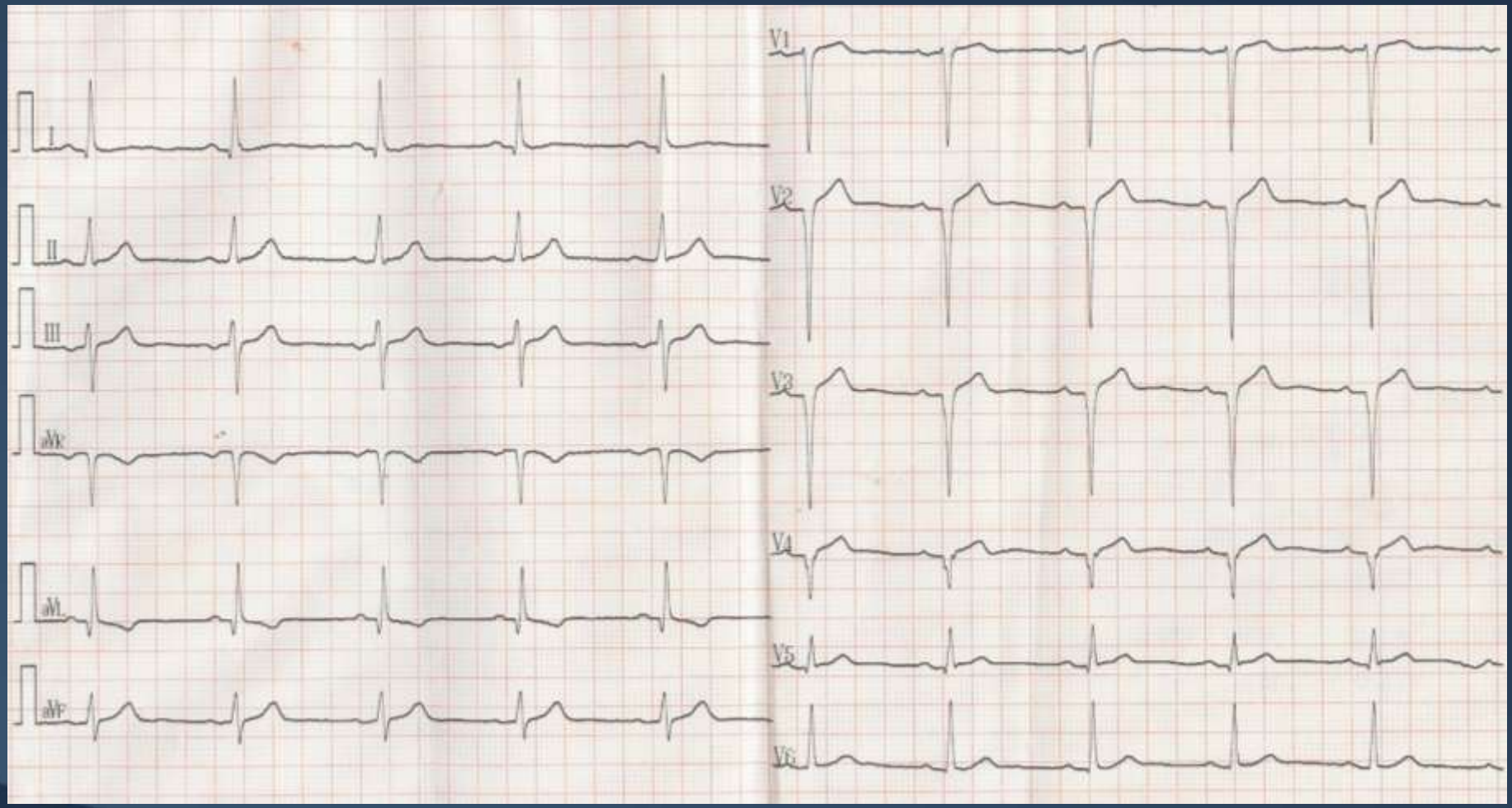
Medical History and Physical, laboratory examination

- **Risk factors**: Smoking 16 years ; Family history of CHD.
- **Physical examination**: BP :120/80mmHg. HR 60 bpm. Murmur(-).
- **Myocardial injury biomarkers**: cTNI: **0.141** ng/ml
- **Biochemical analysis**: TG: 1.17mmol/L, TC: 3.24mmol/L, LDL-C: 2.05mmol/L, GLU: 5.28mmol/L, CRE: 64umol/L(GFR=123.06ml/min*1.75m2).

