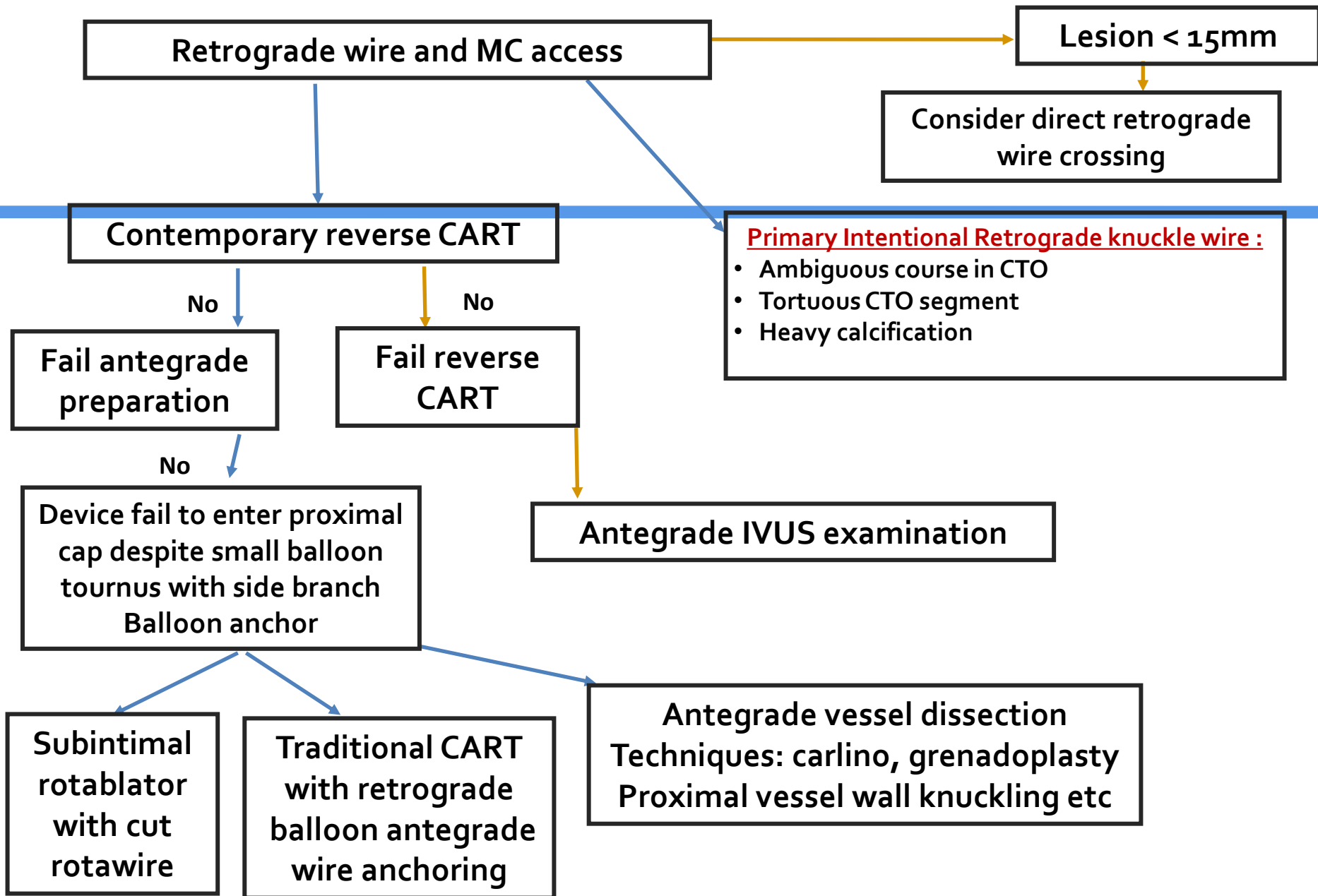




Retrograde Wire Crossing

Dr Eugene B Wu. (Director APCTO
club, Founding Director HKSTENT)



Retrograde wire and MC access

Lesion < 15mm

Consider direct retrograde wire crossing

Contemporary reverse CART

Primary Intentional Retrograde knuckle wire :

- Ambiguous course in CTO
- Tortuous CTO segment
- Heavy calcification

No

No

Fail antegrade preparation

Fail reverse CART

No

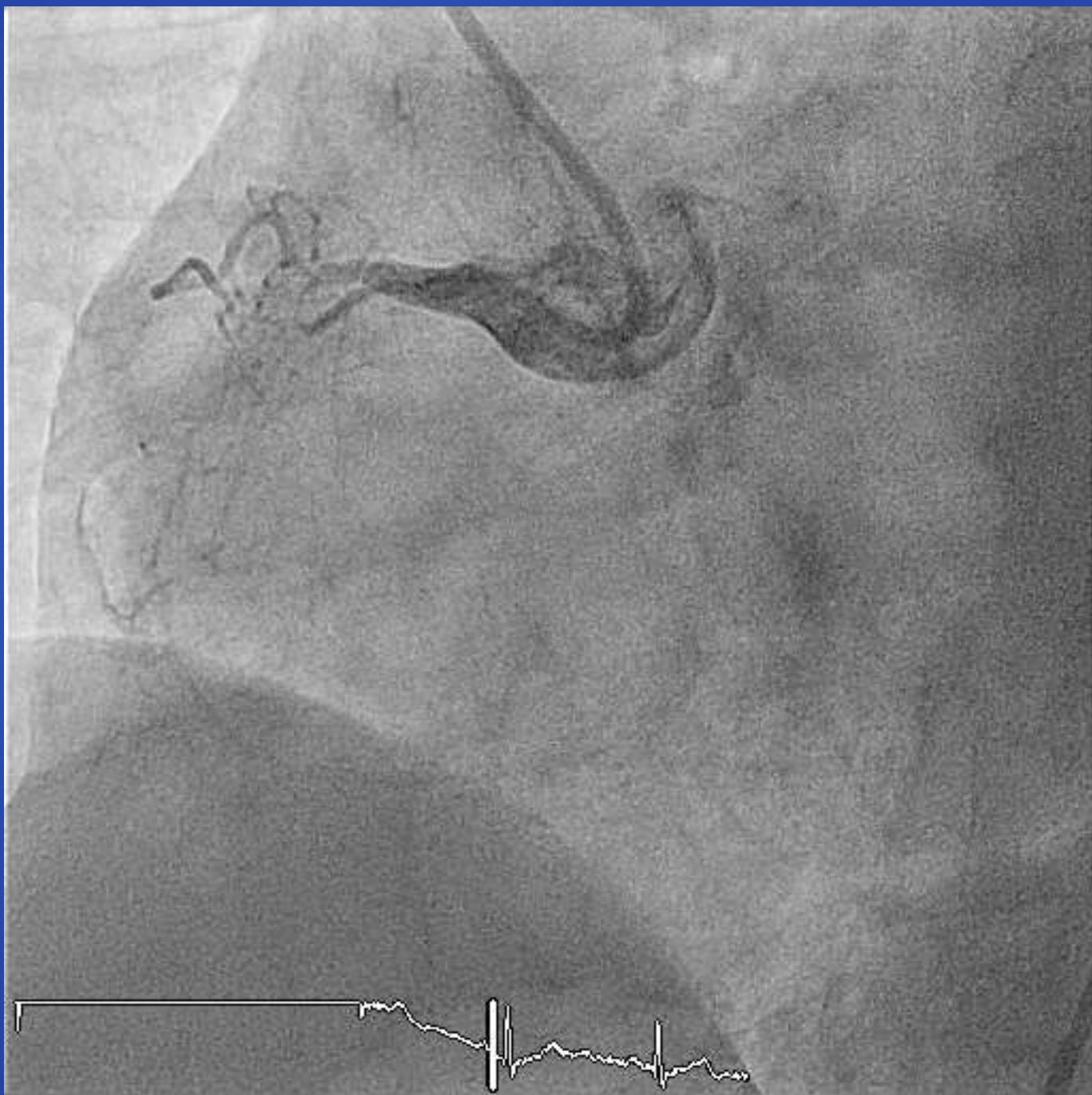
Device fail to enter proximal cap despite small balloon tournus with side branch
Balloon anchor

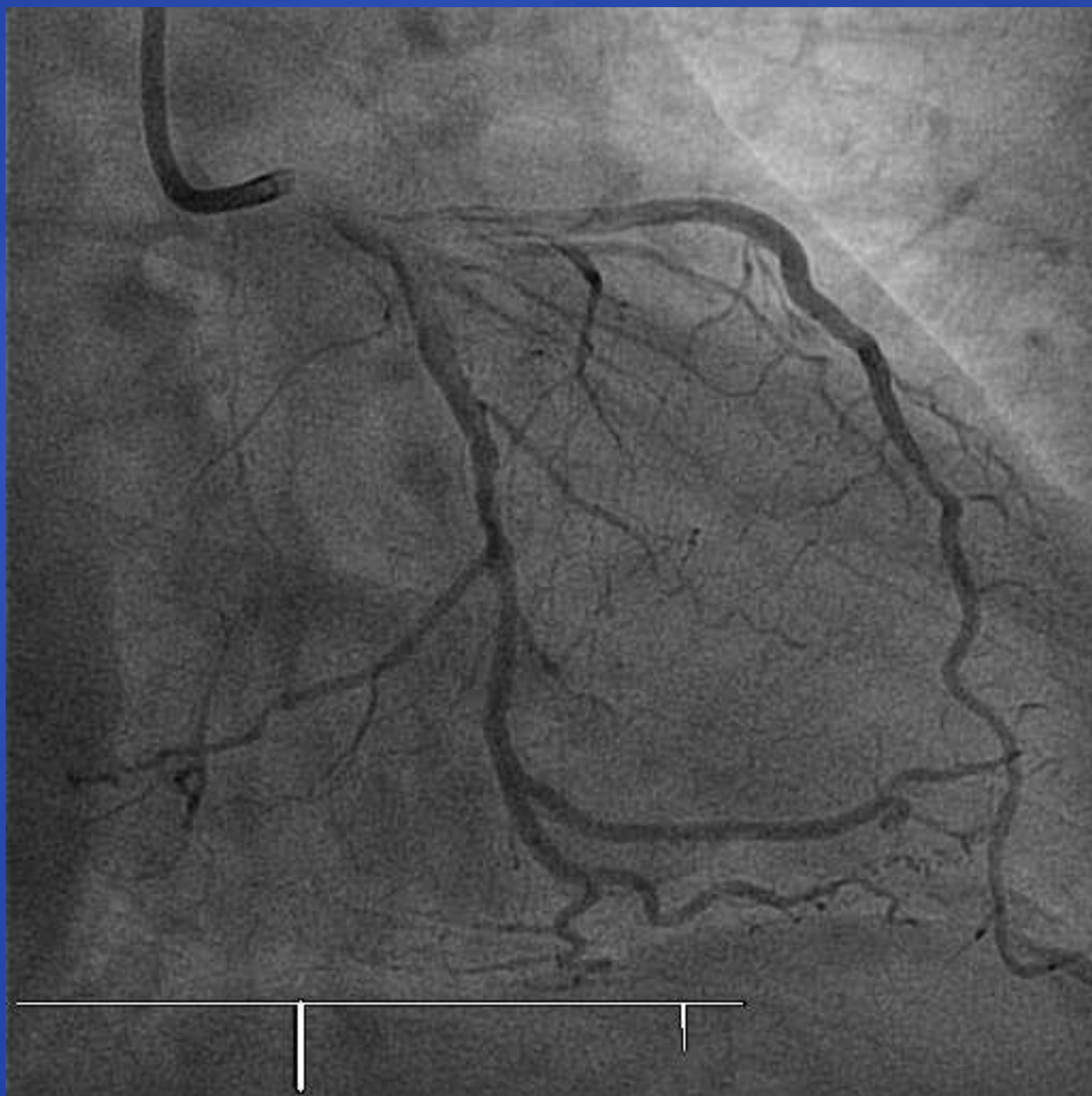
Antegrade IVUS examination

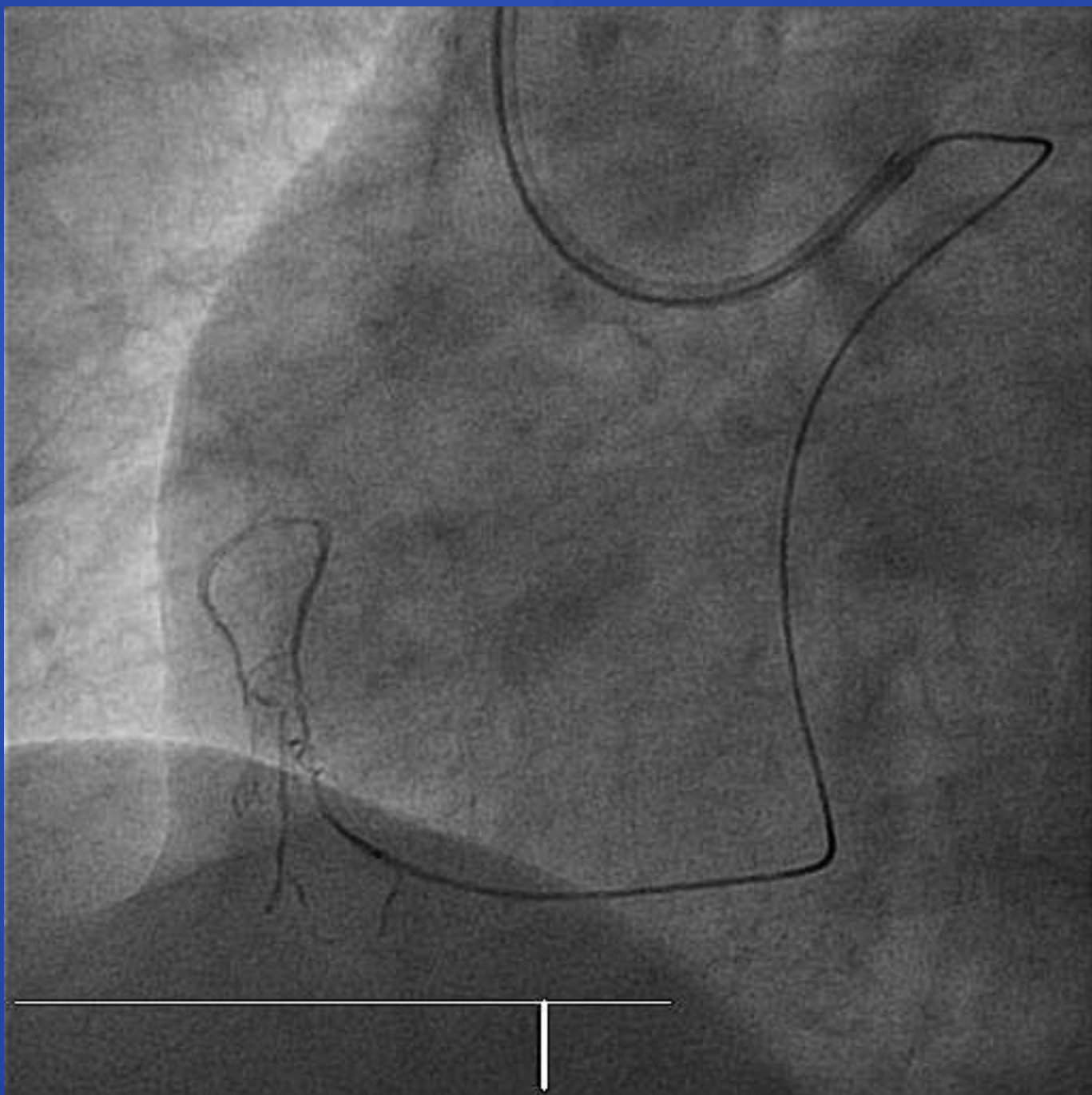
Subintimal rotablator with cut rotawire

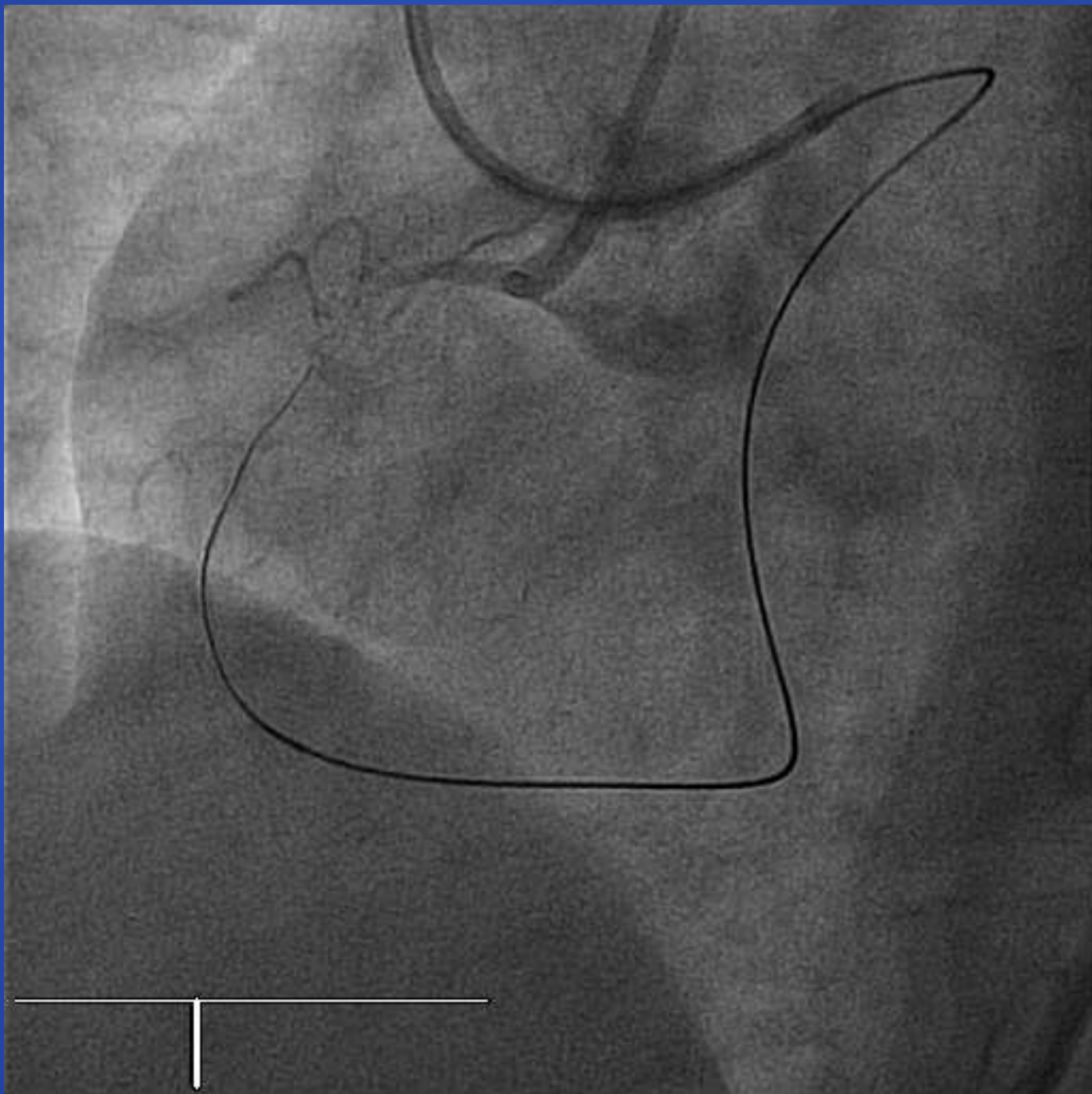
Traditional CART with retrograde balloon antegrade wire anchoring

