

APCTO Club Main Algorithm

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Content

- Case Selection and Proctoring.
- Treatment of ISR CTO.
- Overcoming proximal cap ambiguity.
- Antegrade preparation first philosophy.
- Comparisons to Hybrid Algorithm.
- Introduction to antegrade and retrograde algorithm

Case Selection and Proctoring

- JCTO score 2 or more -> perform case with proctor.
- NOT to ban you from doing high JCTO score CTOs – if you cannot get a proctor you should go ahead to treat the patient.
- BUT – you learn the most and your CTO skills improve the most when you have a proctor for high JCTO score cases.
- STYLE of proctoring -> Recommend allowing operator to be first operator style of proctoring.

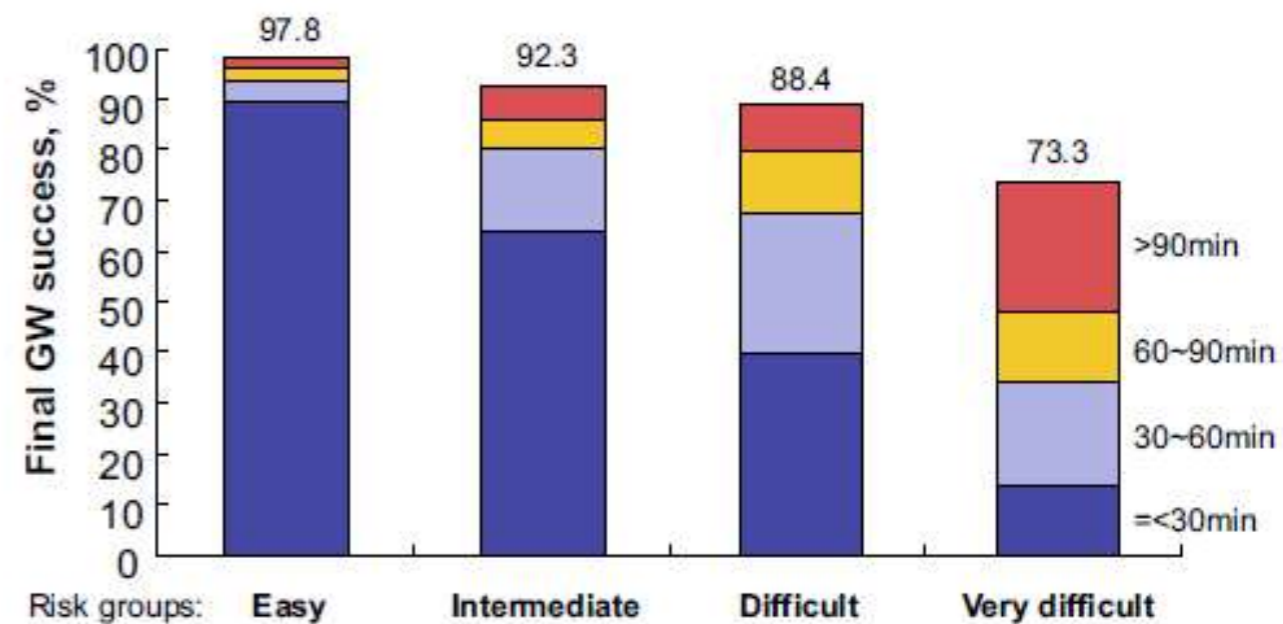
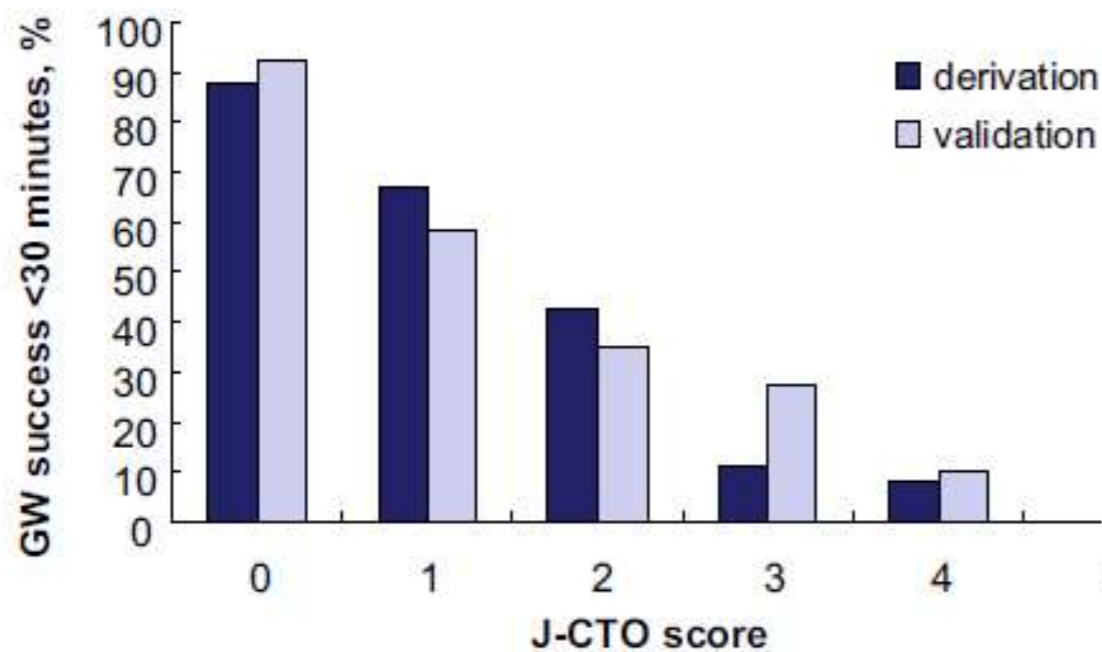
Lesion Length
>20 mm

Calcification

>45 bend

Blunt stump

Prior Failure

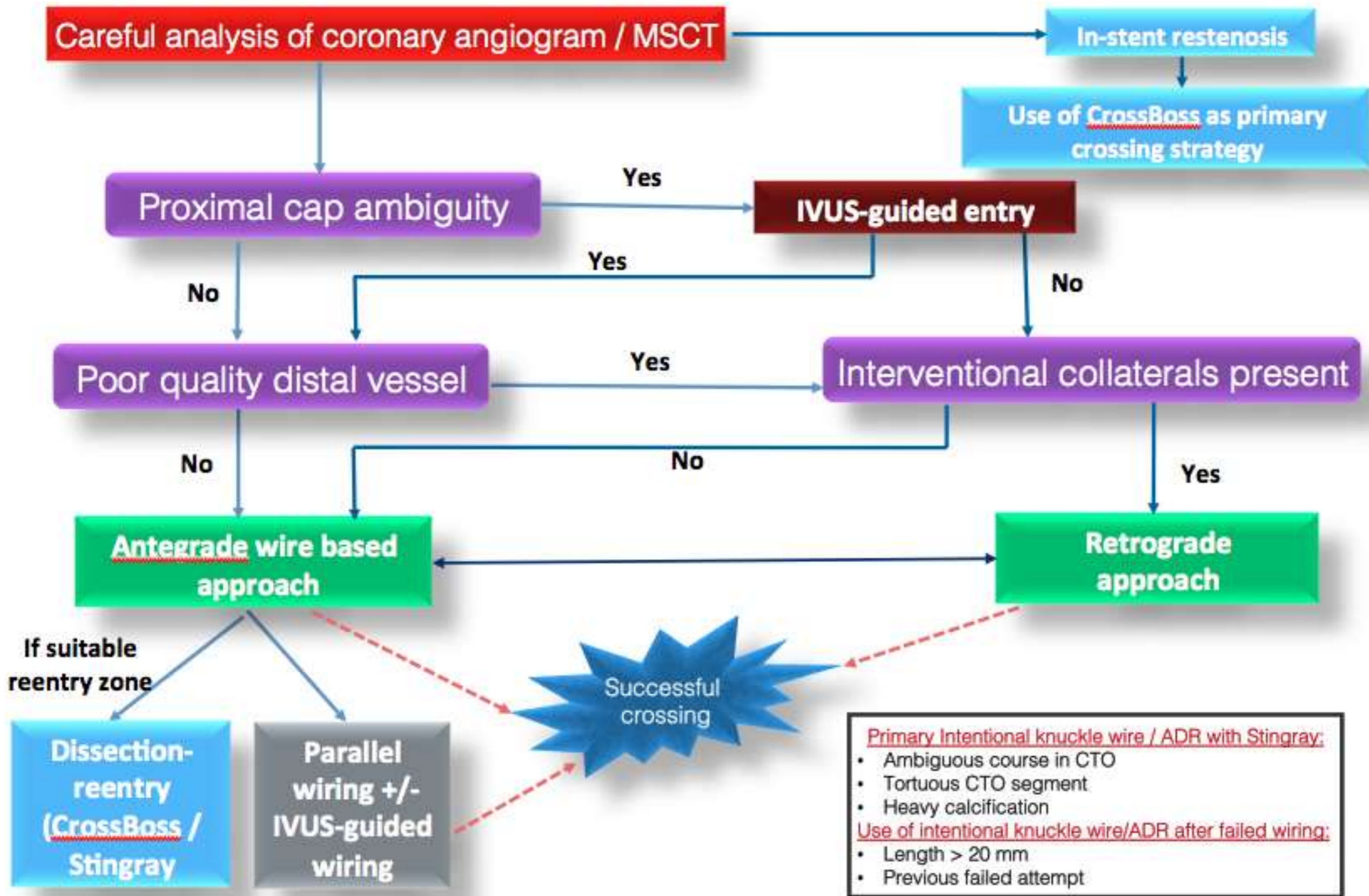


Patient number	329	65	82	92	63	24
	165	26	48	46	33	10

J-CTO score	0	1	2	>=3
Patient number	494	91	130	138

Proctoring

- Once JCTO score 2 or more – 30 minute antegrade wiring success rate drops to 40% in most cath labs this is the time limit.
- Sharma et al 2015 showed in JCTO score of 2 or more, proctoring can improve success rate from 50-> 70%
- Retrograde and crossboss stingray skills used mostly in the JCTO score 2 or more group and with proctor you can learn these new skills.
- “Proctoring is good for you it is good for the patient.”

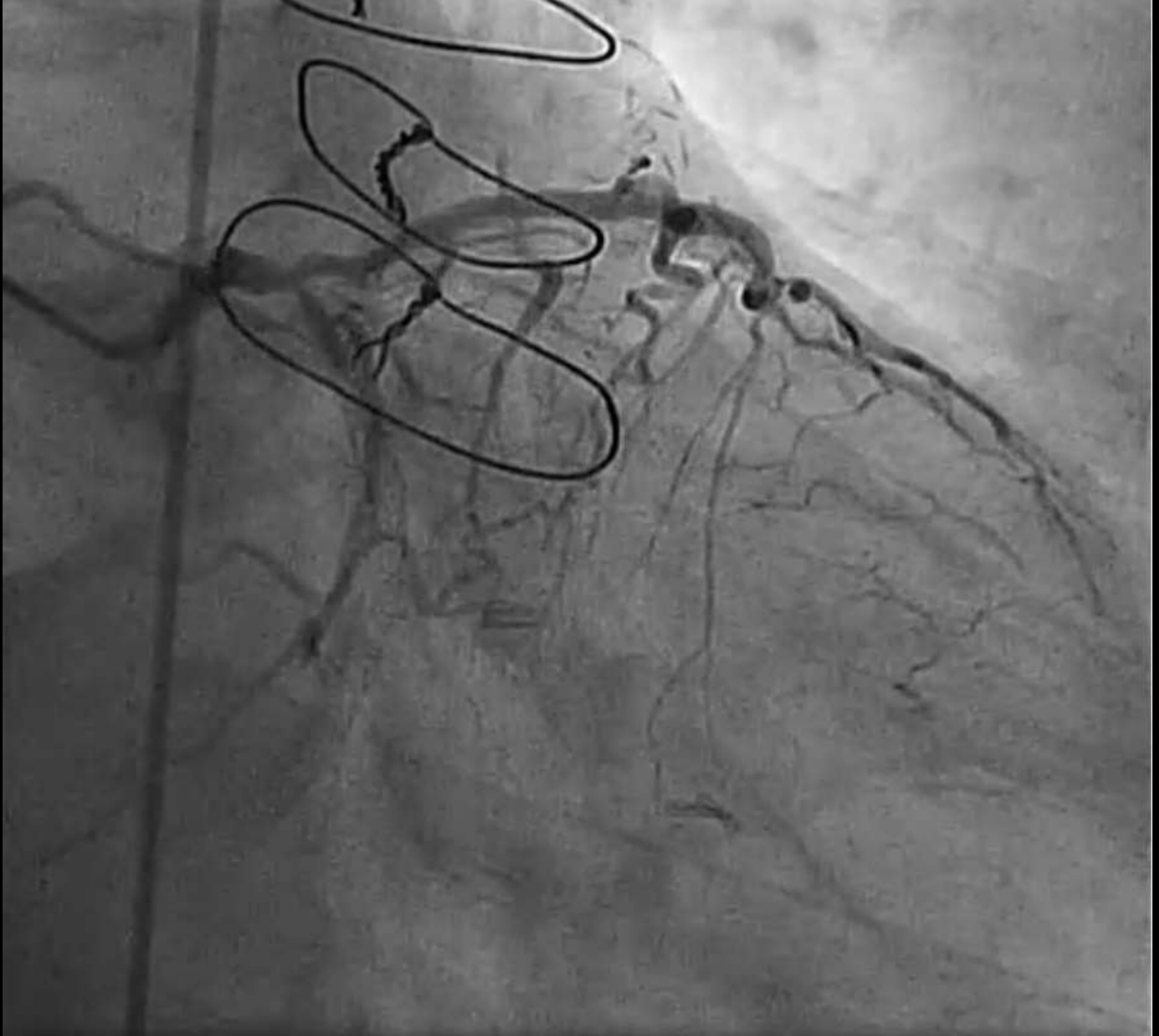


Consider stopping if > 3 hr; 3.7x eGFR ml contrast; Air Kerma > 5 Gy unless procedure well advanced.