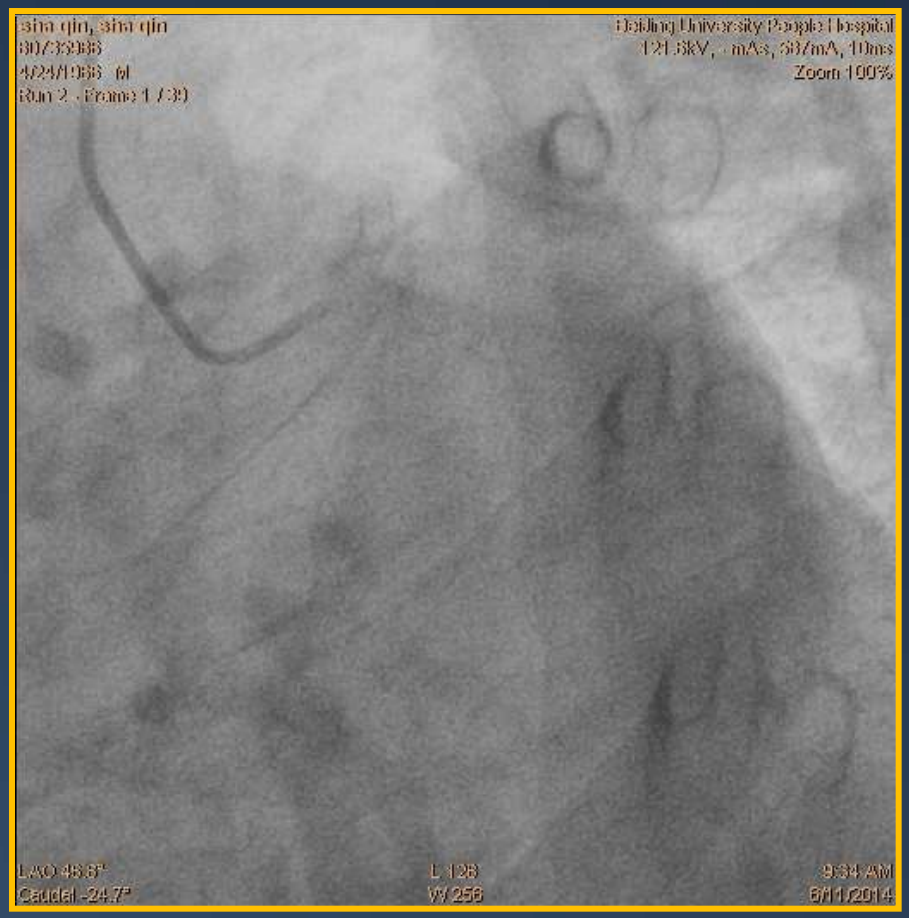
Throat discomfort episodes（ 10d ago ）



Throat discomfort relief



CAG



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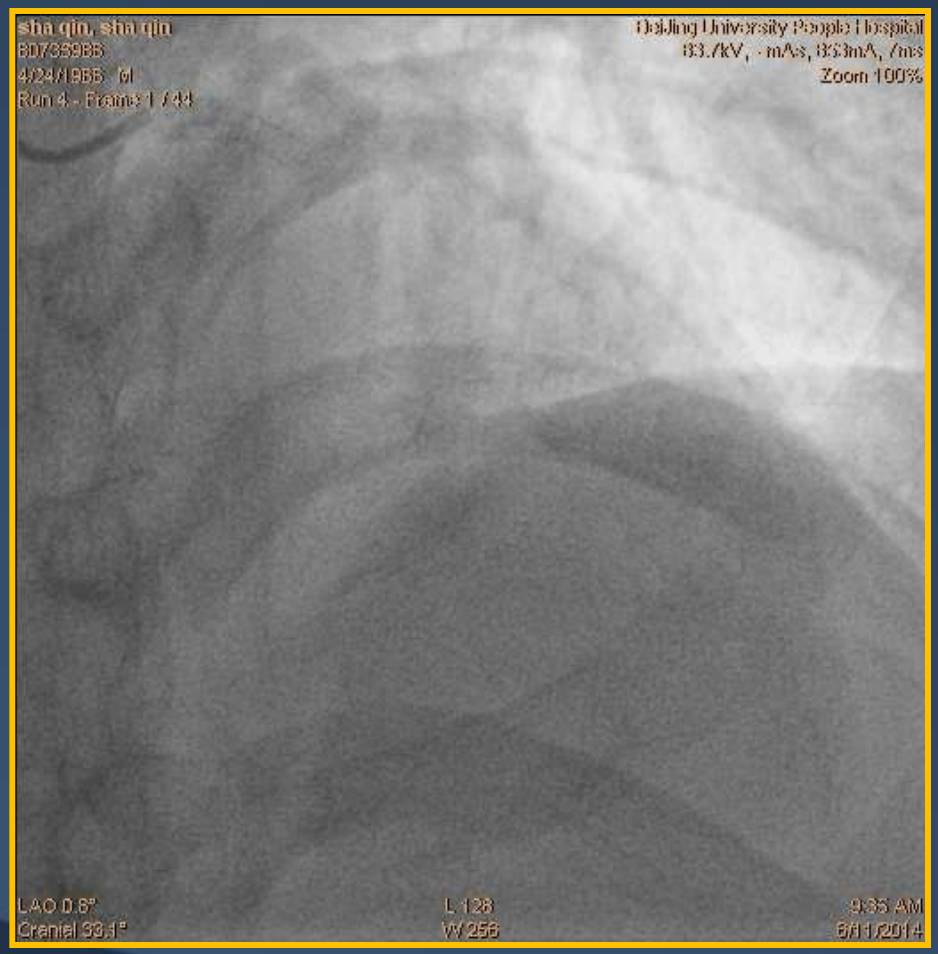
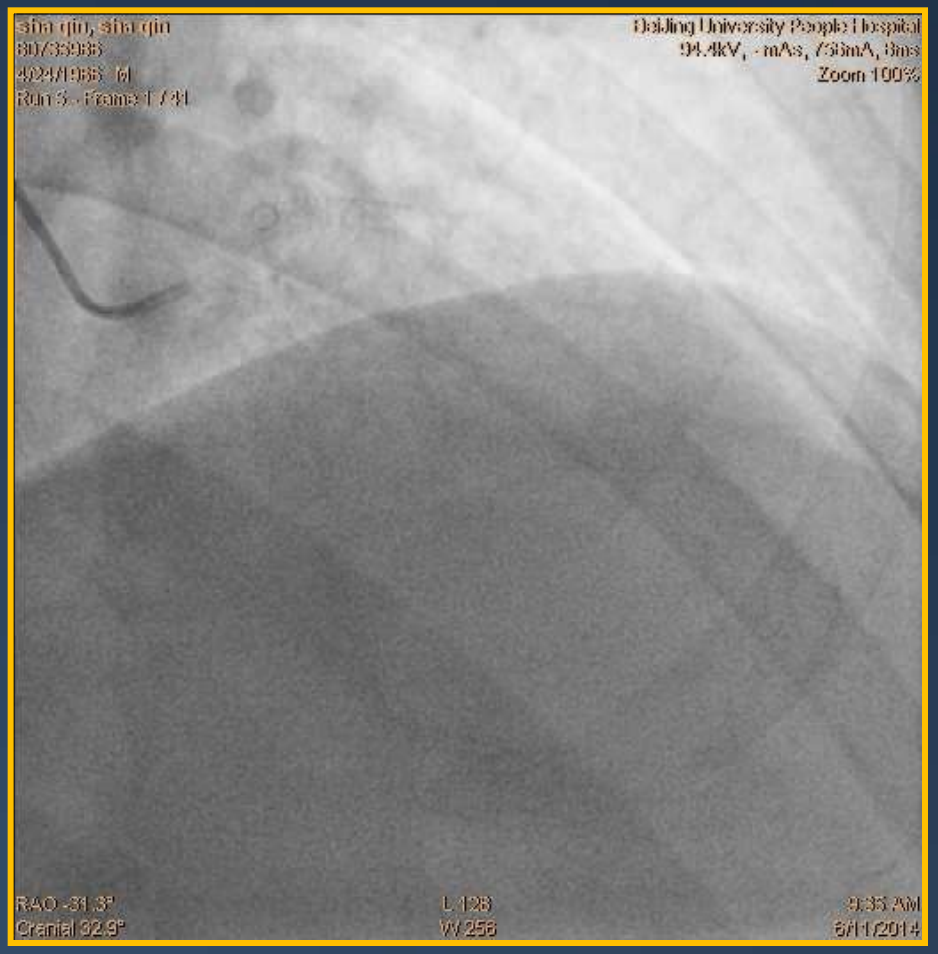
CAG





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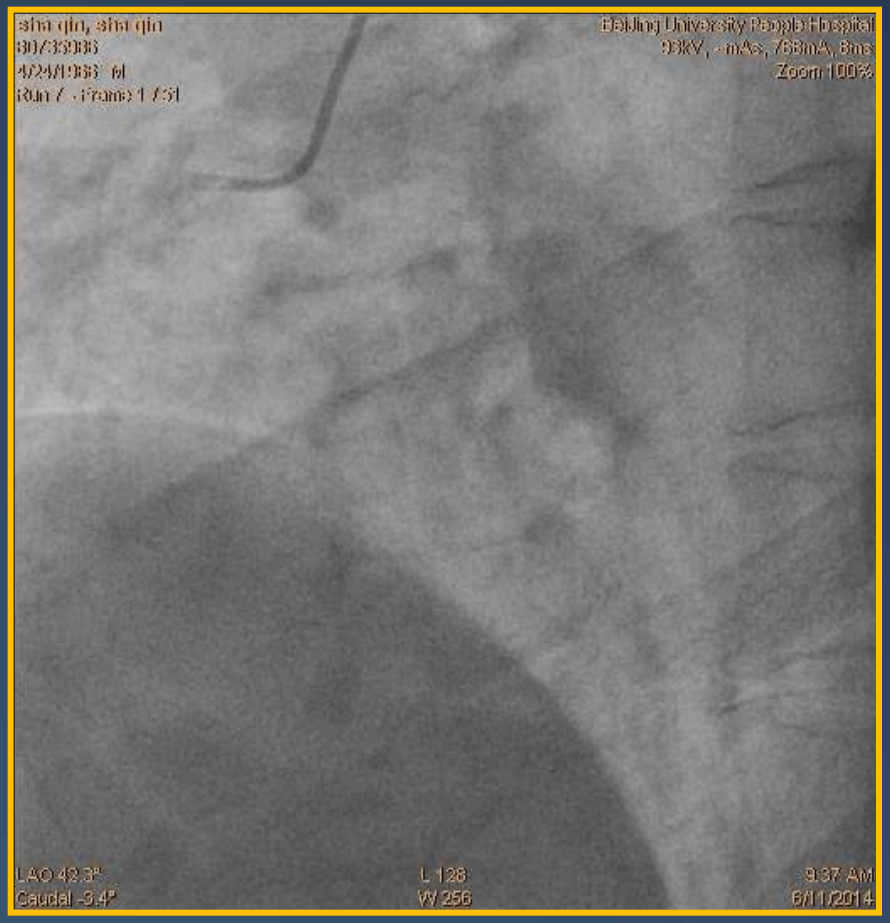

