Successful use of the Guideliner catheter to treat dissection distal to previous implanted stent in a extremely tortuous and calcified right coronary artery: *A "save the day" tool*

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Successful use of the Guideliner catheter to treat dissection distal to previous implanted stent in a extremely tortuous and calcified right coronary artery: A “save the day” tool

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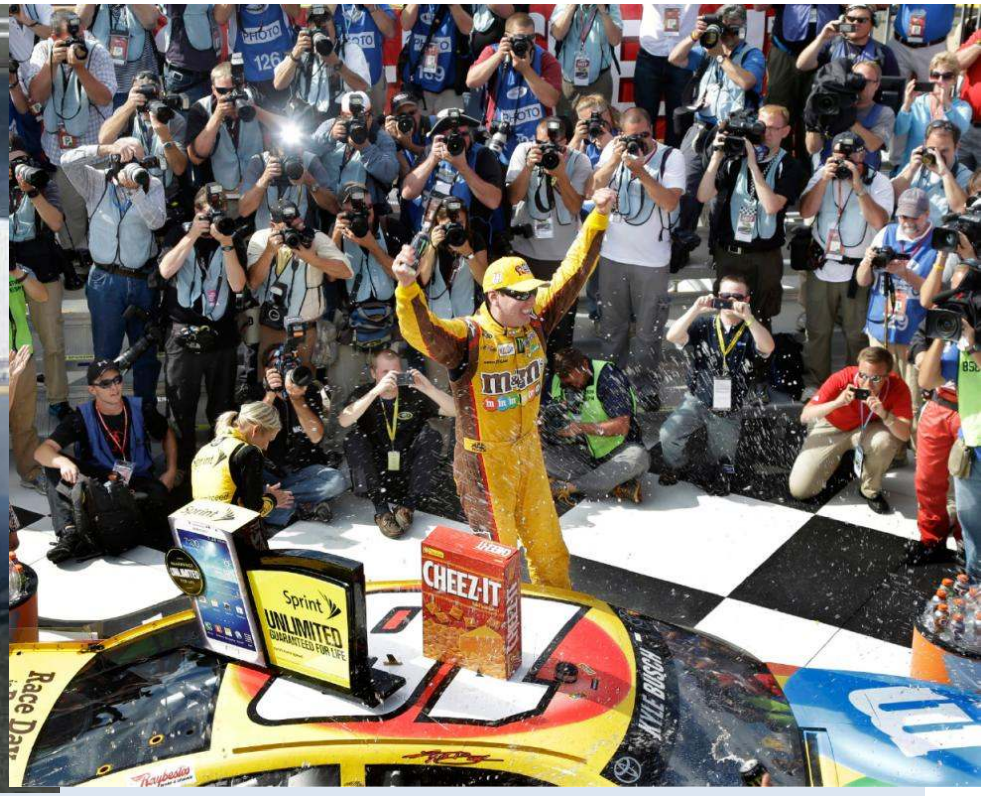
Percutaneous coronary intervention:

Most times we win…



Currently, most PCIs proceed as planned without the need for specialized and complex strategies.

...but sometimes we have adverse events

Delivering equipment to a coronary lesion is at the core of PCI

Although advances in equipment design have significantly facilitated delivery, some lesions, especially in the calcified and tortuous vessels, may be challenging to reach, forcing us to go back to the basics and apply various techniques to succeed.

CASE

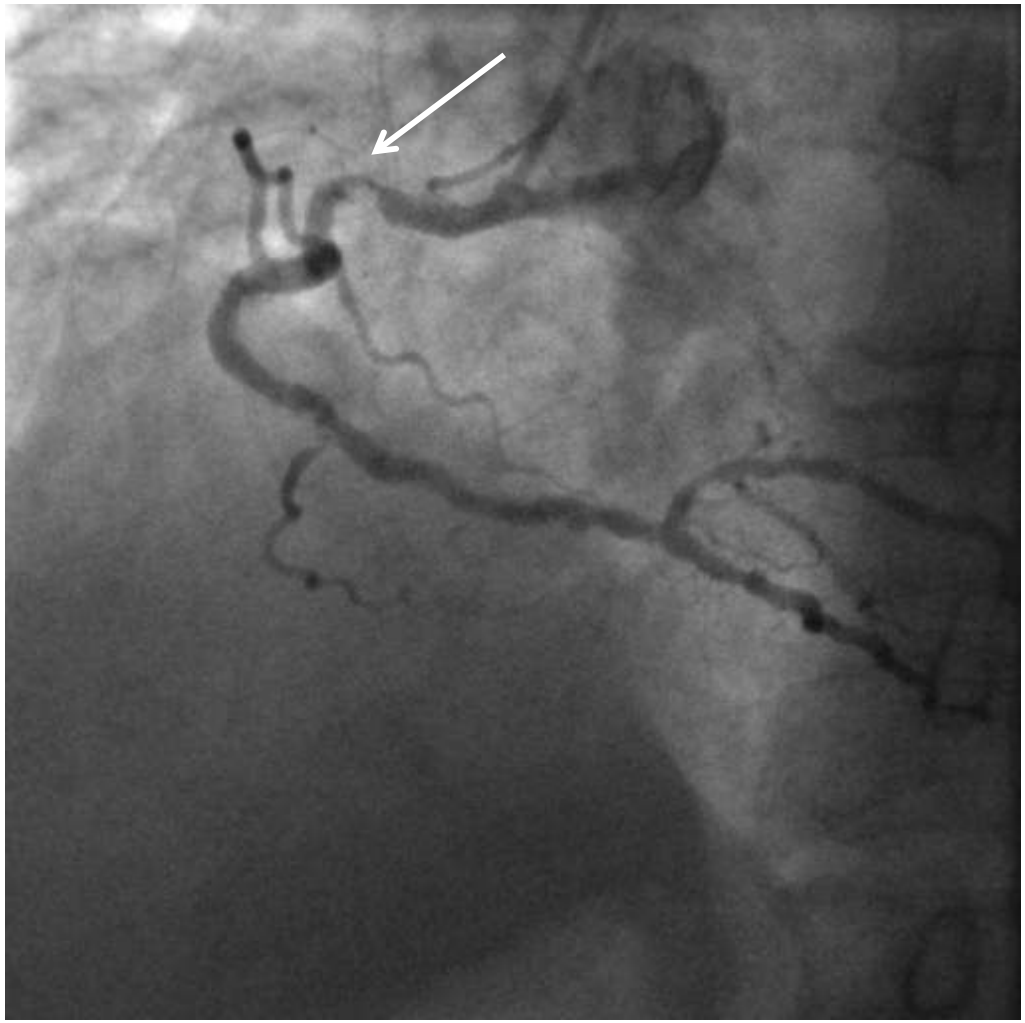
✓ A 79-year-old male with significant exertional angina was referred for a coronary angiography.