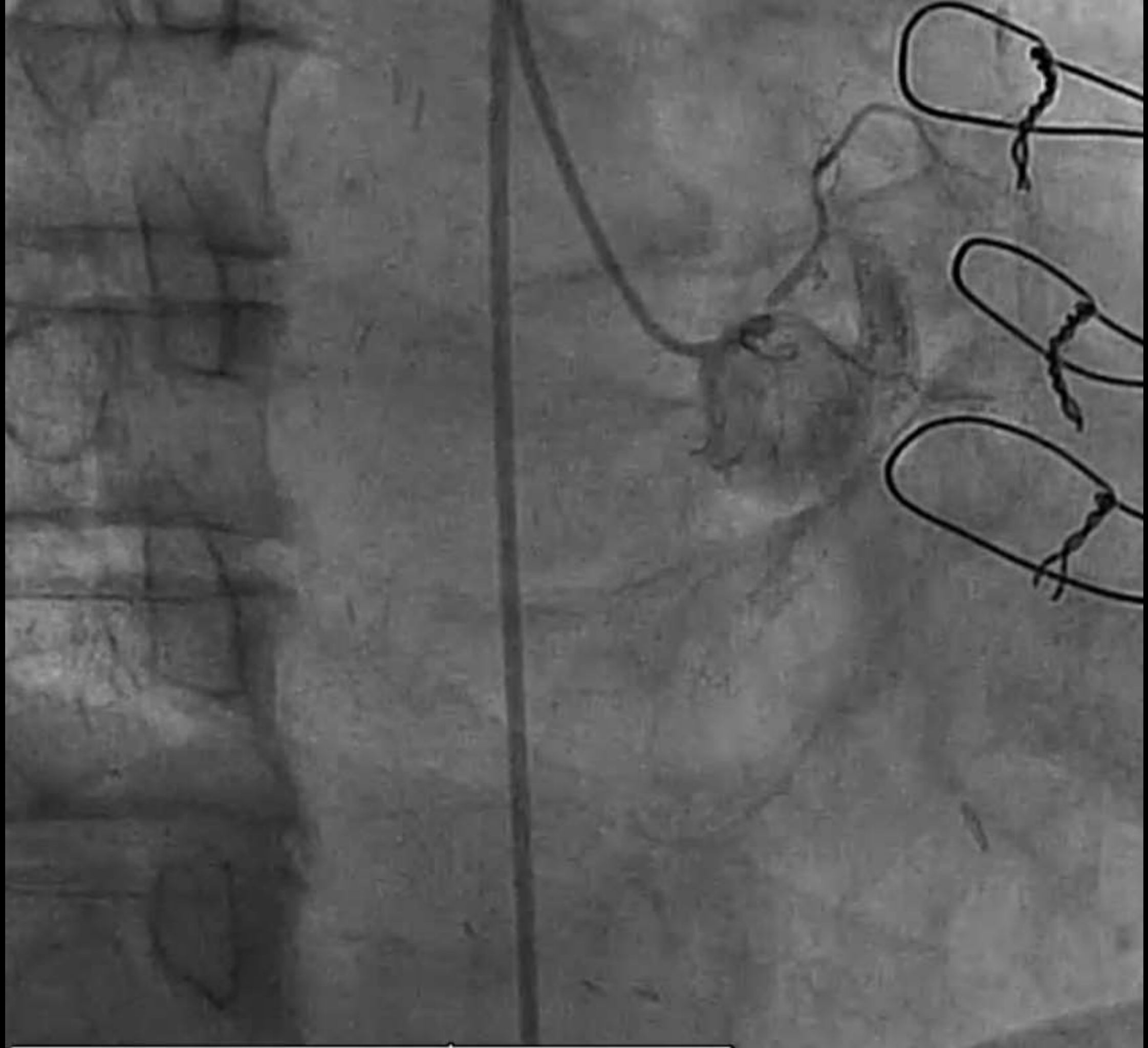
Treatment of ISR CTO

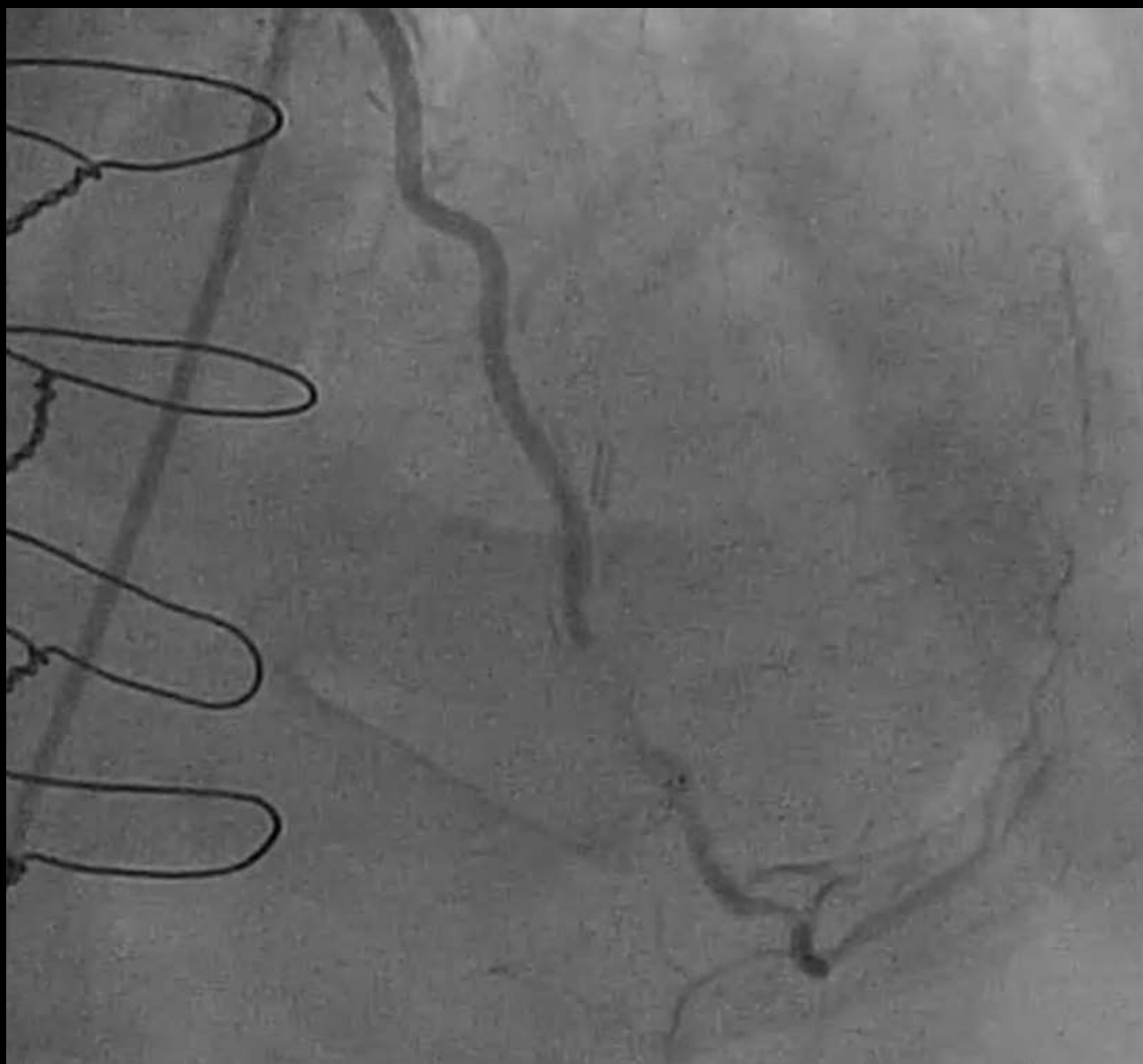
- CrossBoss should be used as primary device for ISR CTO.
- Removes risks of wire going under strut.
- Fast crossing of CTO.