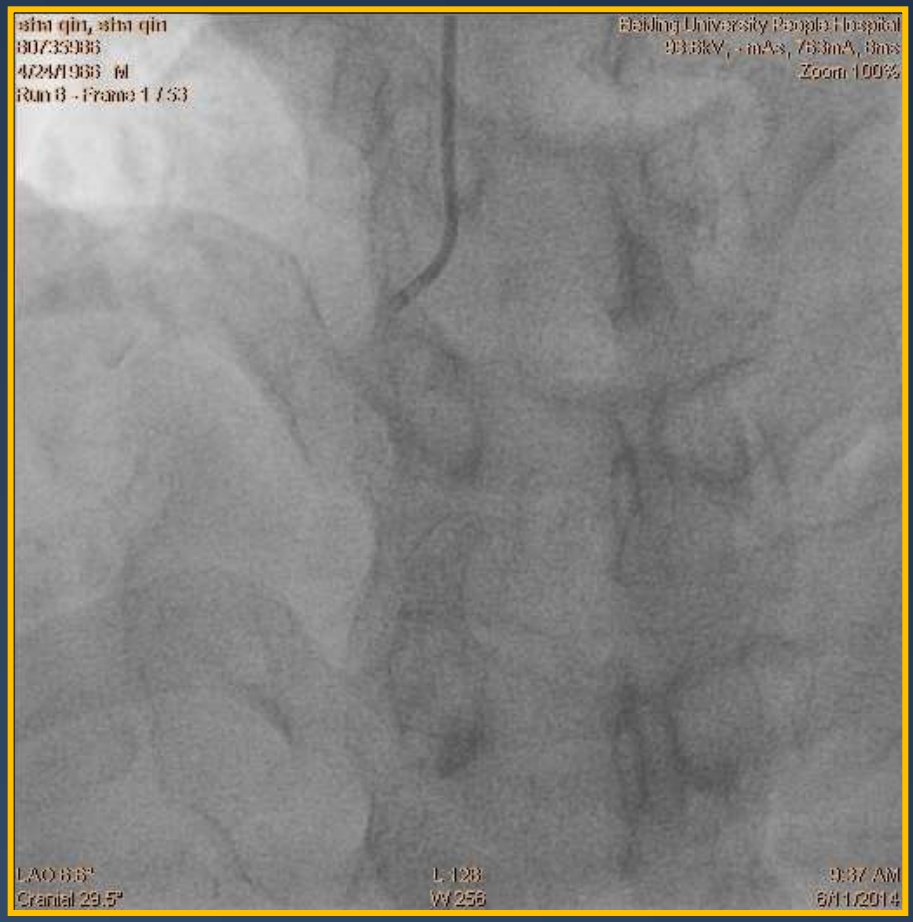

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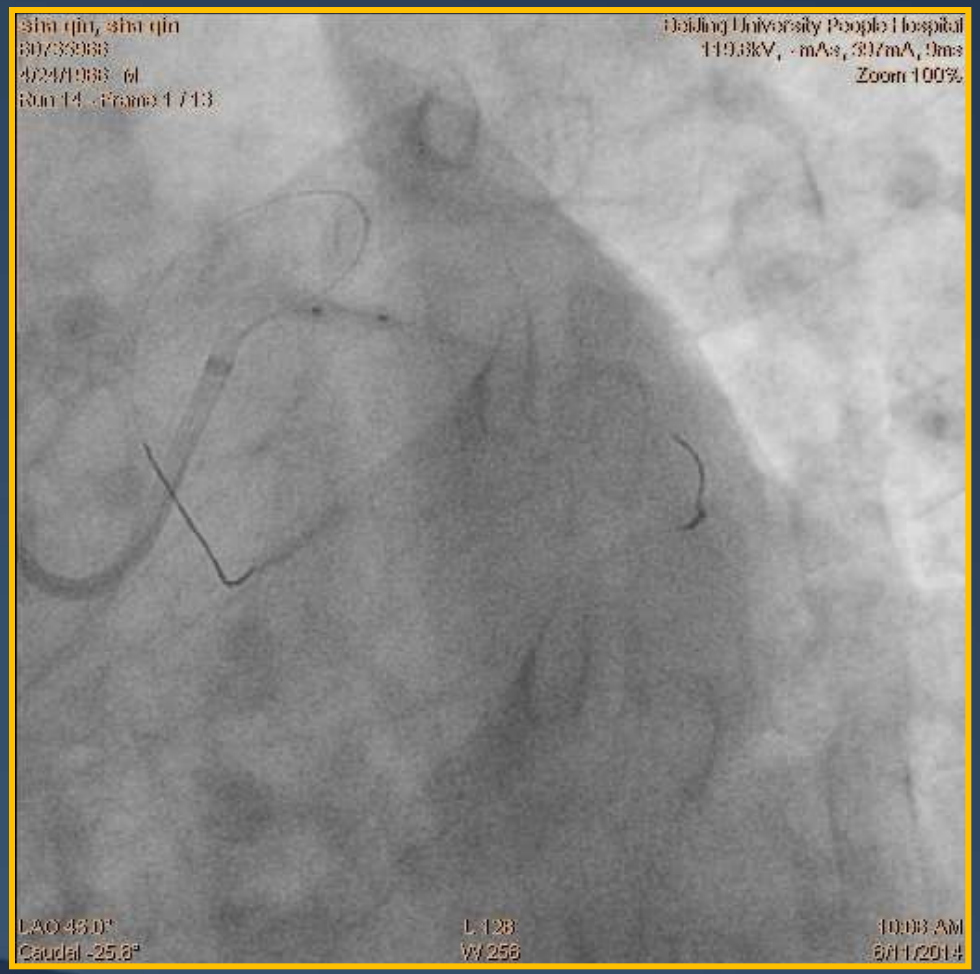
Therapeutic options

- CABG.
- PCI.
  - ✓ Single-Stent Crossover Technique?
  - ✓ Double-stent Technique?
- Medicine conservative treatment.

PCI



GC :

7F EBU3.5

GW :

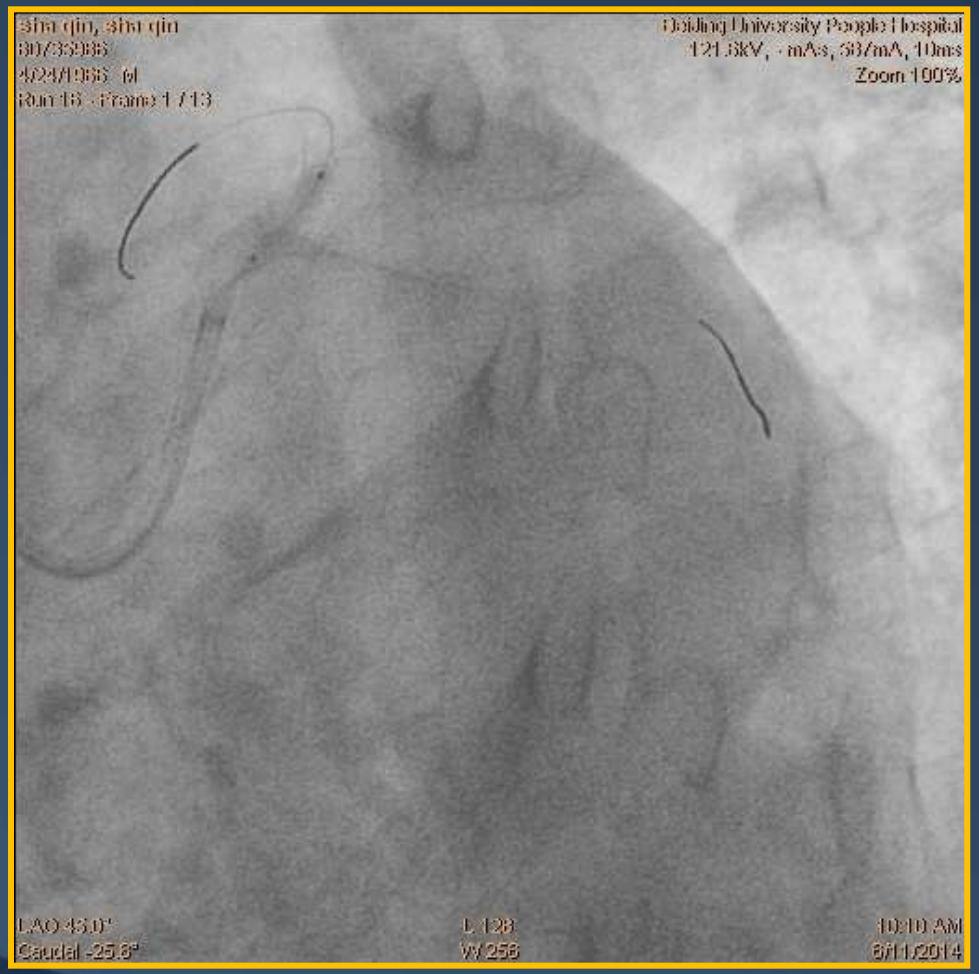
BMW, Runthrough

Cutting balloon :

Flextome 2.75x6mm

6-8atmx10sec twice

PCI

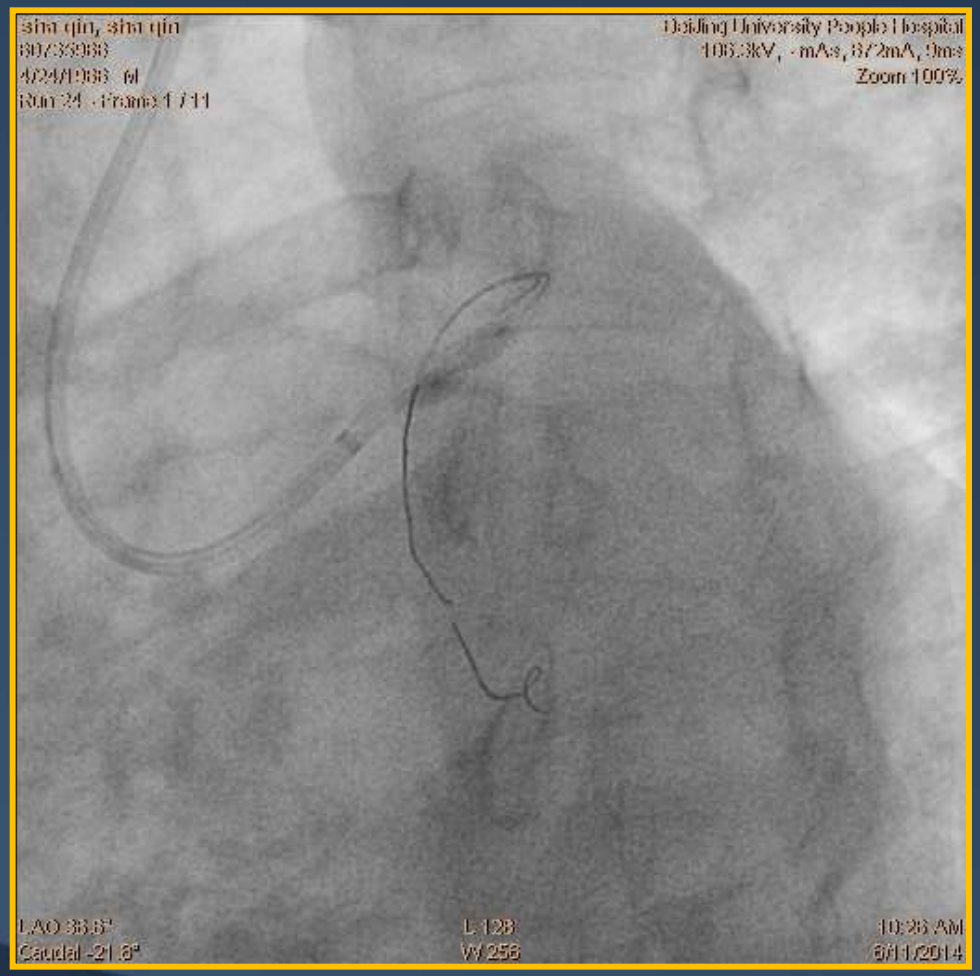


Balloon :