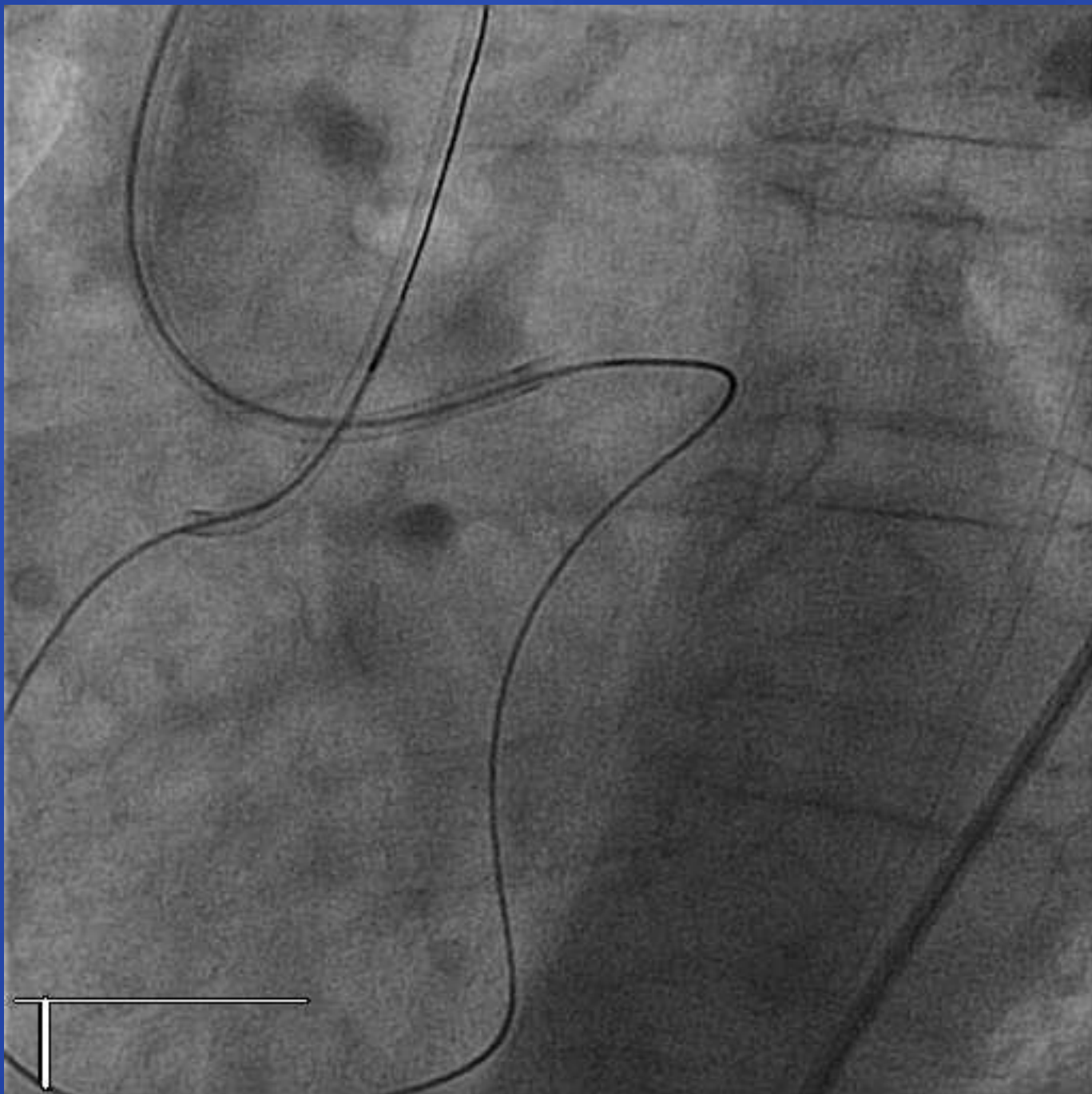
Antegrade vessel dissection
Techniques: carlino, grenadoplasty
Proximal vessel wall knuckling etc