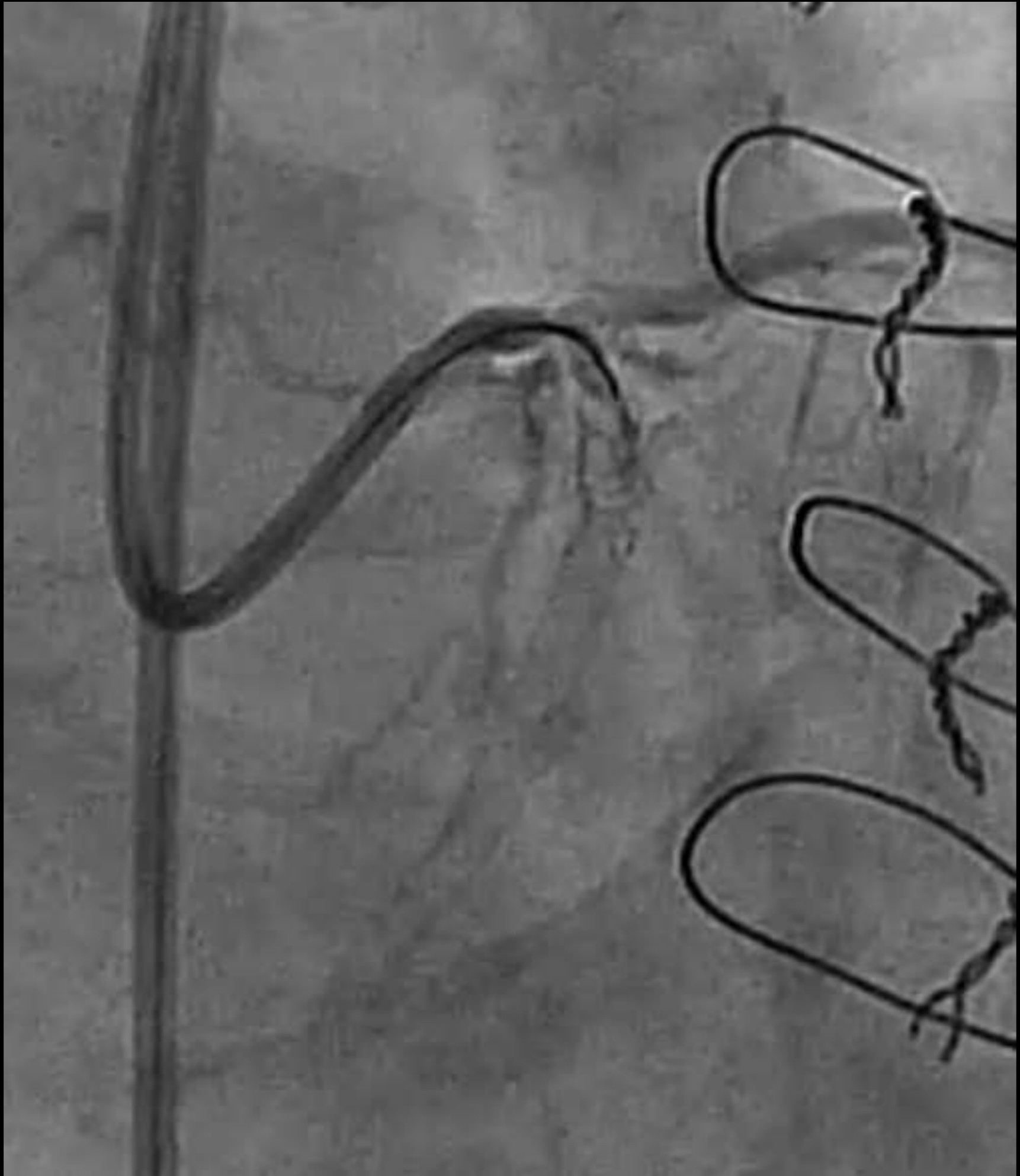


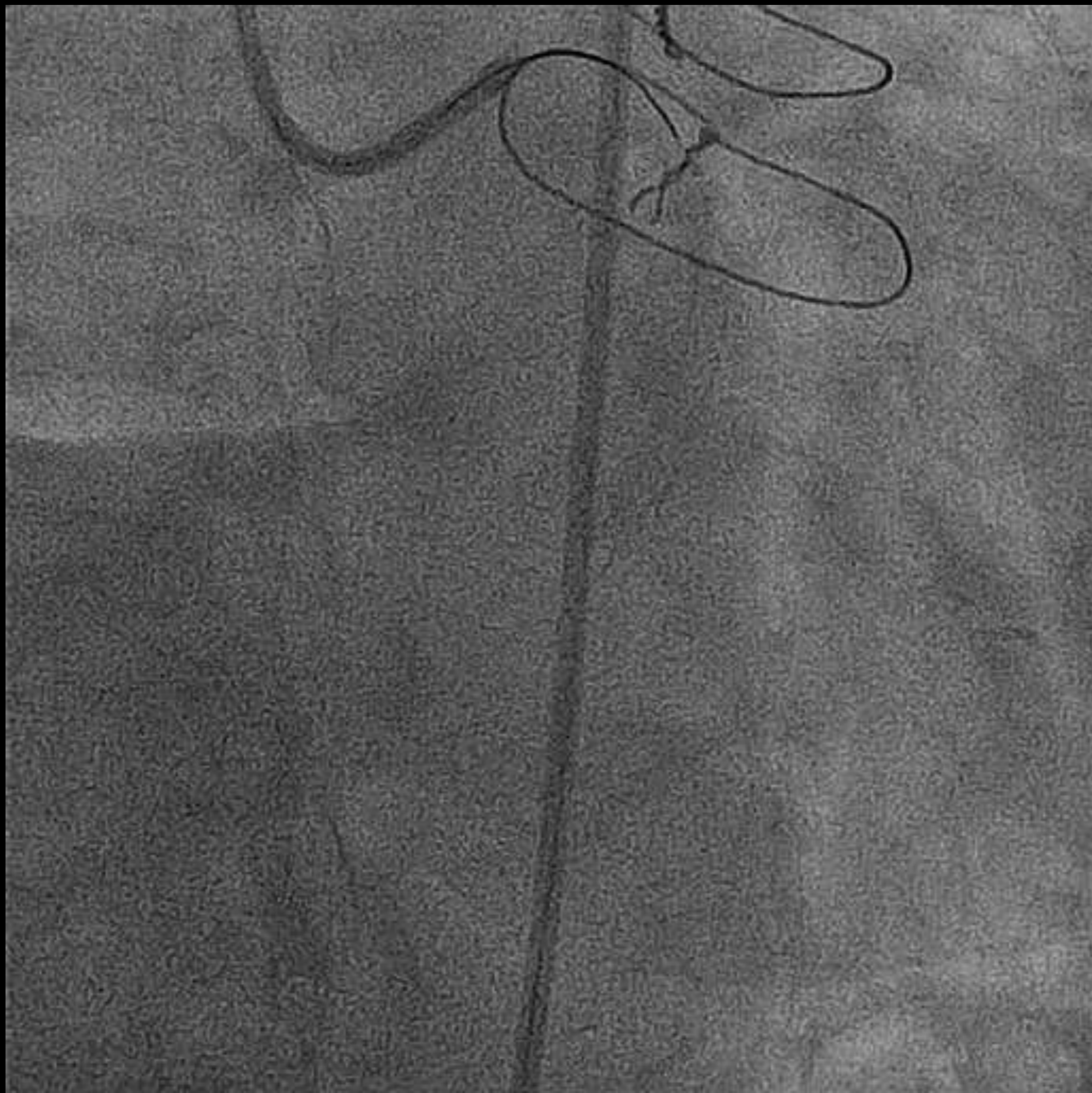
in summary

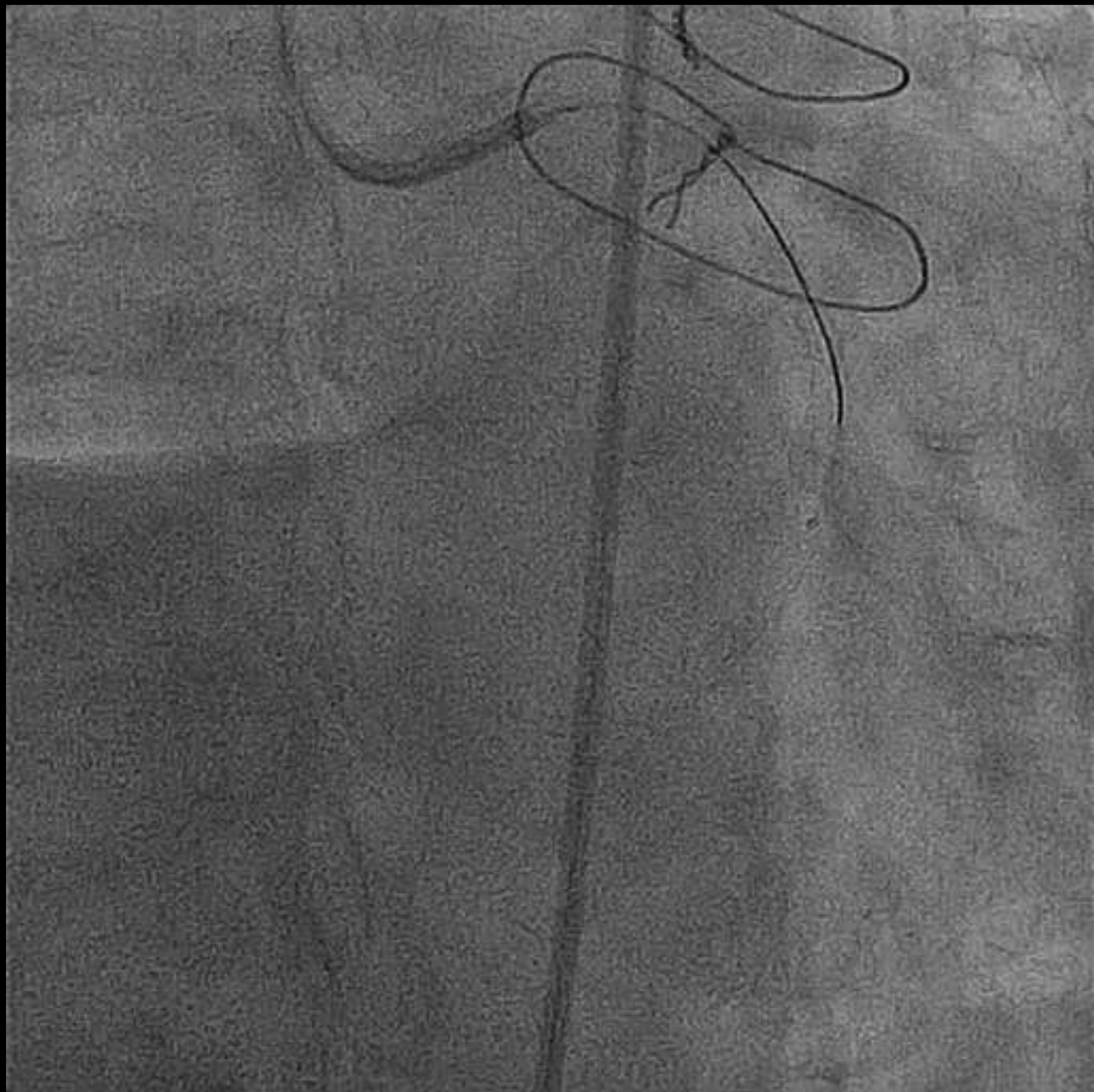
Long Lcx ISR CTO

No visible distal vessel filling on retrograde

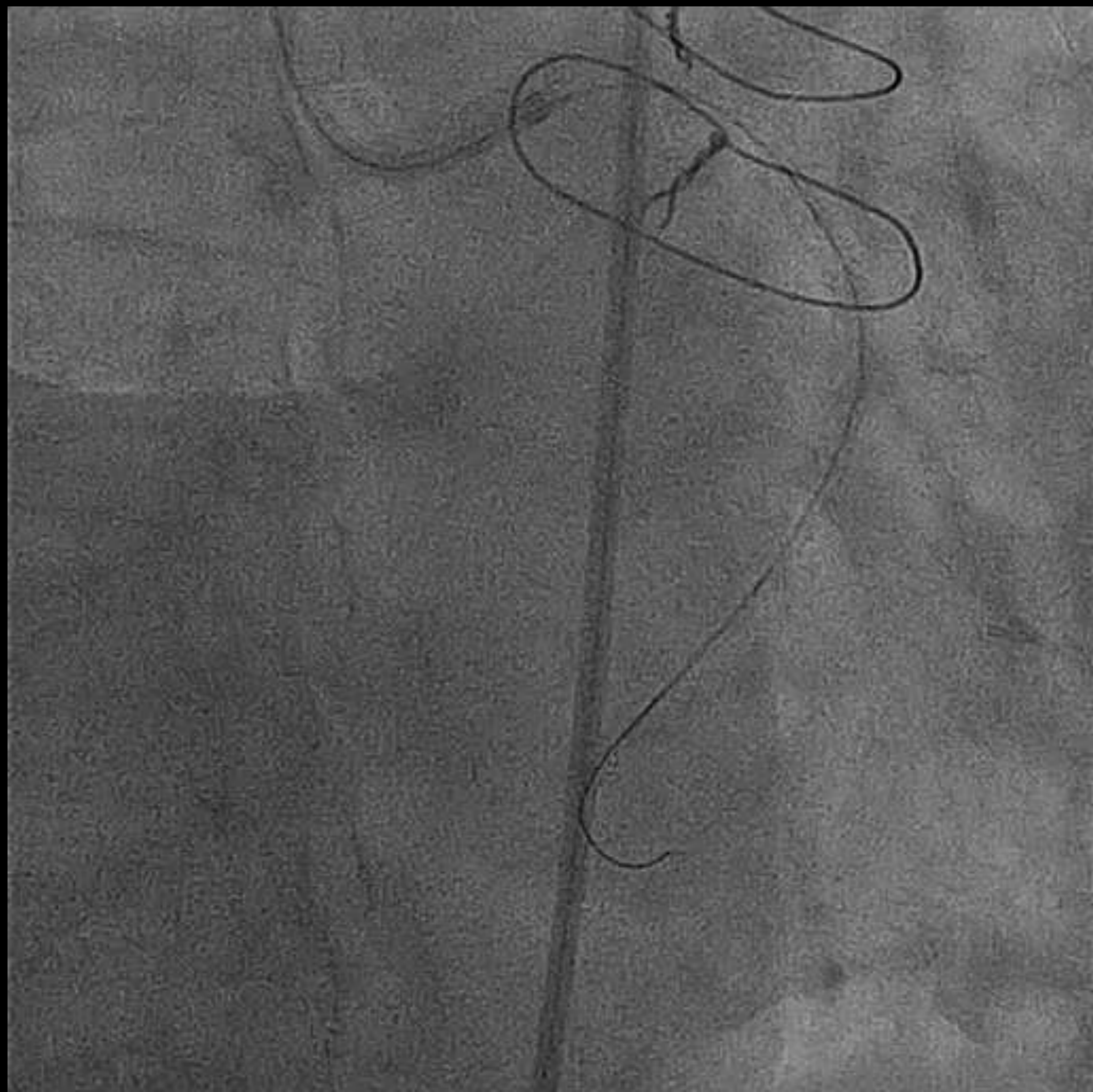


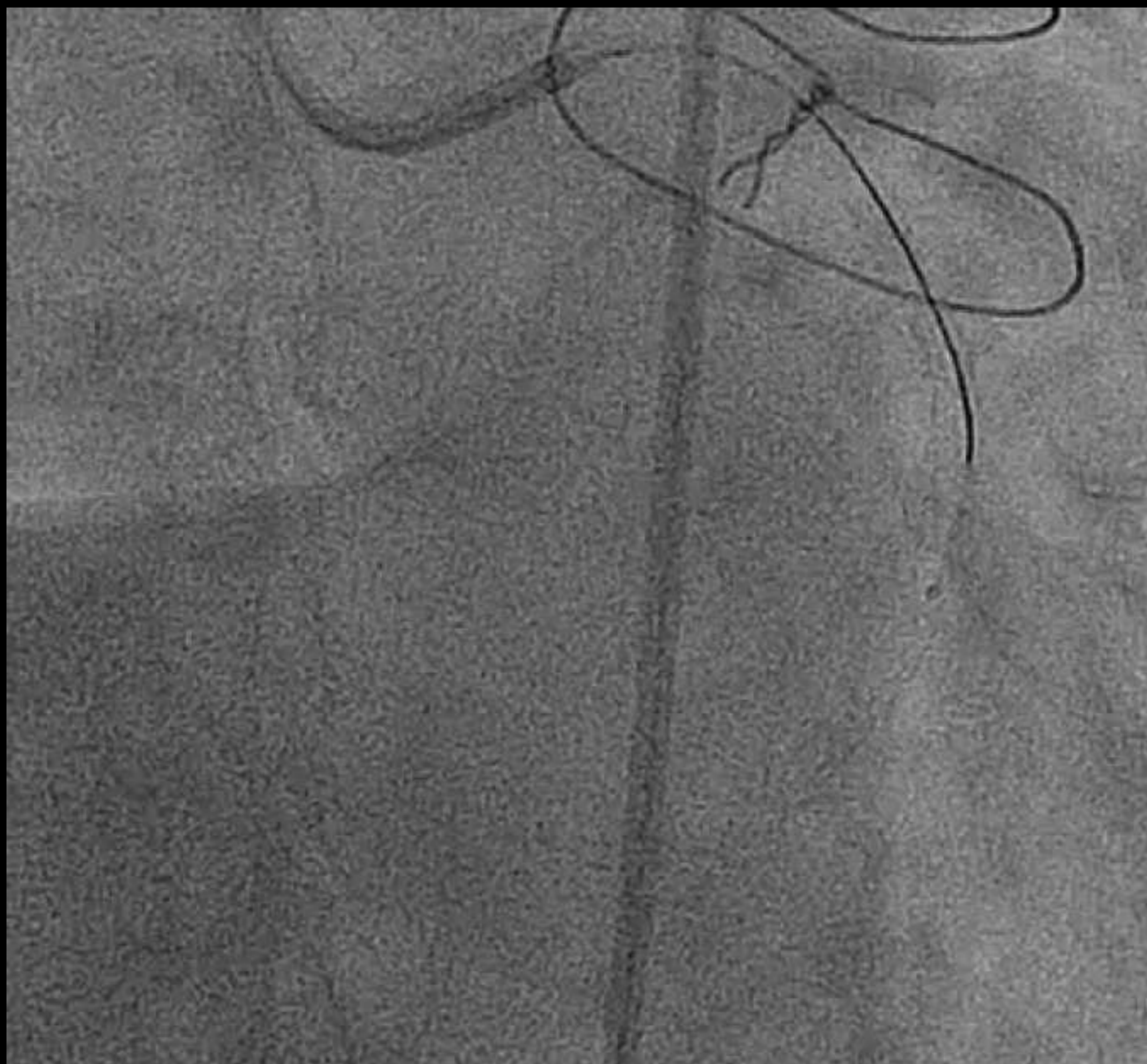