Empria 2.5x15mm

16atmx10sec twice

DES couldn’t pass through the lesion



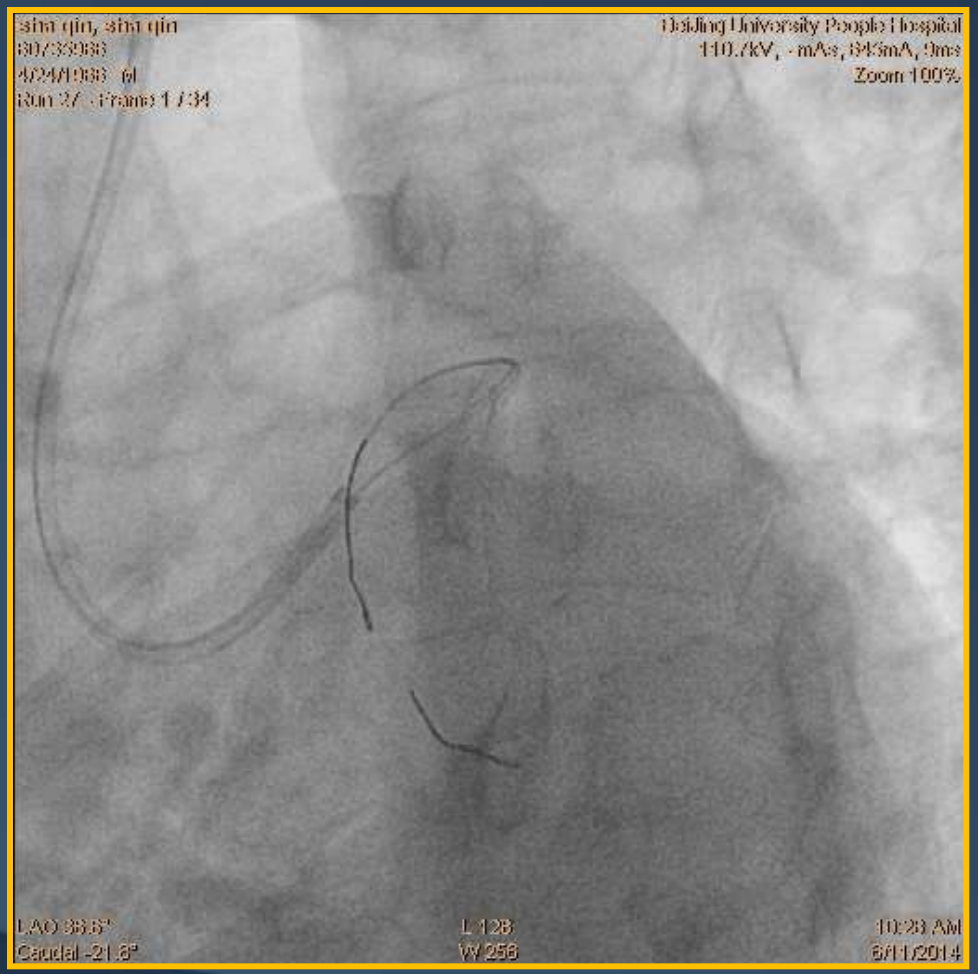
Balloon :

Quantum 3.0x12mm

16-18atmx5sec 4 times

Resolute 4.0x18mm couldn’t pass through the lesion

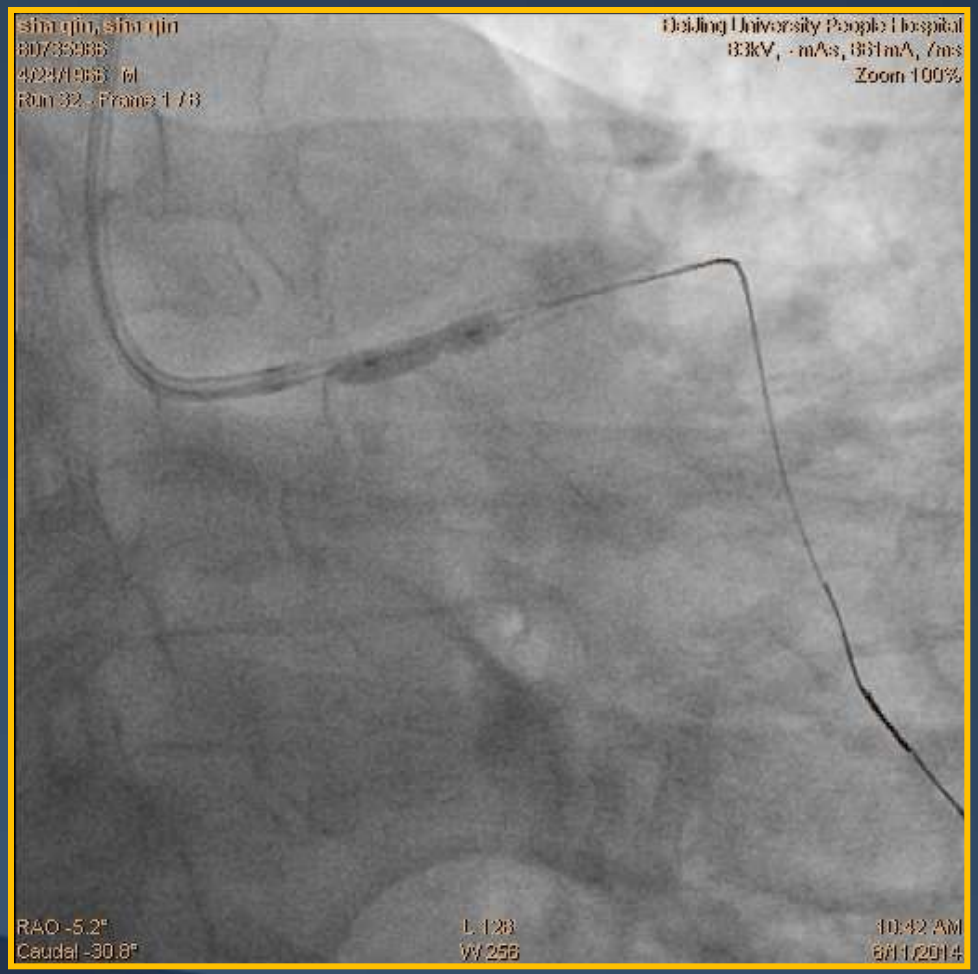
Double wire technique，DES still couldn't pass through the lesion



Double wire

Resolute 4.0x18mm

Postdilatation with noncompliance balloon
DES still couldn't pass through the lesion



Balloon

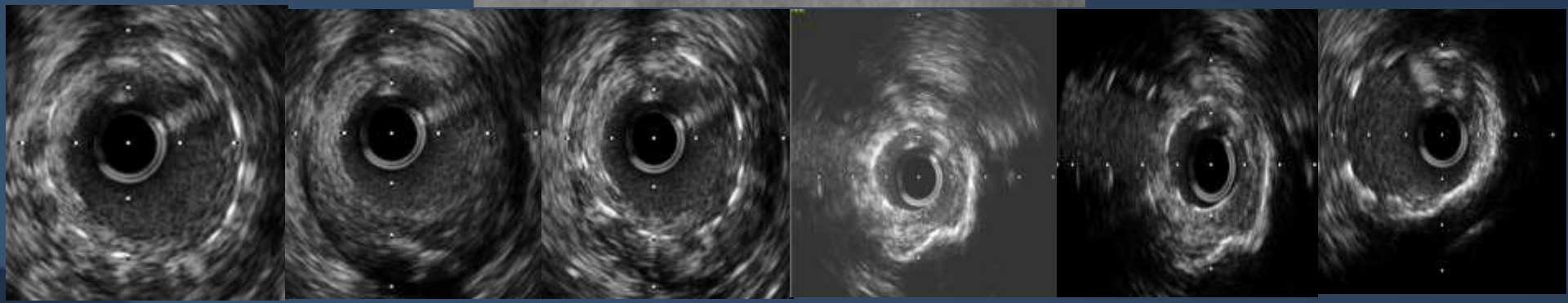
Quantum 3.0x12mm

22-28atmx5sec twice

Resolute 4.0x18mm

What's the reason ?