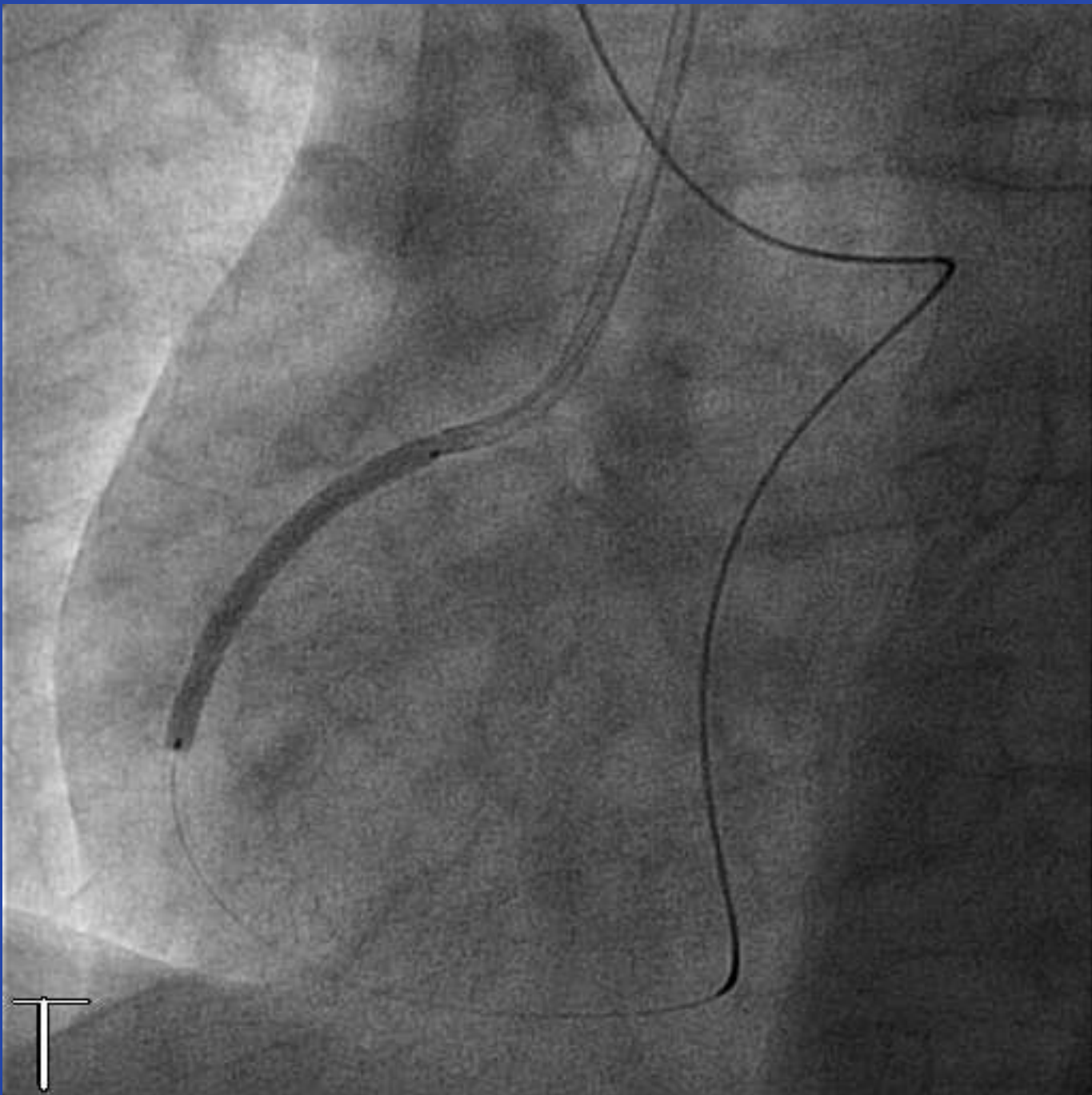


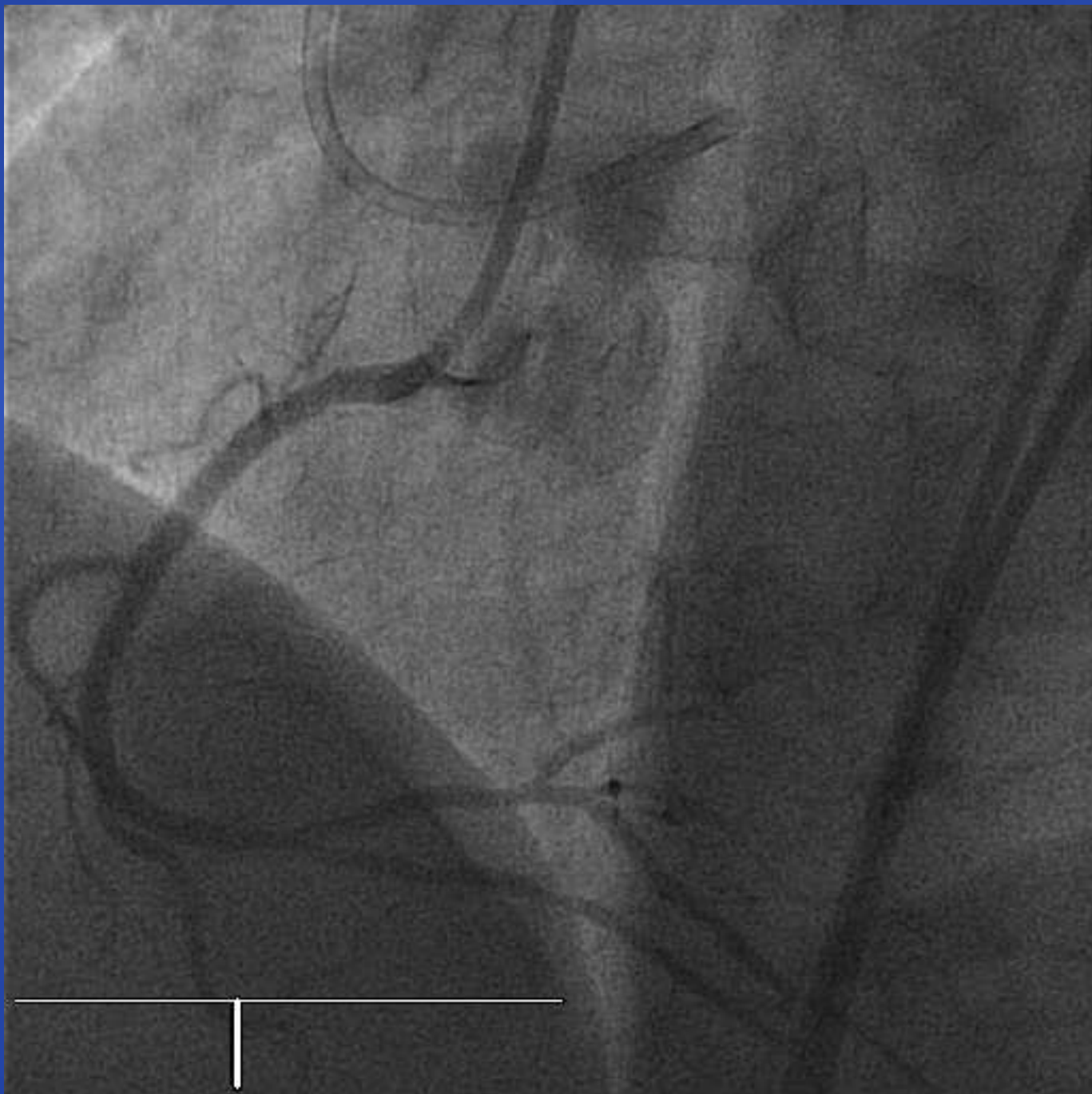


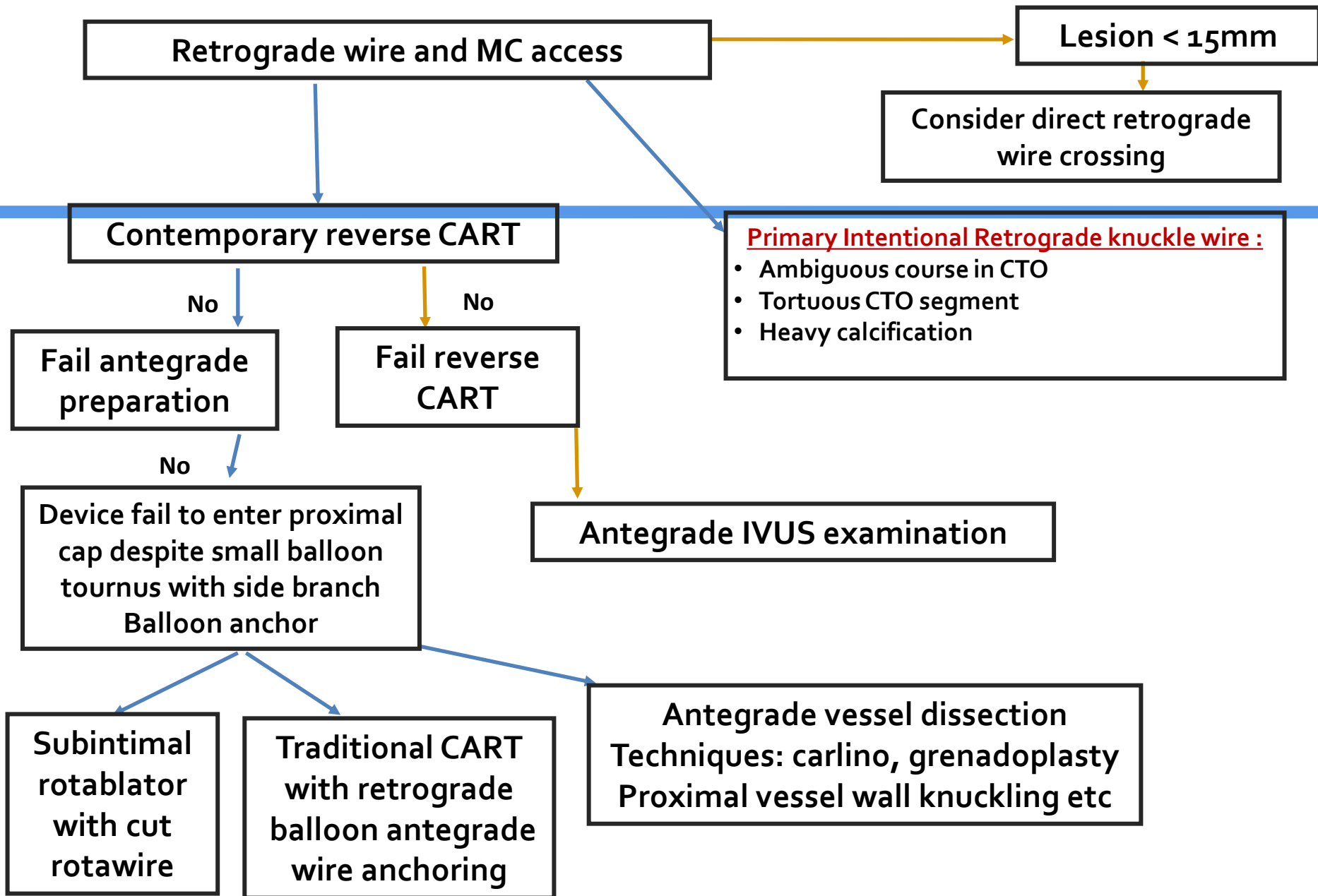


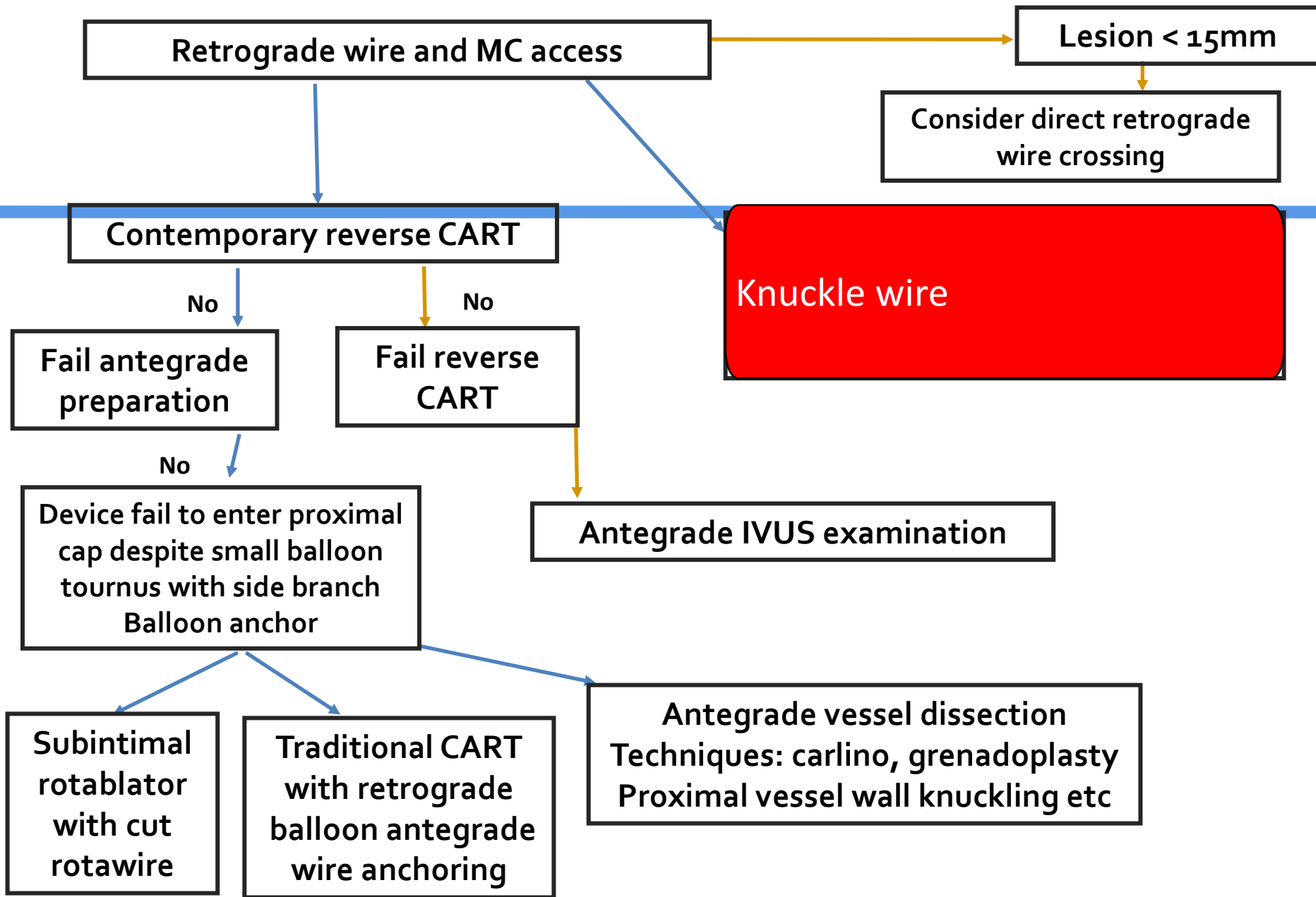




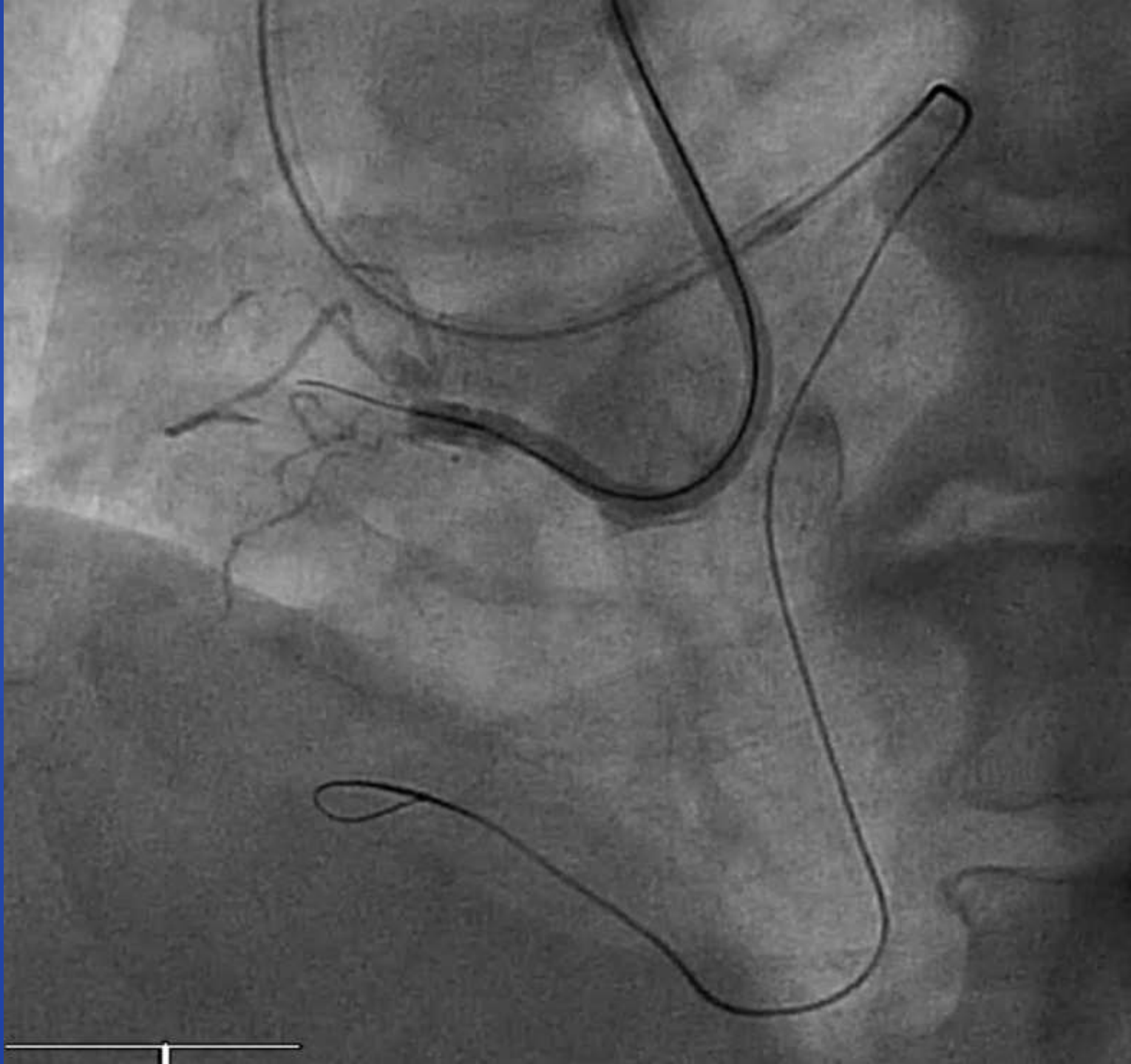


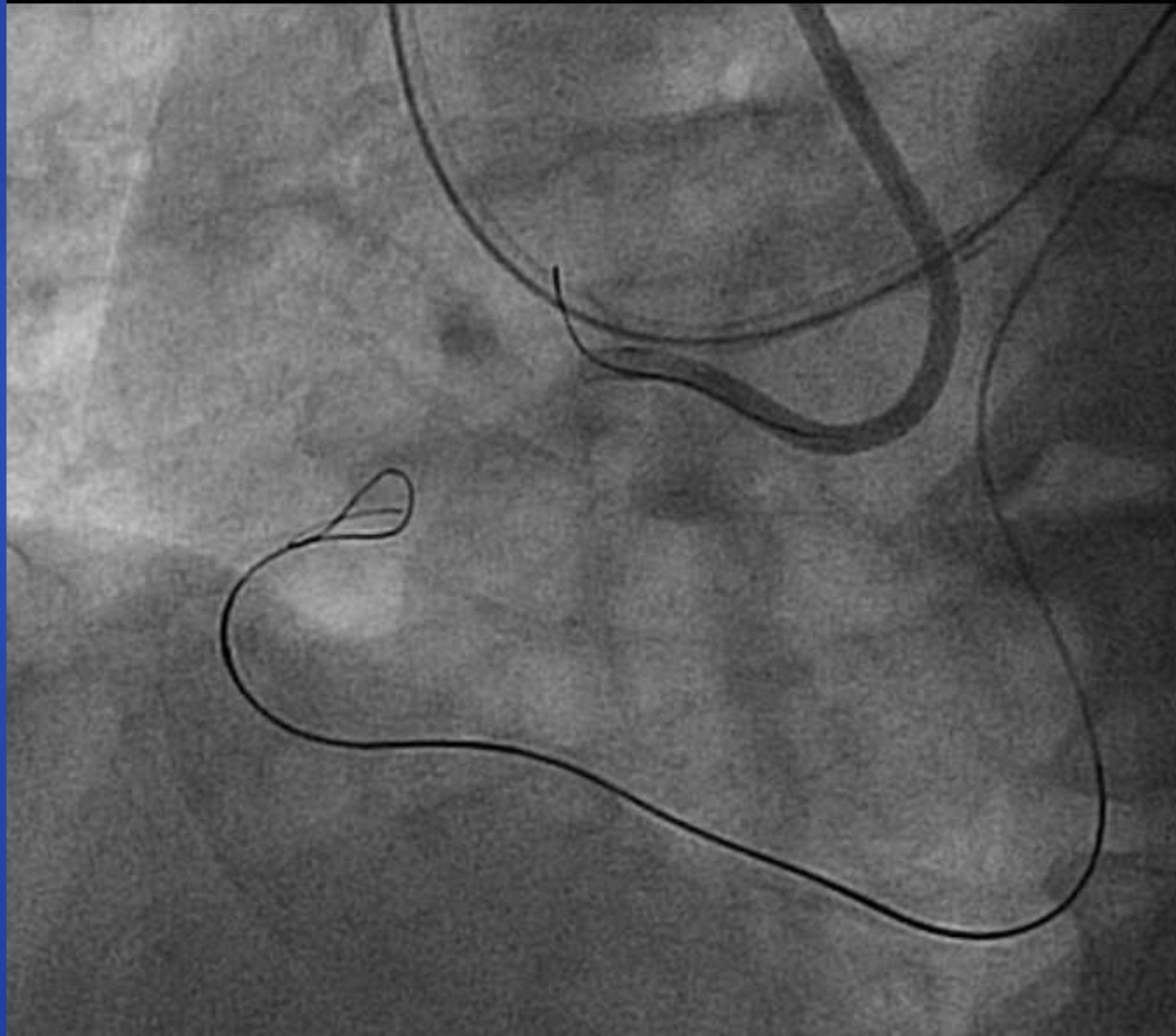


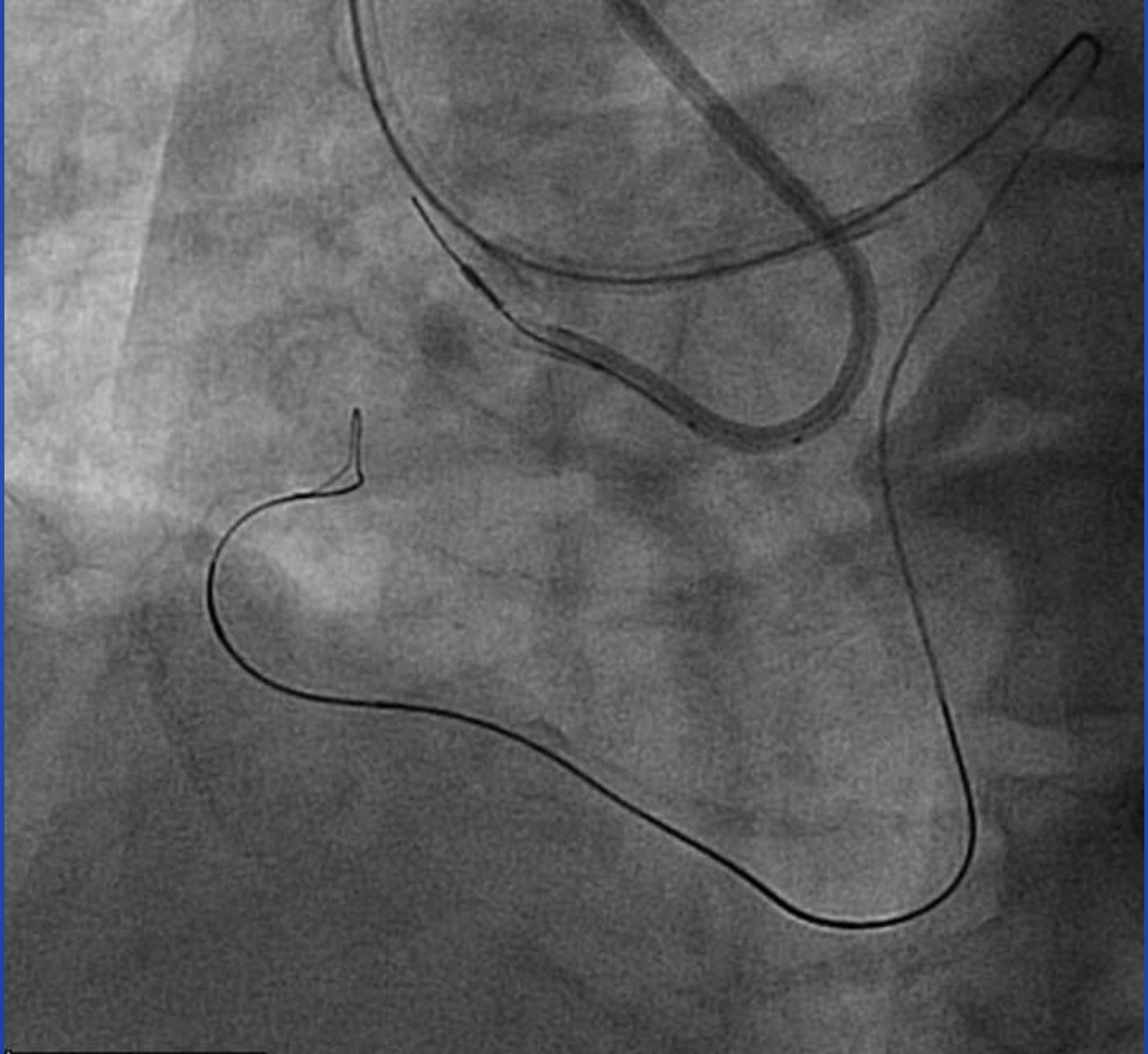


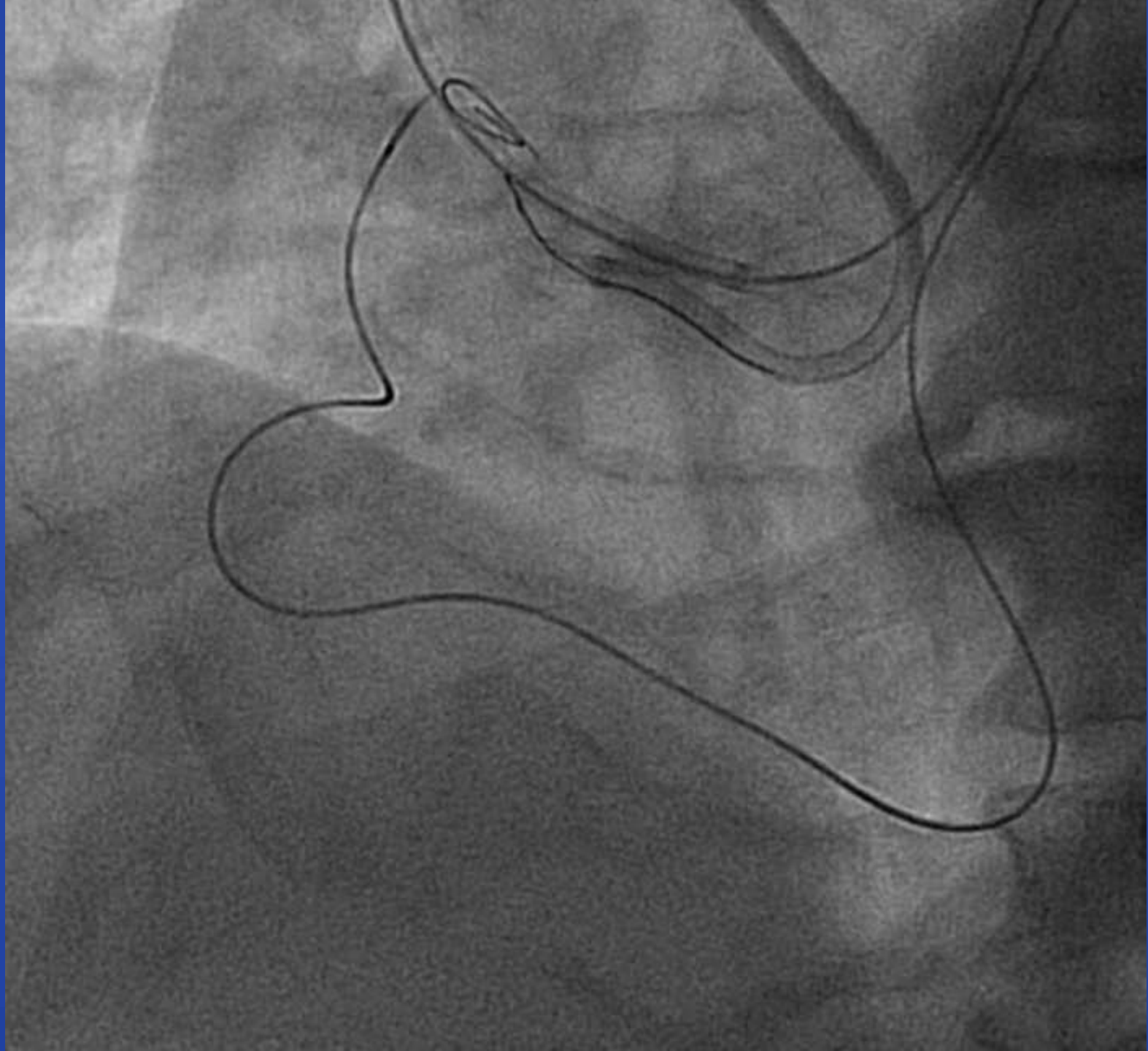


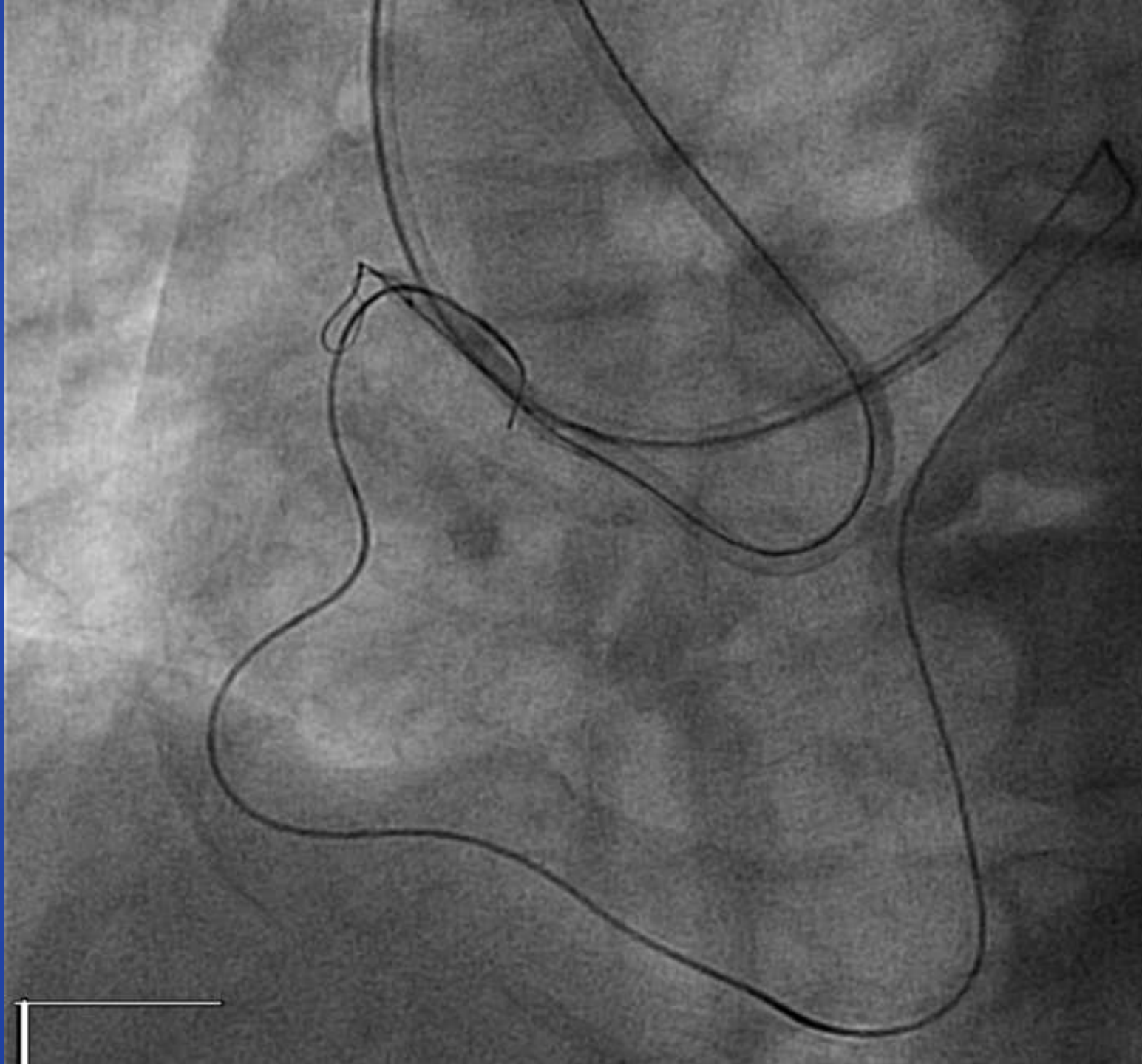


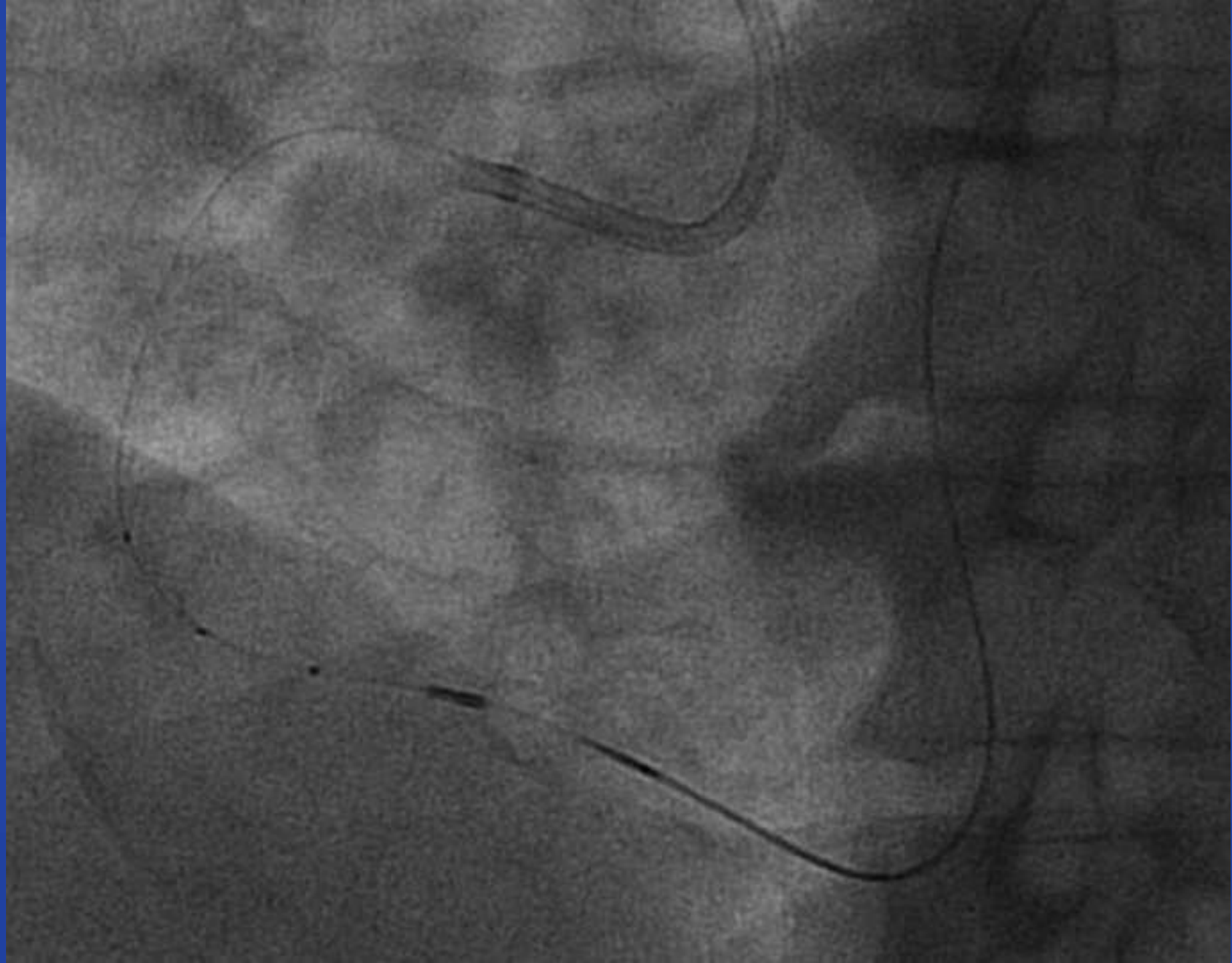














Retrograde wire and MC access

Lesion < 15mm

Consider direct retrograde
wire crossing

Contemporary reverse CART

Primary Intentional Retrograde knuckle wire :

- Ambiguous course in CTO
- Tortuous CTO segment
- Heavy calcification

No

No

Fail antegrade
preparation

Fail reverse
CART

No

Device fail to enter proximal
cap despite small balloon
tournus with side branch
Balloon anchor