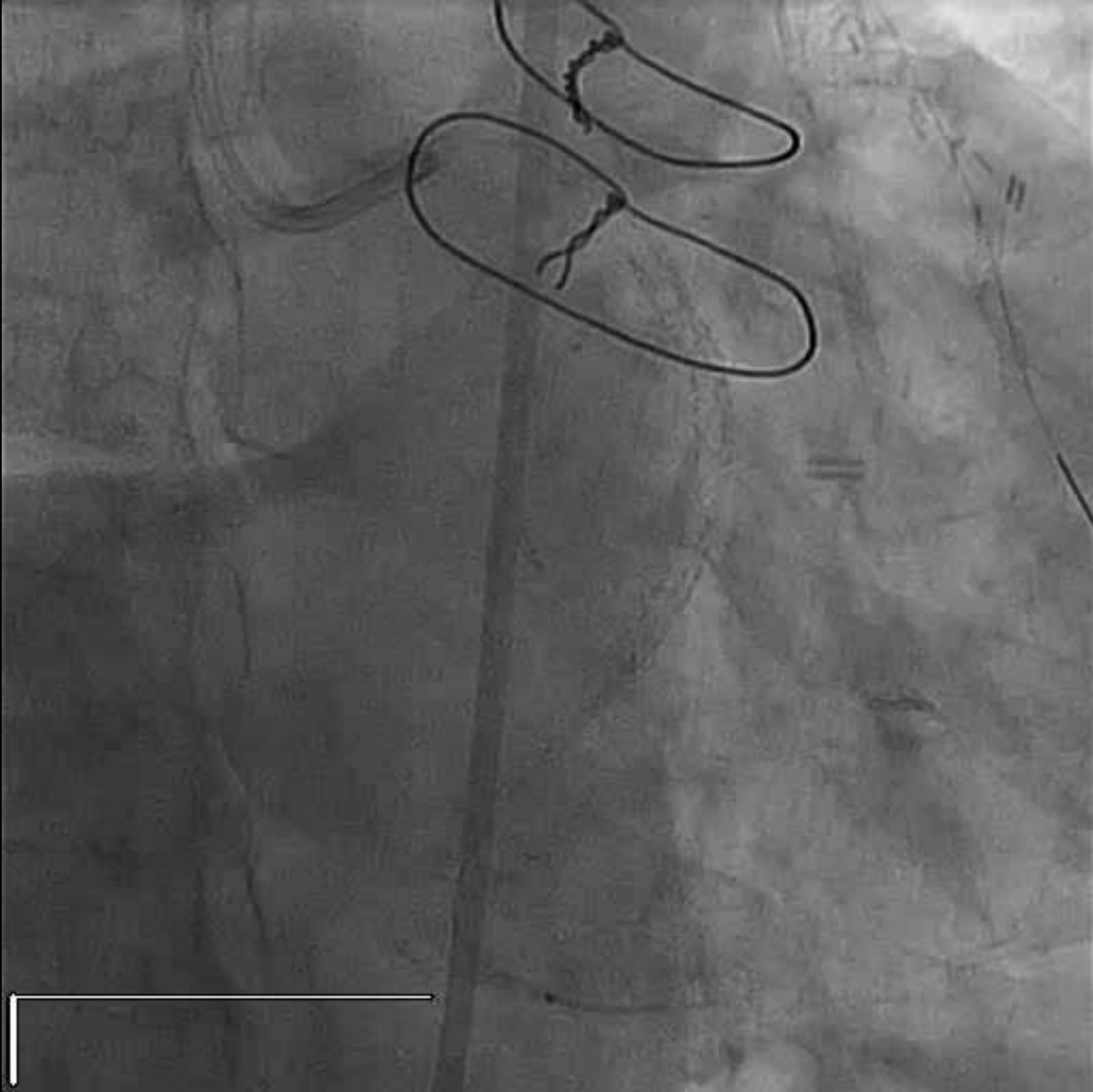


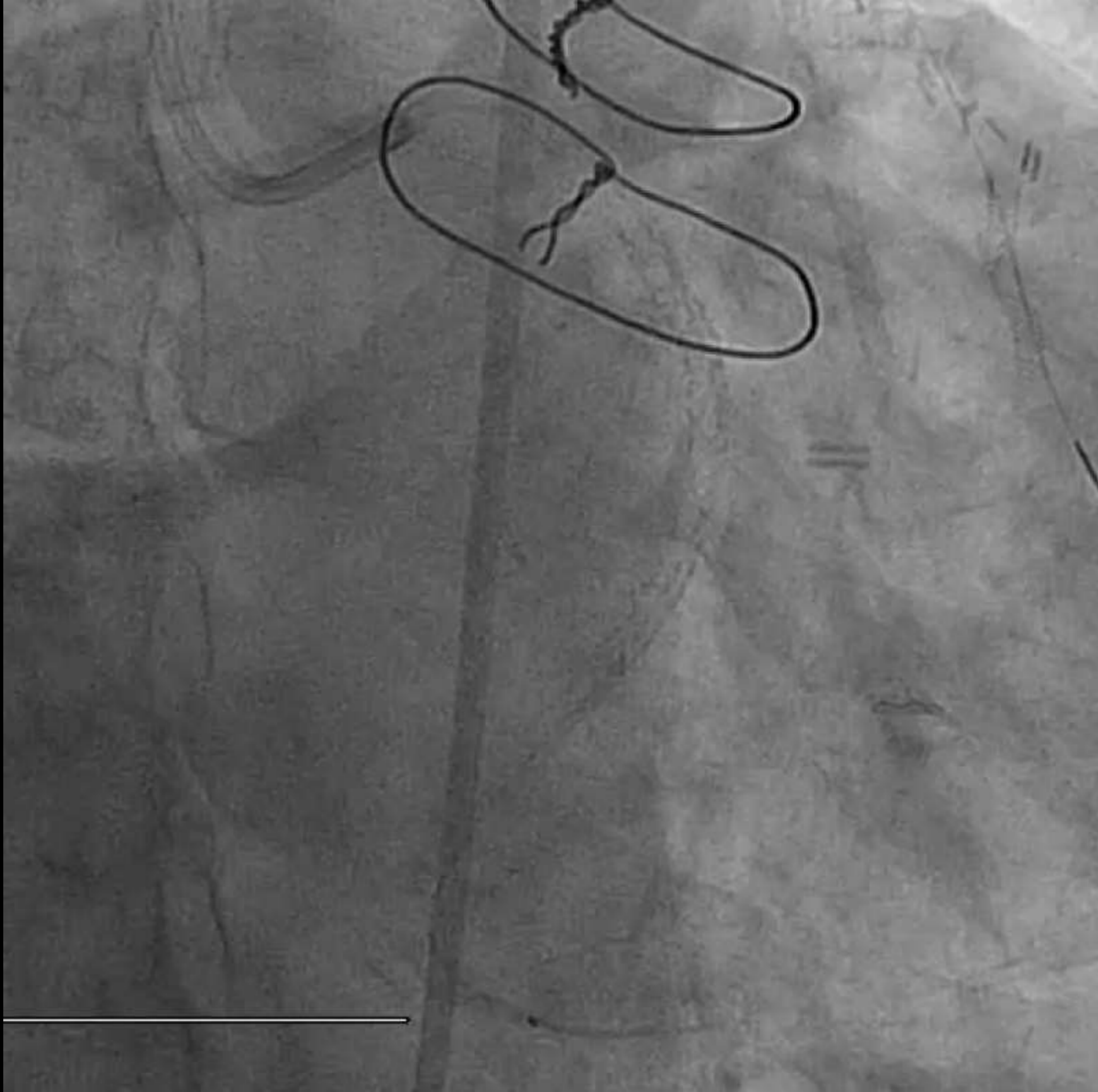


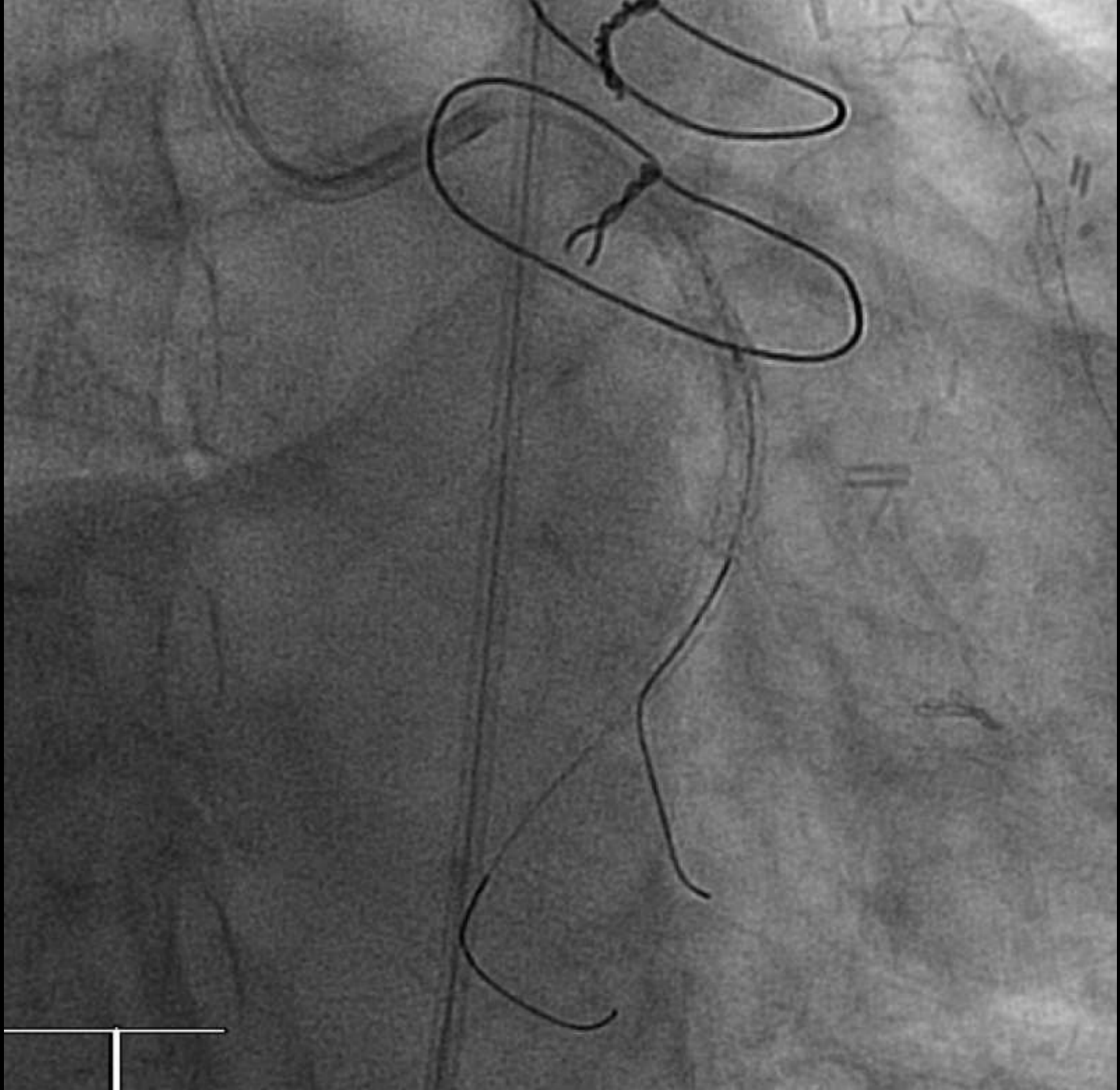


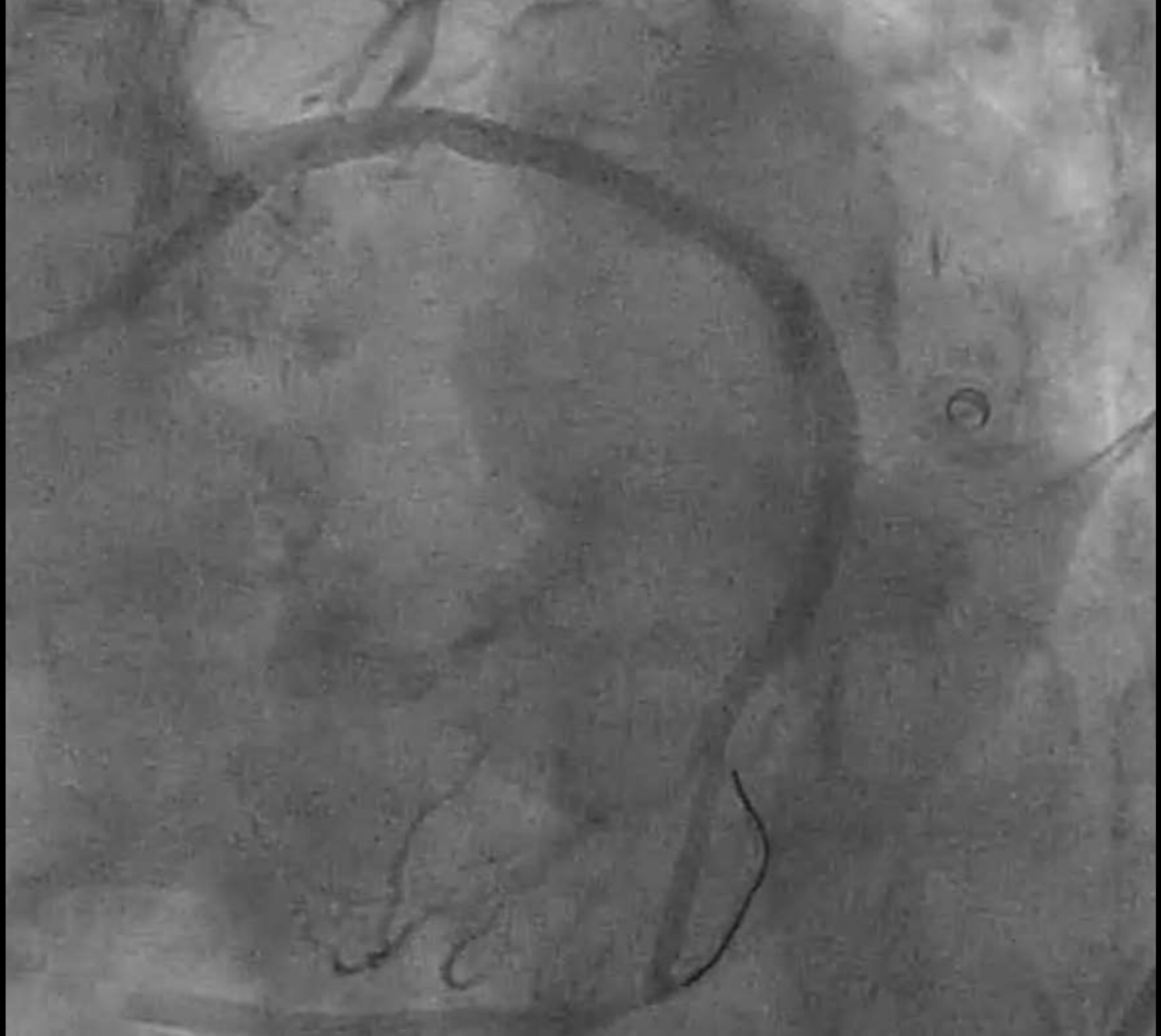
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A single handwritten mark or character at the bottom of the page.