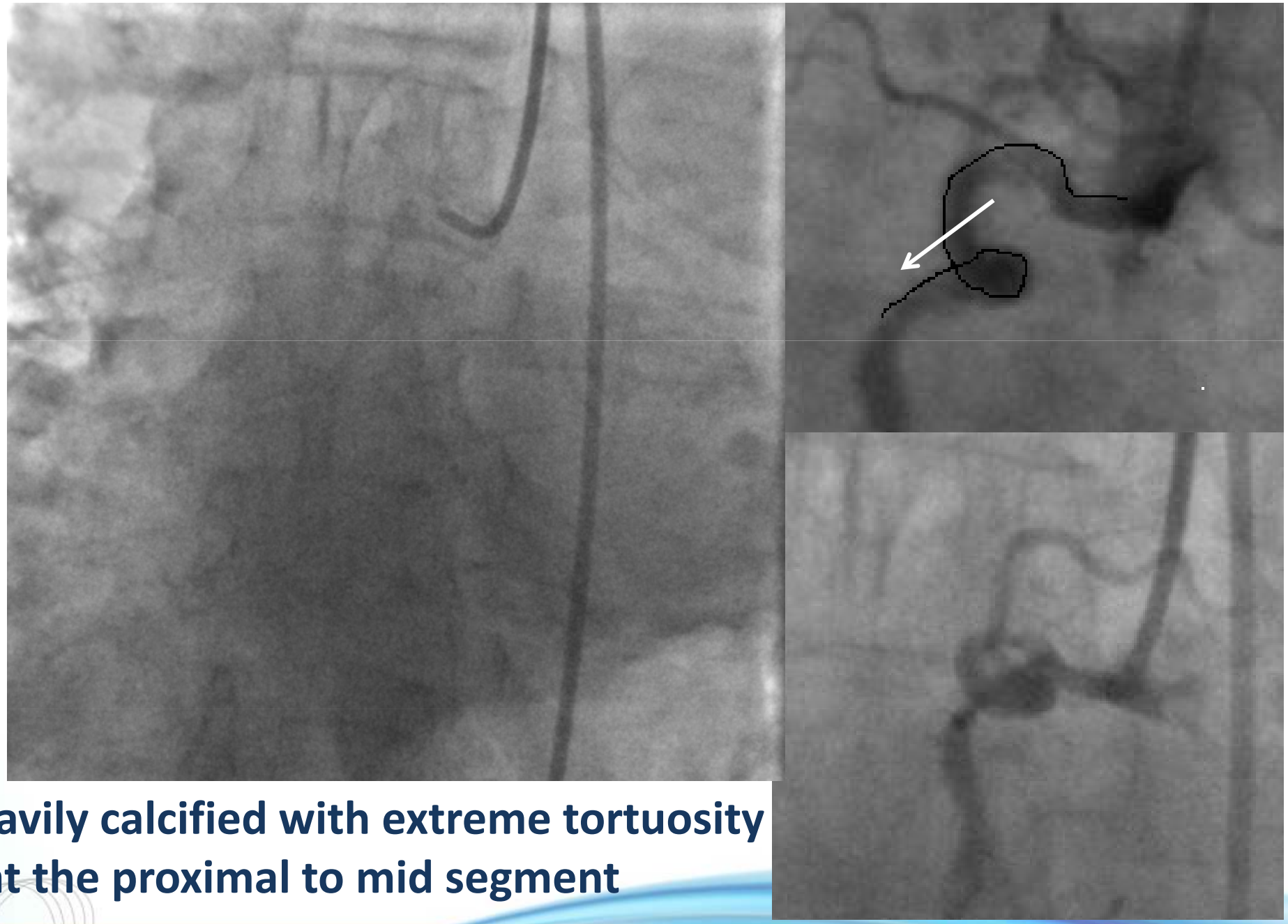
✓ Coronary risk factors : hypertension, dyslipidaemia

✓ ECG: sinus rhythm with T inversion in the inferior leads.

✓ Echocardiography demonstrated mild hypokinesia of the inferior wall with overall preservation of global left ventricular ejection fraction.

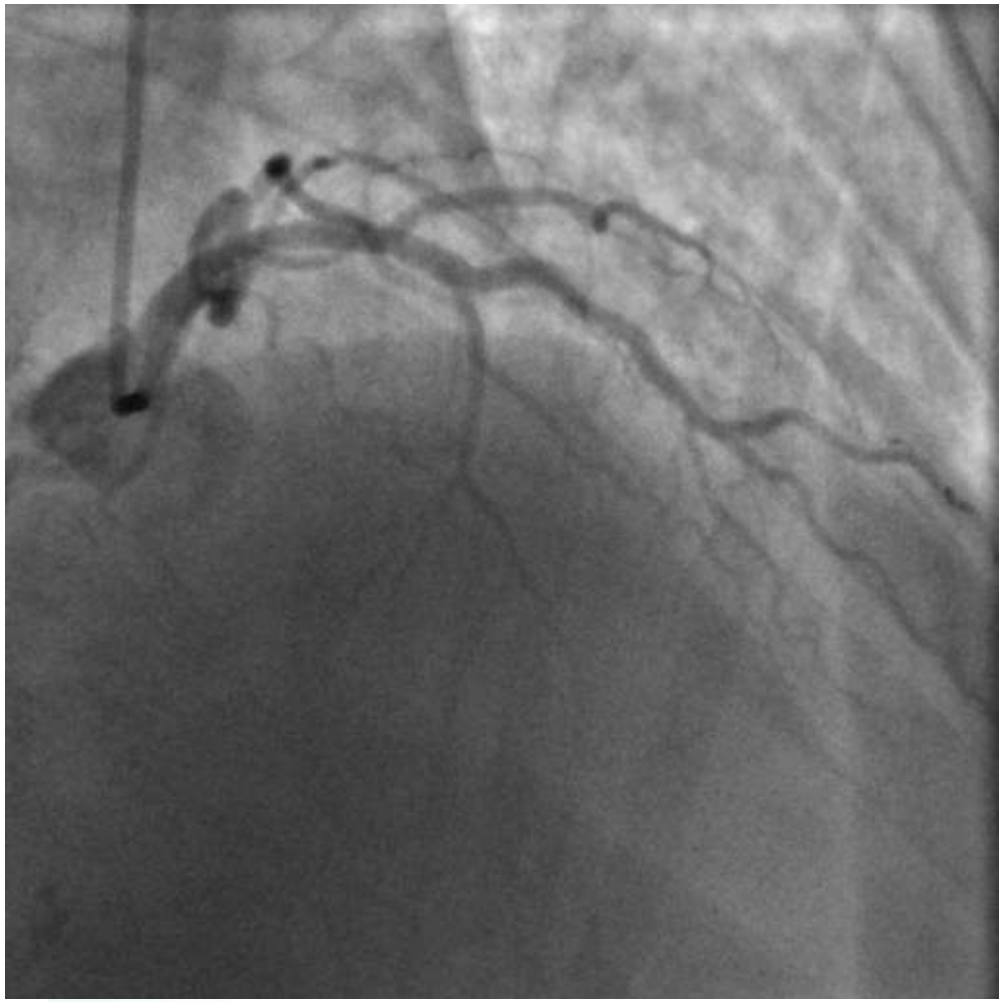
Critical lesion at the proximal segment of the RCA