Antegrade IVUS examination

Subintimal
rotablator
with cut
rotawire

Traditional CART
with retrograde
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Antegrade vessel dissection
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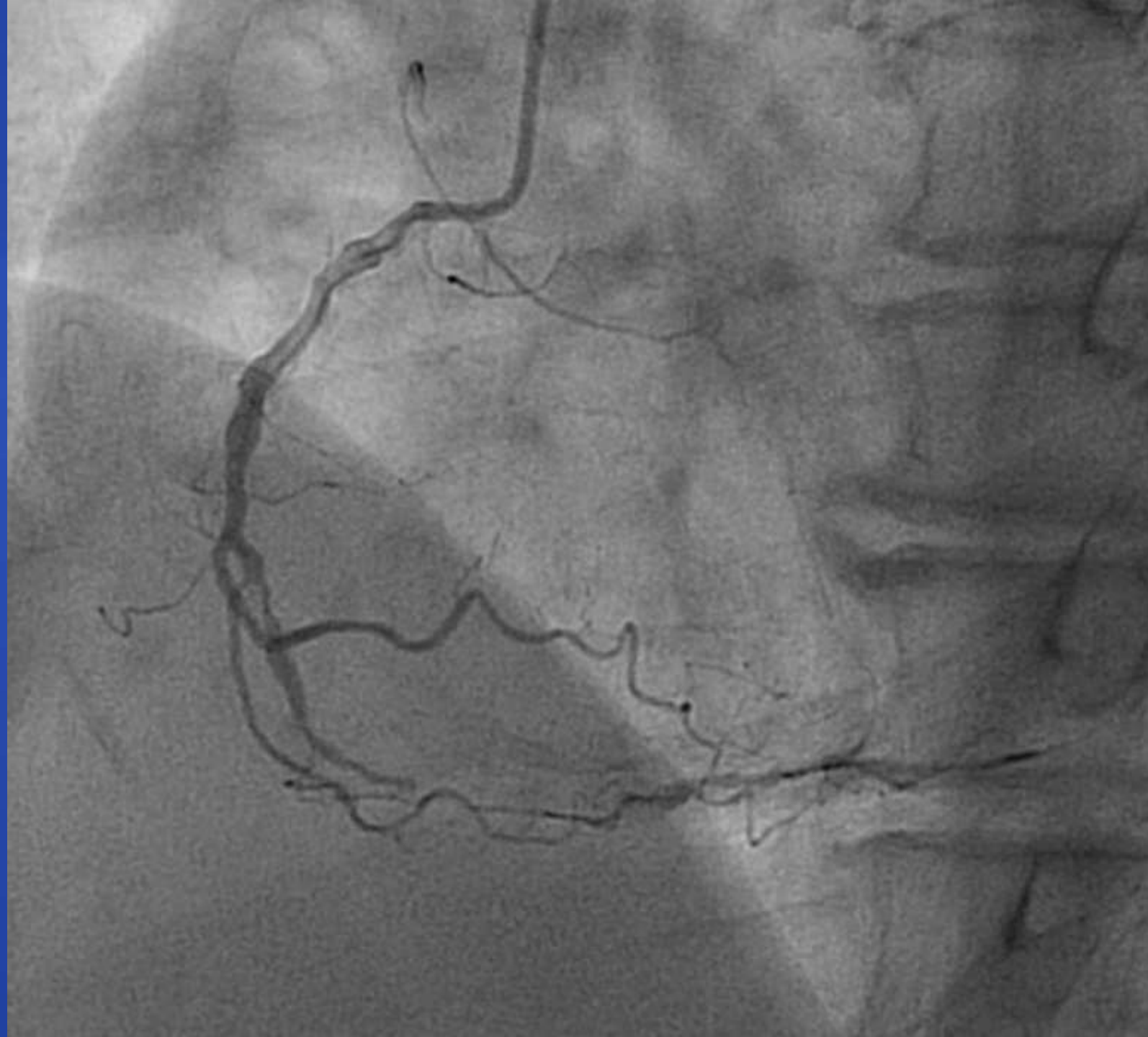
Fail reverse
CART

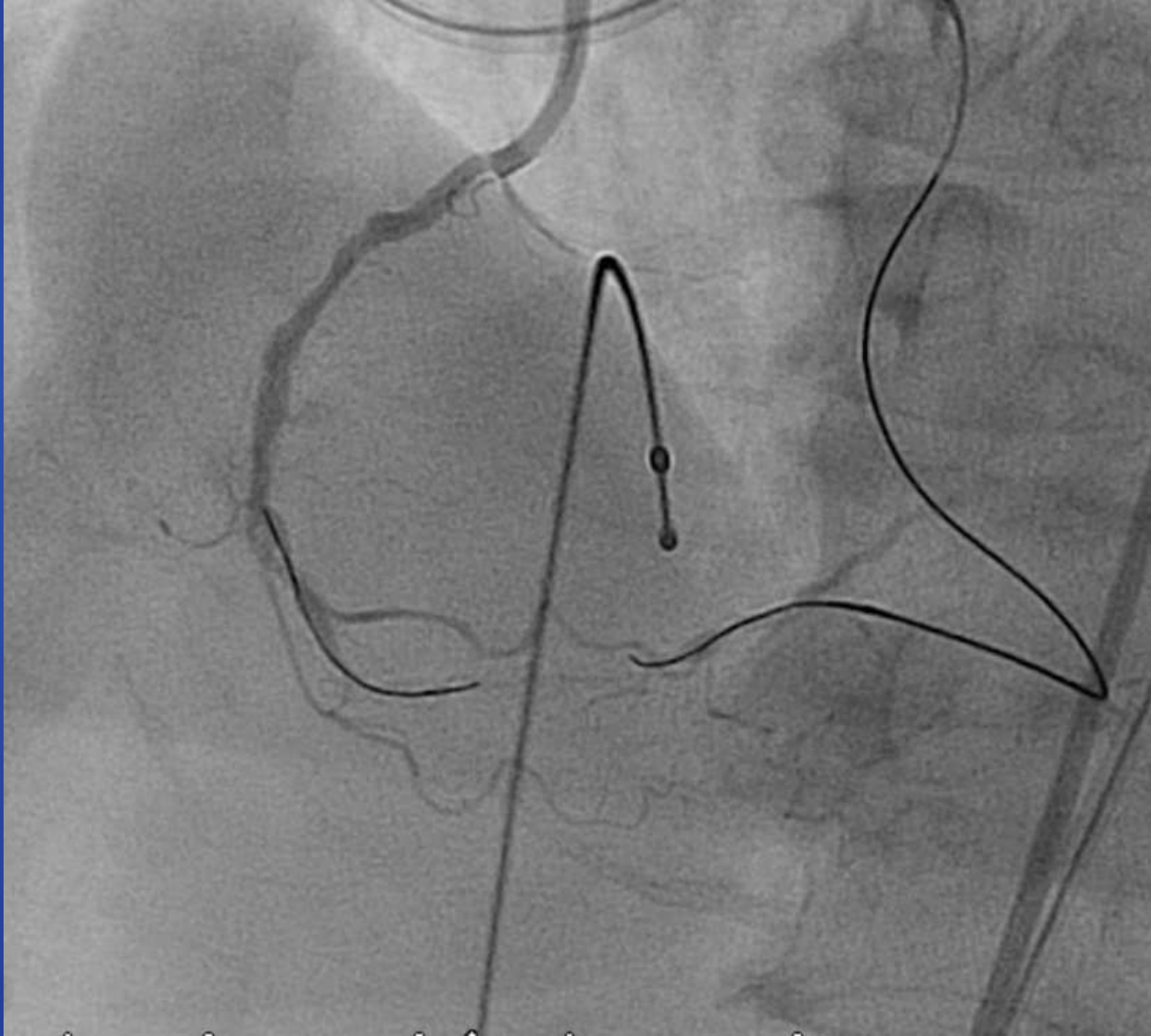
Antegrade IVUS examination

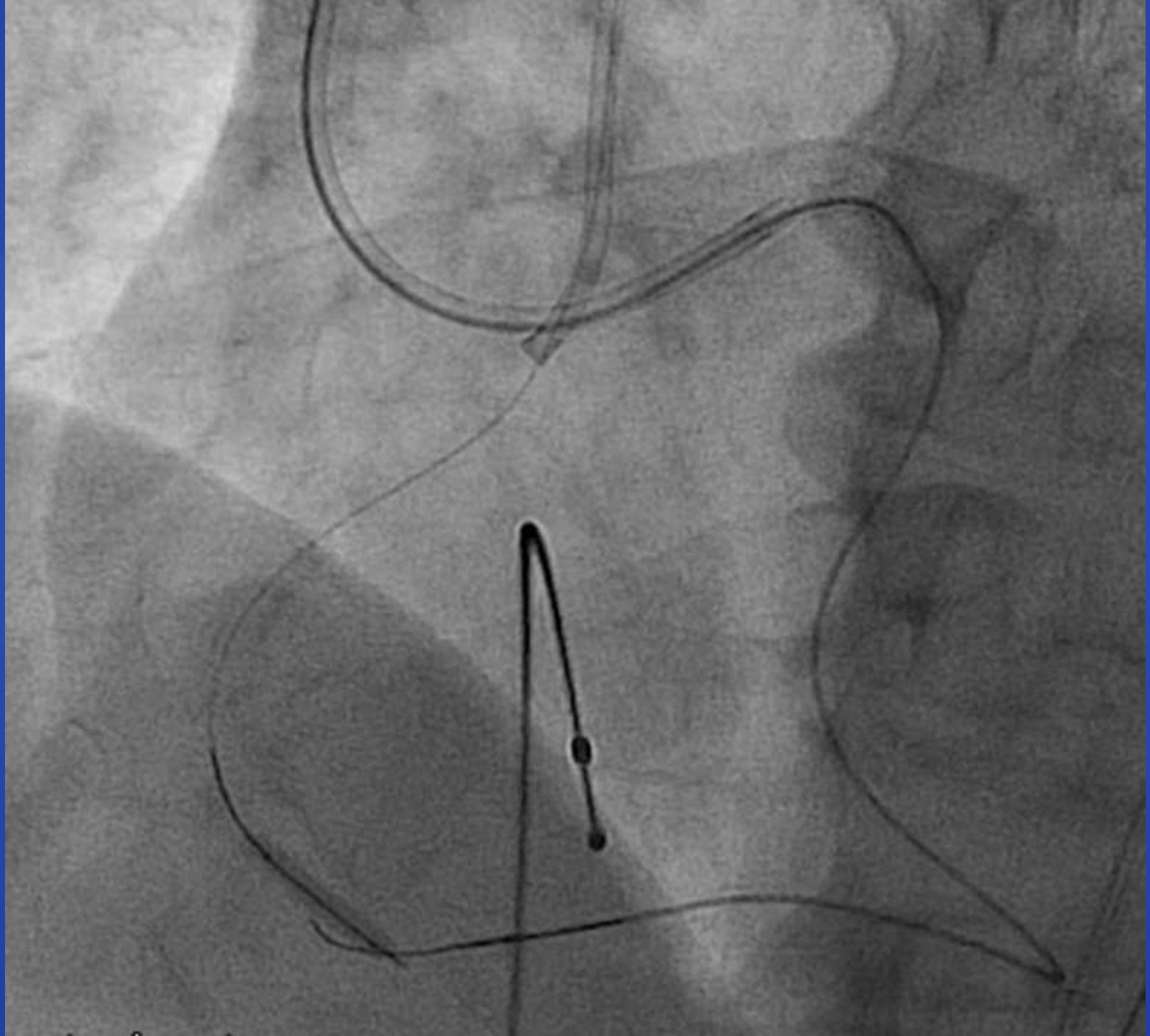
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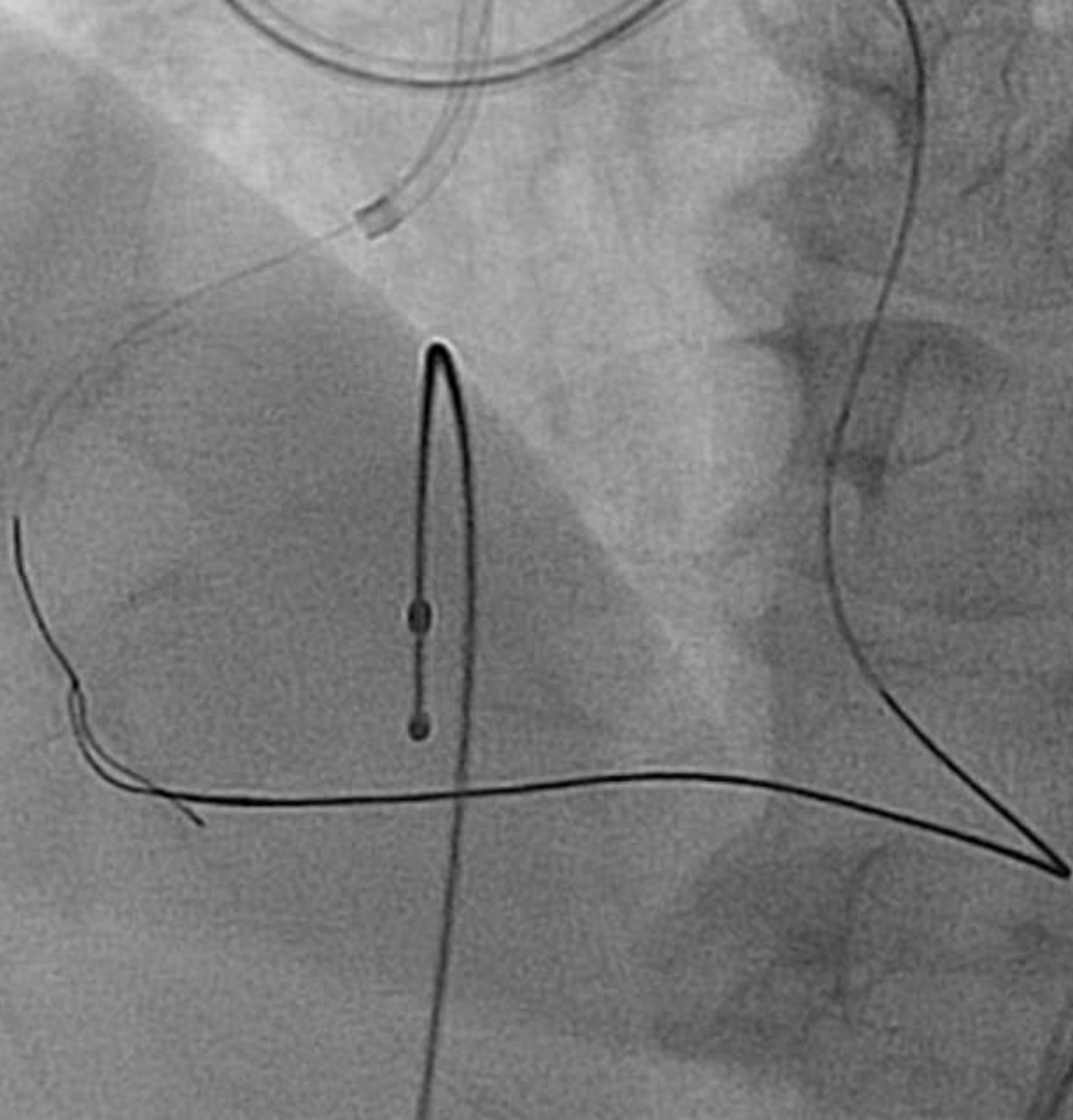
Primary Intentional Retrograde knuckle wire :

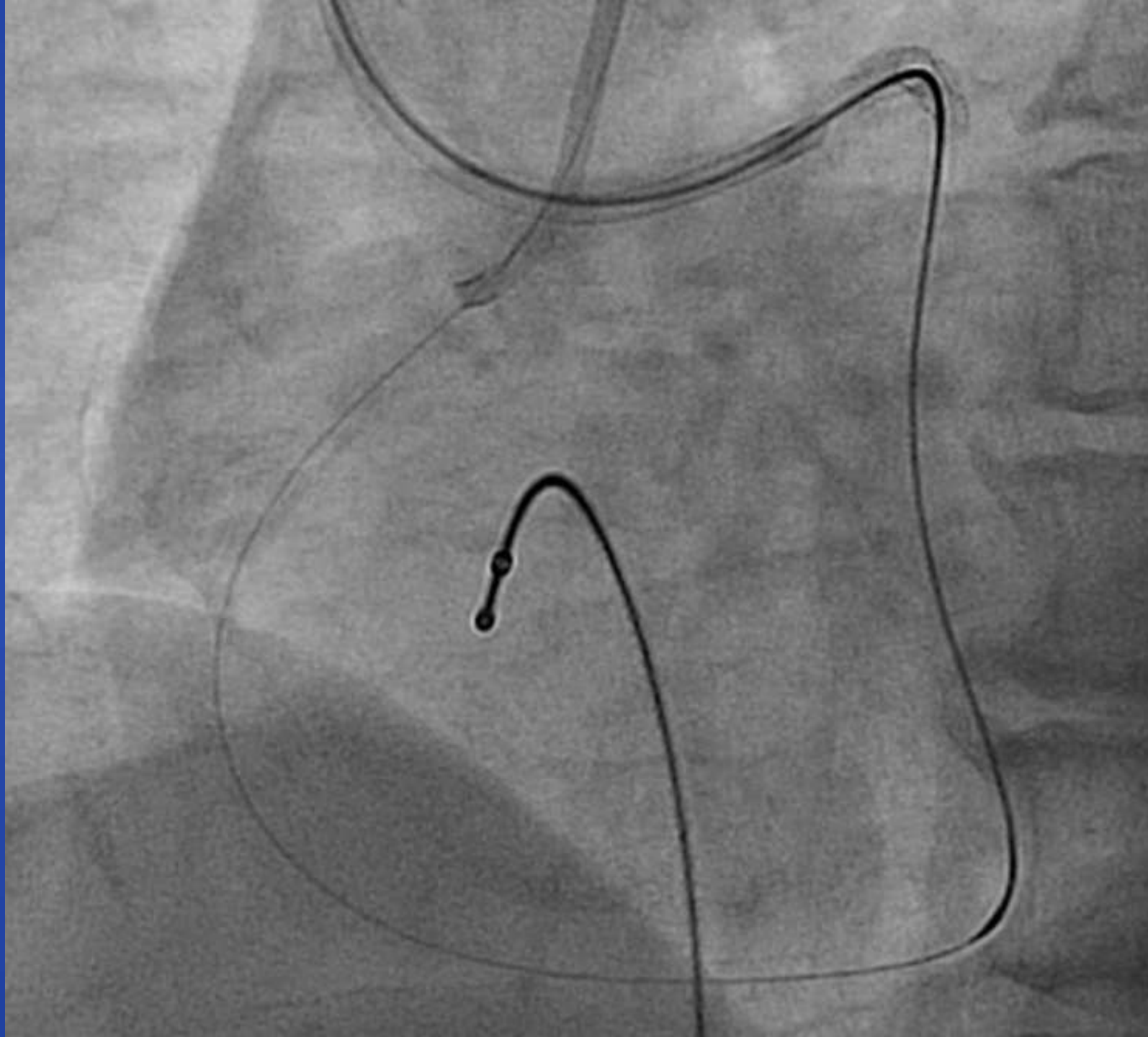
- Ambiguous course in CTO
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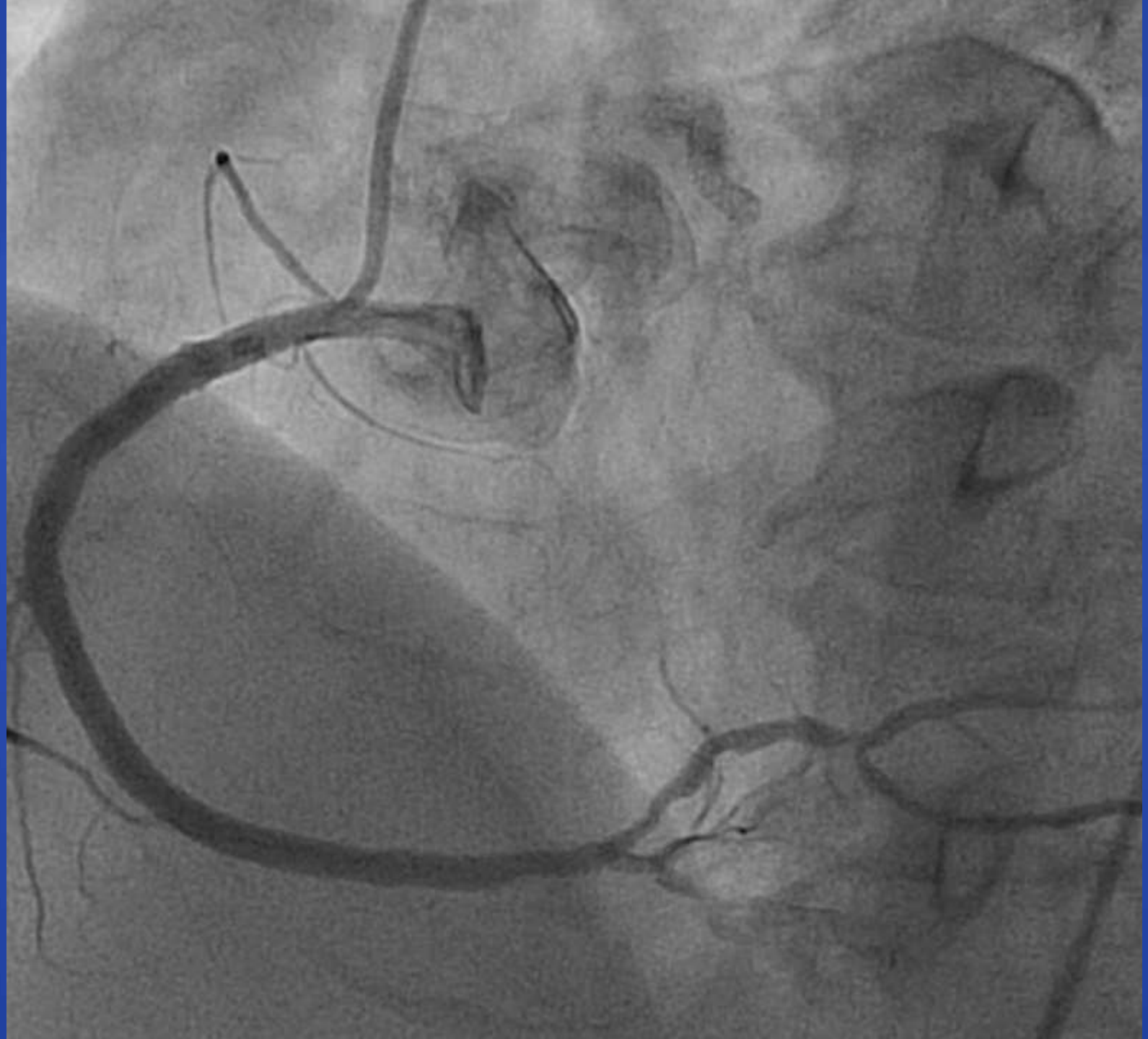