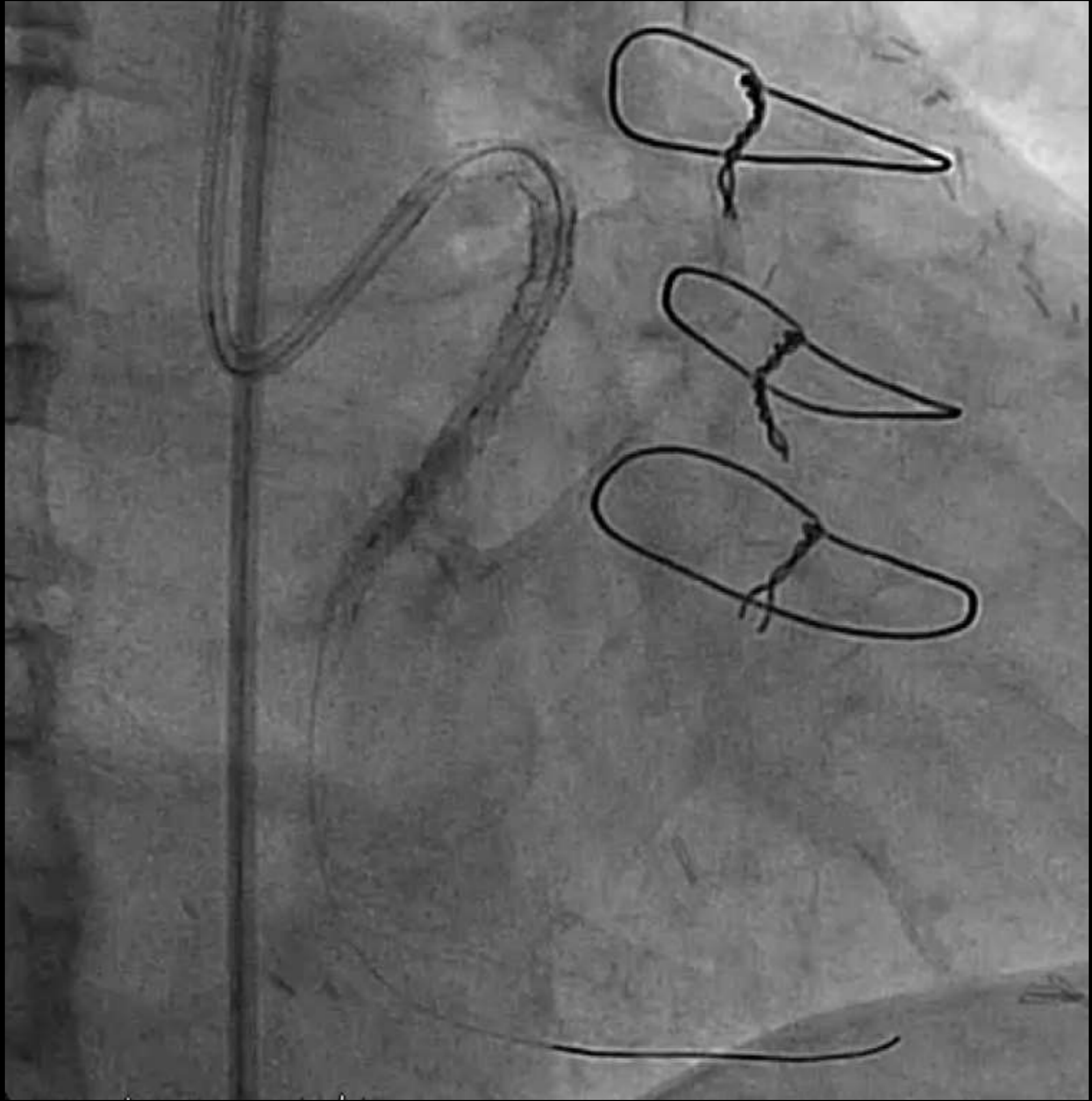


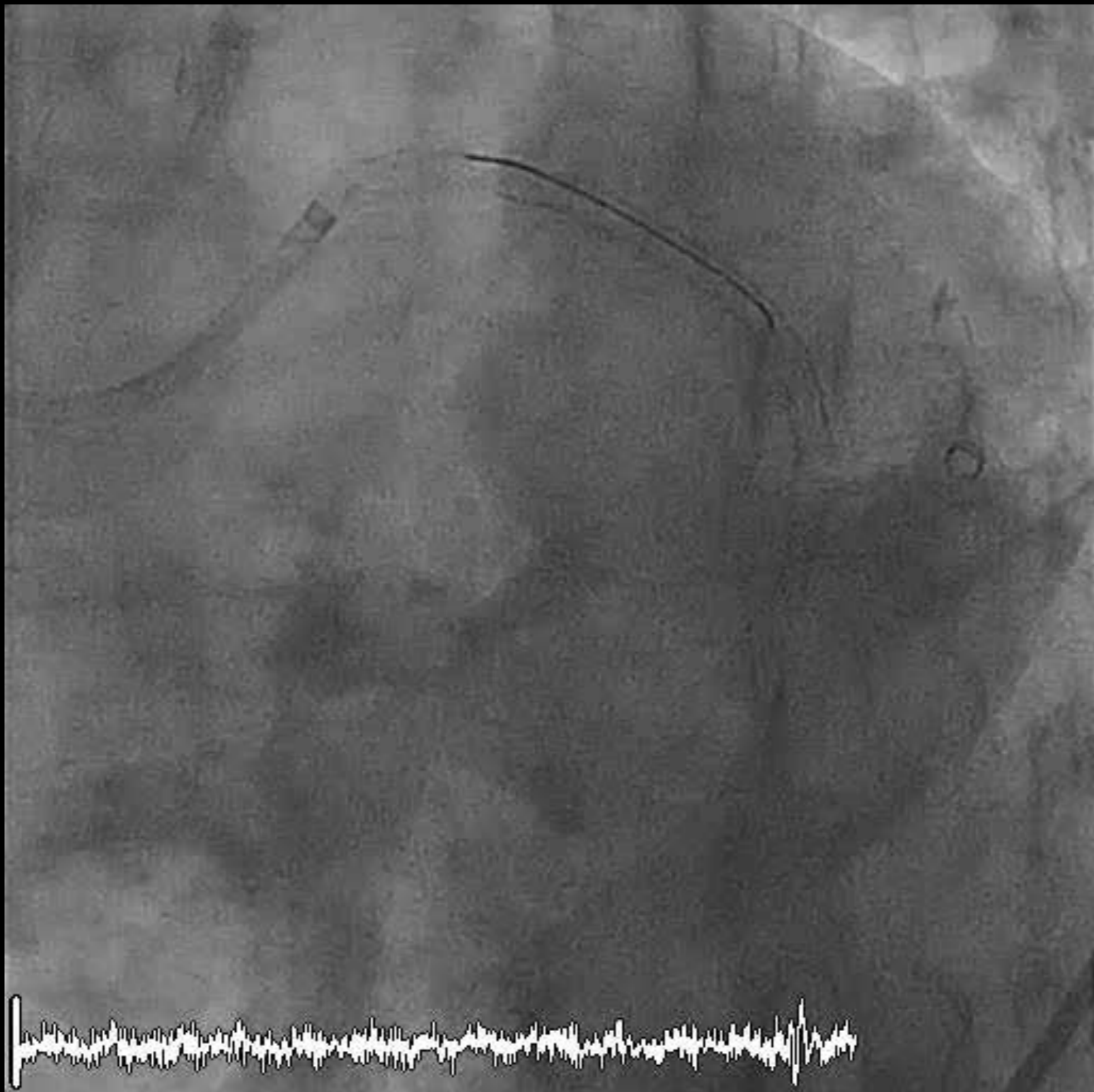




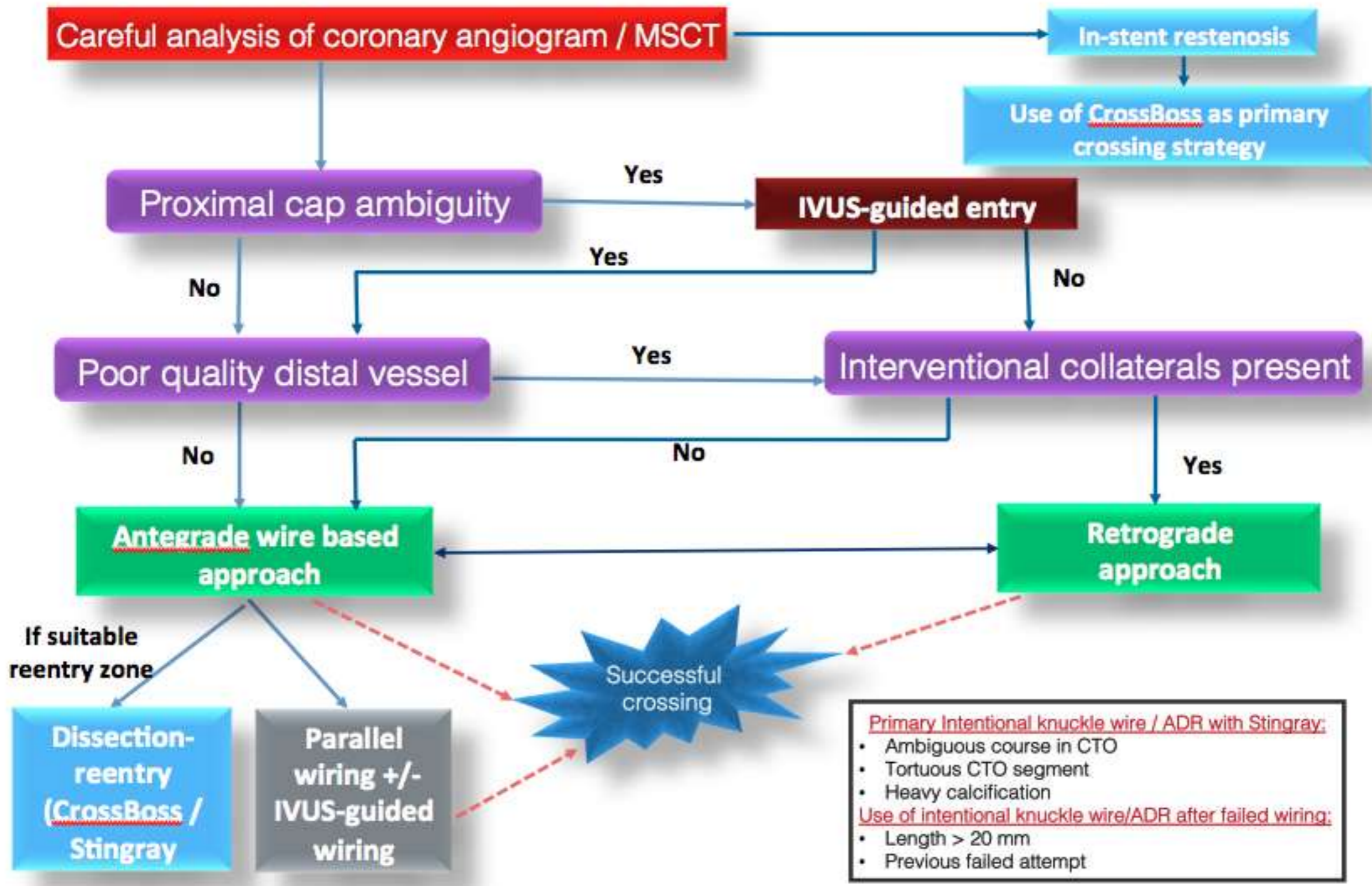










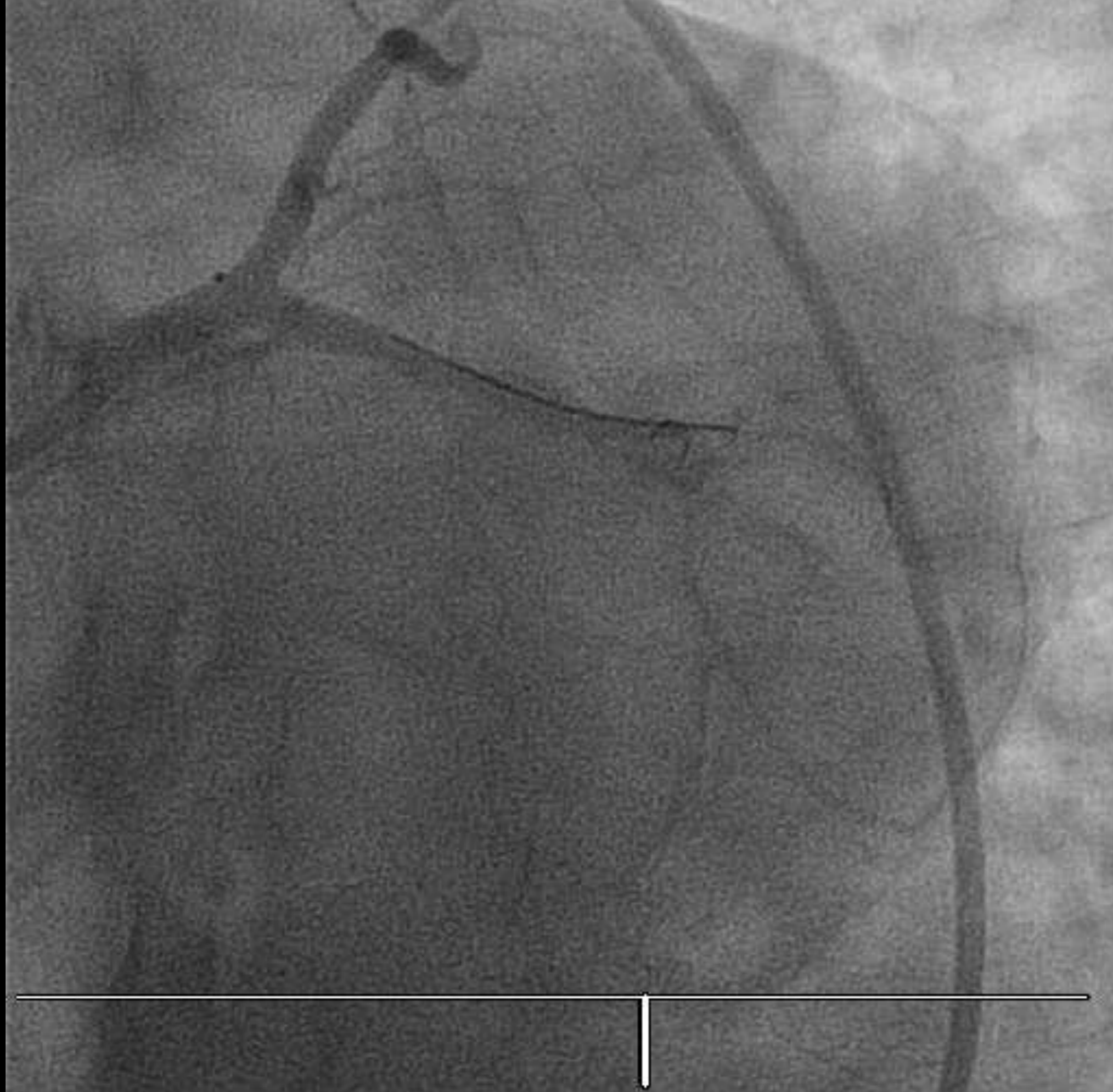


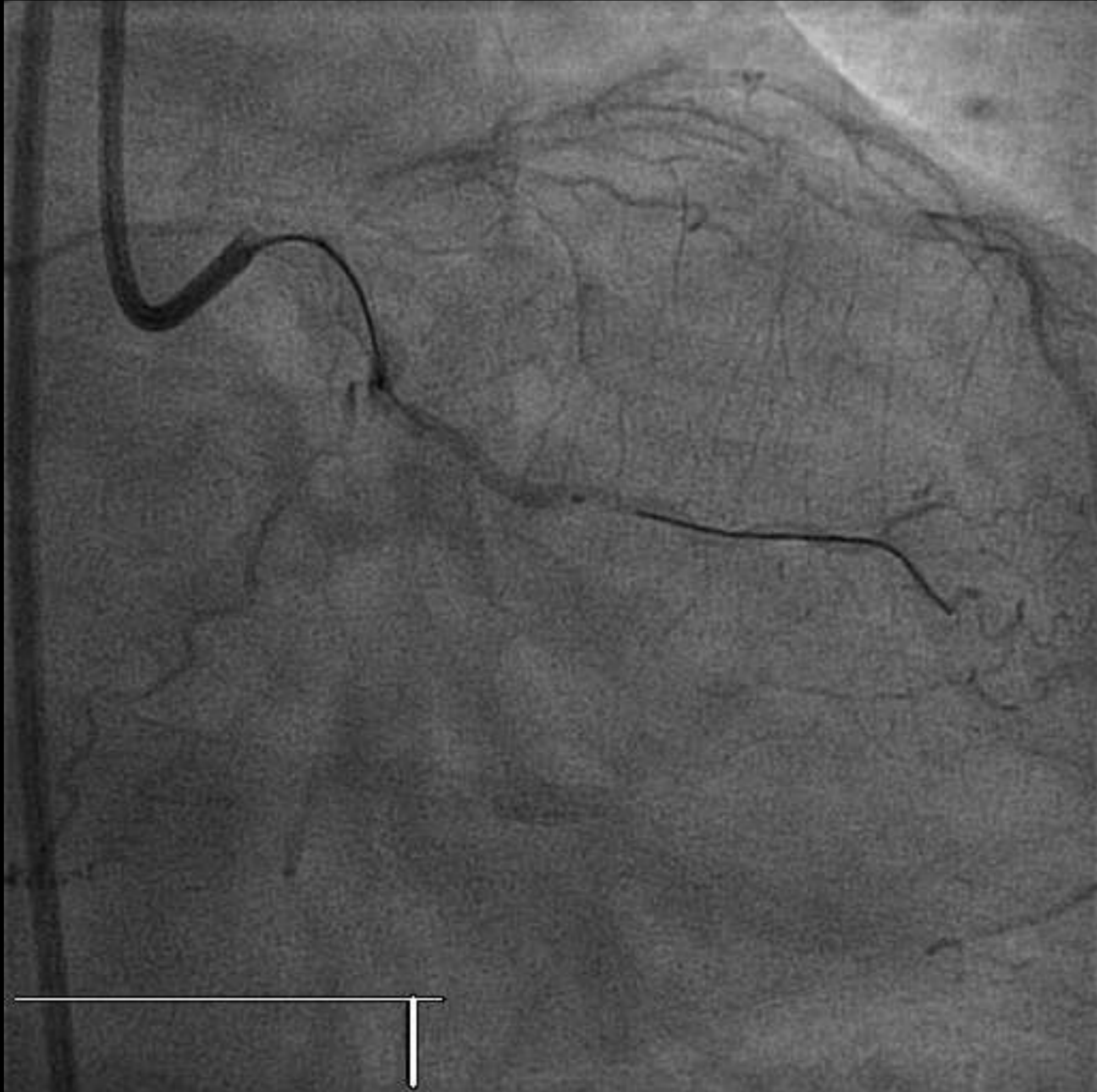
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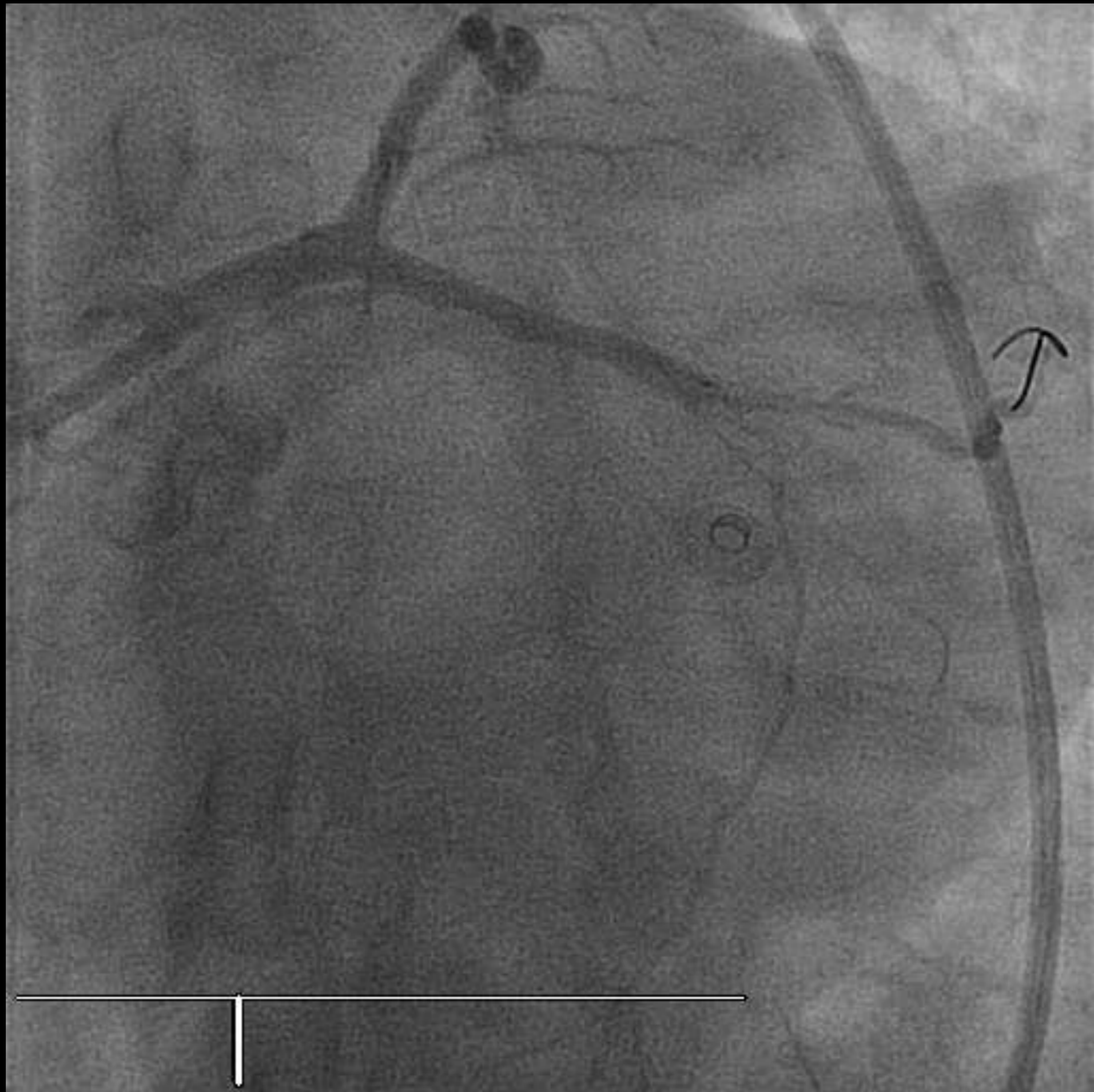
Overcoming Prox cap ambiguity.

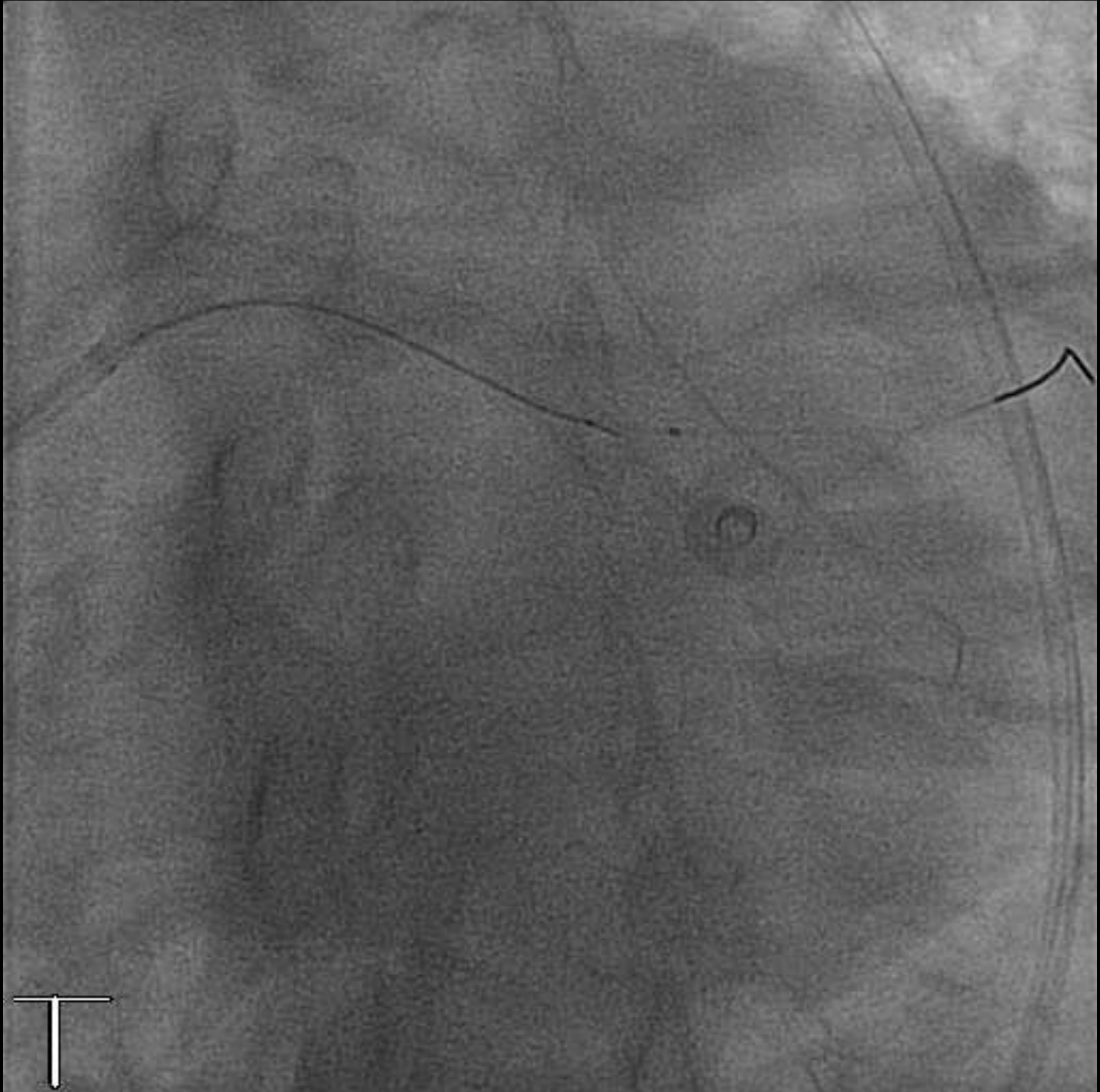
- Proximal cap Ambiguity is common.
- It should be dealt with by IVUS guidance which is possible in majority of cases.
- Often the cap is tough and a high penetration (Conquest 12, Gaia 3rd type) wire should be used over a twin lumen catheter.
- Step down after wire puncture should be done.