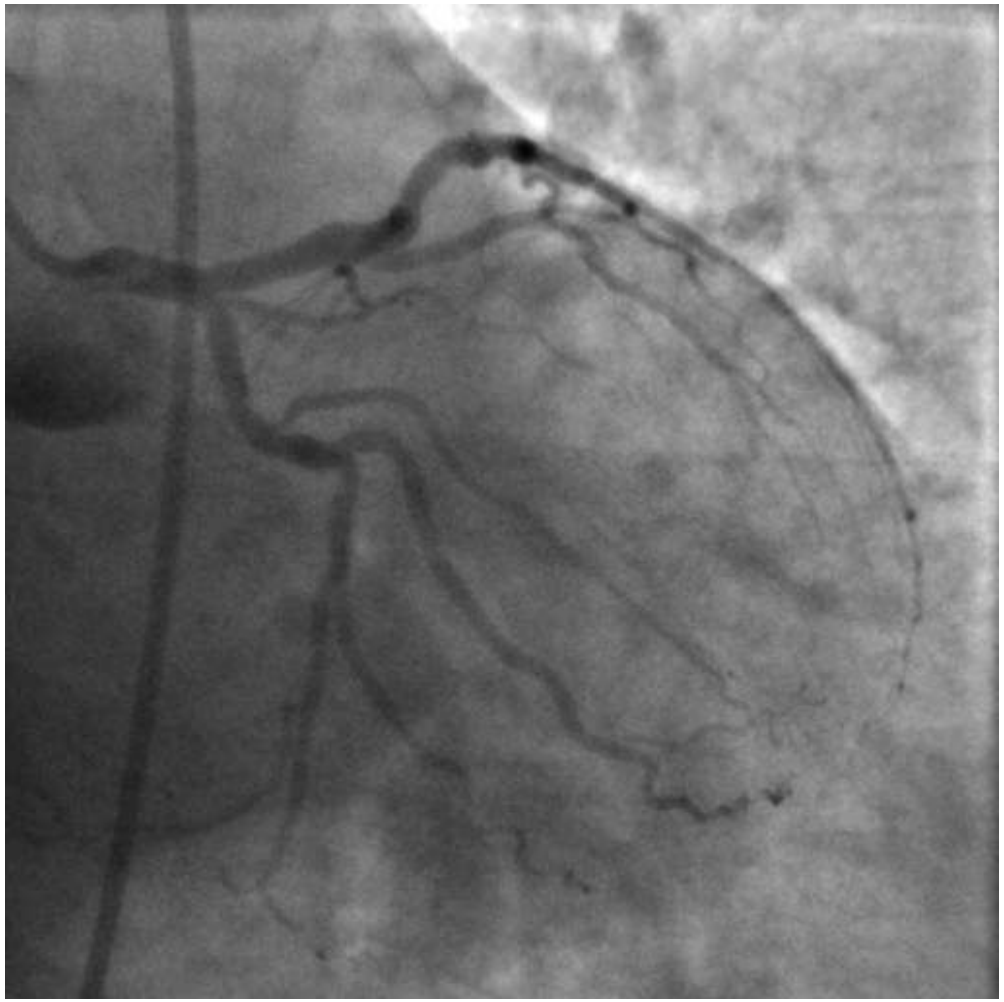




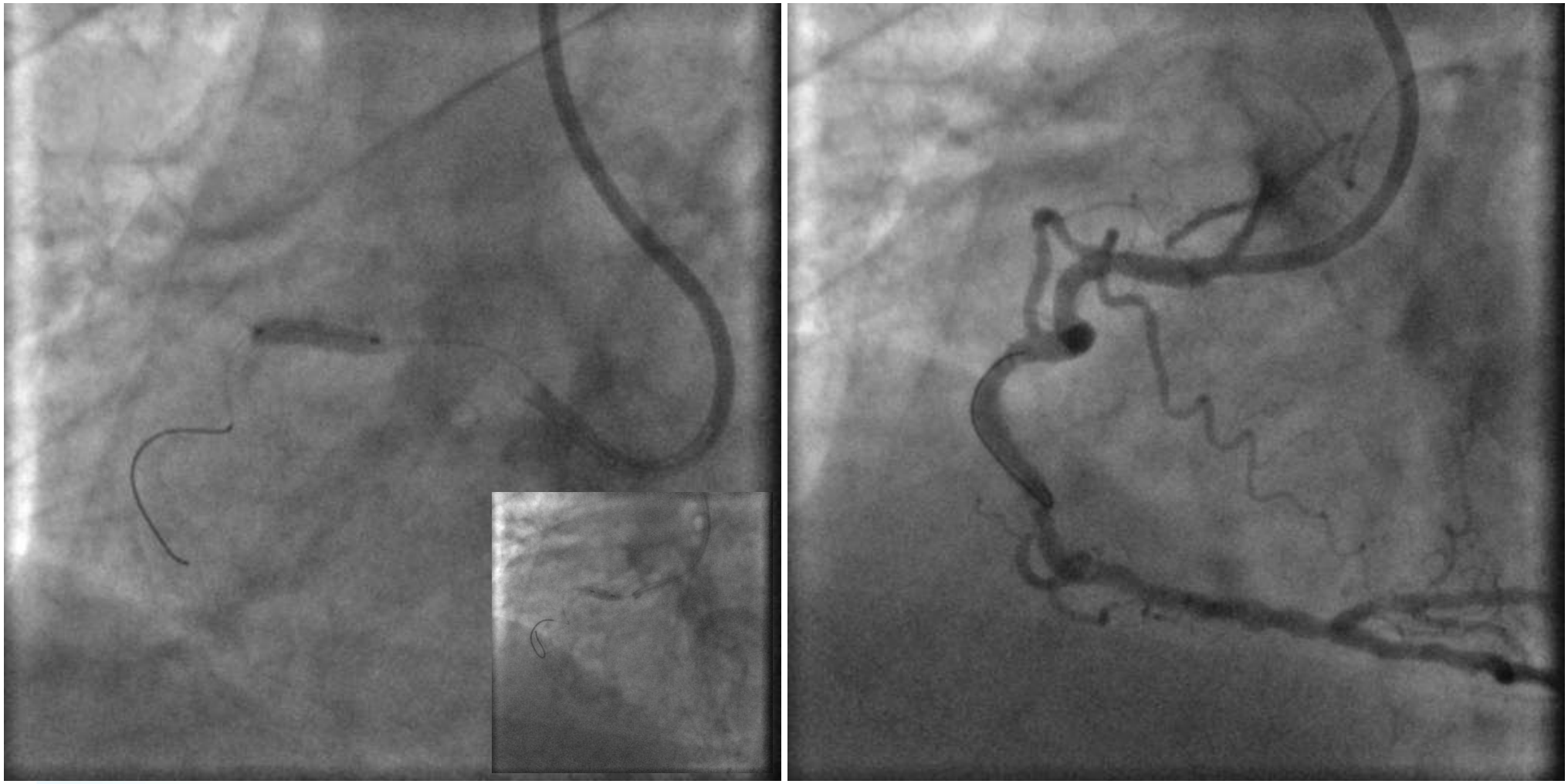
RCA: heavily calcified with extreme tortuosity at the proximal to mid segment