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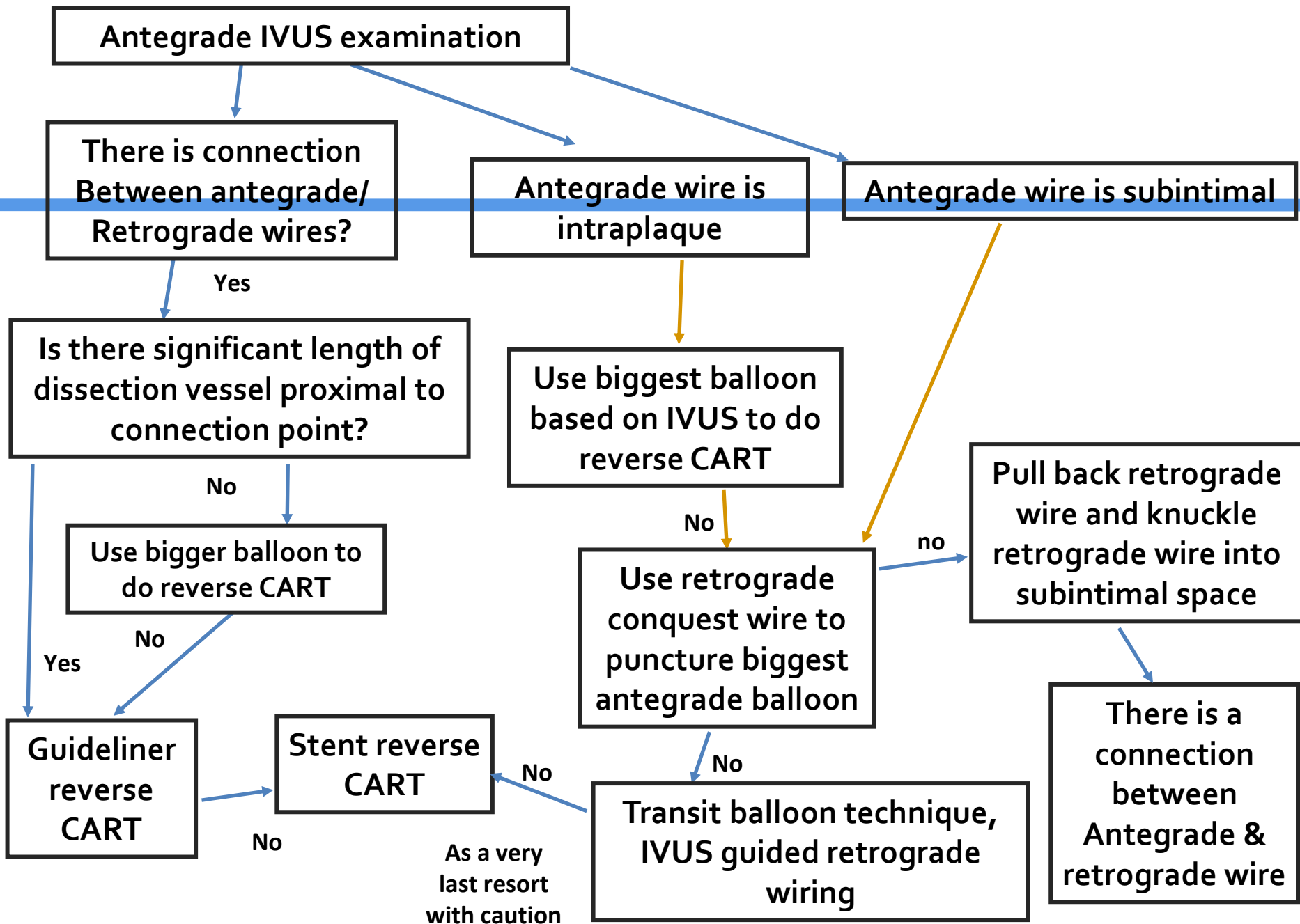
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Techniques: carlino, grenadoplasty
Proximal vessel wall knuckling etc

Primary Intentional Retrograde knuckle wire :

- Ambiguous course in CTO
- Tortuous CTO segment
- Heavy calcification



Antegrade IVUS examination

There is connection

Yes

Is there significant length of dissection vessel proximal to connection point?

No

Use bigger balloon to do reverse CART

No

Yes

Guideliner reverse CART

No

Stent reverse CART

As a very last resort with caution

Antegrade wire is intraplaque

Use biggest balloon based on IVUS to do reverse CART

No

Use retrograde conquest wire to puncture biggest antegrade balloon

No

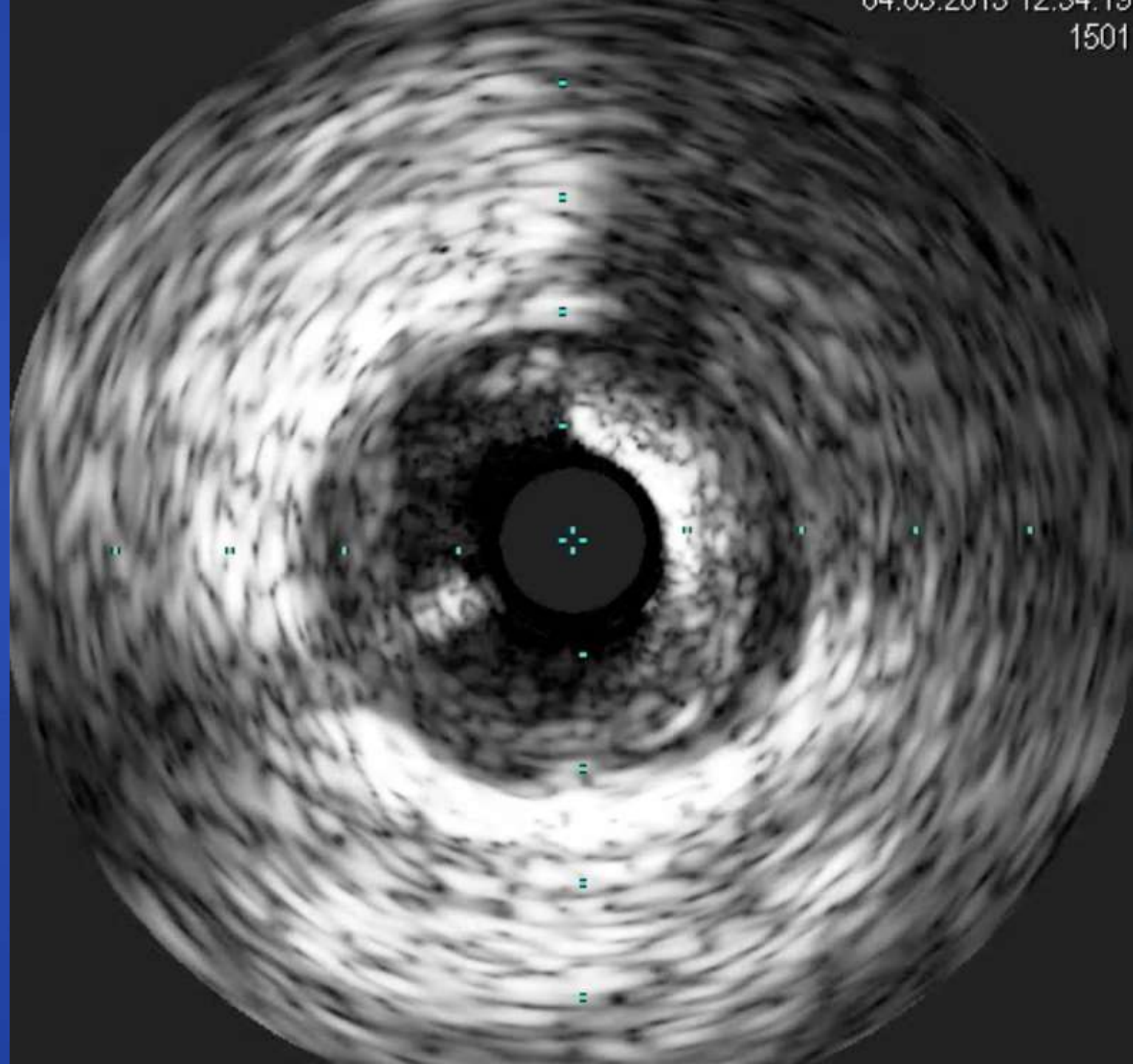
Transit balloon technique, IVUS guided retrograde wiring

Antegrade wire is subintimal

no

Pull back retrograde wire and knuckle retrograde wire into subintimal space

There is a connection between Antegrade & retrograde wire



Antegrade IVUS examination

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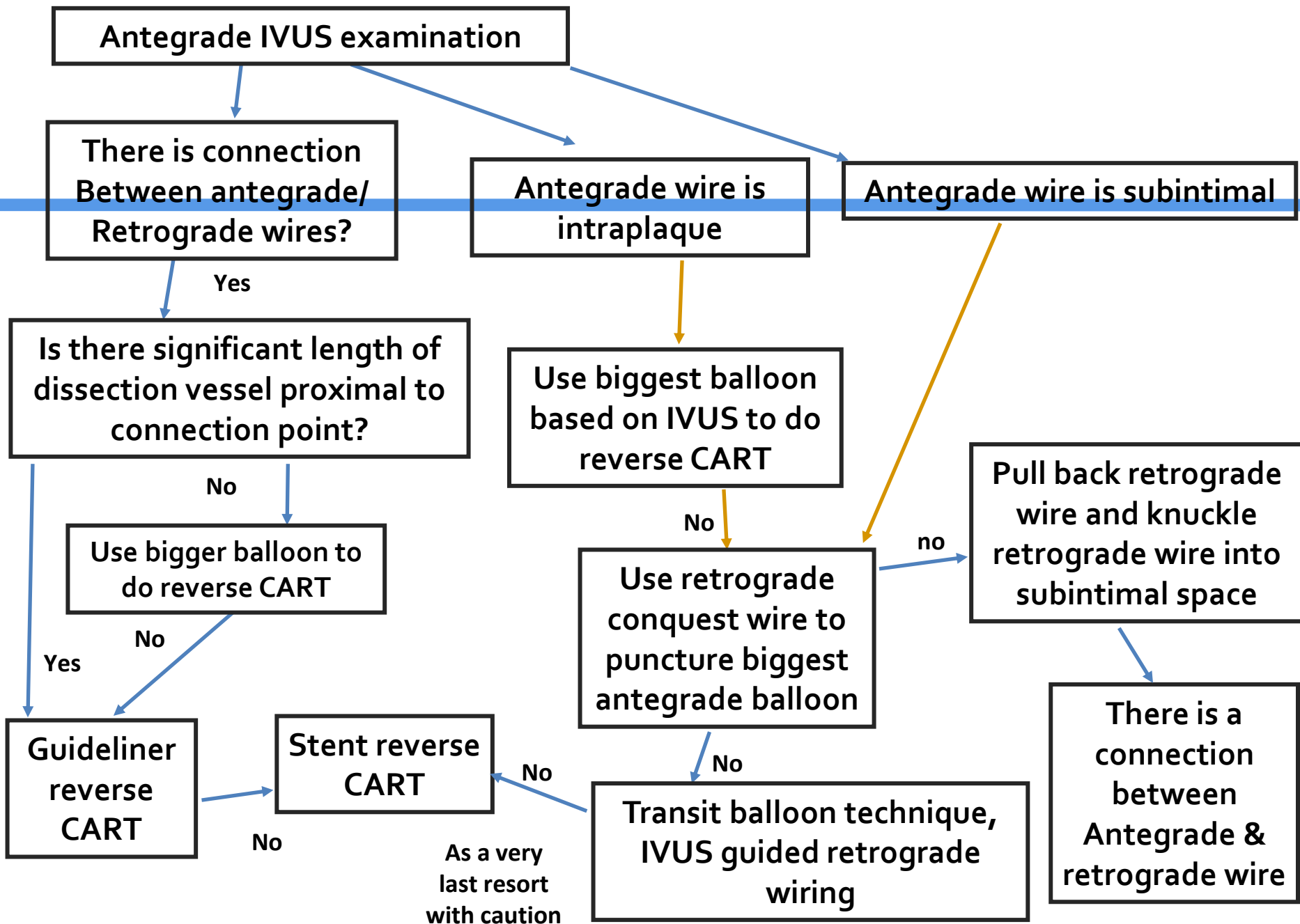
Transit balloon technique, IVUS guided retrograde wiring