IVUS：LAD to LM



The proximal stent in LAD

Ostial of LAD

LM

IVUS：LCX to LM

The proximal stent in LCX

Ostial of stent in LCX

LM

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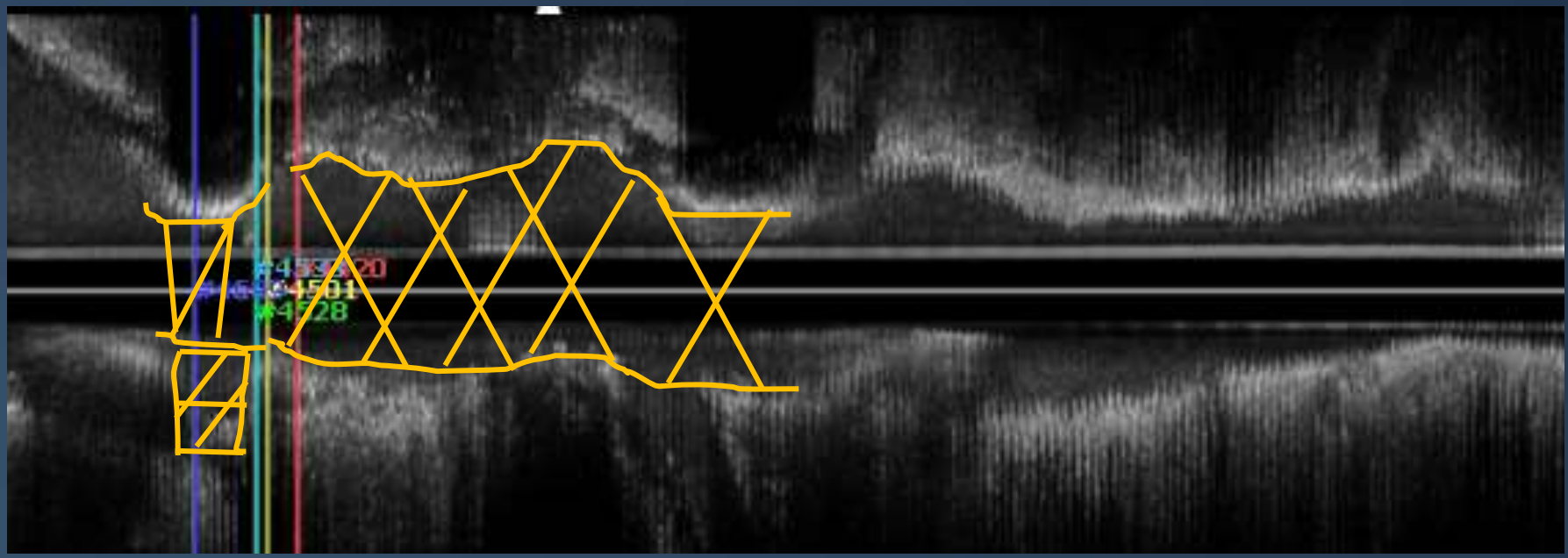
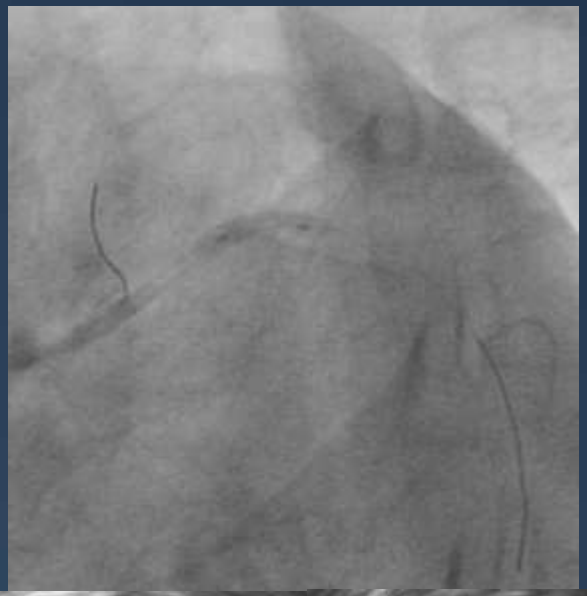
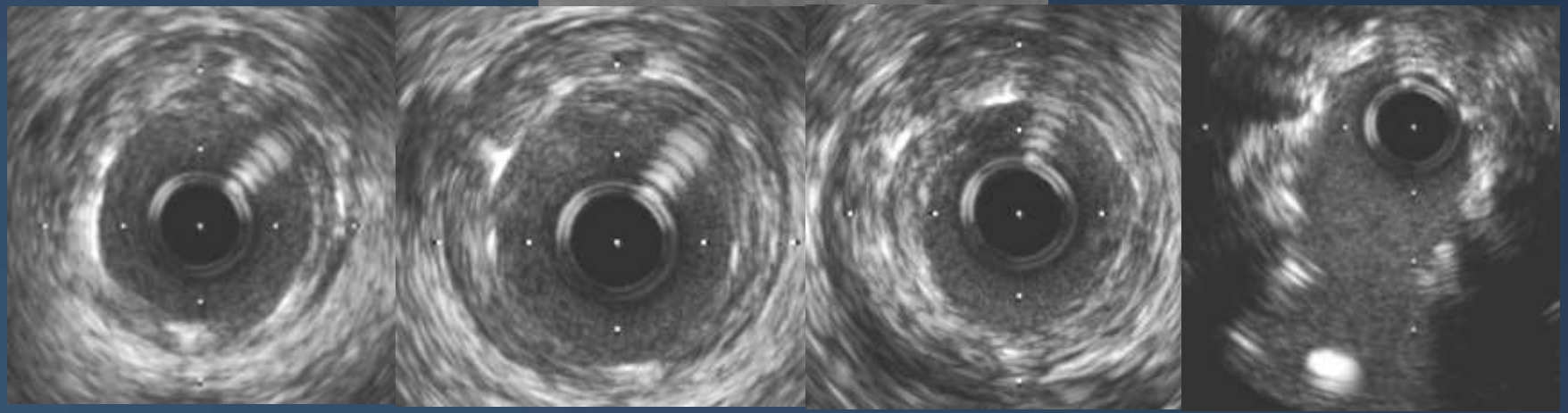
IVUS：DES structural cartoon