Left coronary artery with mild irregularities

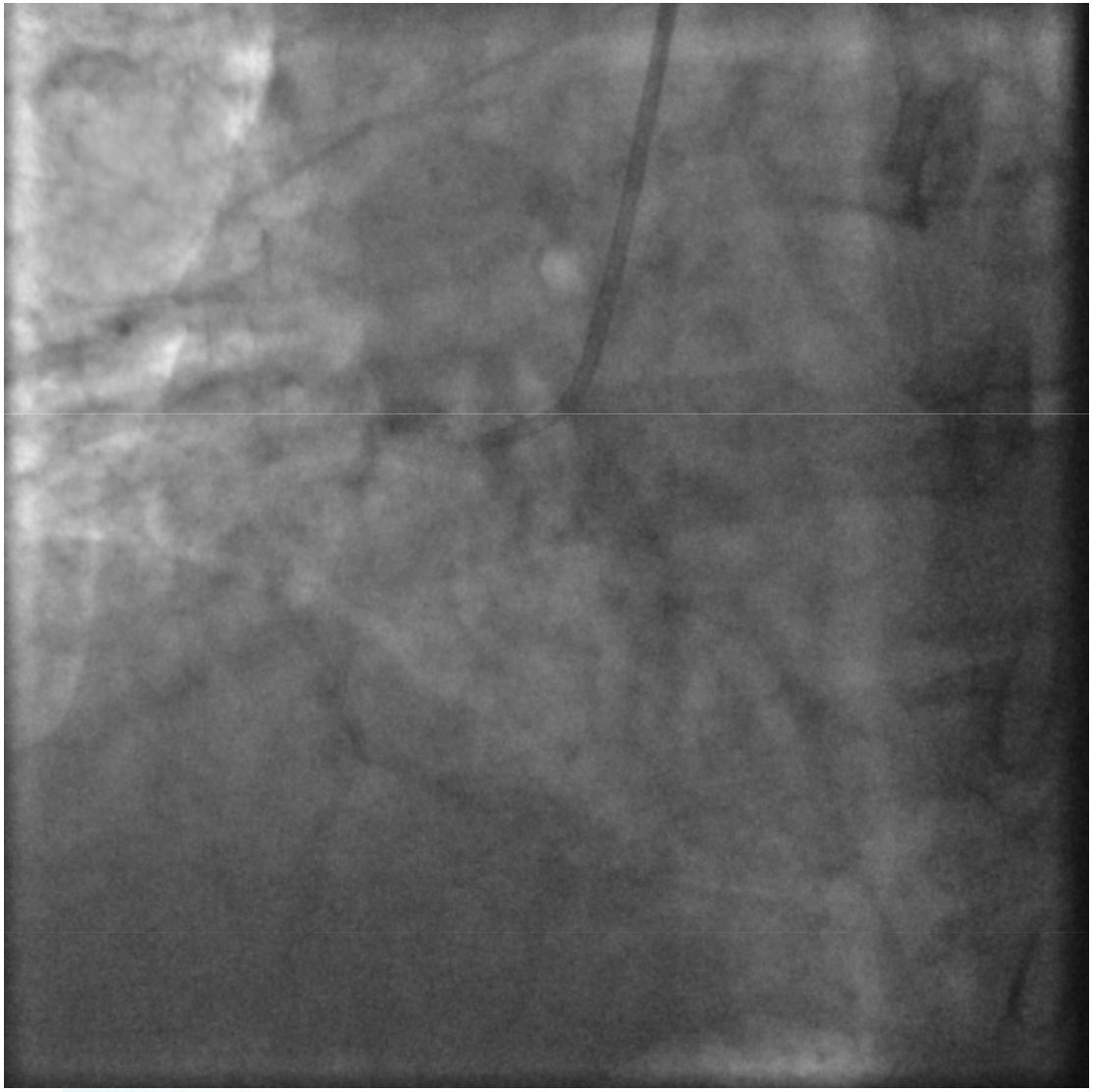




A 3.0X12mm Promus Element stent was deployed with a good angiographic result

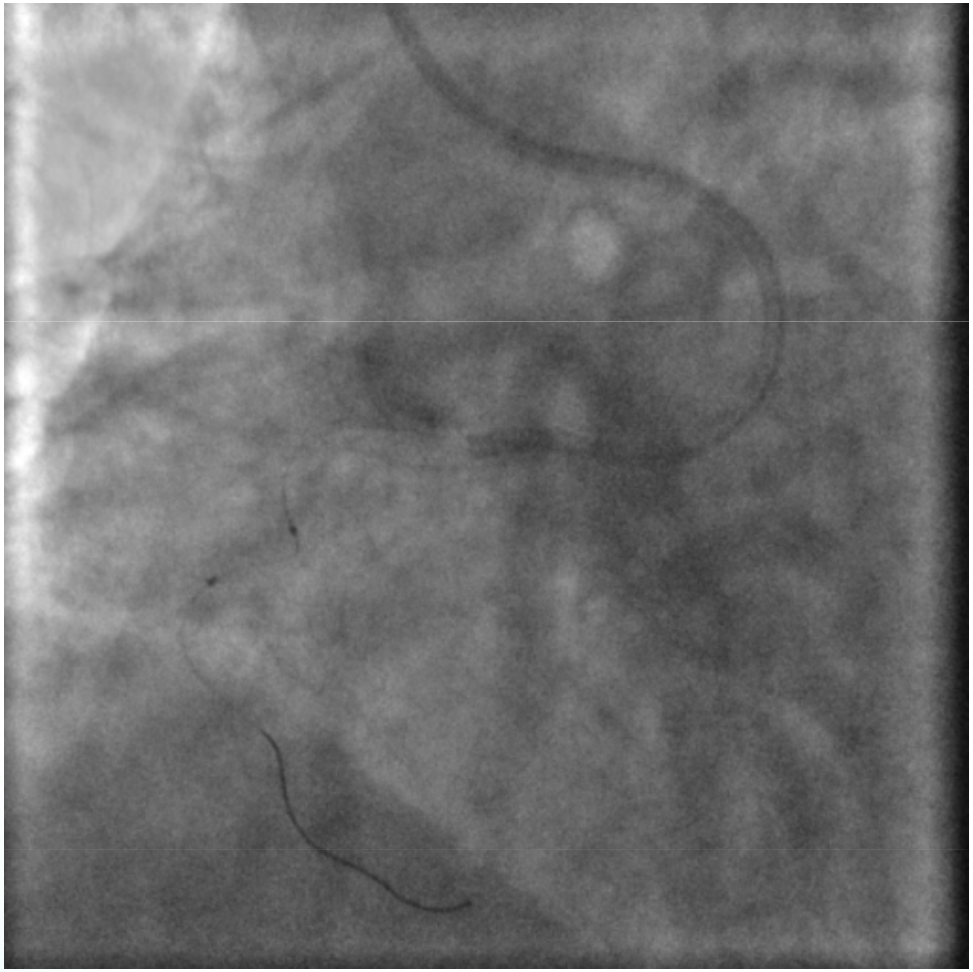


One hour later, the patient suffered from an episode of substernal chest pain, with bradycardia, hypotension and ST elevation in the inferior leads and *was urgently transferred to the cardiac catheterization laboratory.*



Coronary angiography revealed subtotal occlusion of the RCA at the midsegment, distally to the previous implanted stent, *probably due to dissection from the guidewire*

The decision was made to attempt recanalization of the RCA



Guiding catheter:
6-French XBRCA

The lesion was successfully crossed with moderate difficulty with Runthrough guide wire

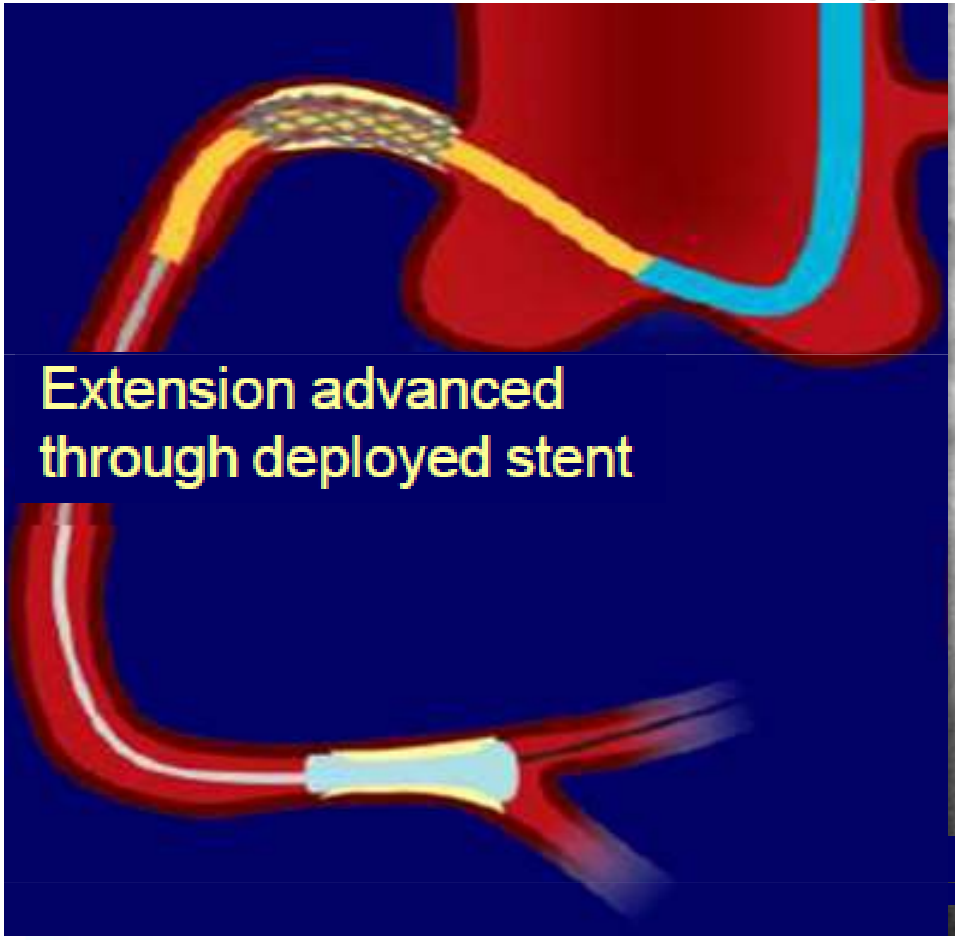
It was impossible to advance a stent to the target lesion and seal the dissection flap .