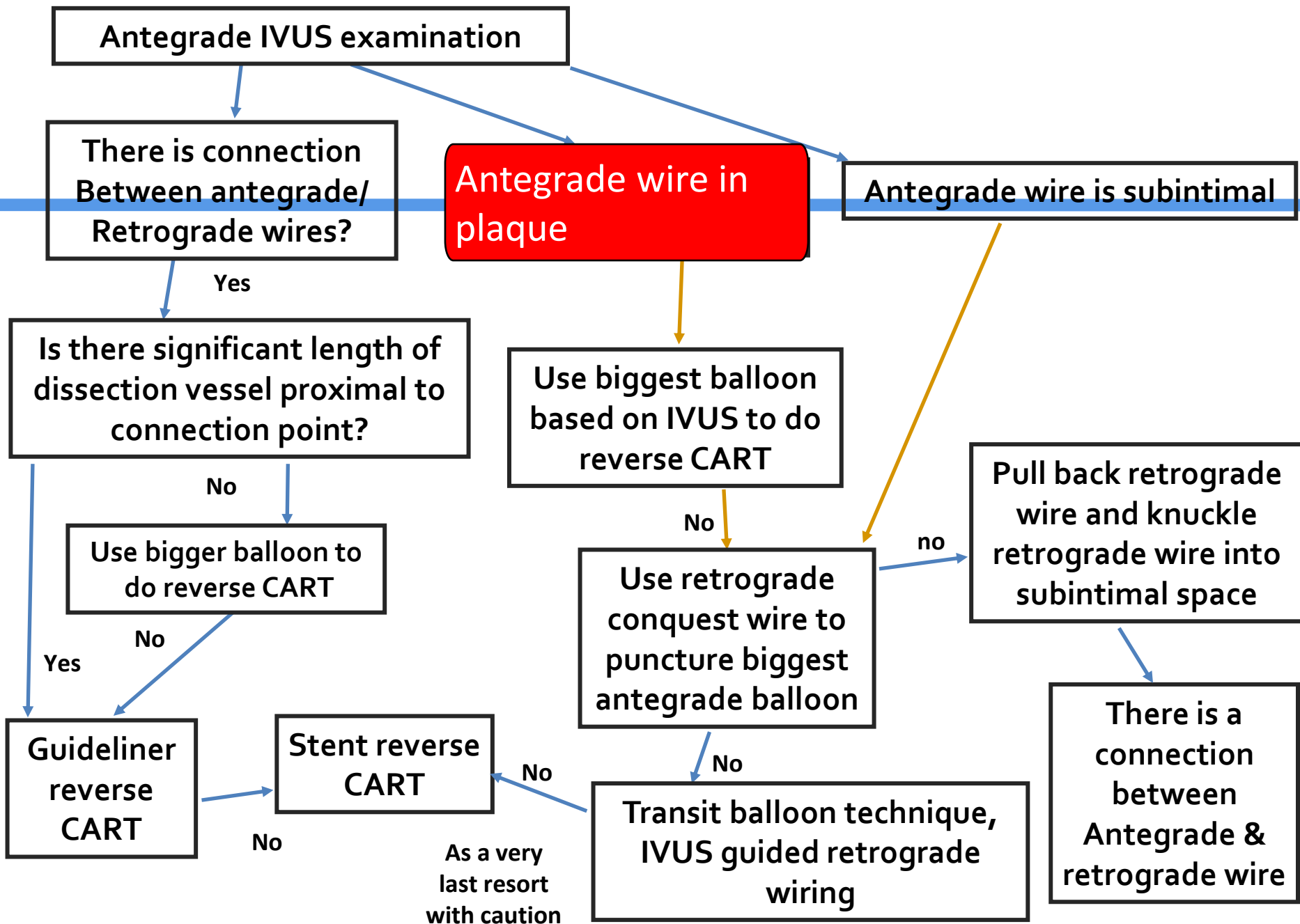
Antegrade wire is subintimal

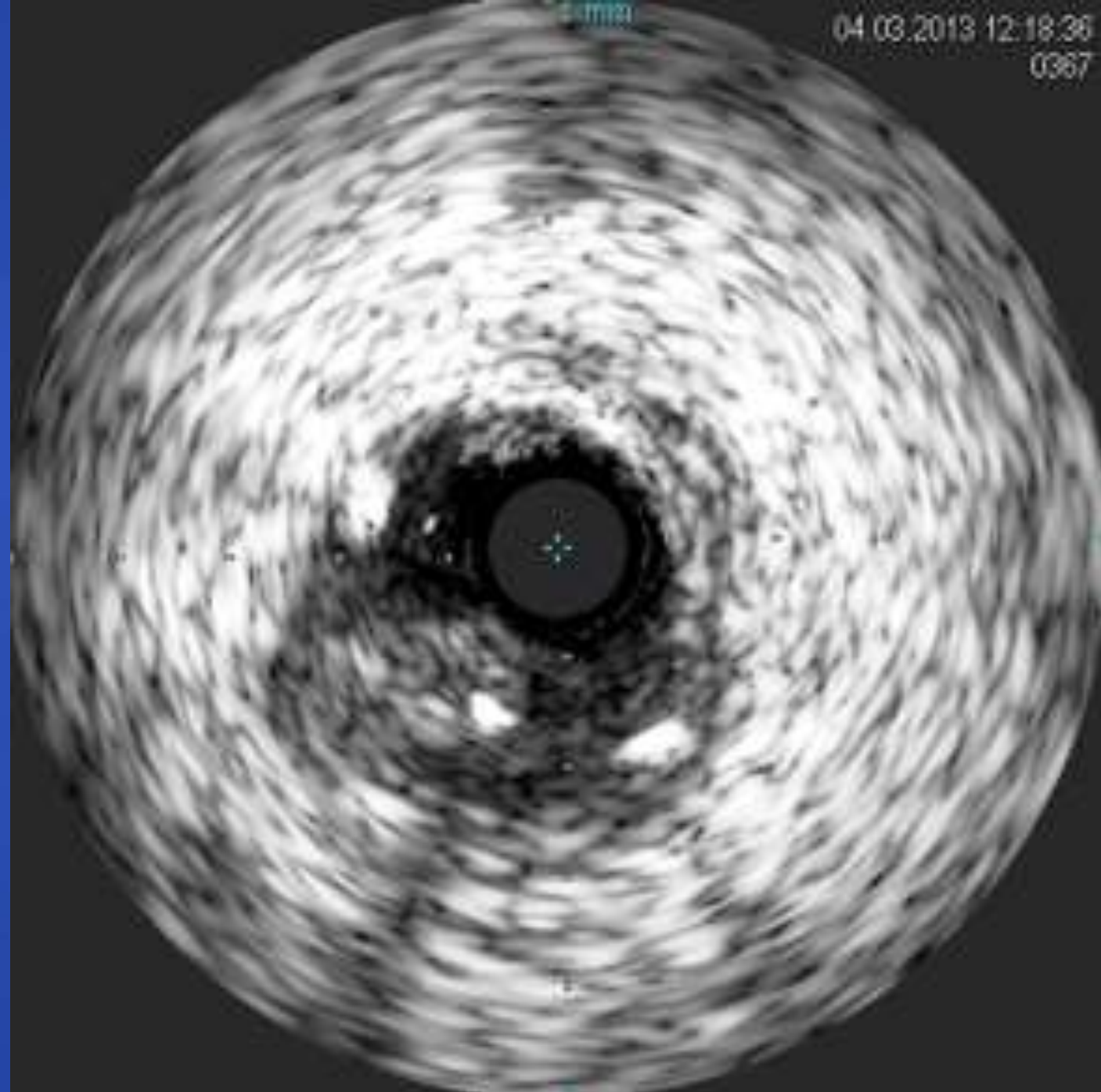
no

Pull back retrograde wire and knuckle retrograde wire into subintimal space

There is a connection between Antegrade & retrograde wire

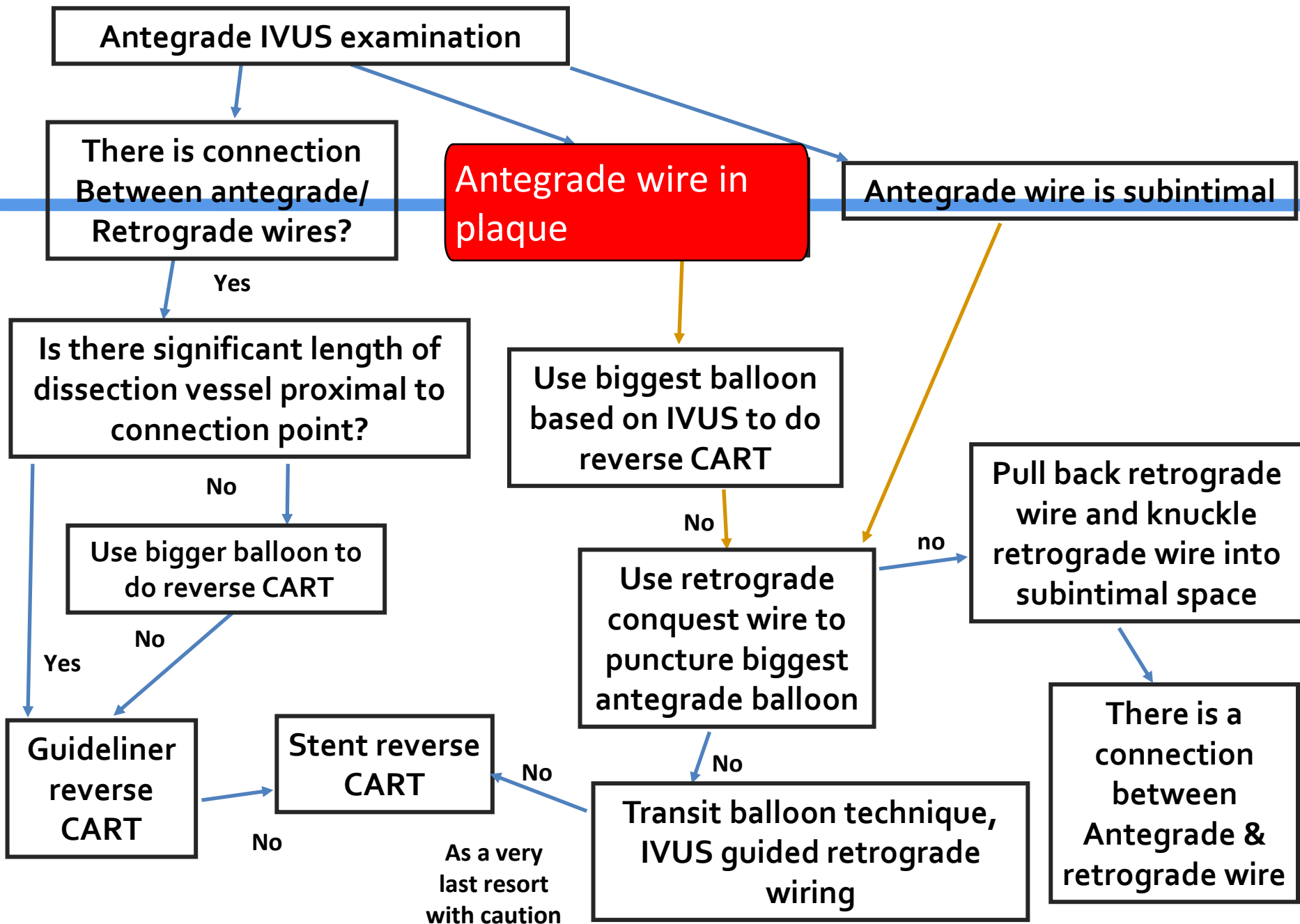


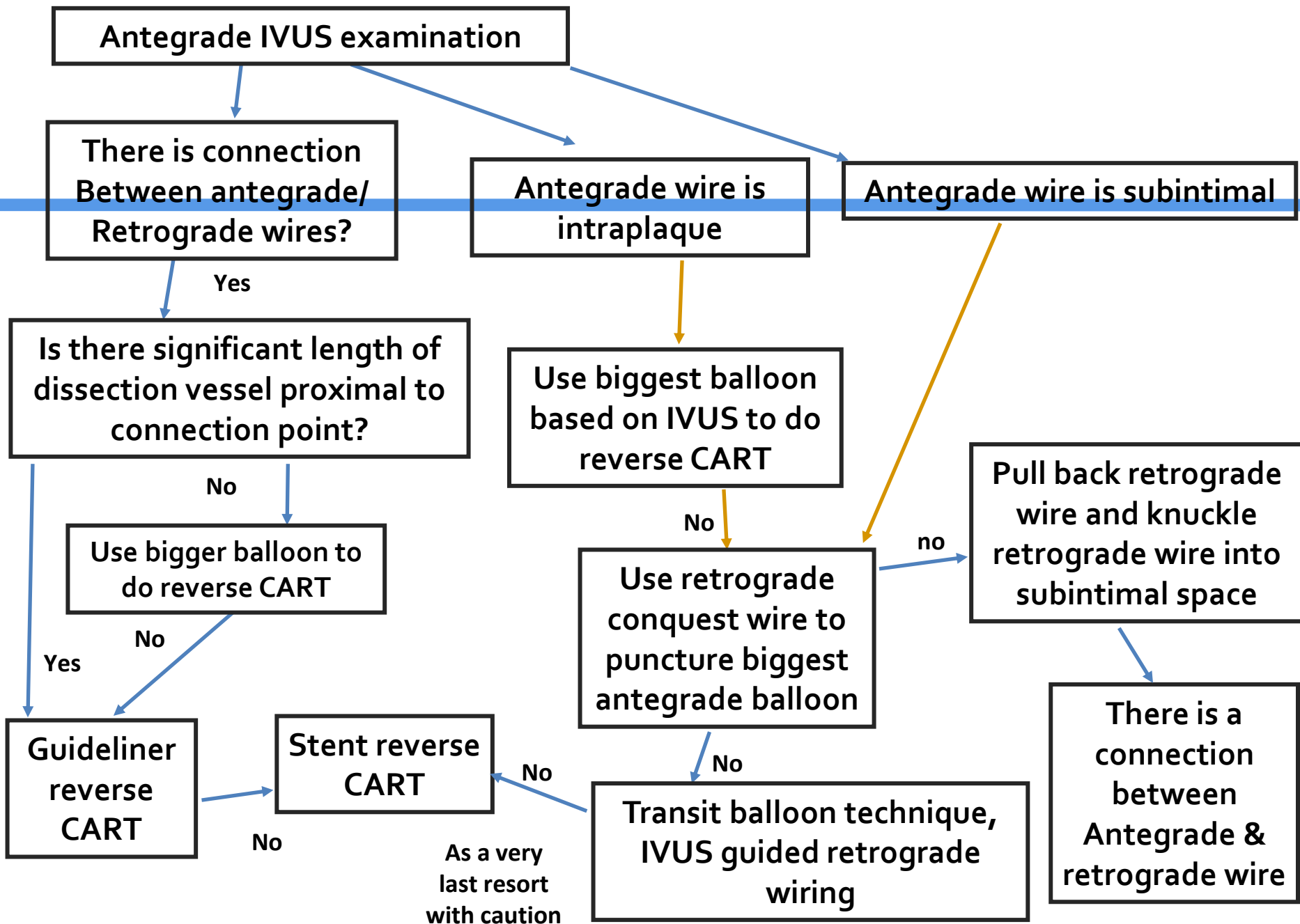


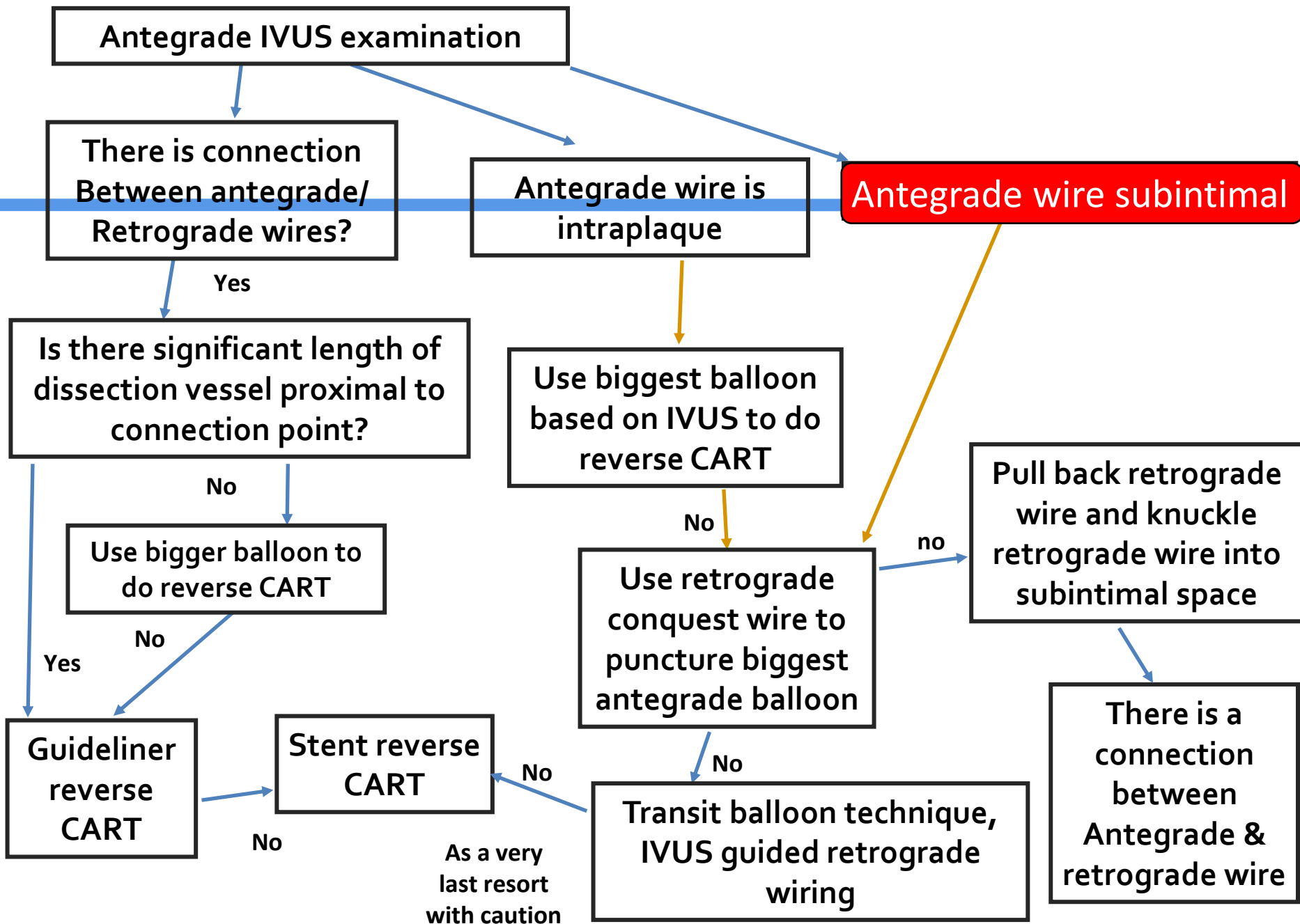


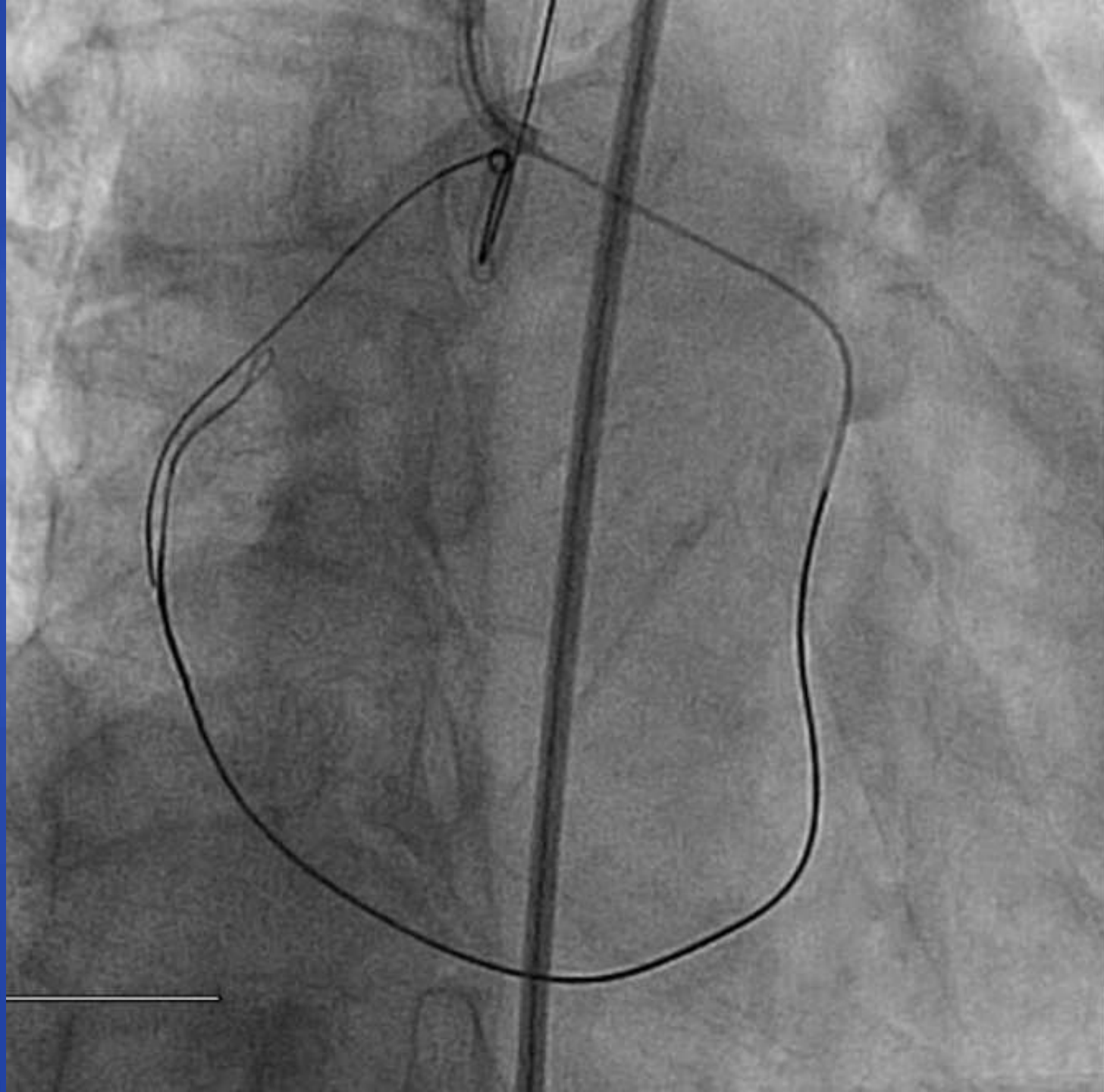
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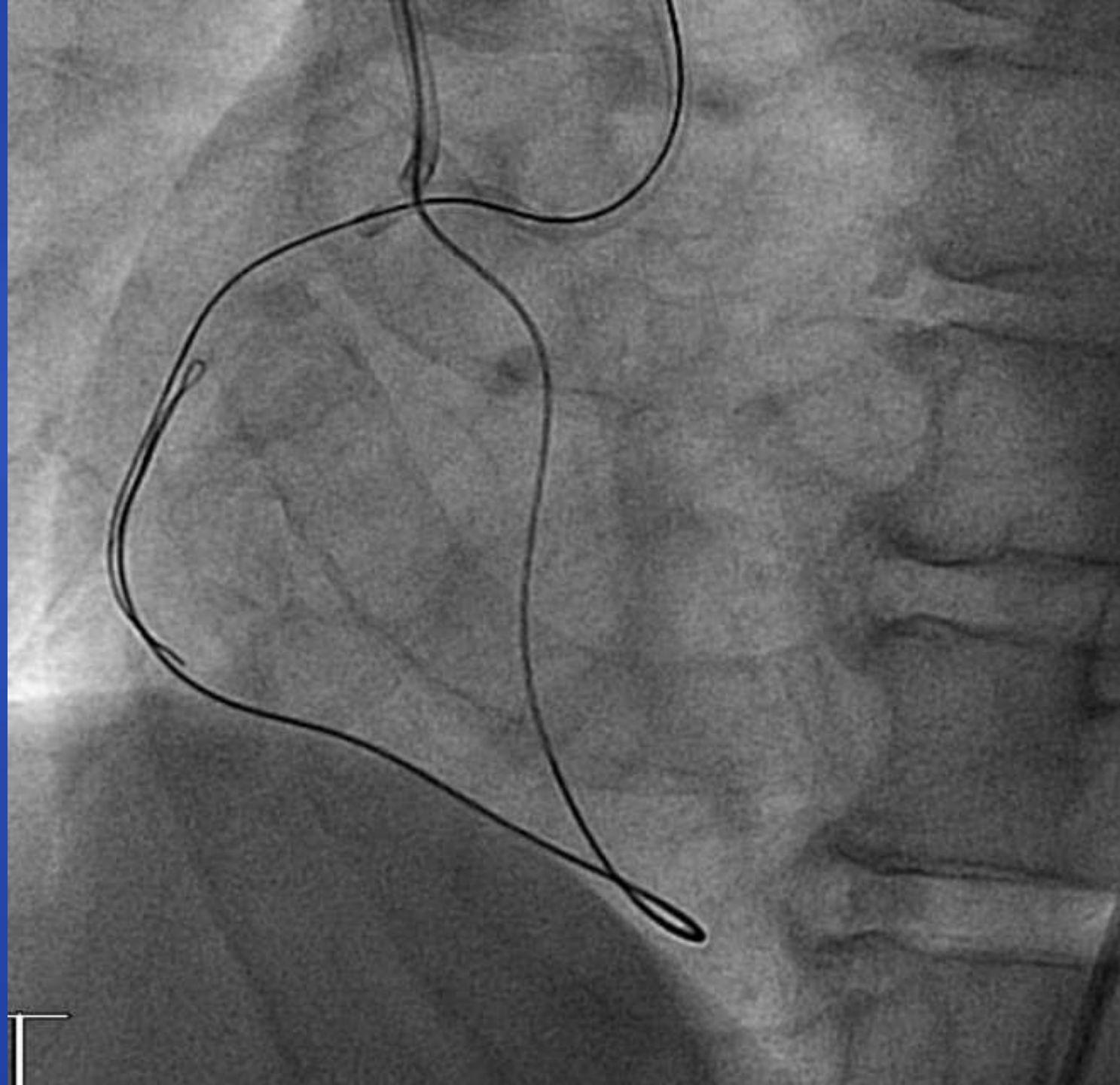
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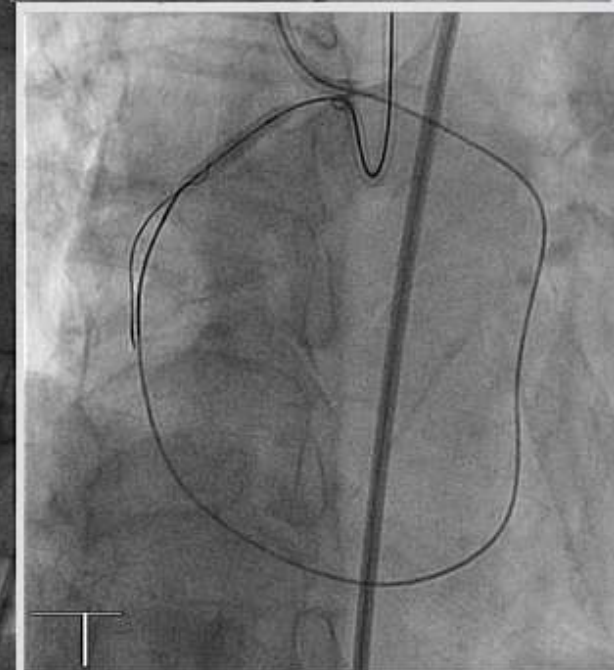
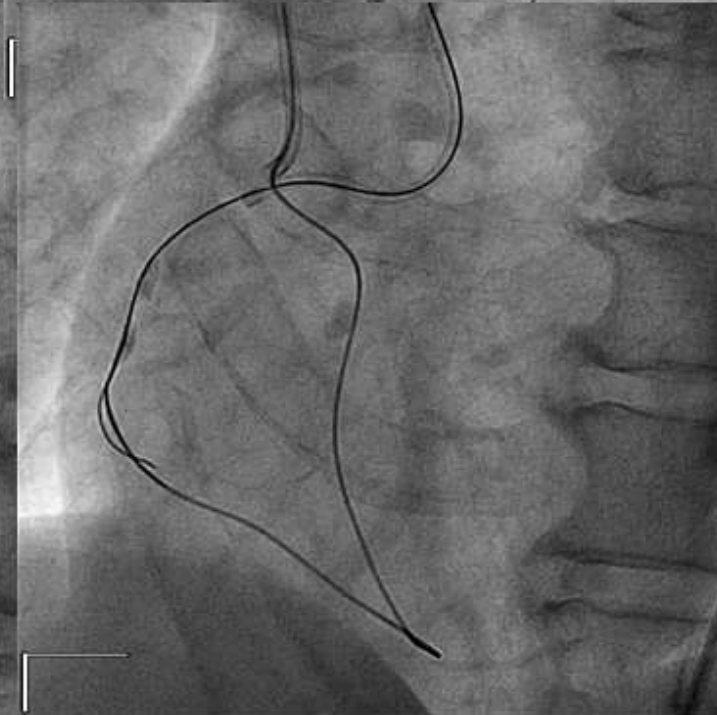
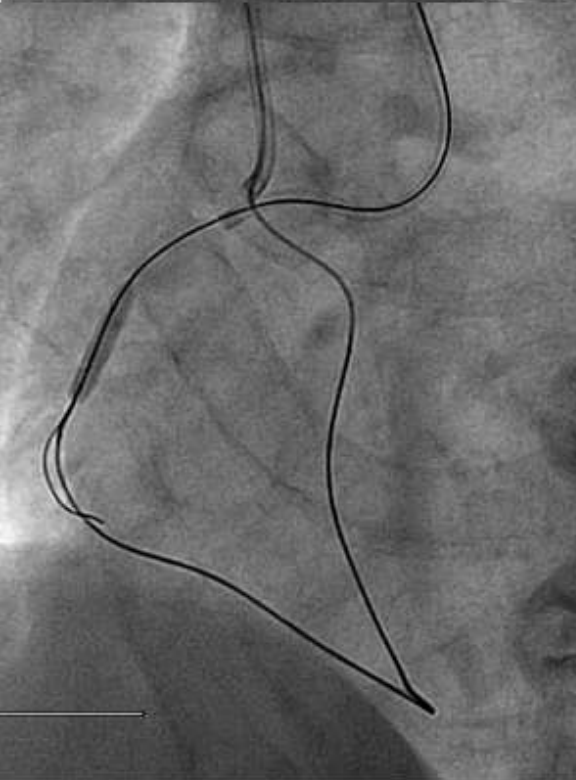
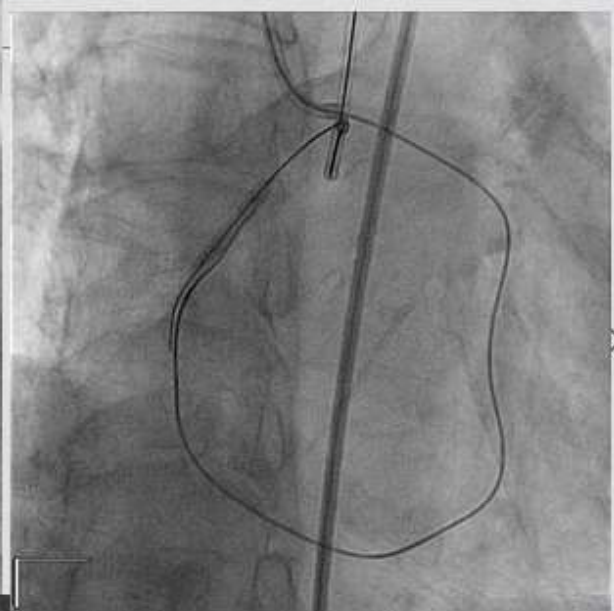
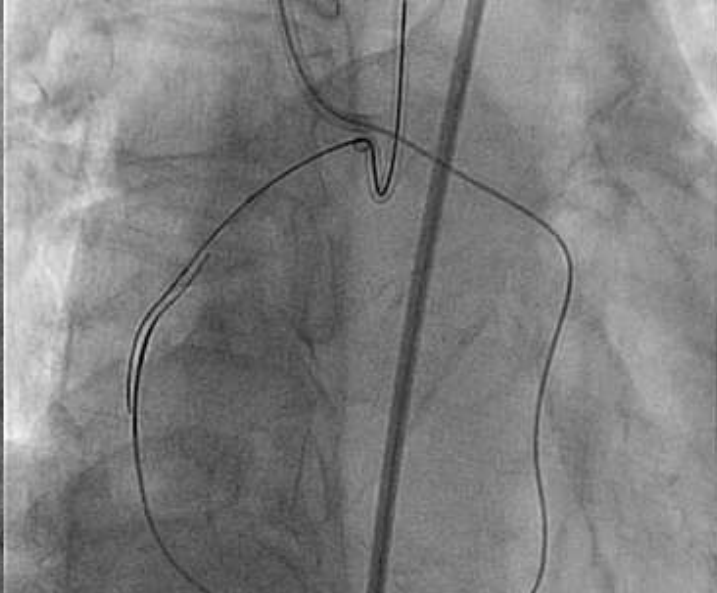
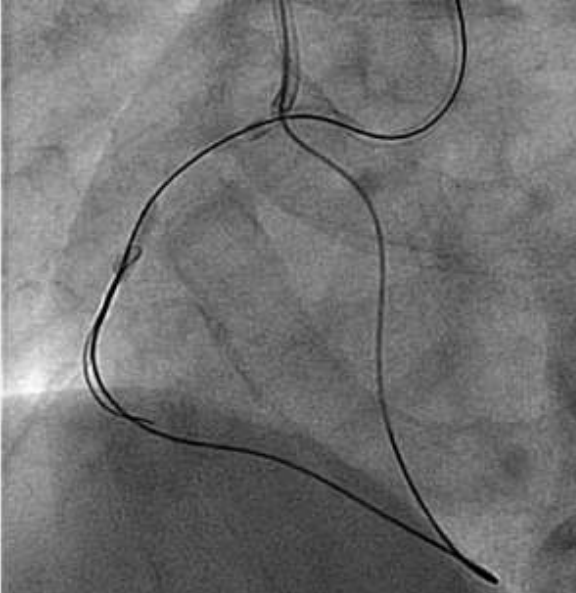