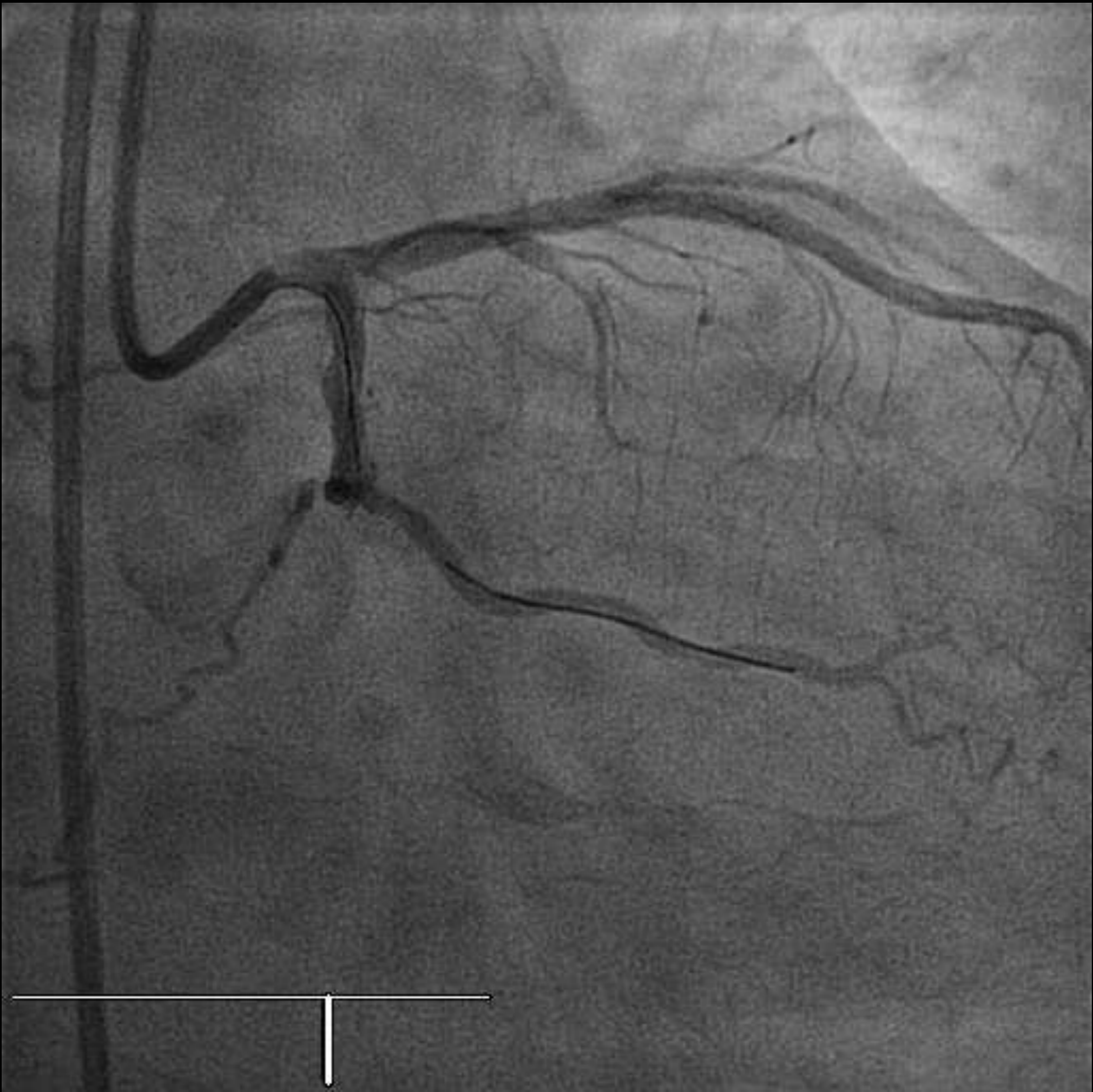


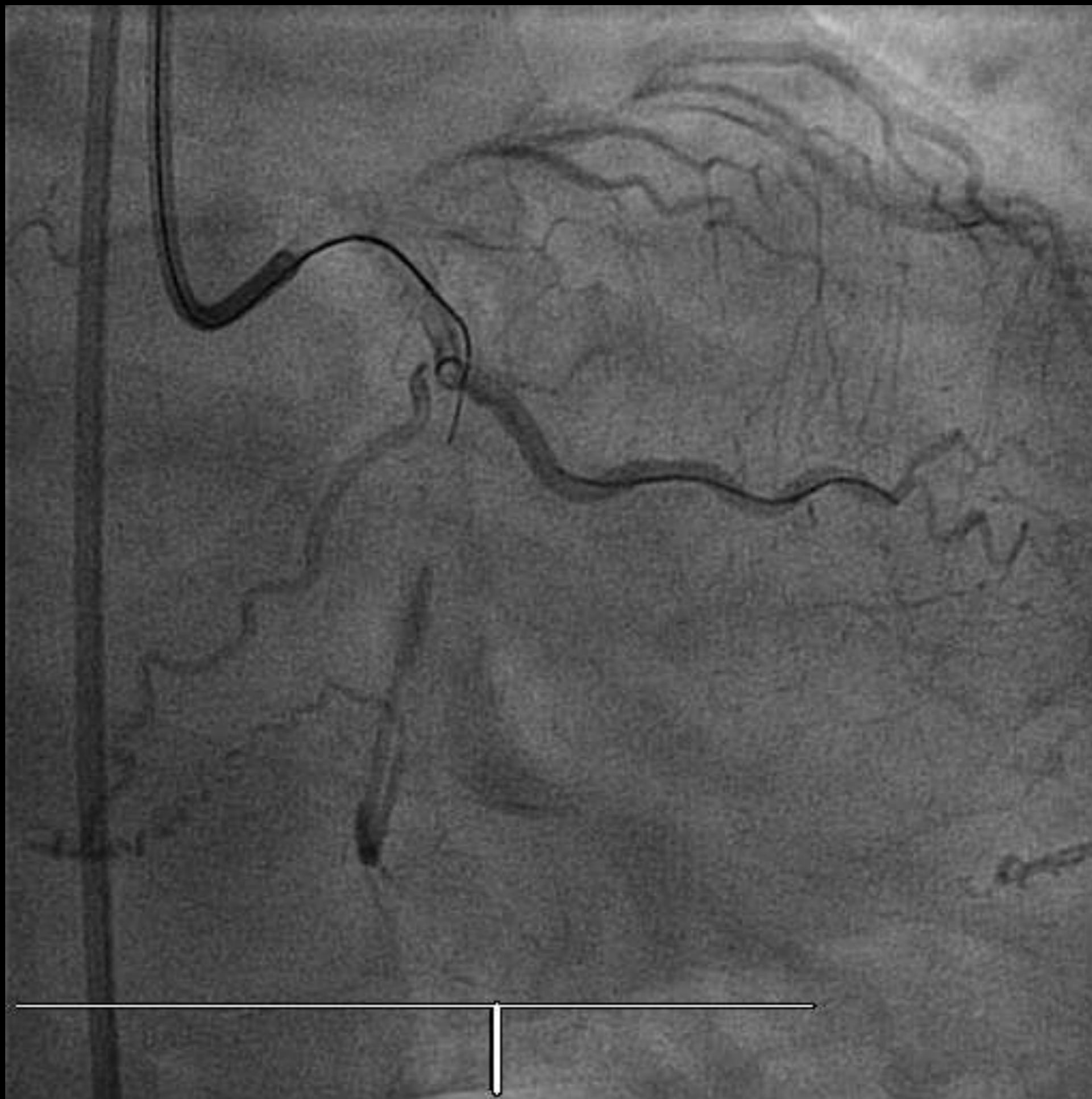


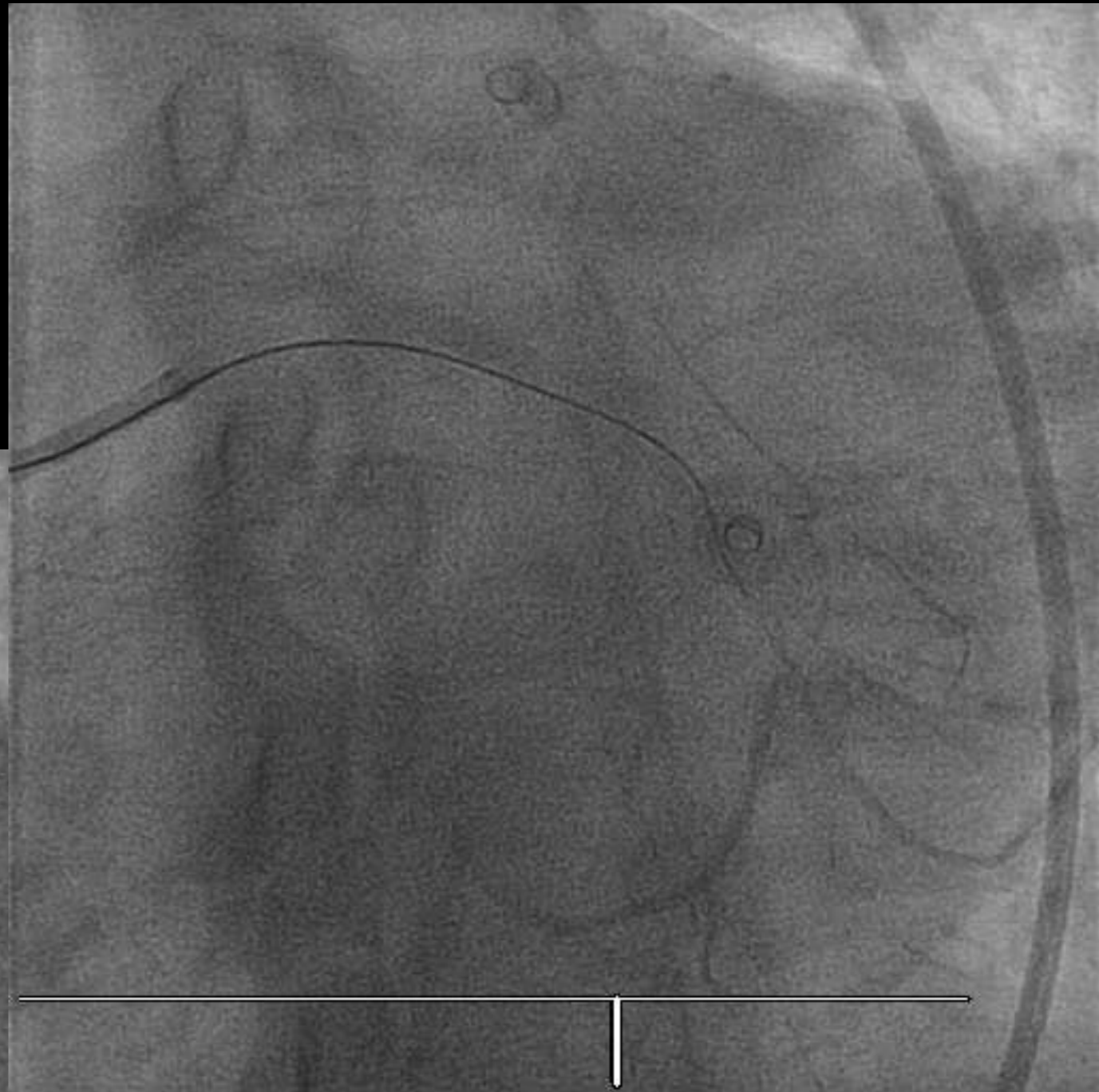
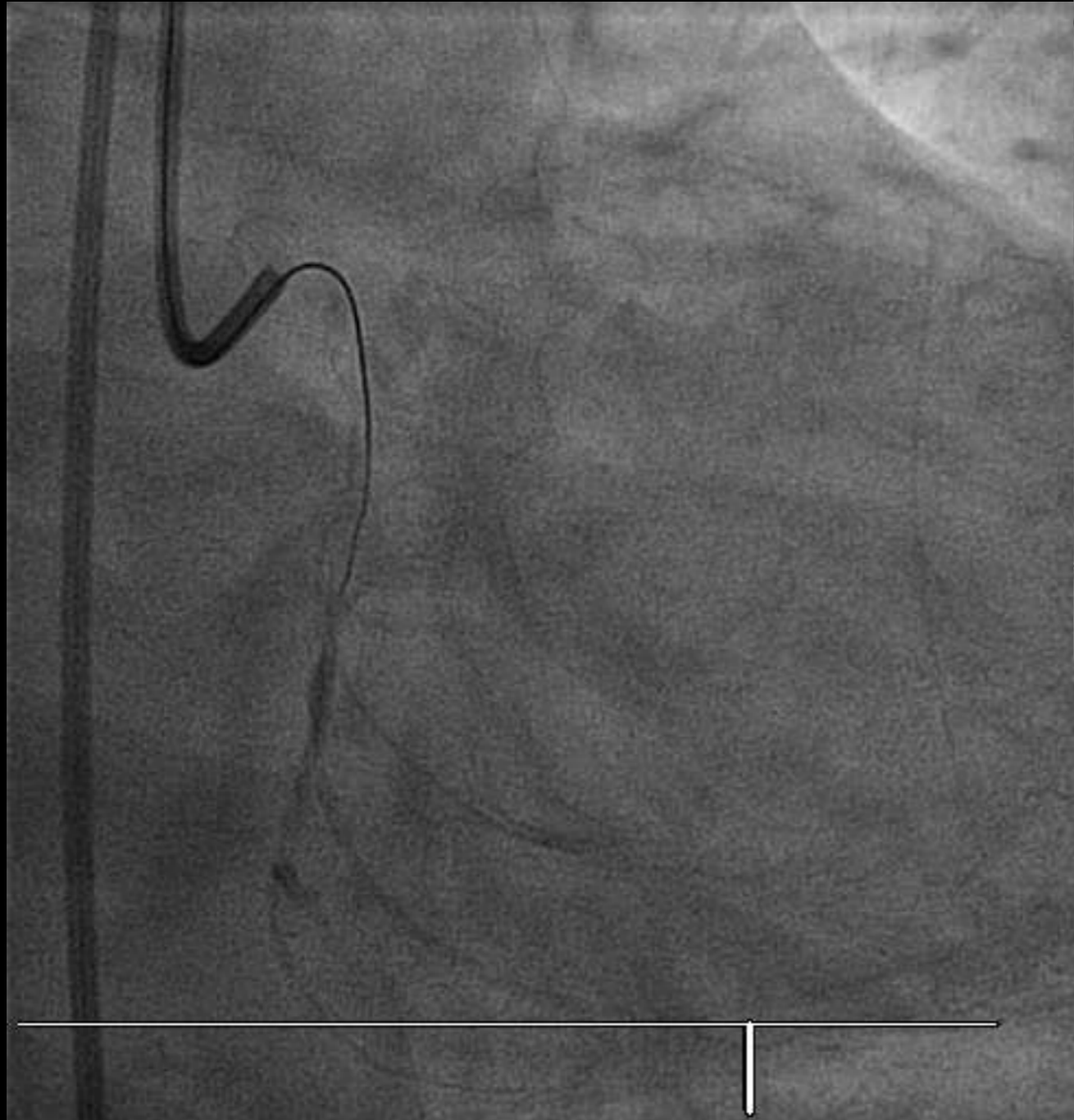