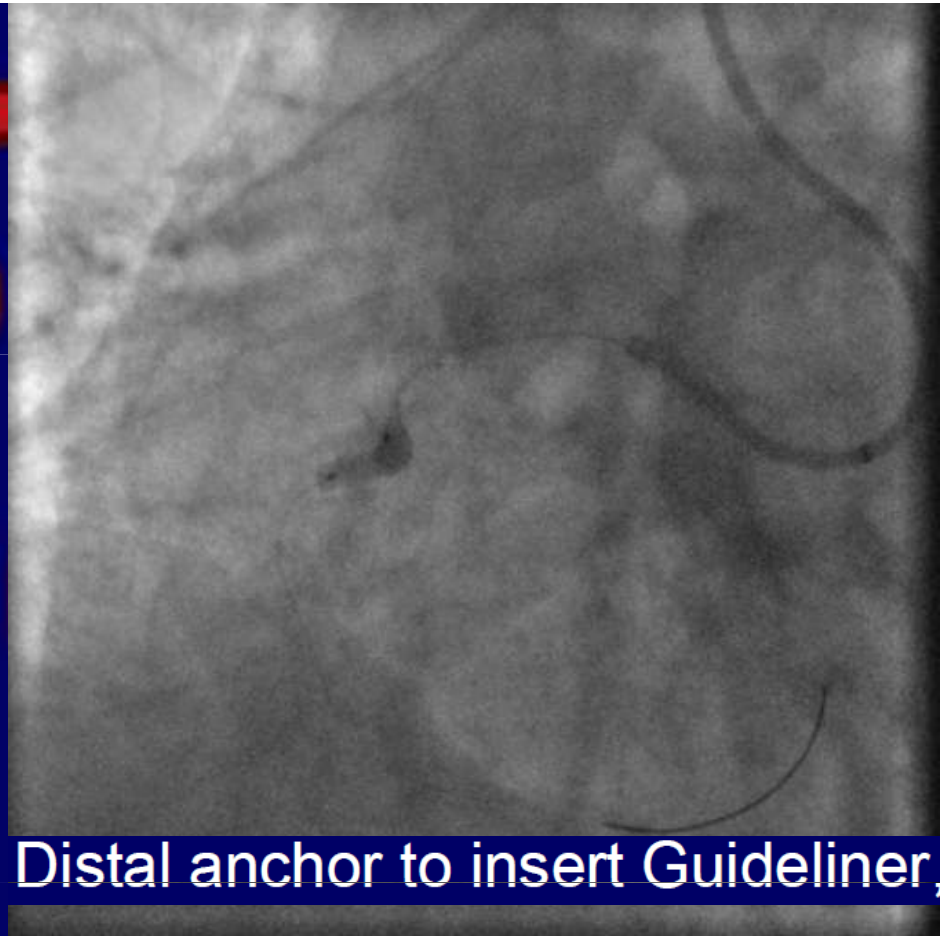
This isn't the way we planned it !!!!

Techniques to be considered

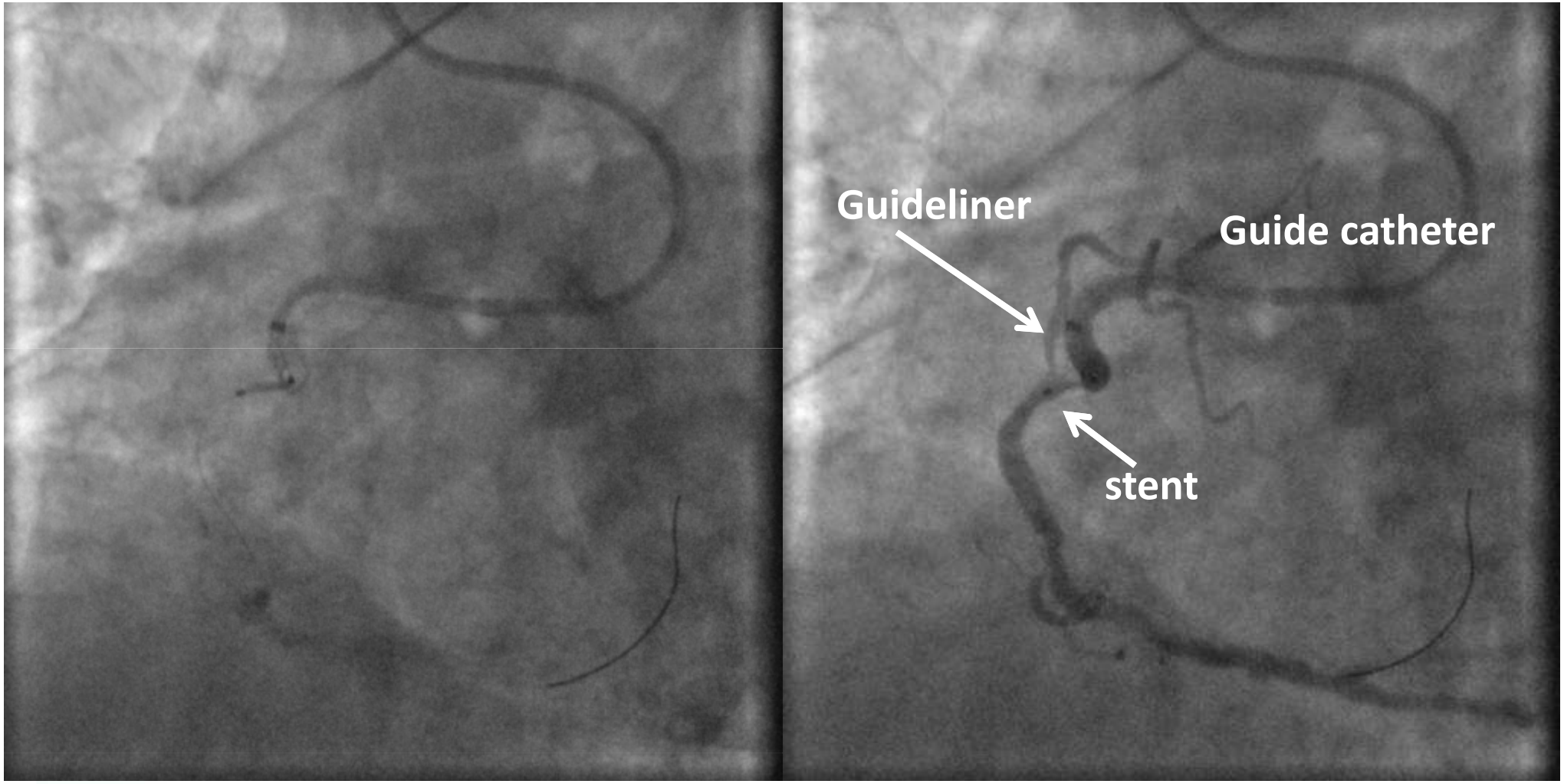
- Guide catheter:
  - Deep seating
  - Change in more supportive shape
  - size-up
- Buddy wire
- Anchor balloon
- Mother-child technique
- ……

We elected to aid stent delivery by performing extra deep intubation using the Guideliner 6 Fr catheter.