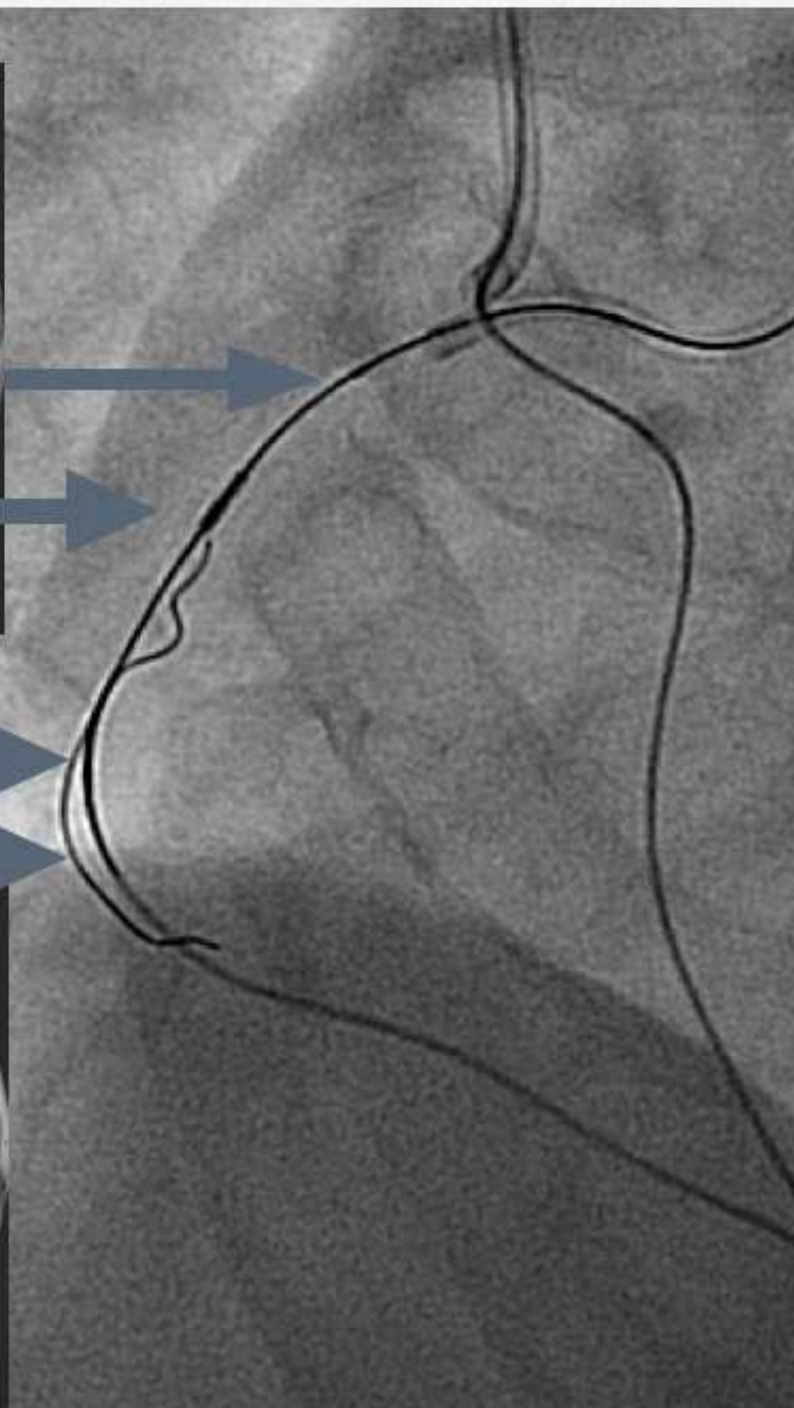
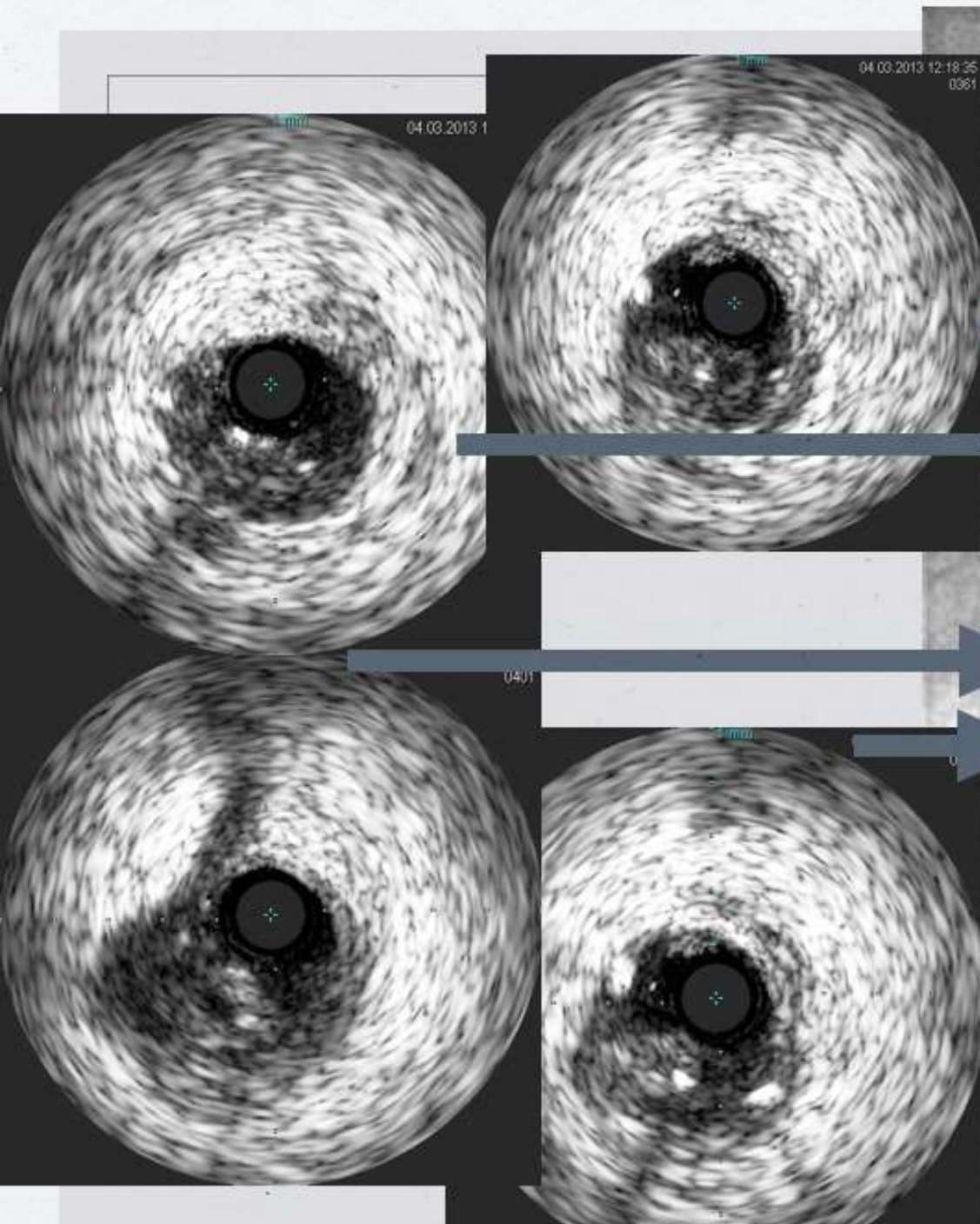