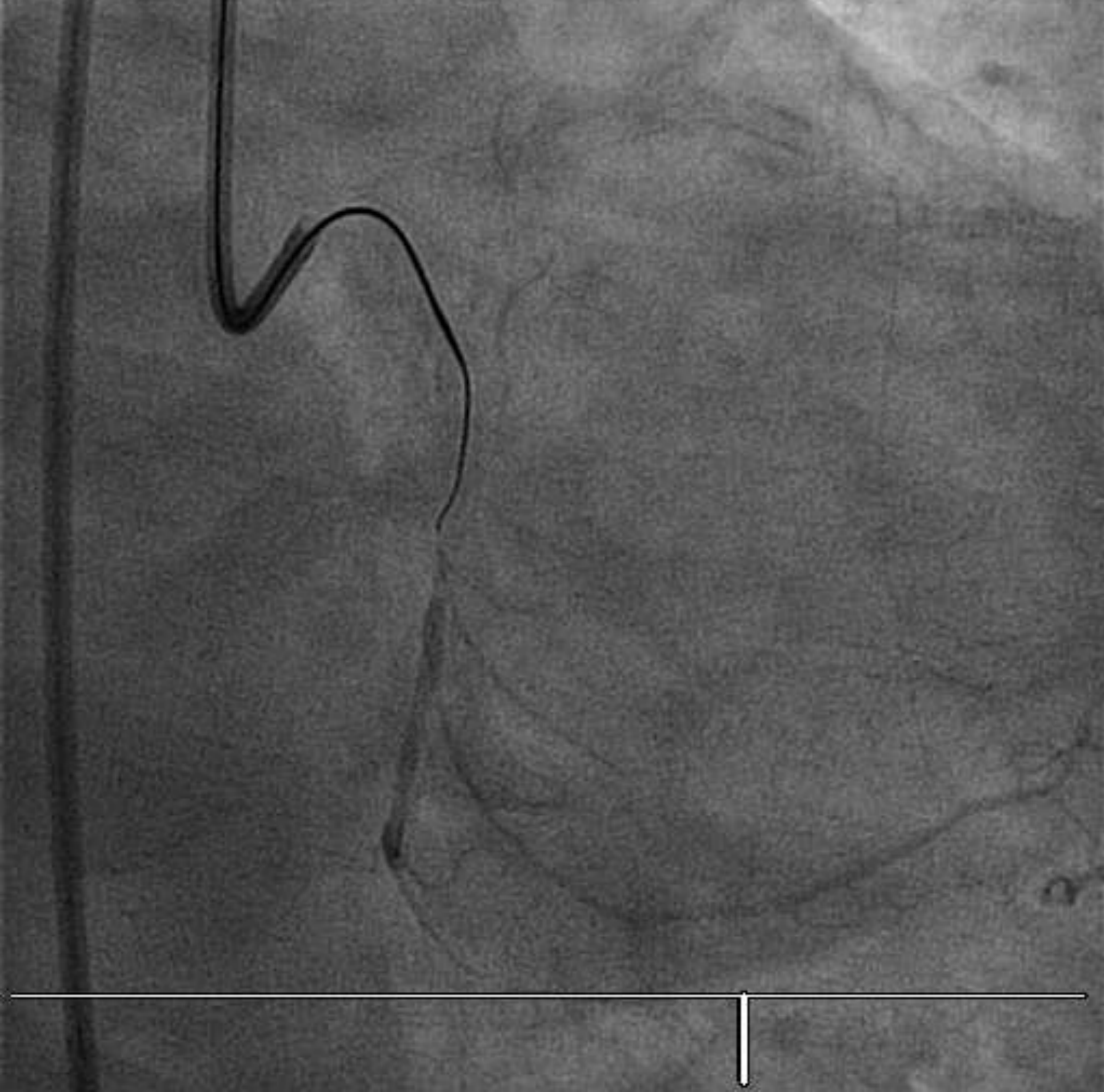


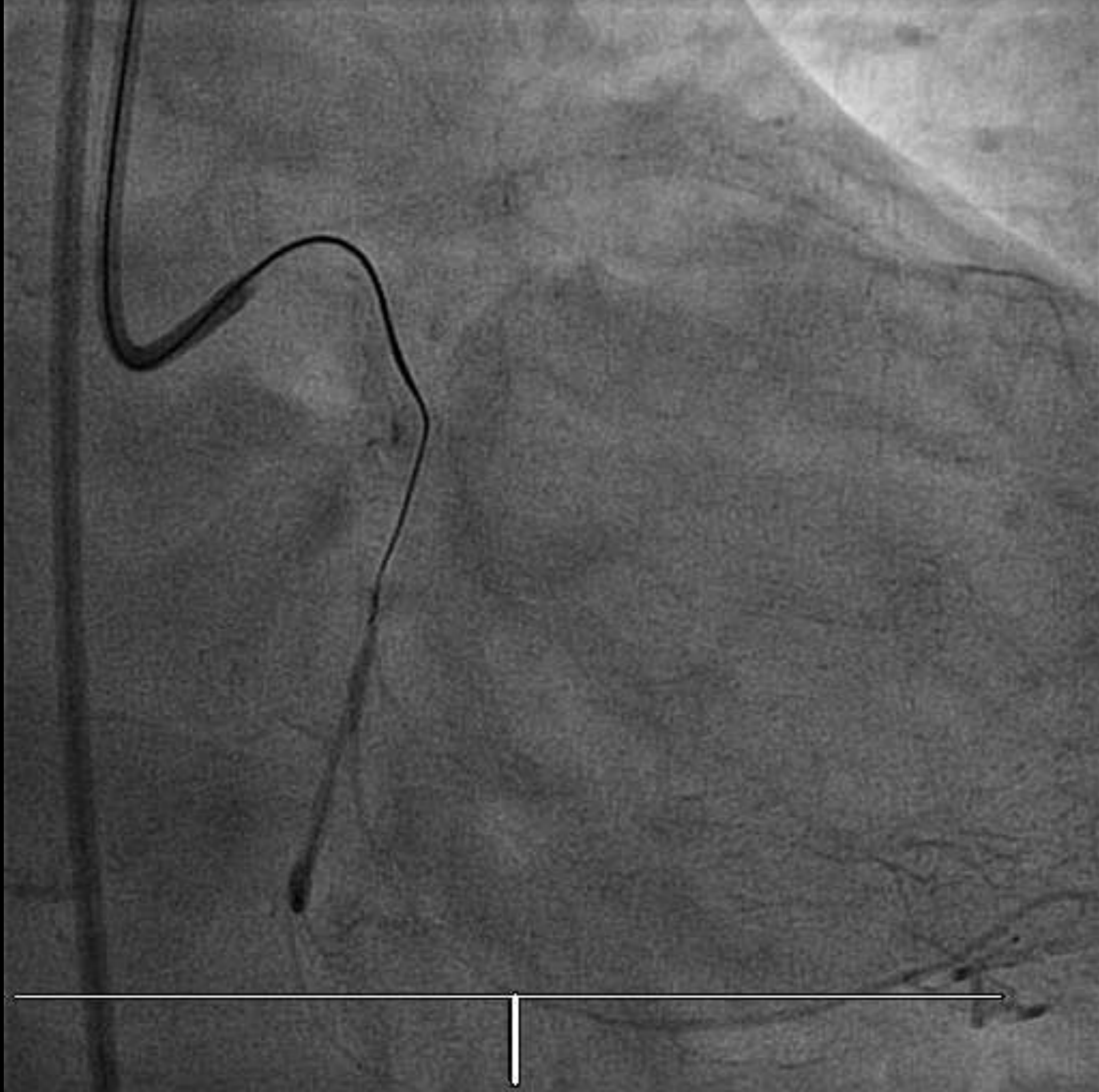


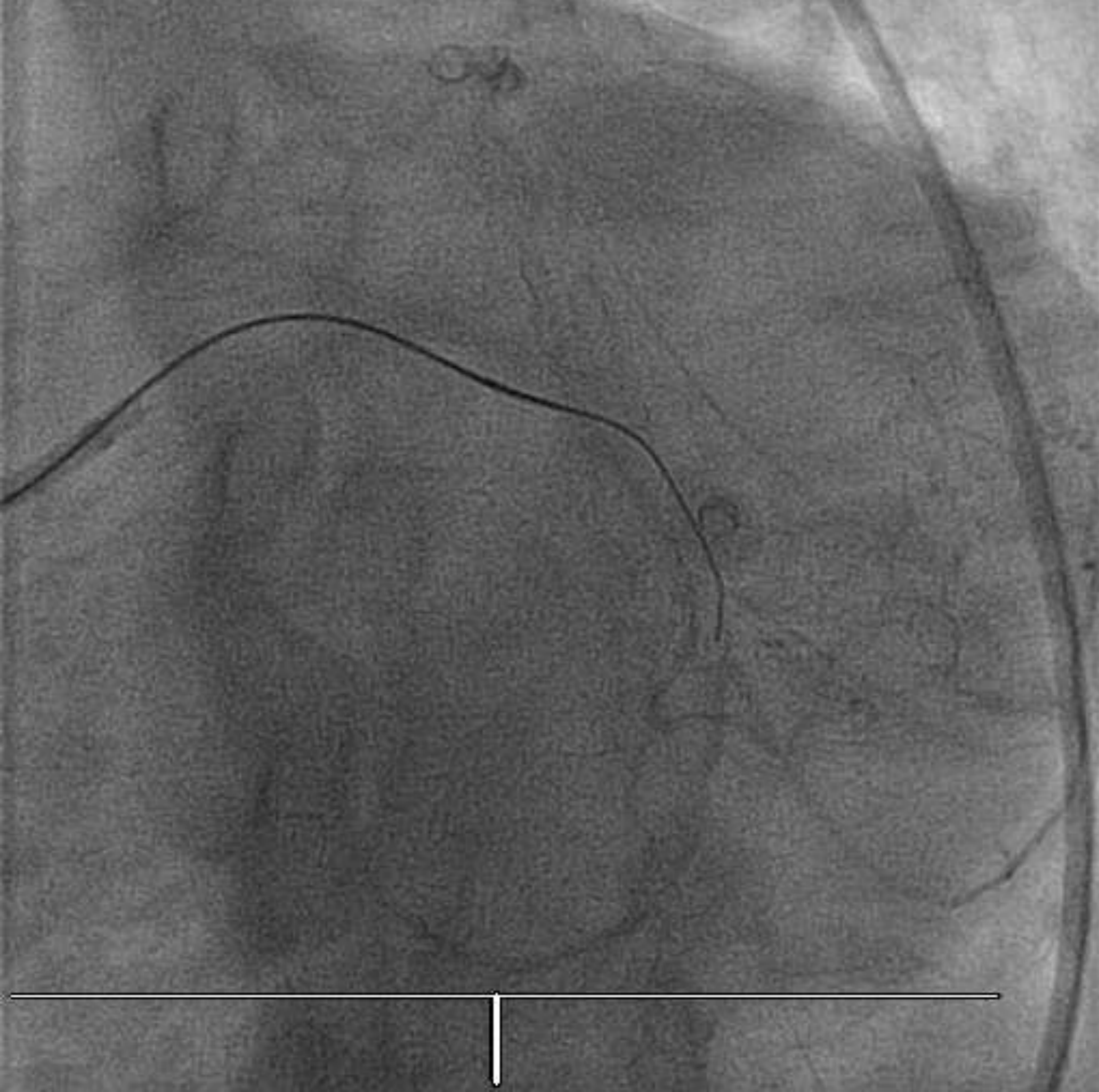


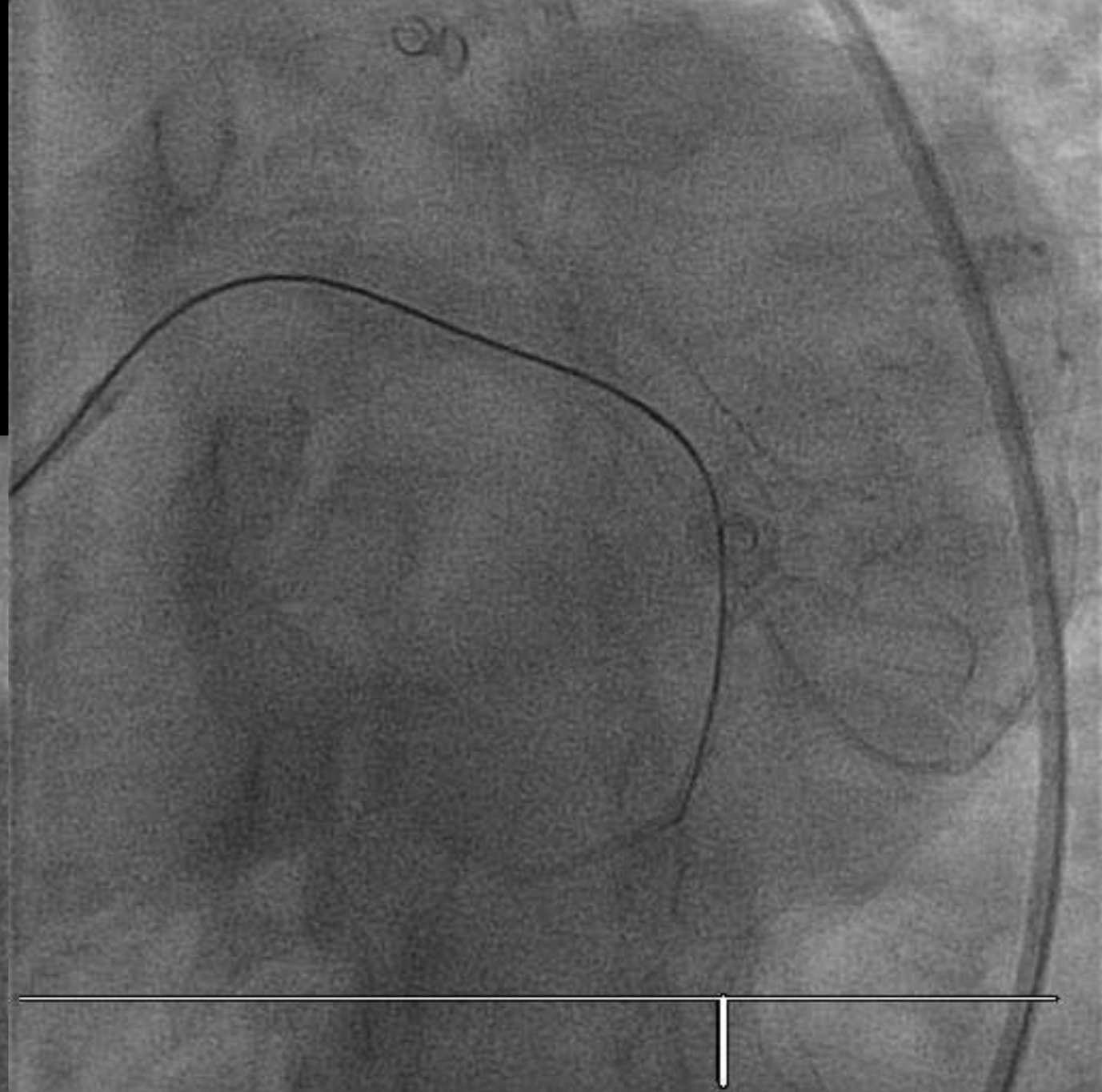
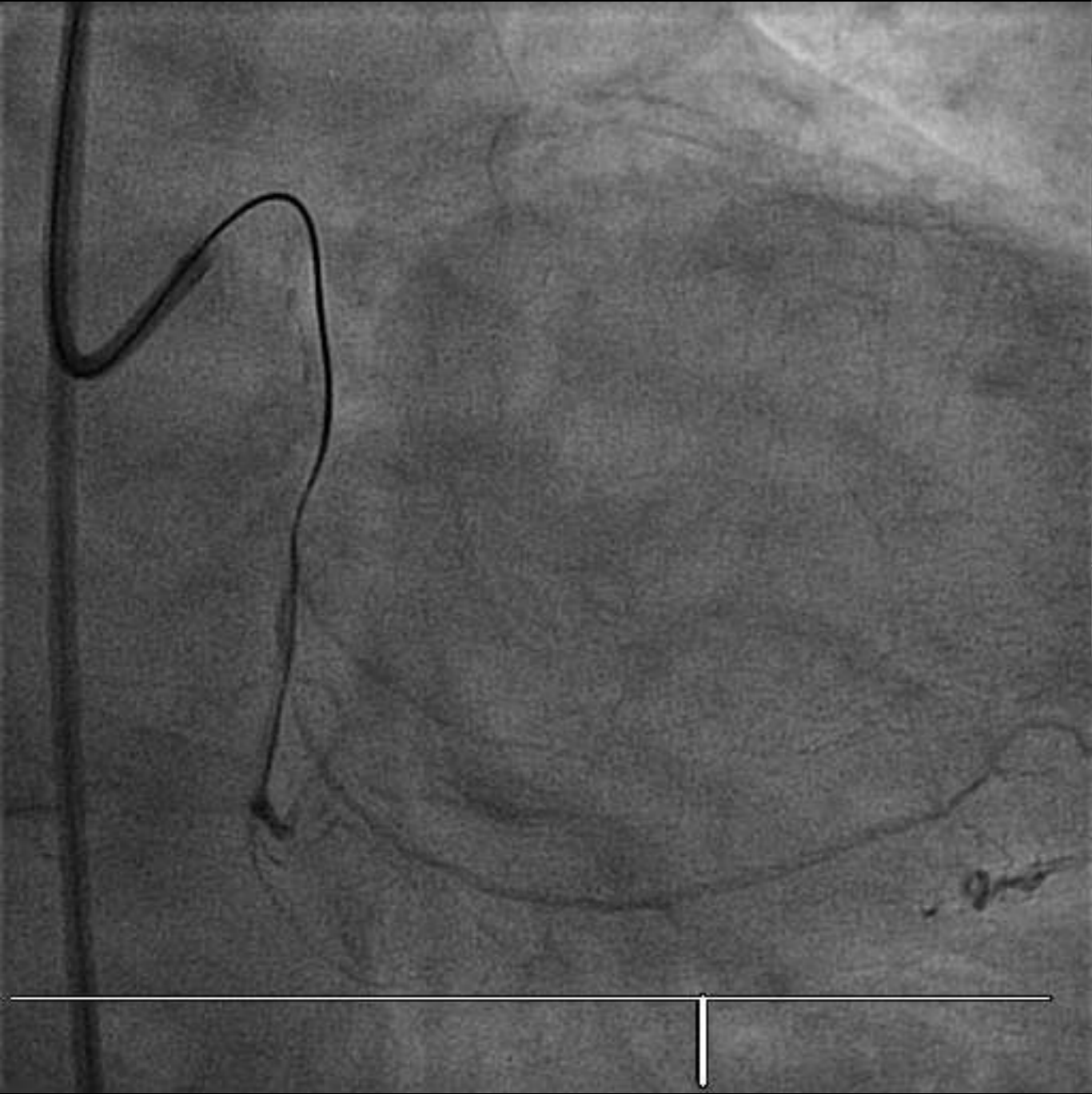