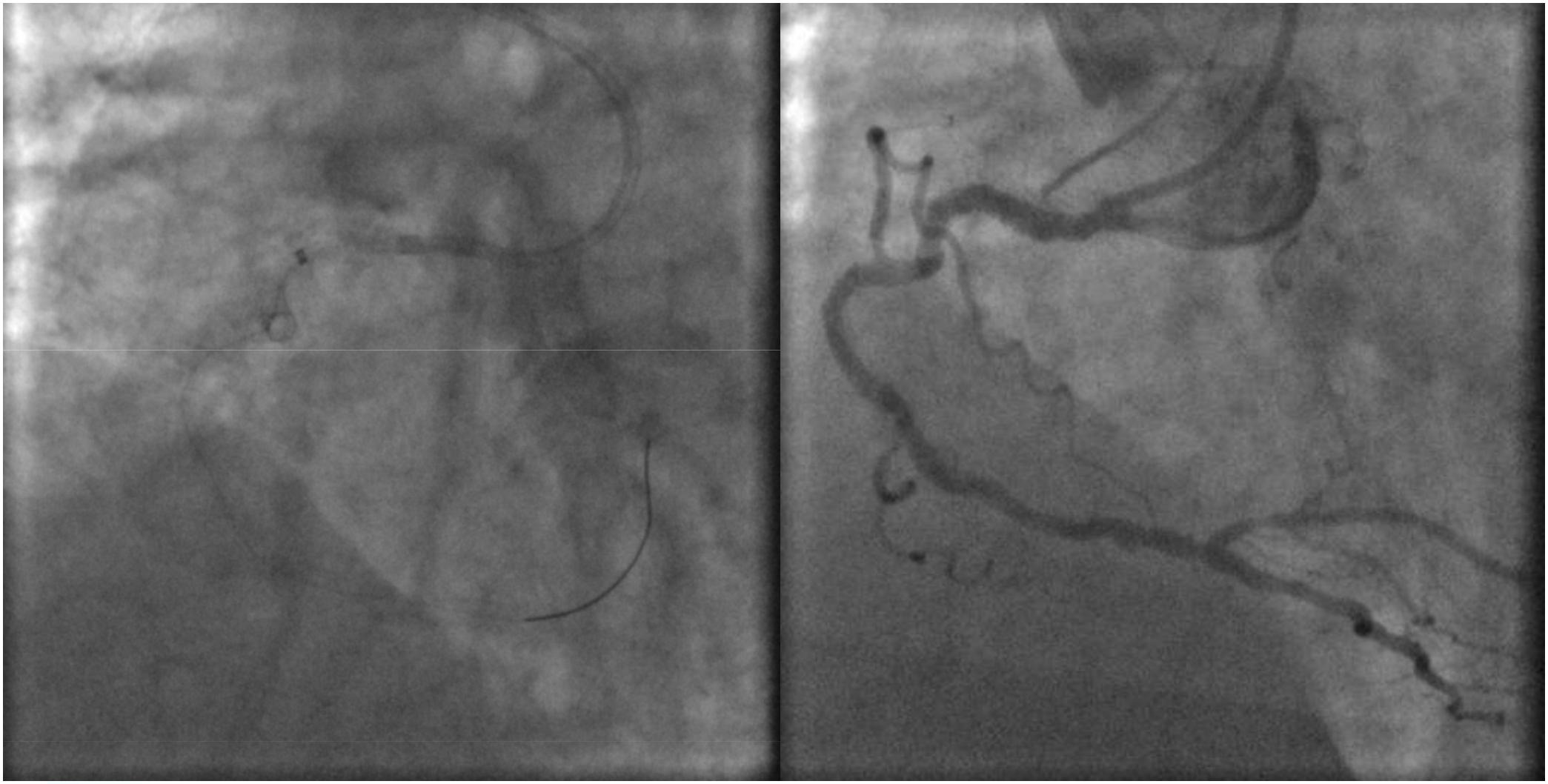




Using an inflated balloon in the target lesion as an anchor, the Guideliner was advanced through the deployed stent into the distal vessel



A 2.75X16mm Promus Element stent was advanced in the distal vessel and deployed at the point of dissection



The final result was excellent, *with no residual dissection and TIMI 3 flow*

Despite improvements in stent profile, *unsuccessful stent delivery still occurs in about 5% of the cases*, and this is associated with poorer short and long term outcomes

Advancement of a stent to a distal target lesion can be technically difficult:

- ✓**in cases with proximal vessel tortuosity, angulations and/or calcification (due to the development of significant friction between the stent and the vessel wall).**
- ✓**Chronic total occlusions,**
- ✓**long lesions,**
- ✓**previously implanted stents in the proximal vessel, and**
- ✓**anomalous coronary anatomy**

The Problem Solving Loop

1. Identify the problem.

2. Explore information and create ideas.

3. Select the best idea.

4. Build and test the idea.

5. Evaluate the results.

TECHNIQUES TO ENHANCE GUIDING CATHETER SUPPORT

- ✓ Larger guiding catheter size
- ✓ More supportive guiding catheter shape
- ✓ Coaxial position
- ✓ Deep seating
- ✓ Stiff wires
- ✓ Anchor techniques
- ✓ Guide extensions (Guideliner or other)

Our choice……

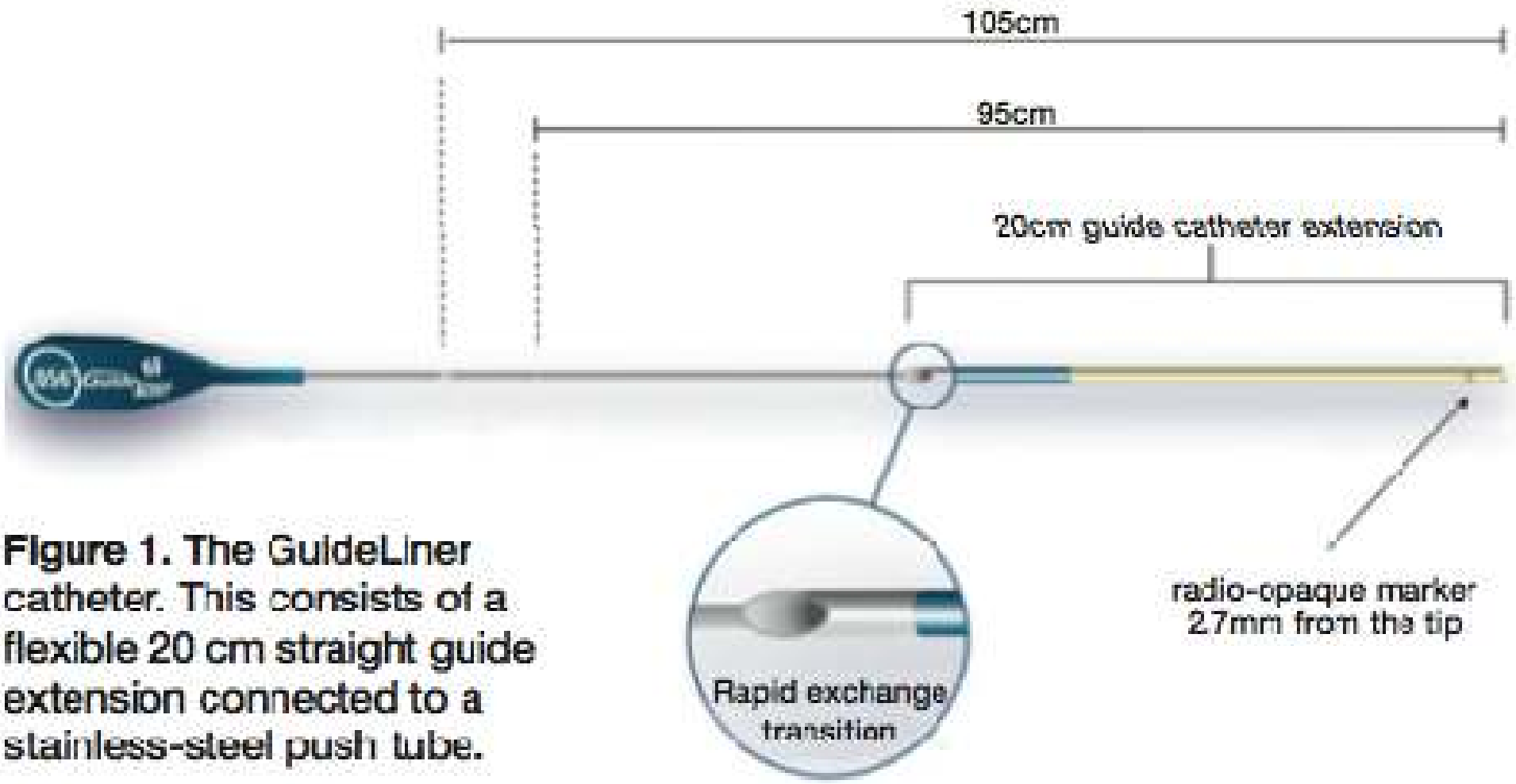


Figure 1. The GuideLiner catheter. This consists of a flexible 20 cm straight guide extension connected to a stainless-steel push tube.