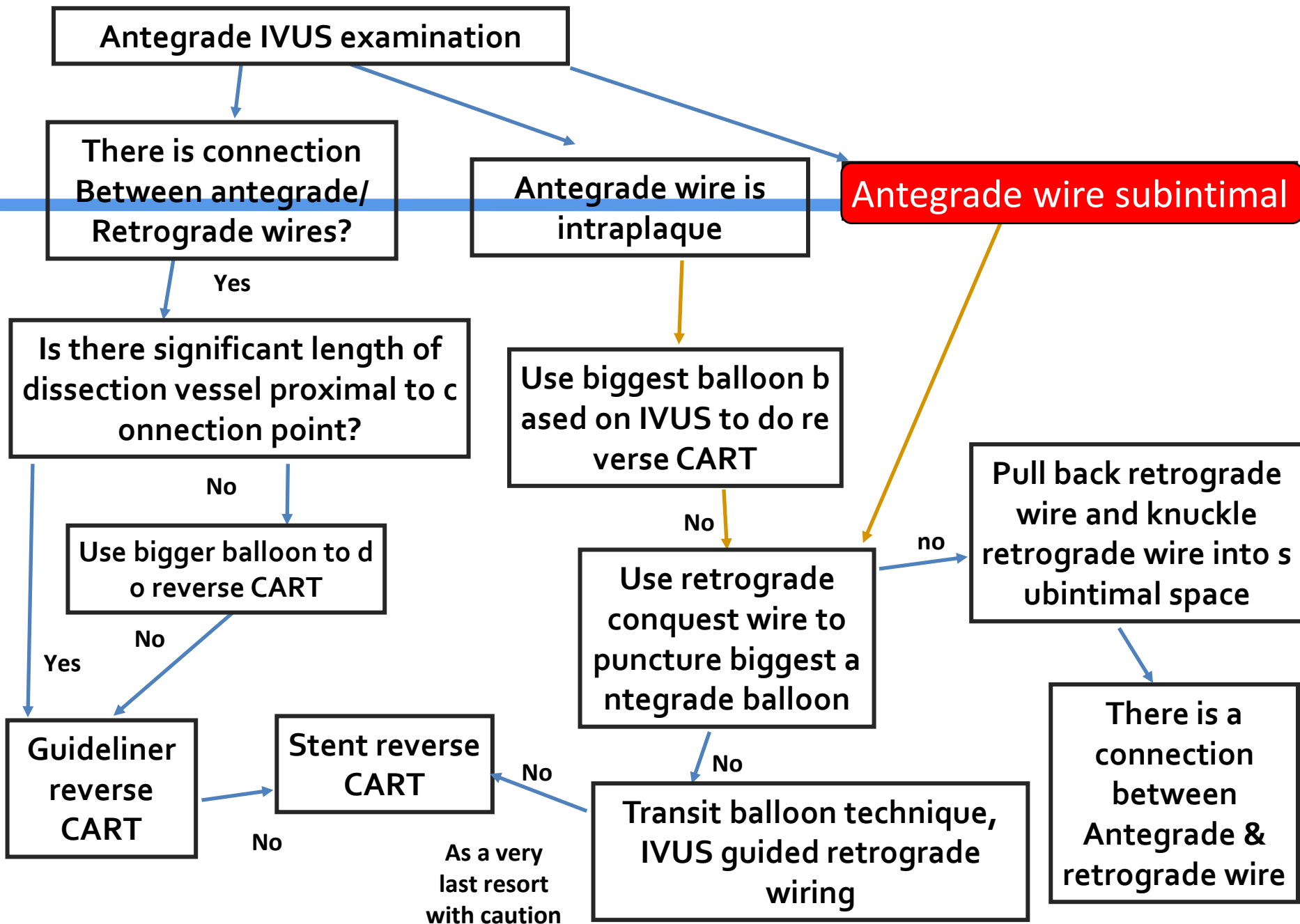


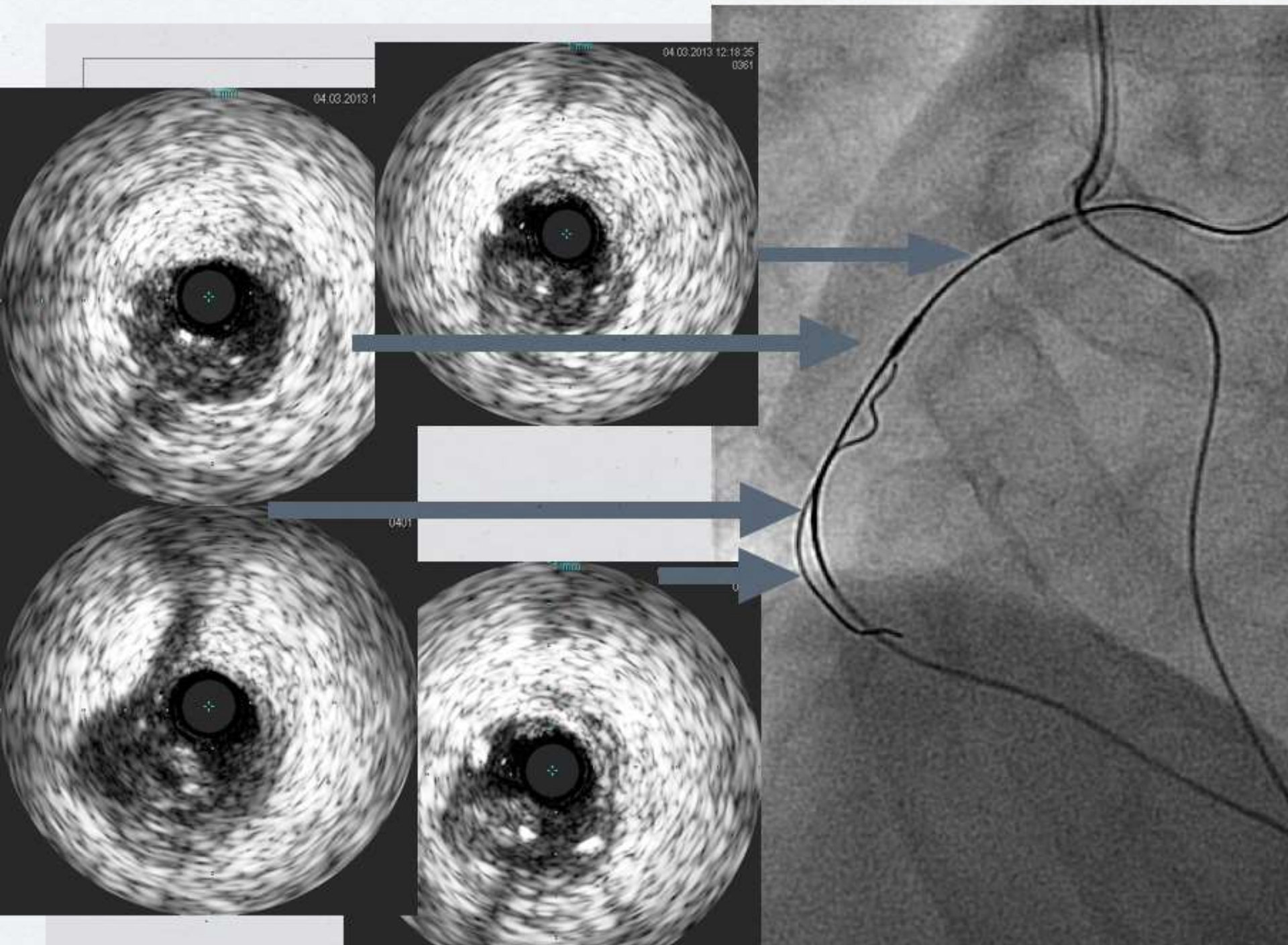


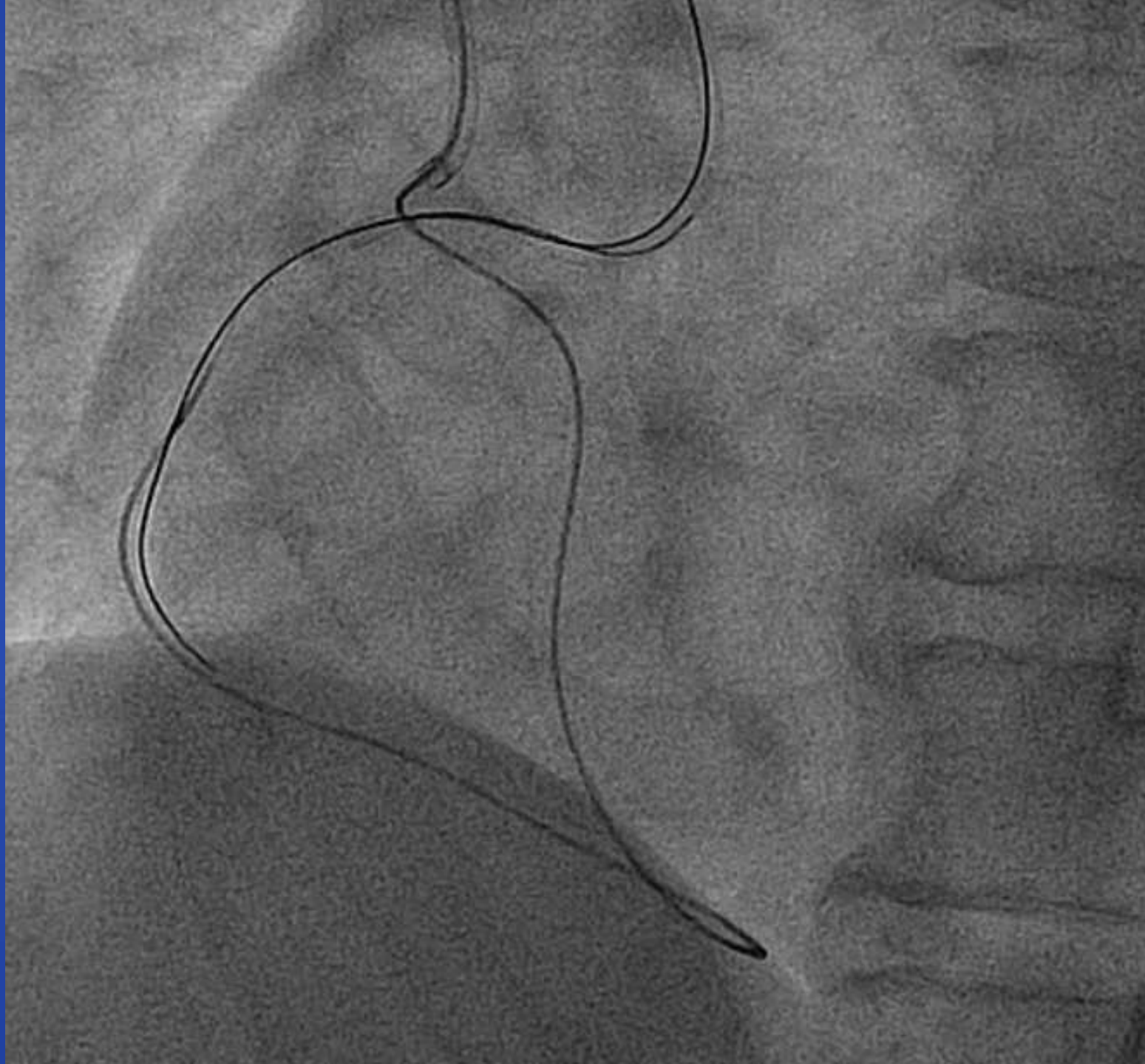




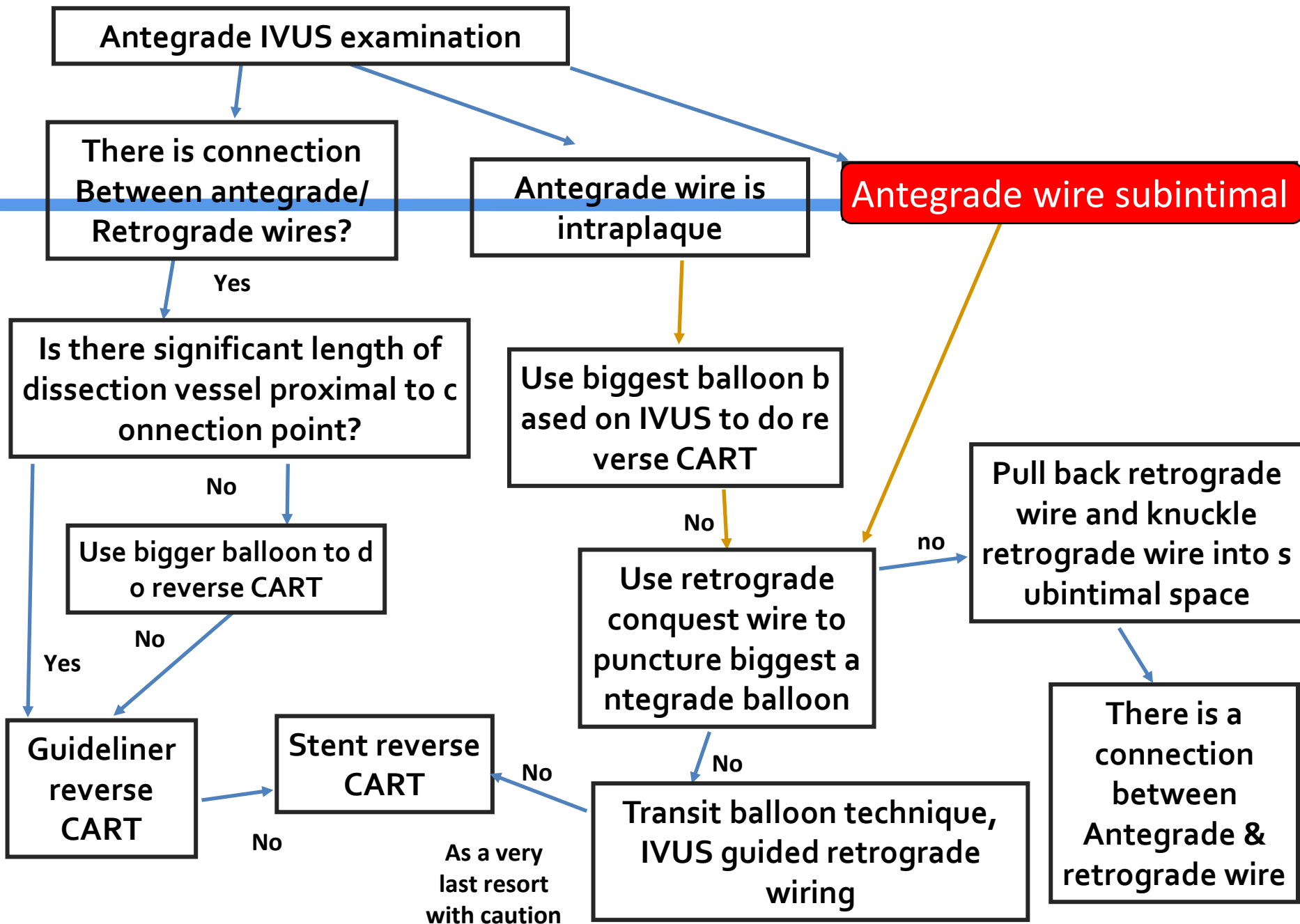


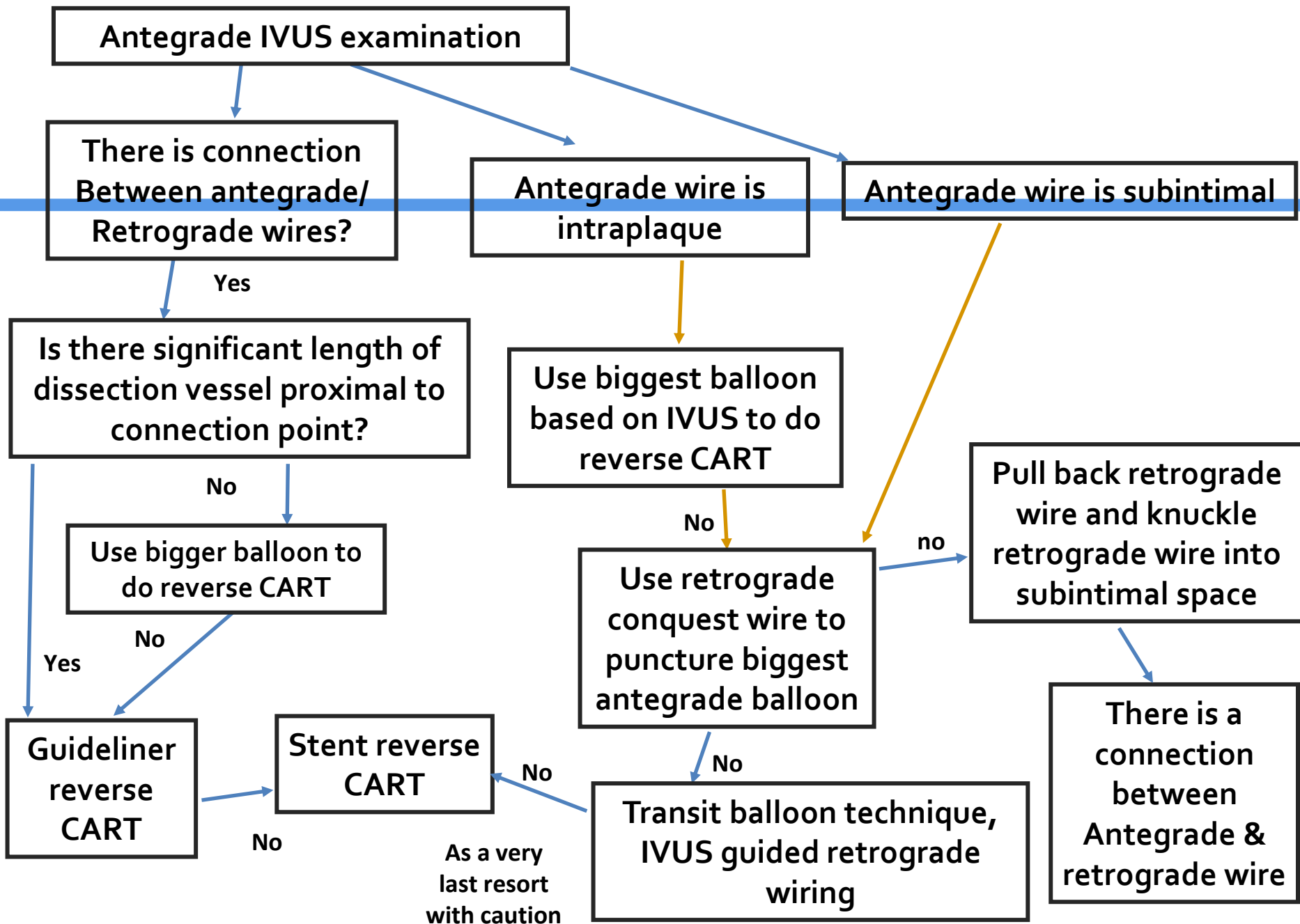


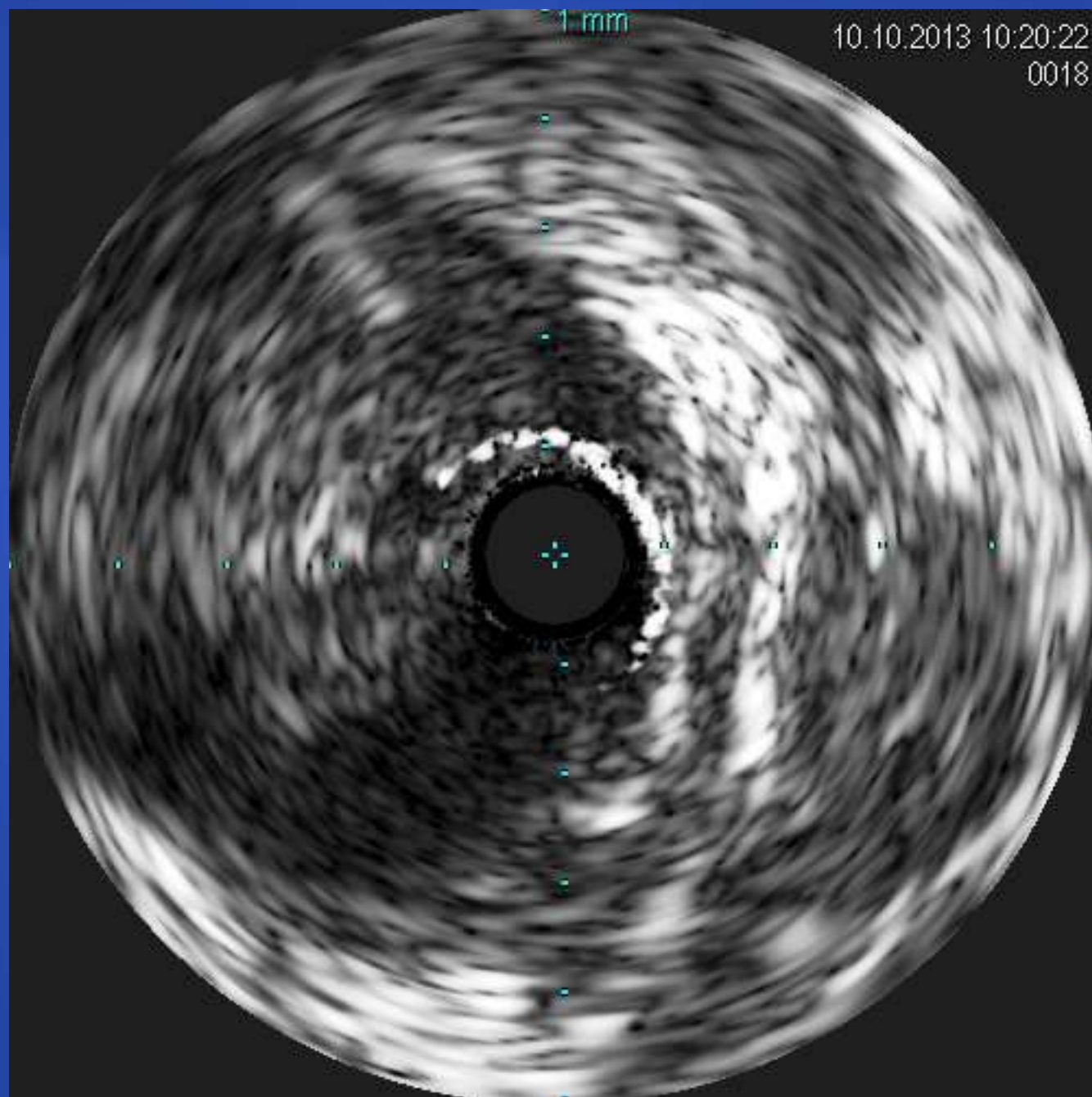


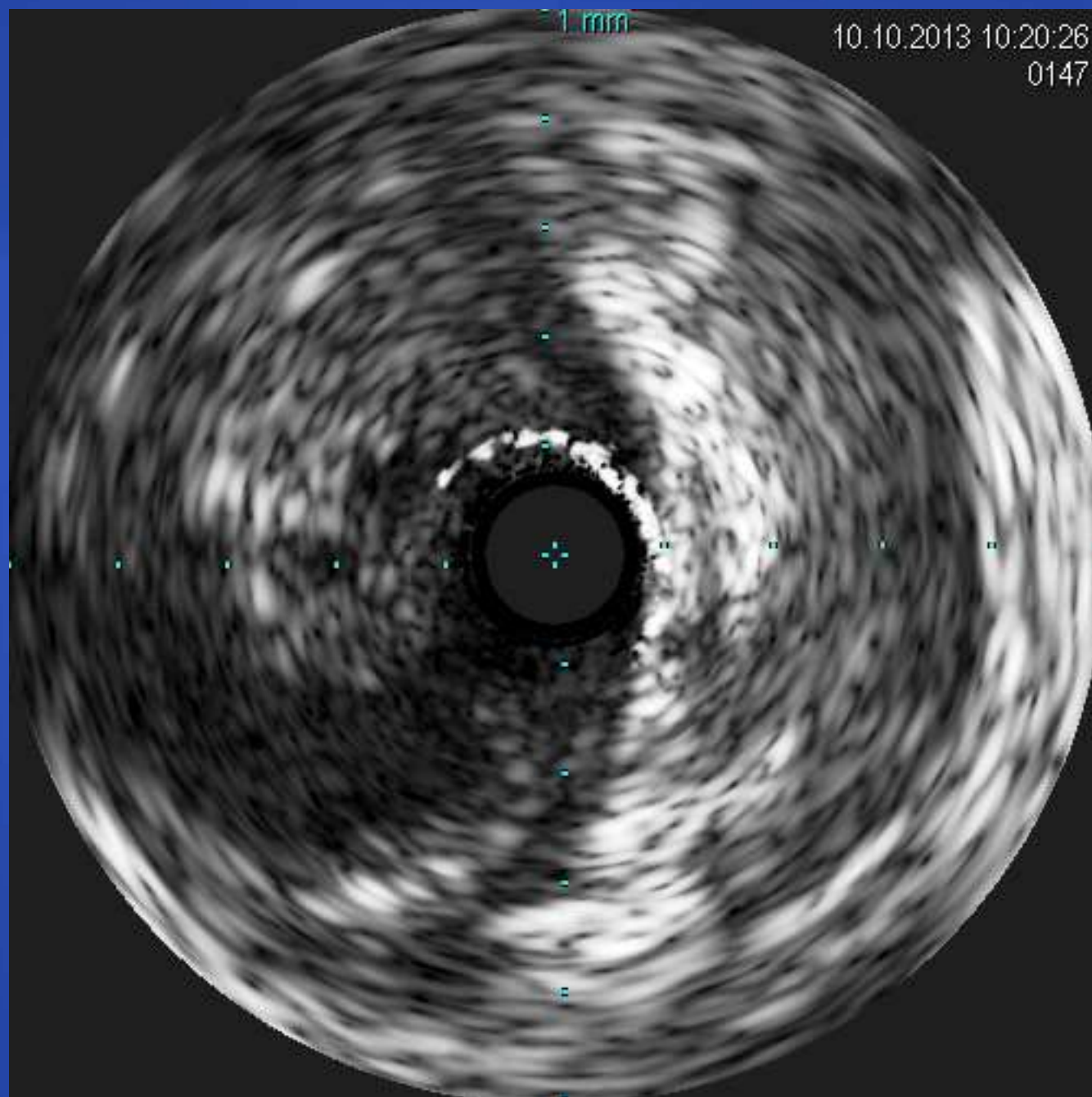












Conclusions.

- Short CTO – direct retrograde wiring.
- Ambiguous, long, tortuous, calcified, previous failed CTO -
> can consider knuckle wire or intentional subintimal tracking.
- Contemporary reverse CART for majority of cases.
- If failed – IVUS exam and follow the flow to succeed.
- Good luck in crossing your CTOs.