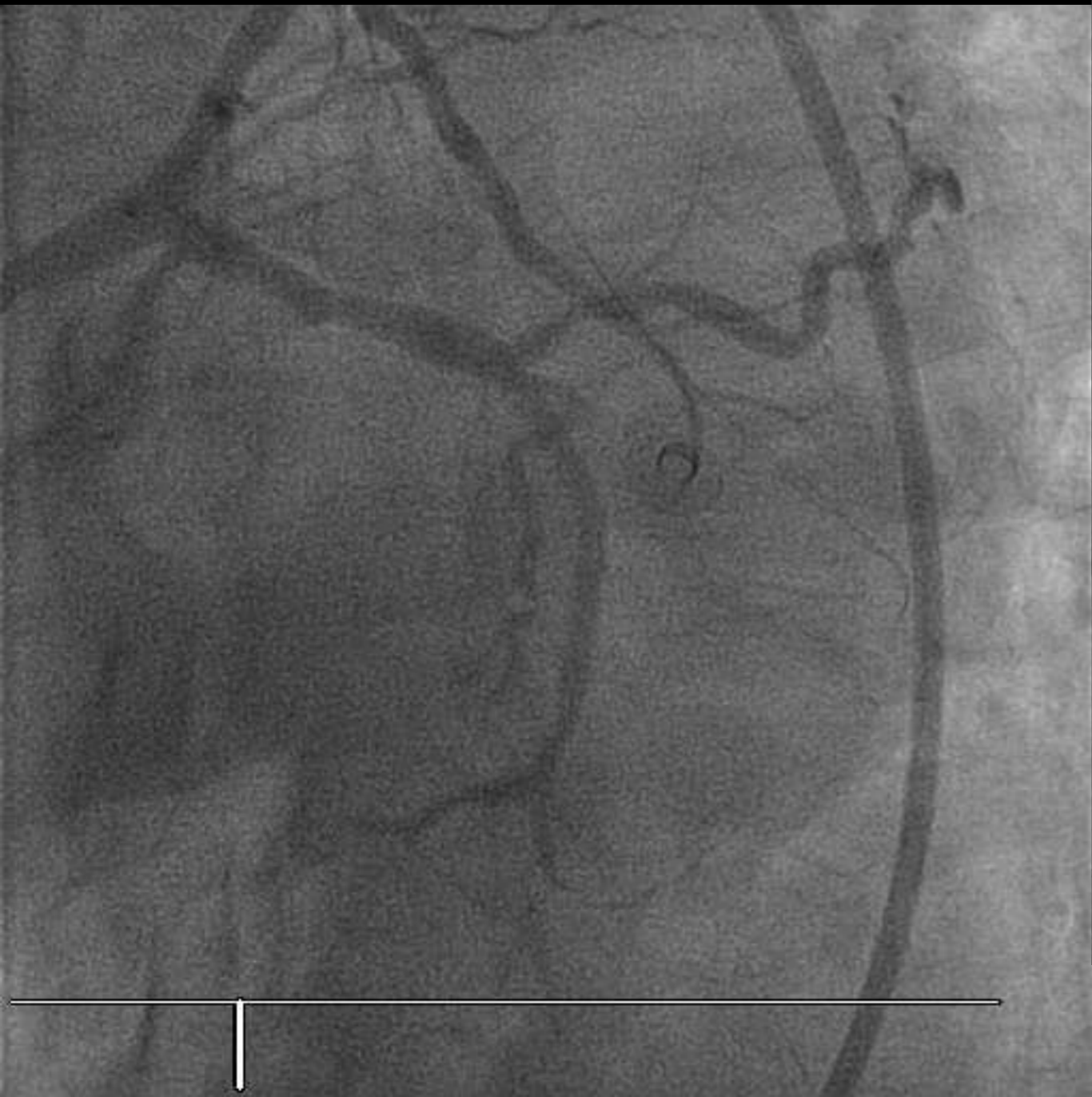






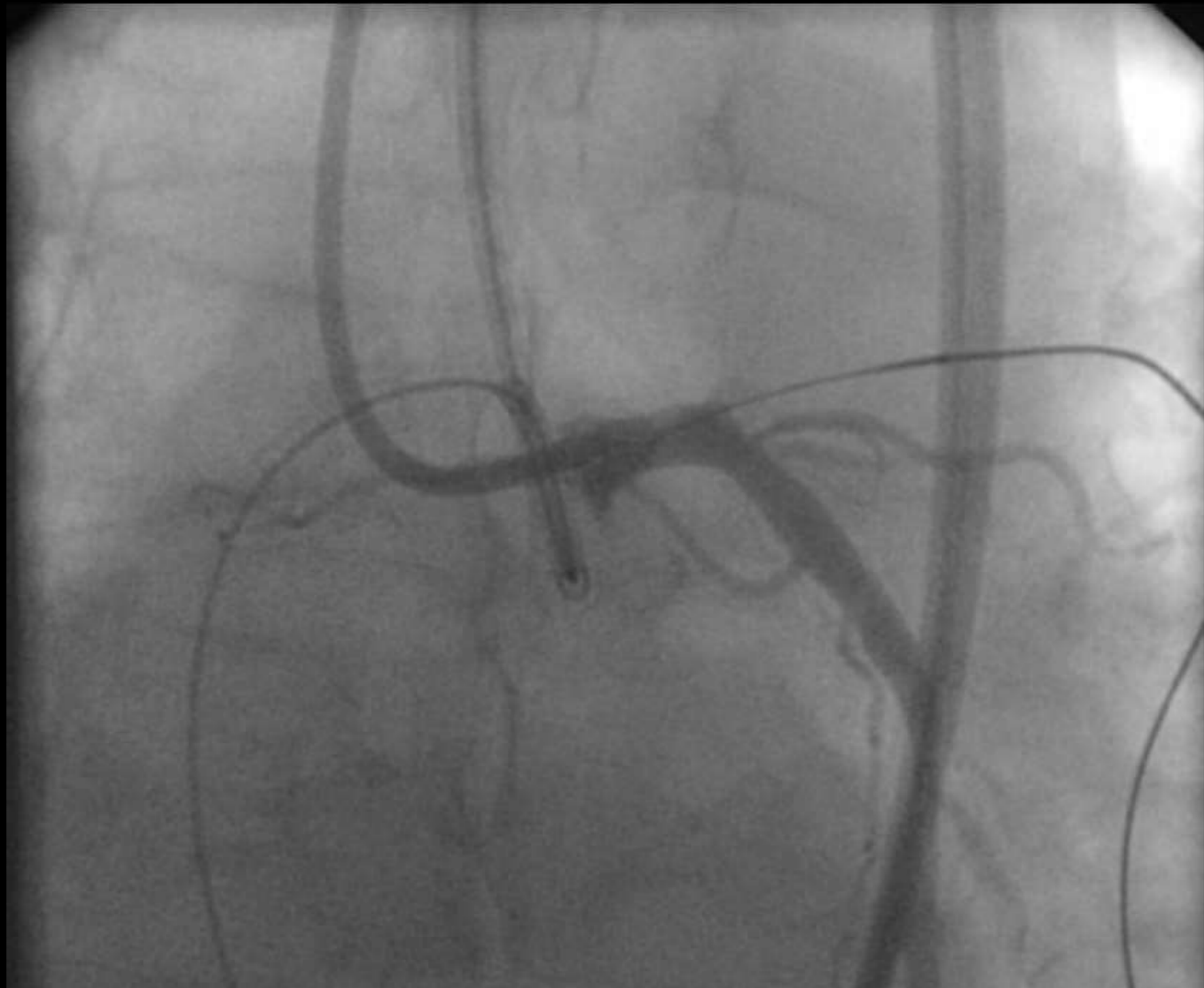


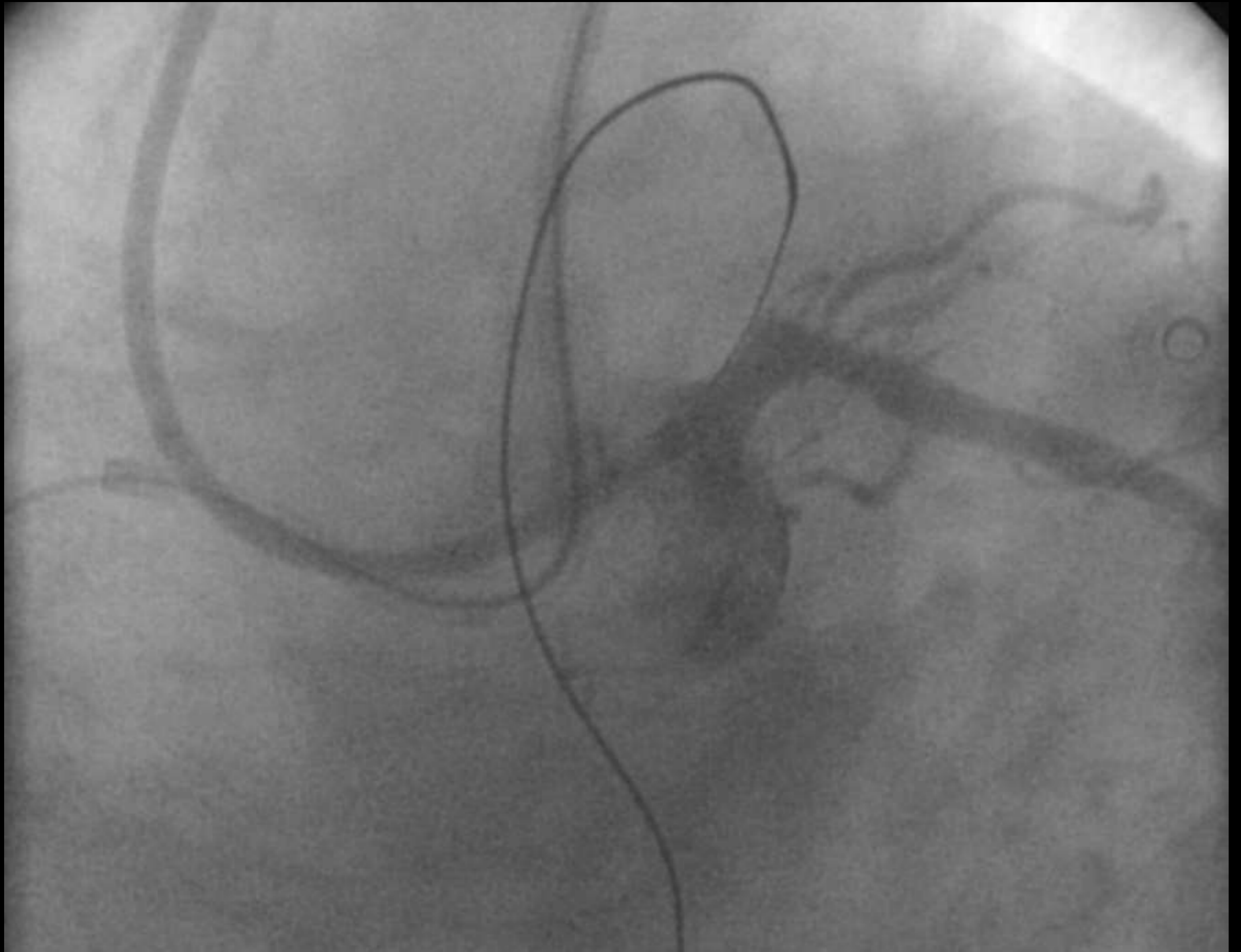




Antegrade preparation first.

- Improved wire technology means antegrade wiring is often successful.
- Antegrade preparation first reduces retrograde gear engagement time and thus reduce donor artery risks.
- Antegrade preparation first encourages reverse CART which is the fastest and surest way to complete wire crossing.
- Removes risks of single wire crossing.





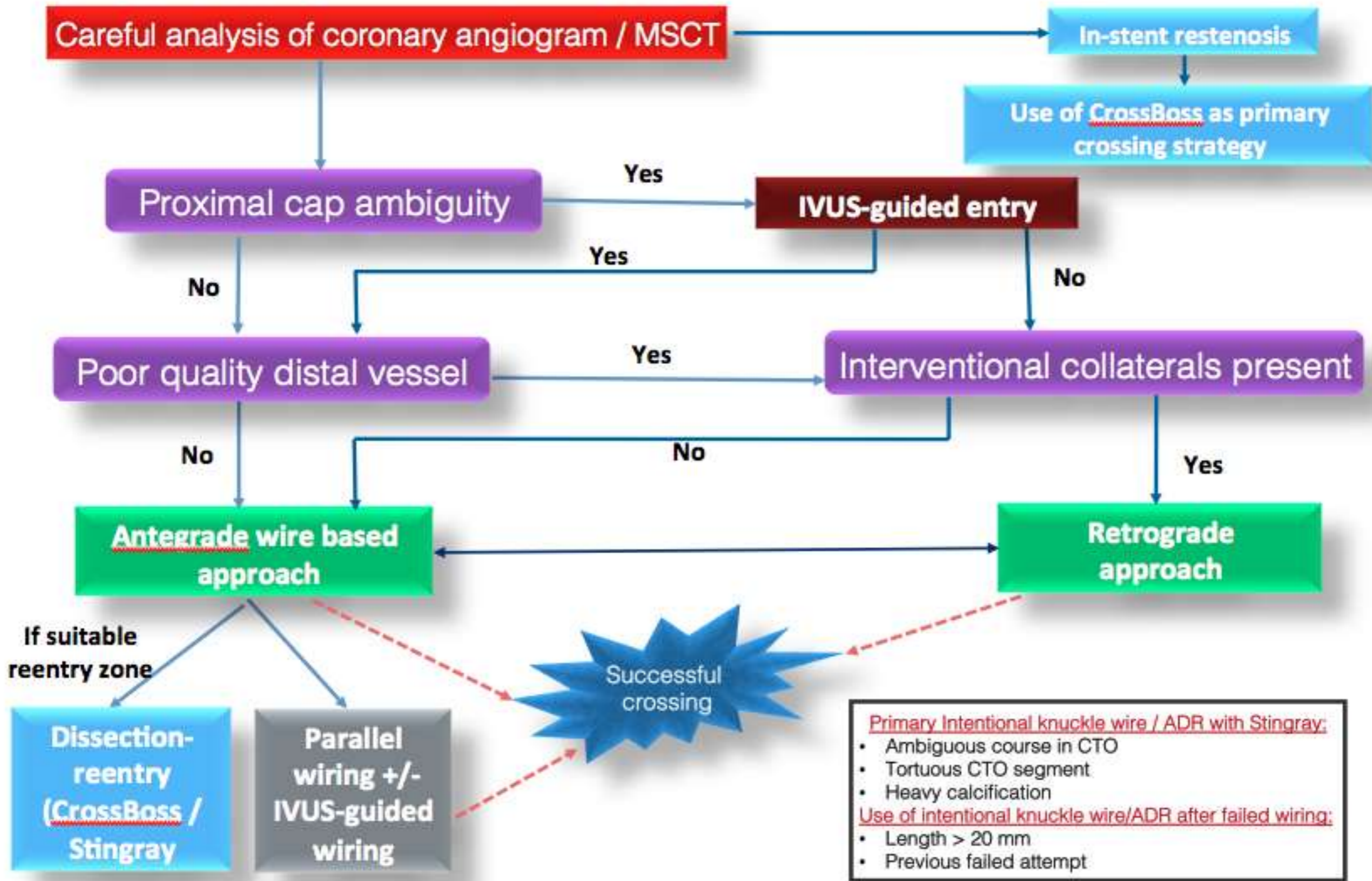
Comparison to Hybrid.

- Similarities

- Dual injection recommended.
- Contrast and Radiation limits enforced.
- Avoid Stuck in Failure Mode – rapid switch method.
- Inclusion of Crossboss stingray.
- Proctoring style of Hybrid.

Differences to Hybrid

- Determinants of CTO PCI strategy –
 - Prox cap ambiguity.
- Antegrade preparation first philosophy.
- When to Knuckle wire.
- Parallel wiring and IVUS guided wiring.



Consider stopping if > 3 hr; 3.7x eGFR ml contrast; Air Kerma > 5 Gy unless procedure well advanced.

Determinants of strategy

- Clear Proximal Cap and good distal vessel determines antegrade strategy in Hybrid.
- Obviously presence of Interventional collaterals determine possibility of retrograde.
- BUT for APCTO club algorithm, unclear proximal cap should be resolved with IVUS guidance and this skill is an important skill for CTO operators to learn.
- So only presence of interventional collaterals and distal vessel quality determines the choice of antegrade vs retrograde.

Antegrade preparation first.

- Compared to Hybrid, most cases under the APCTO algorithm will begin with antegrade first.
- However, if the anatomy dictates, the antegrade wiring maybe preparation and not aim for true to true wiring.

When to knuckle.

- In Hybrid – lesion length > 20 mm determines knuckle wire.
- In our experience often > 20 mm lesion can be crossed by wiring true to true.
- Knuckling should be reserved mainly for ambiguous, tortuous or extreme calcified lesions.

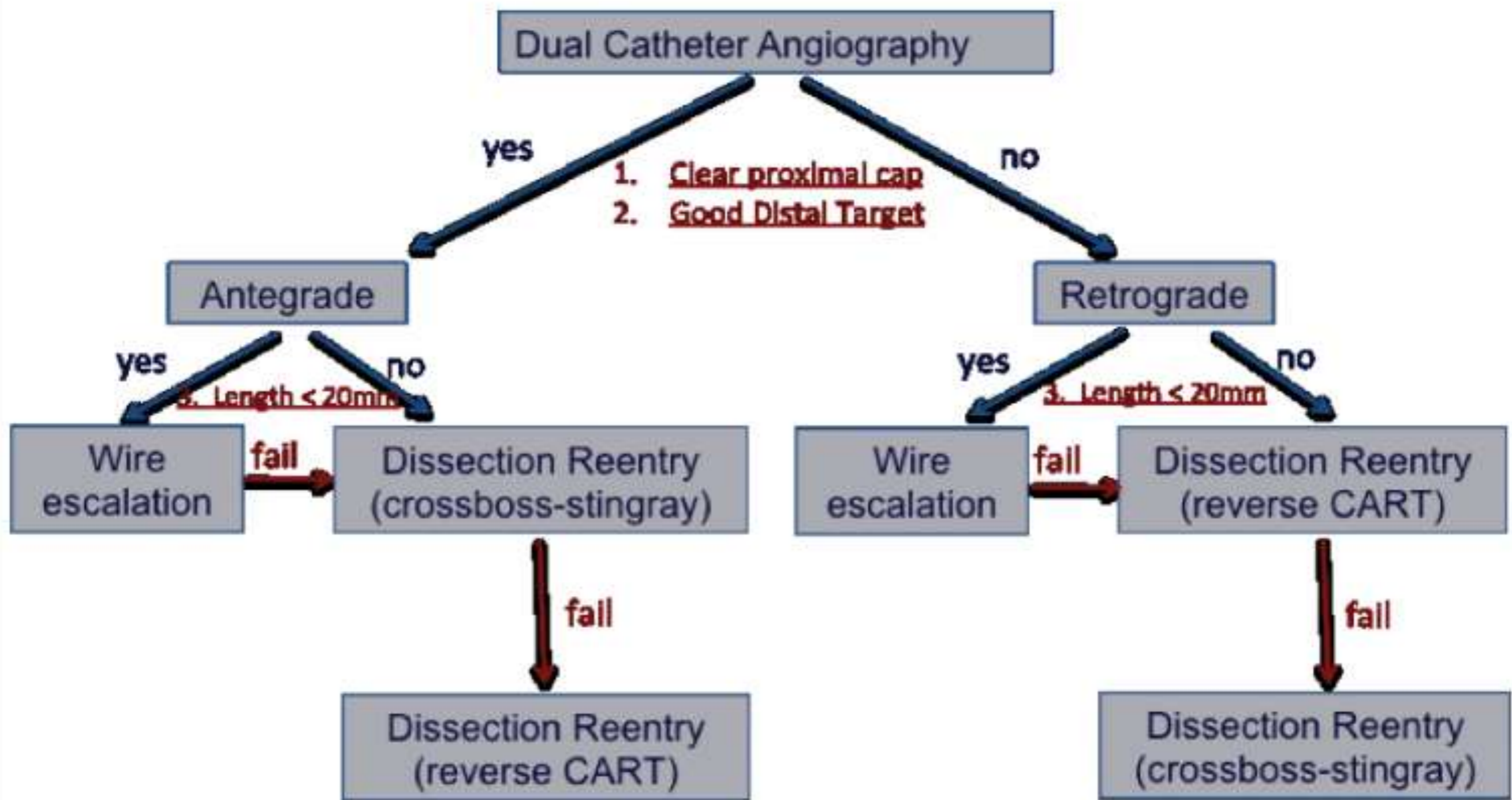


Figure 2. The hybrid algorithm. Reprinted with permission from Grantham JA, Thompson CA. Chronic total occlusion angioplasty: indications appropriateness, and strategy. In: Thompson CA, ed. Textbook of Cardiovascular Intervention. London, UK: Springer-Verlag London; 2014:289–297

APCTO algorithm recommends

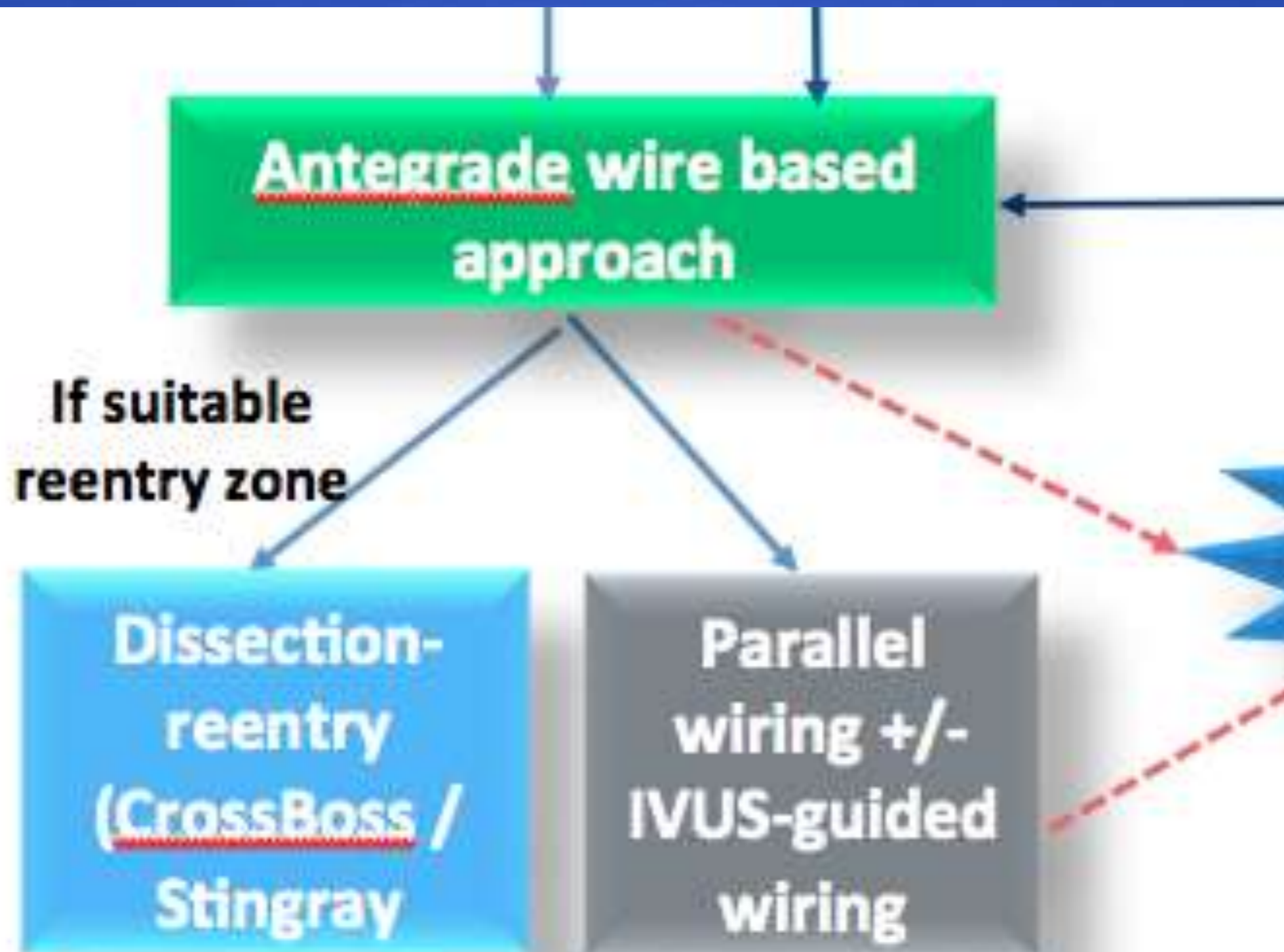
Primary Intentional knuckle wire / ADR with Stingray:

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

Use of intentional knuckle wire/ADR after failed wiring:

- Length > 20 mm
- Previous failed attempt

Parallel wiring and IVUS wiring



How to chose.

- Availability and skill of parallel wire/ IVUS guided wiring/ Stingray will be main determinant of which to use.
- If both available -> not diseased re-entry site, close position of wire to true lumen, absence of bifurcation at distal cap, lack of calcium at re-entry zone all favours stingray.
- BUT stingray must be used early!!!

Antegrade and retrograde

- There is an informative antegrade and retrograde subalgorithm in APCTO club.

From Left to Right: Eugene B Wu (Hong Kong); Ge Lei (Shanghai); Jie Qian (Beijing); Scott Harding (New Zealand); Chen Ji Yan (GuangZhou); Sidney Lo (Australia); Etsuo Tsuchikane (Japan); Osamu Katoh (Japan); Soo Teik Lim (Singapore); Paul Kao (Taiwan).

CTO Club

*The 16th Seminar of
Angioplasty of Chronic Total Occlusions*