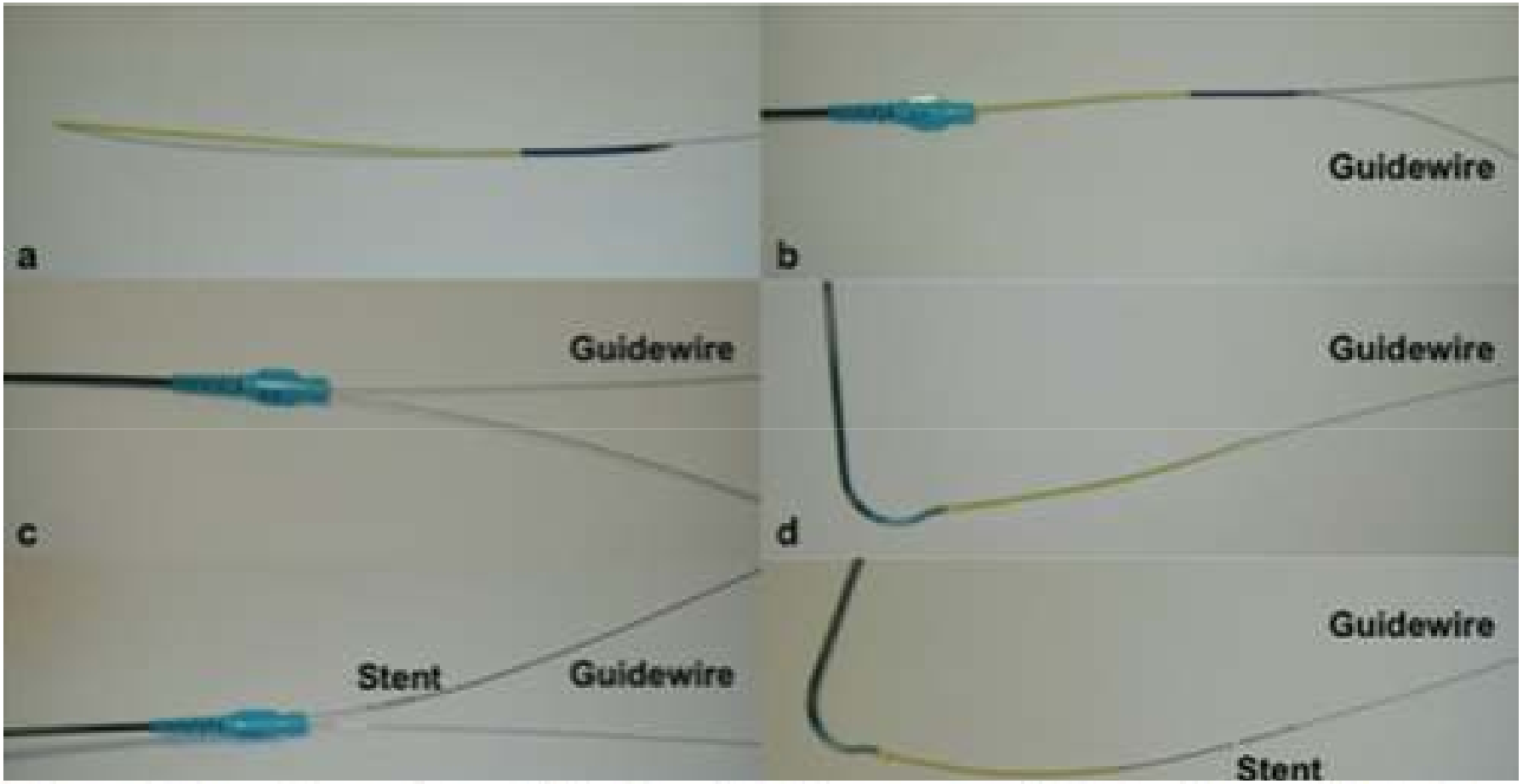


Figure 2. Insertion of the GuideLiner (a). The monorail GuideLiner catheter is inserted into a guiding catheter over a guidewire (b). Once advanced into the guiding catheter, the GuideLiner push tube can be advanced while holding the guidewire in place (c). The GuideLiner can be advanced up to 10 cm beyond the guiding catheter tip (d). Balloons or stents can be advanced along the guidewire (e), through the GuideLiner to the target lesion (f).

- **The concept with Double Coaxial Guiding Catheter Technique ('Mother and Child') is to combine the passive support of a large GC with the ability to insert a small GC much deeper into the target vessel.**

- **The Guideliner catheter in particular is a unique coaxial guide extension which enables deep, selective intubation with *good back-up support* in challenging coronary interventions.**

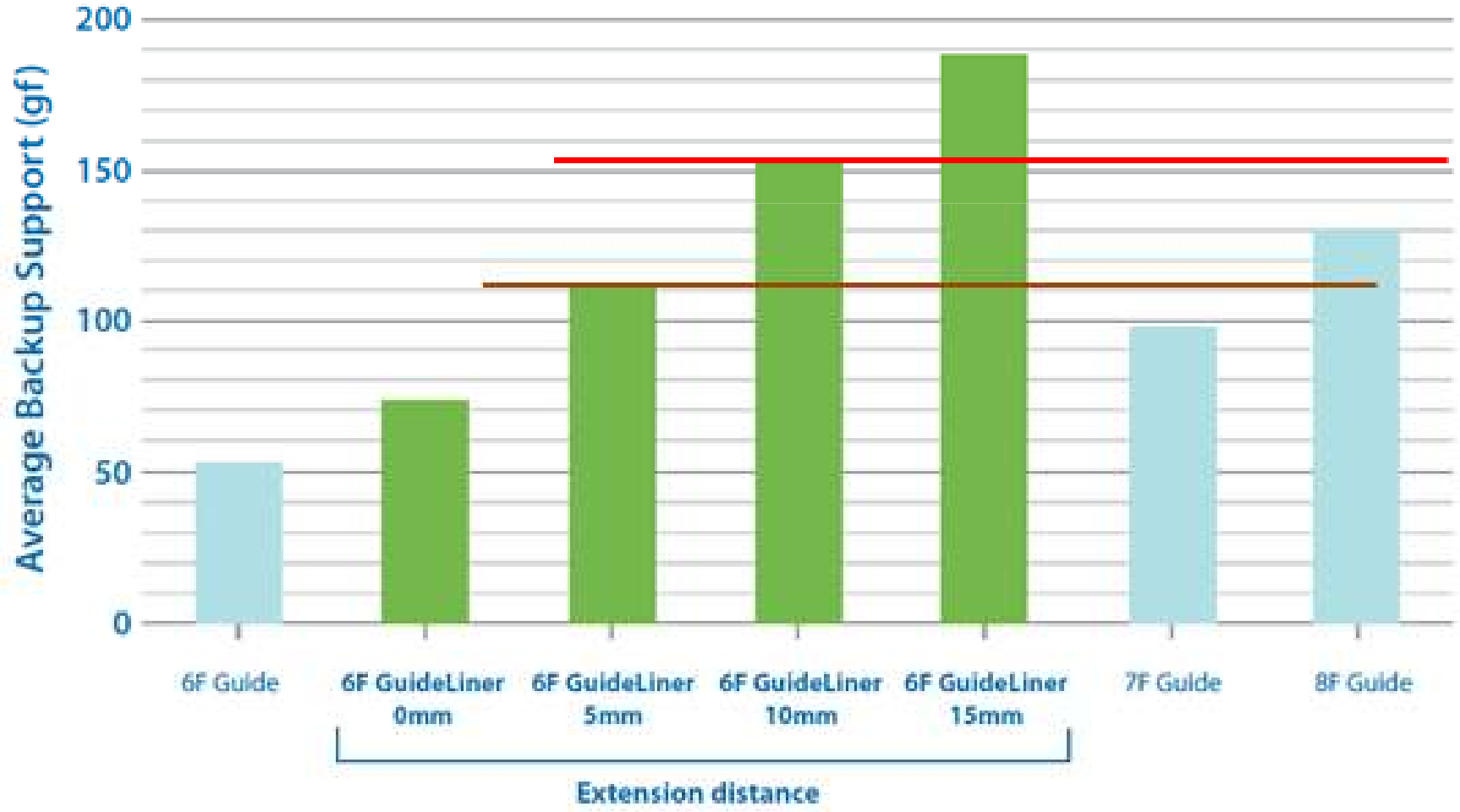
- ***The Guideliner is a rapid exchange catheter*** **(can be used within standard guide in situ, without moving the wire), i.e. *it can be used as a bail-out device* when conventional techniques fail.**

The GuideLiner Catheter

GuideLiner Model	Compatible Guide Catheter	GuideLiner Min. I.D.	GuideLiner Tip O.D.
6F (5-in-6)	**≥ 6F** (≥ 0.070" / 1.78mm I.D.)	0.056" / 1.42mm	0.067" / 1.70mm
7F (6-in-7)	**≥ 7F** (≥ 0.078" / 1.98mm I.D.)	0.062" / 1.57mm	0.074" / 1.88mm
8F (7-in-8)	**≥ 8F** (≥ 0.088" / 2.24mm I.D.)	0.071" / 1.80mm	0.084" / 2.13mm

- **GuideLiner inner diameter approximately 1 French smaller than the guiding catheter.**
- **It may be placed over either an exchange length or 180cm guidewire.**

Bench testing demonstrates the 6F GuideLiner substantially increases backup support compared to standard guide catheters.