Balloon dilation in LCX again





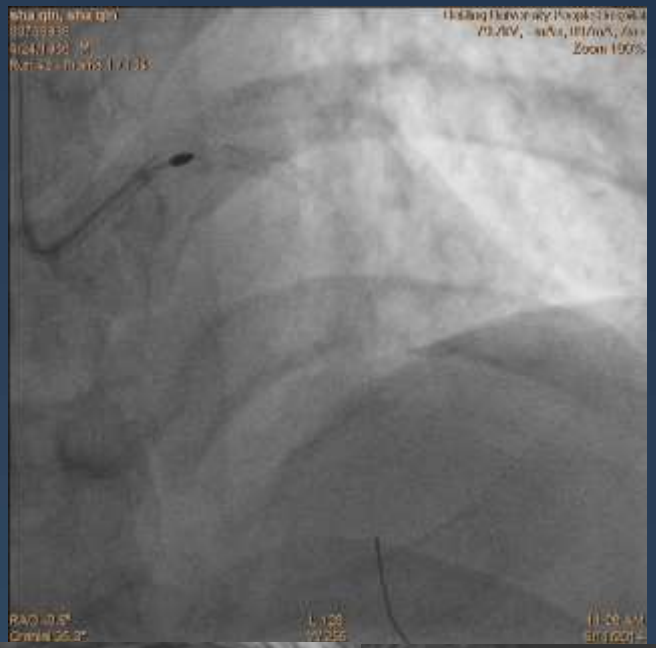
The mid-stent in LCX

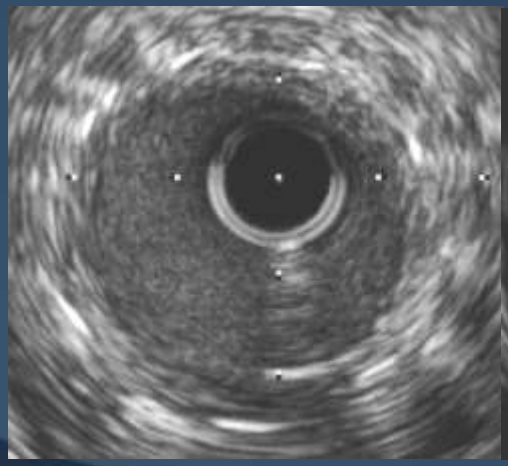
The proximal stent in LCX

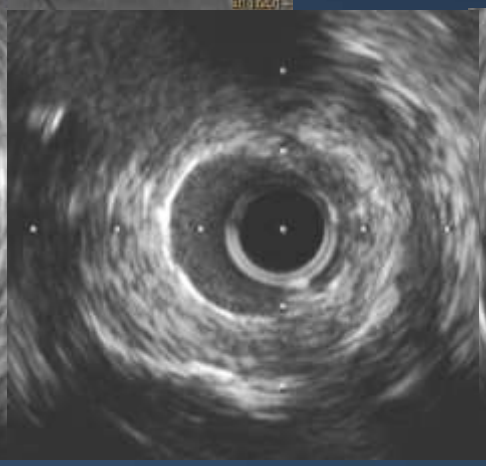
Ostial of stent in Lcx

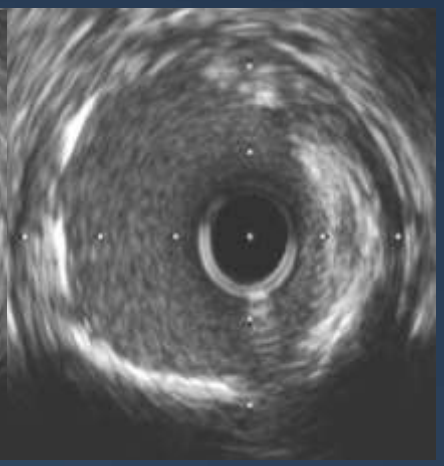
Balloon：Quantum 3.0x12mm ; 20atmx5sec

Rotational atherectomy：LAD to LM









The location of stent fracture

Ostial of stent in LAD

LM

Rota Berr: RotaLink Blree1.75mm

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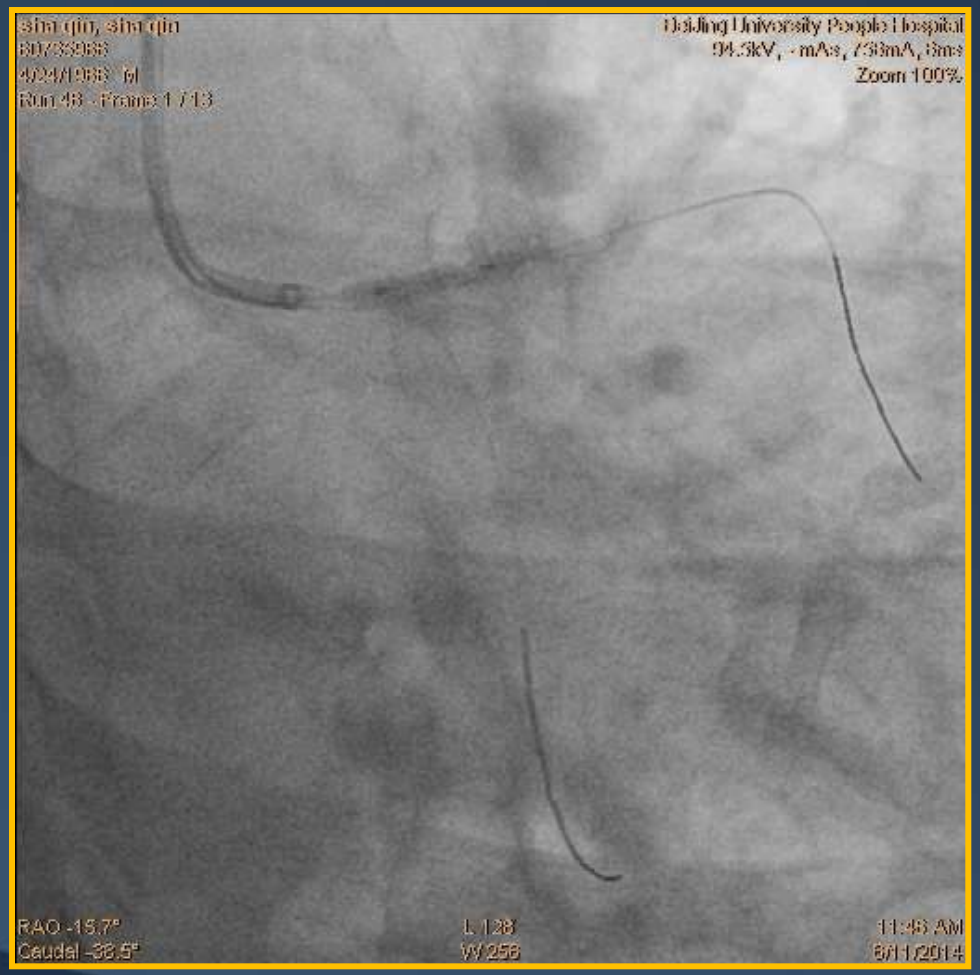
Postdilatation again



Balloon：

Quantum 3.0x12mm

12atmx5sec twice

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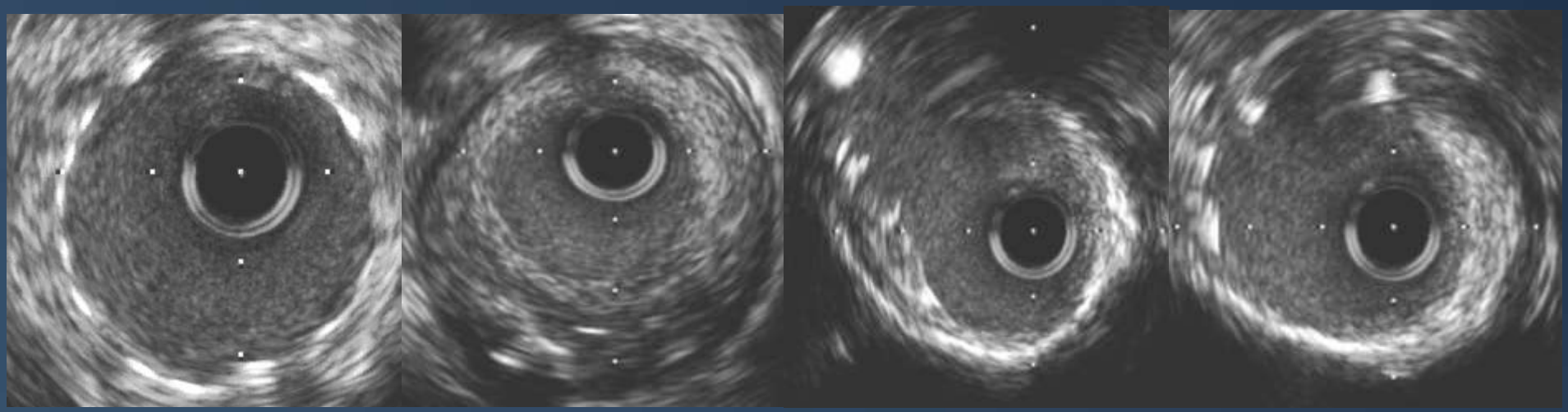
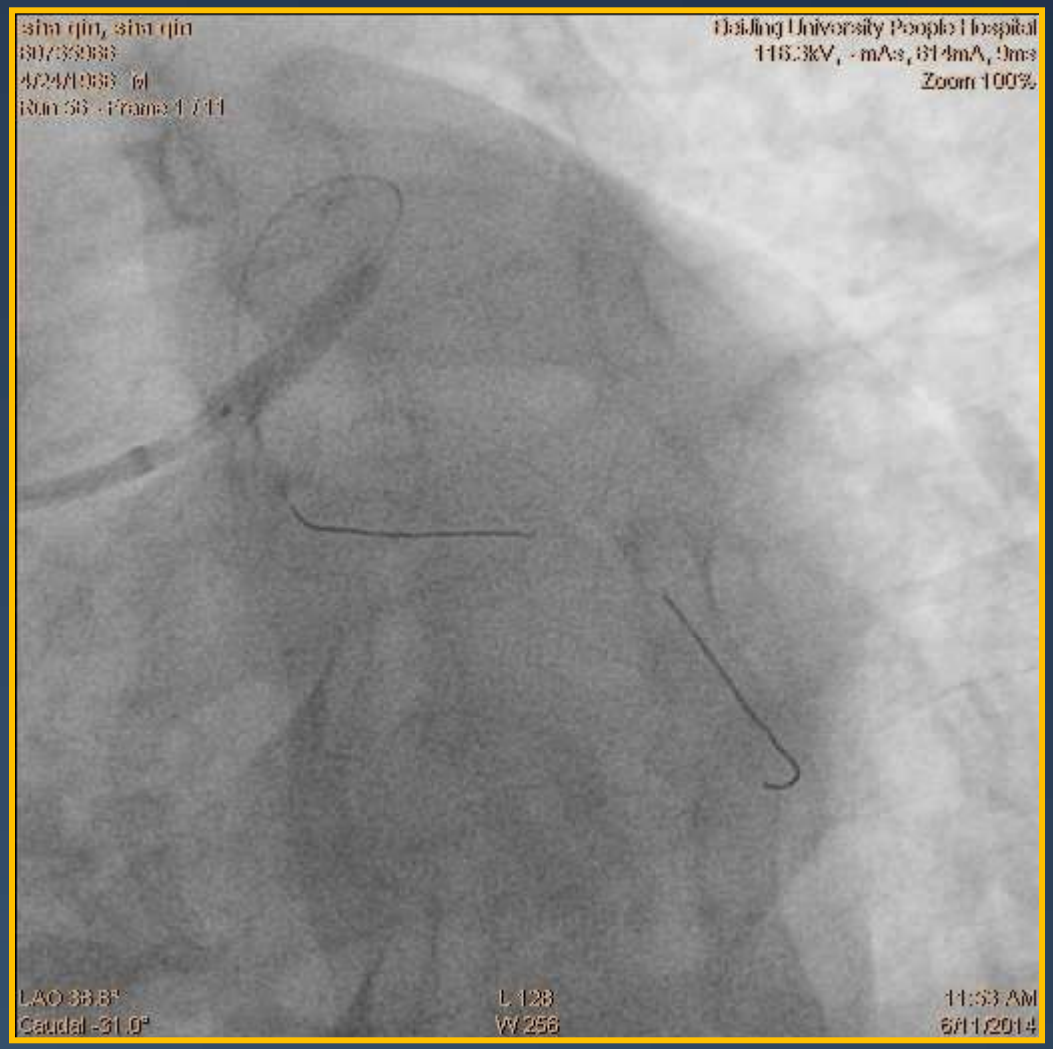
After rotational atherectomy and balloon dilation : LAD to LM



The proximal stent in LAD

Ostial of stent in LAD

LM



Resolute 4.0x18mm passed through the lesion successfully

14atmx10ec released

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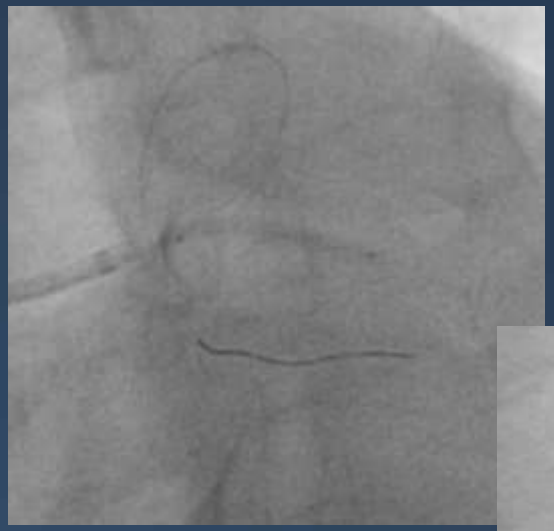
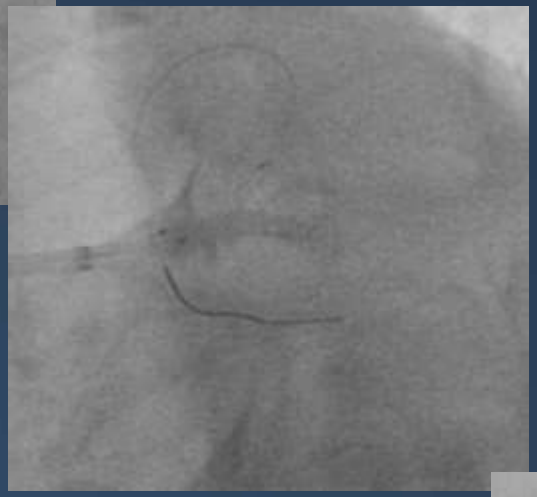