Complications related with Guideliner

- ✓ **air embolism**
- ✓ **intimal disruption**
- ✓ **dissection**
- ✓ **perforation of the vessel wall**
- ✓ **arterial spasm**

……

The safest approach in order to minimise the risk of wall damage, is *to advance the catheter over a wire and microcatheter or a balloon catheter,* with the balloon uninflated in the distal vessel.

This manoeuvre :

✓reduces the dead space between the GuideLiner catheter and guidewire, providing a tapered, atraumatic leading edge.
✓It also stiffens the rail over which the device can be advanced.
✓helps to maintain the stability of the system, while the inner GC is advanced through acute curves.

In some cases, catheter advancement can be aided *by inflating the balloon in the target lesion (distal anchoring).*

Another drawback of this device is the potential for stents especially larger profile stents to get caught on the metal collar of the device.

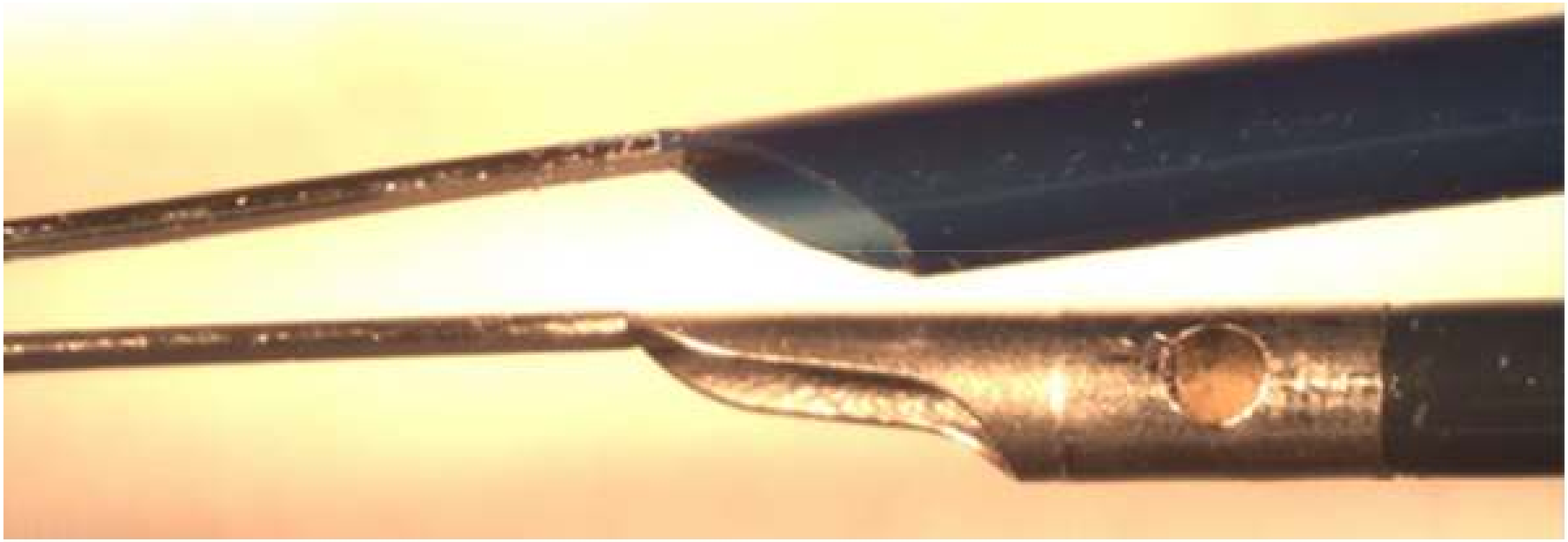
- **This can damage the stent and may even cause it to shear off, if this is not readily recognized.**

The cause: **wire wrap around the metal collar.**

PRECAUTIONS: **If any resistance is encountered during advancement of the stent through the GuideLiner catheter, the stent should not be pushed but instead withdrawn and inspected for damage to its integrity.**

Use of low profile stents **with this system since this appears to limit the potential for stent damage**

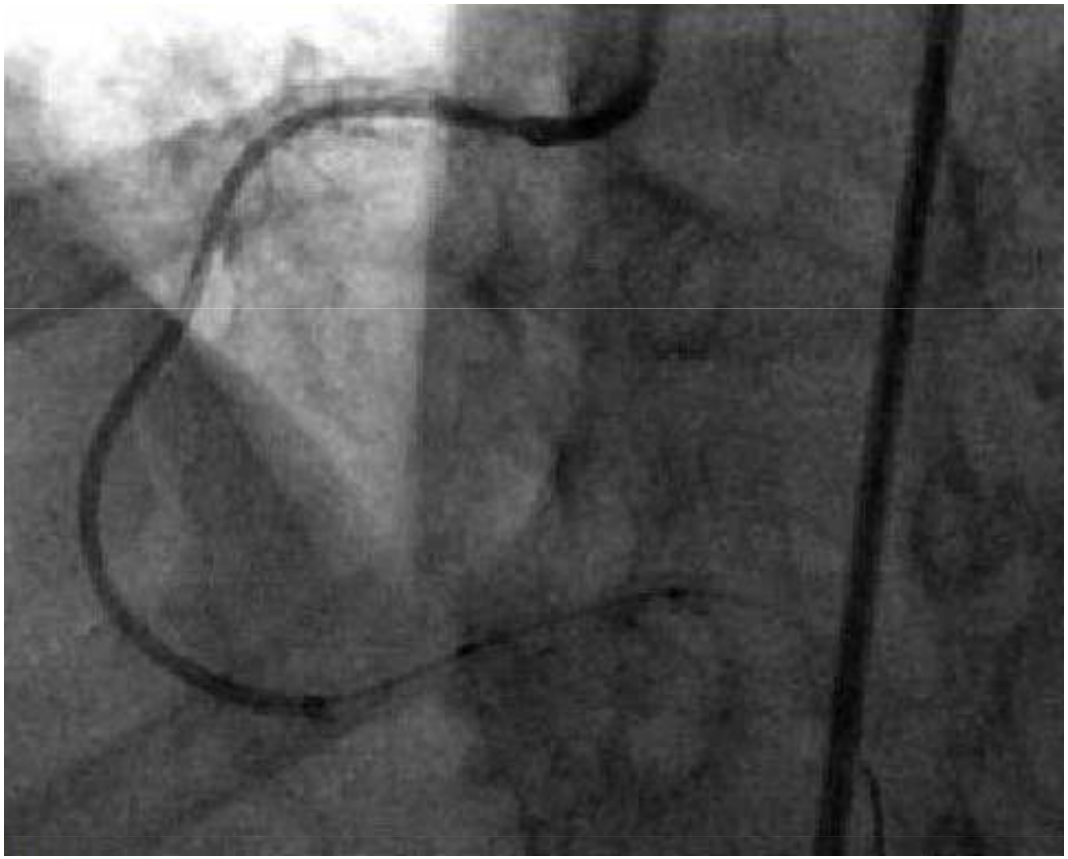
Catheter design modifications, ***particularly at the steel collar*** may reduce the small risk of stent damage



GuideLiner V2 Collar Improvements

The V1's metal collar is inflexible
V2 will eliminate all of the metal
V2 rapid exchange segment 5cm longer

Flexible guide extension



Deep seating with the GuideLiner facilitates device delivery through tortuous anatomy

New V2 Improvements

- All-polymer collar for increased flexibility
- New 5.5F size option for compatibility with all 6F guide catheters
- 5cm longer for additional extension

TAKE HOME MESSSAGE

✓Guideliner catheter makes ***some impossible cases possible***

✓This catheter is an excellent bail-out device for distal stent delivery when all other techniques have failed

- ***but should also be considered early in a procedure*** when difficulties with stent delivery are anticipated

✓The advantages of extra deep intubation and rapid exchange make this catheter an ideal solution in such cases

✓Anyone doing complex PCI should have Guideliner on their shelf and be familiar and prepared in using it.

Thank you for your attention !!!!!!!!!