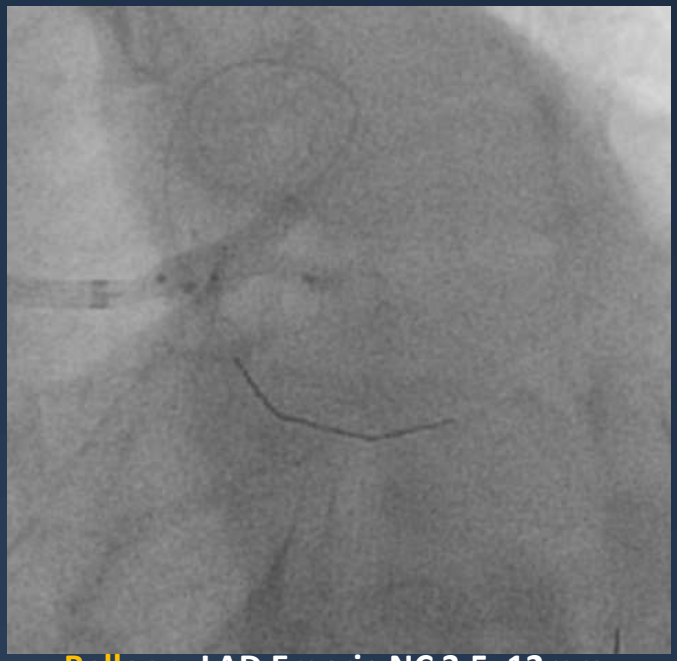
Balloon: Empira 2.0x15mm

16atmx10sec



Balloon: Quantum 3.0x12mm

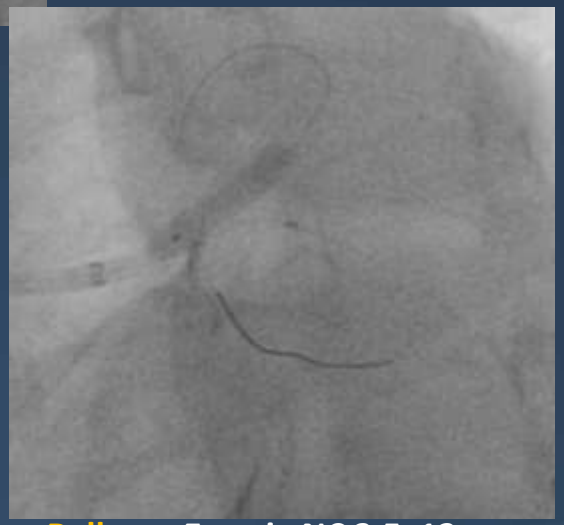
Dilatation: 20atmx10sec



Balloon: LAD Empria NC 3.5x12mm

Balloon: LCX Quantum 3.0x12mm

Kissing balloon angioplasty:10atmx10sec



Balloon: Empria NC 3.5x12mm

Dilatation: 24atmx10sec

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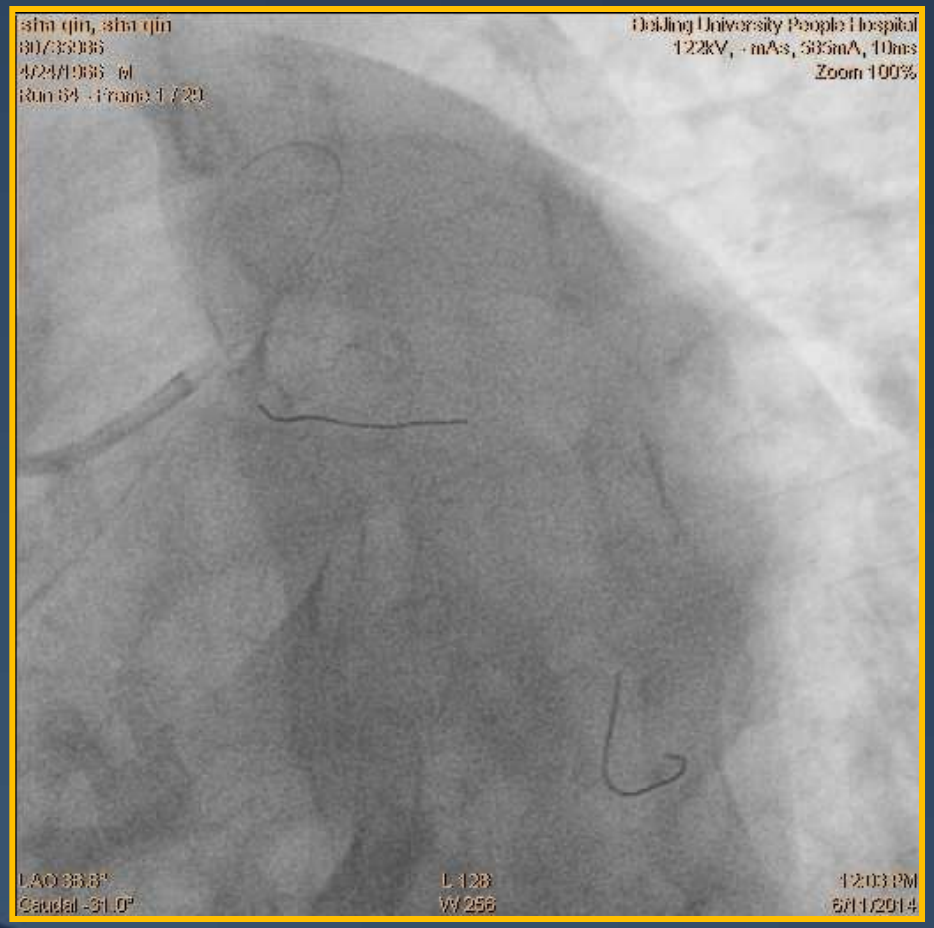
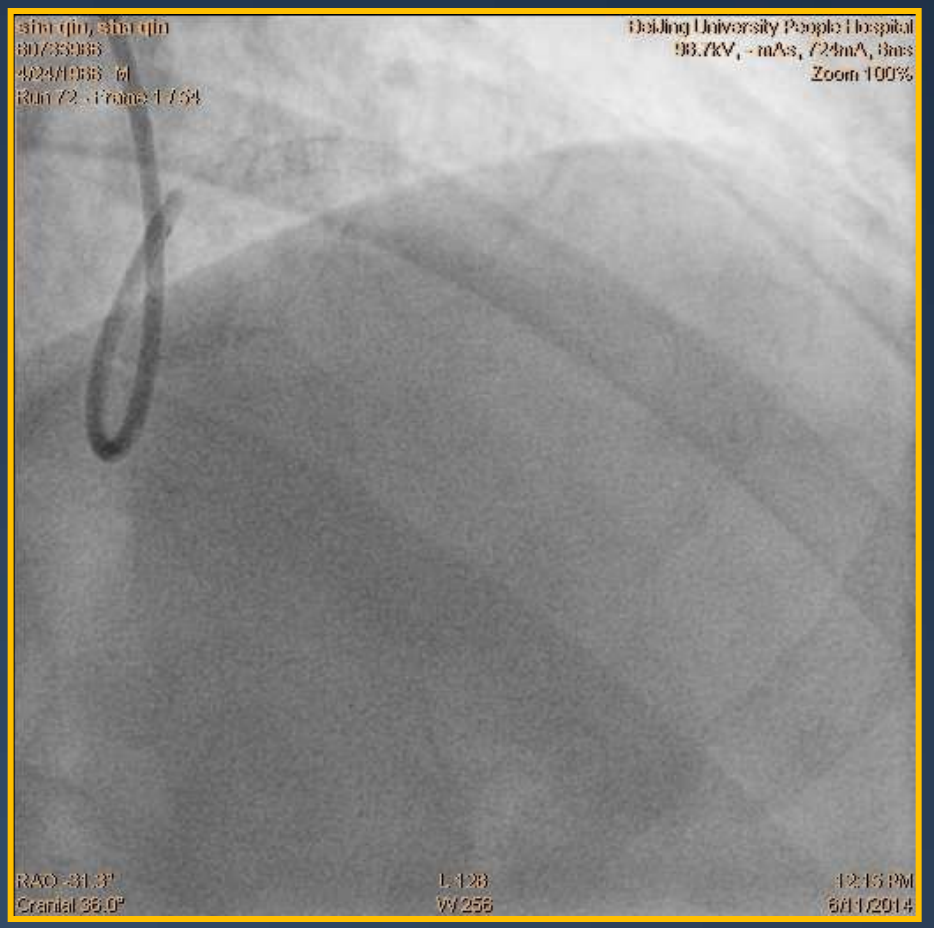
Final result





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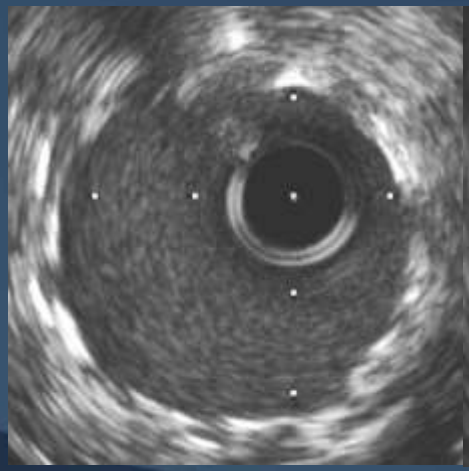
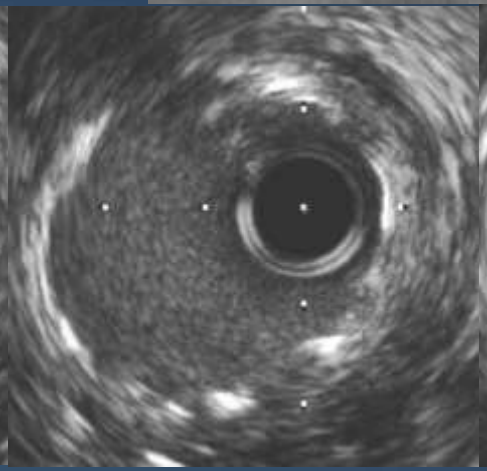
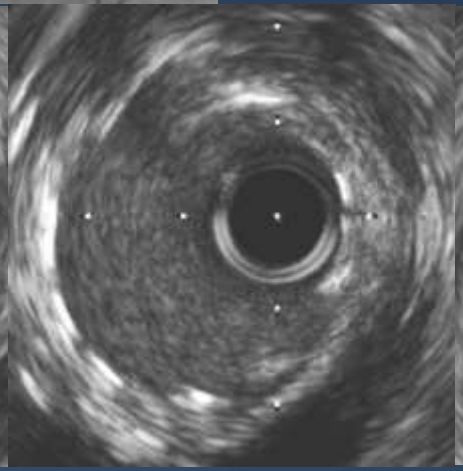
LAD：Final IVUS result

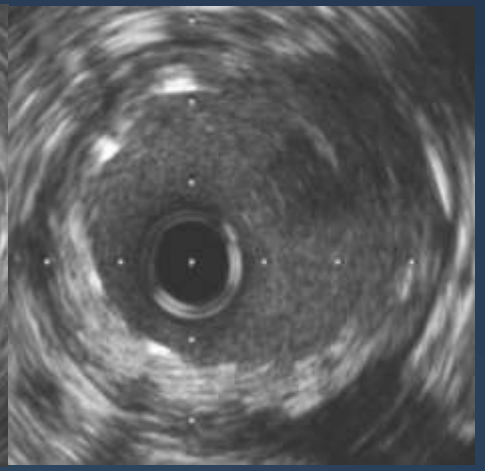




The location of stent fracture



Ostial of stent in LAD



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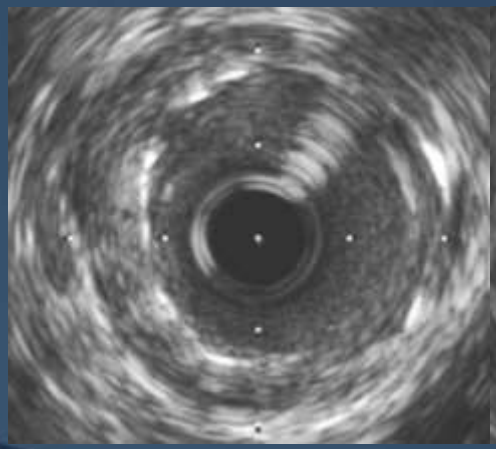
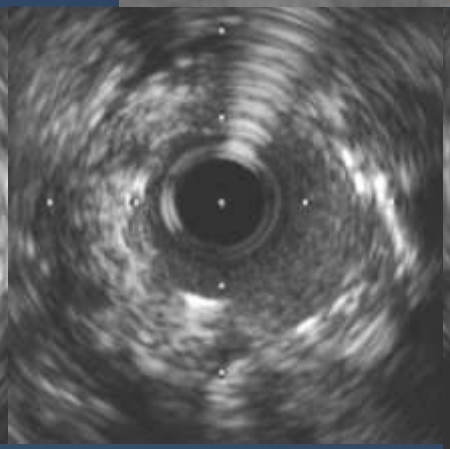
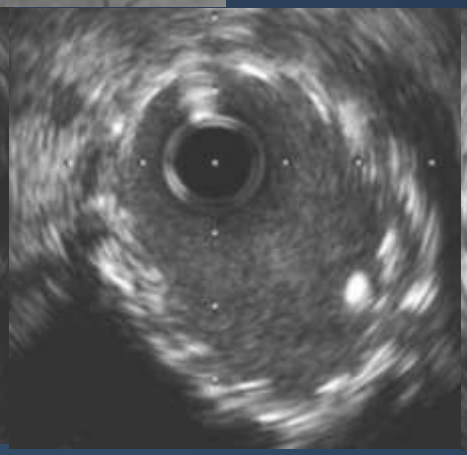
LCX：Final IVUS result



The proximal stent in LCX



Ostial of stent in LCX



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Conclusions

- Stent fracture is one of the important causes of in-stent restenosis.
- Coronary rotational atherectomy has important value in the treatment of significant calcified lesions. However, more evidence is needed to support the efficacy of rotational atherectomy for stent fracture combined with calcification.
- IVUS plays an important role in guiding PCI strategy to complex lesions.