

CTO : ou comment devenir fou ? si on ne l'est pas déjà

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INCCI
HAERZ
ZENTER



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de chirurgie
cardiaque et
de cardiologie
interventionnelle

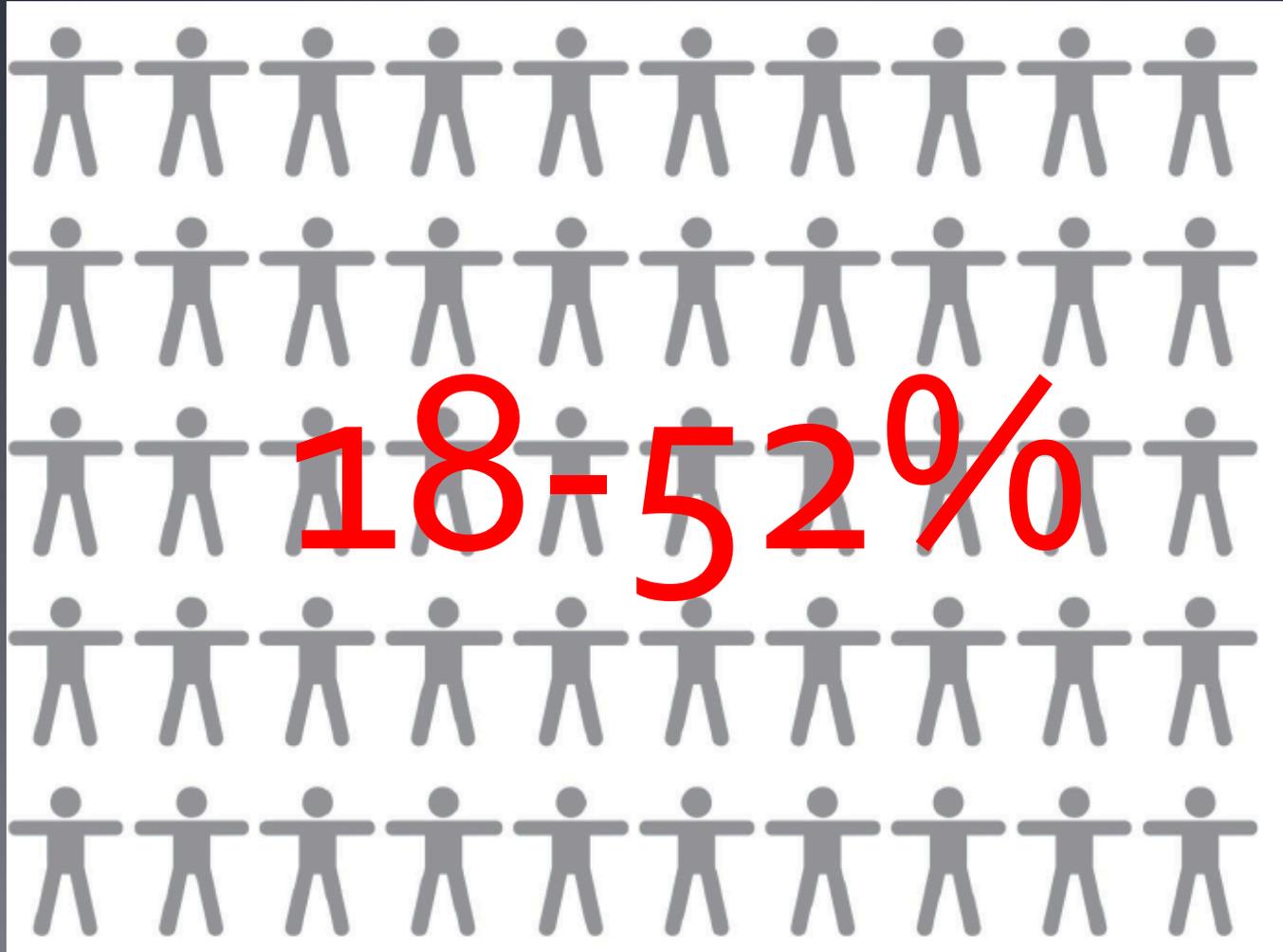


SOCIETE
LUXEMBOURGEOISE
DE CARDIOLOGIE

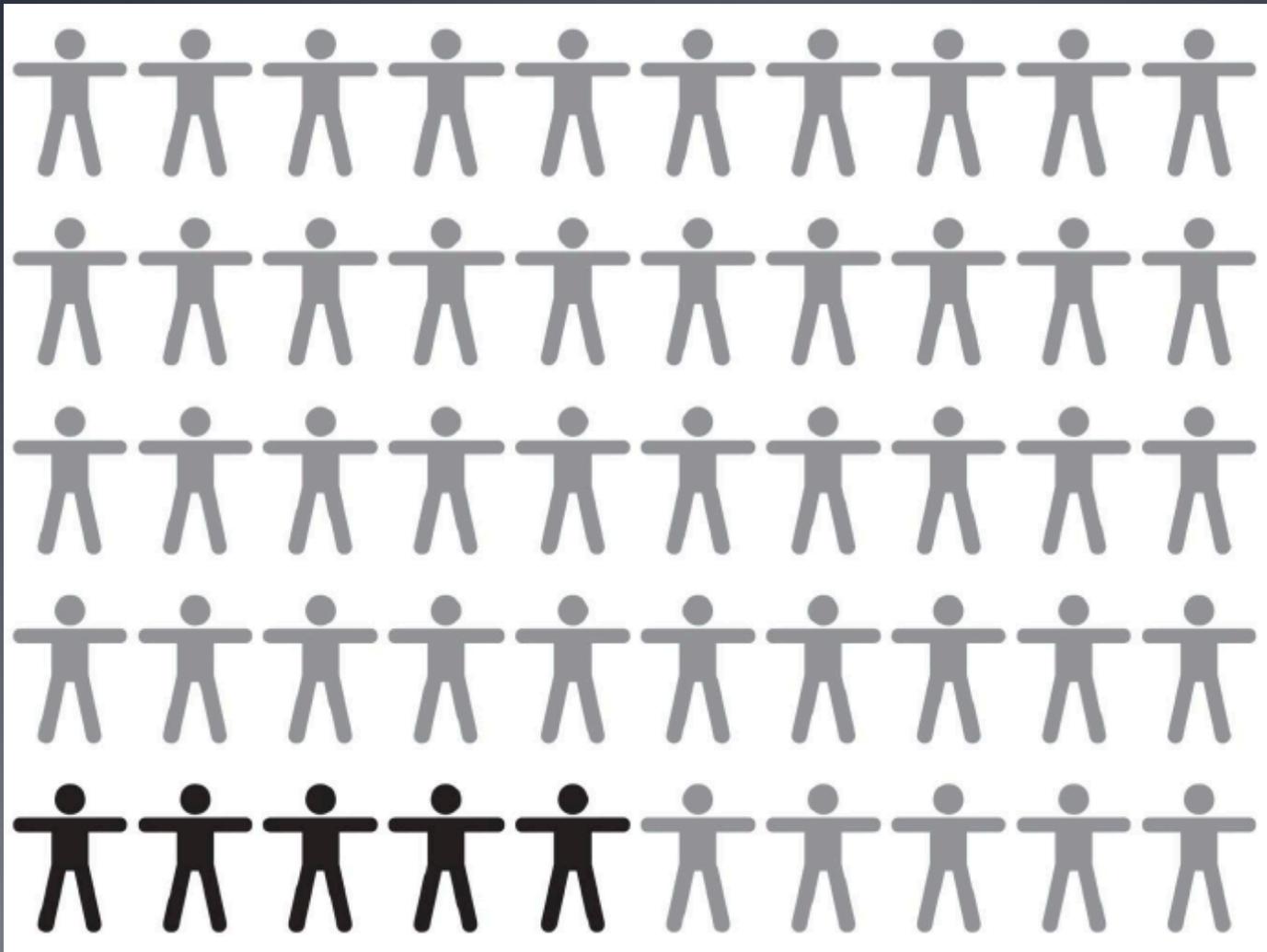
Qu'est-ce?

- C : chronic (> 3 mois)
 - T : total (110%)
 - O : occlusion (flux TIMI 0)
-

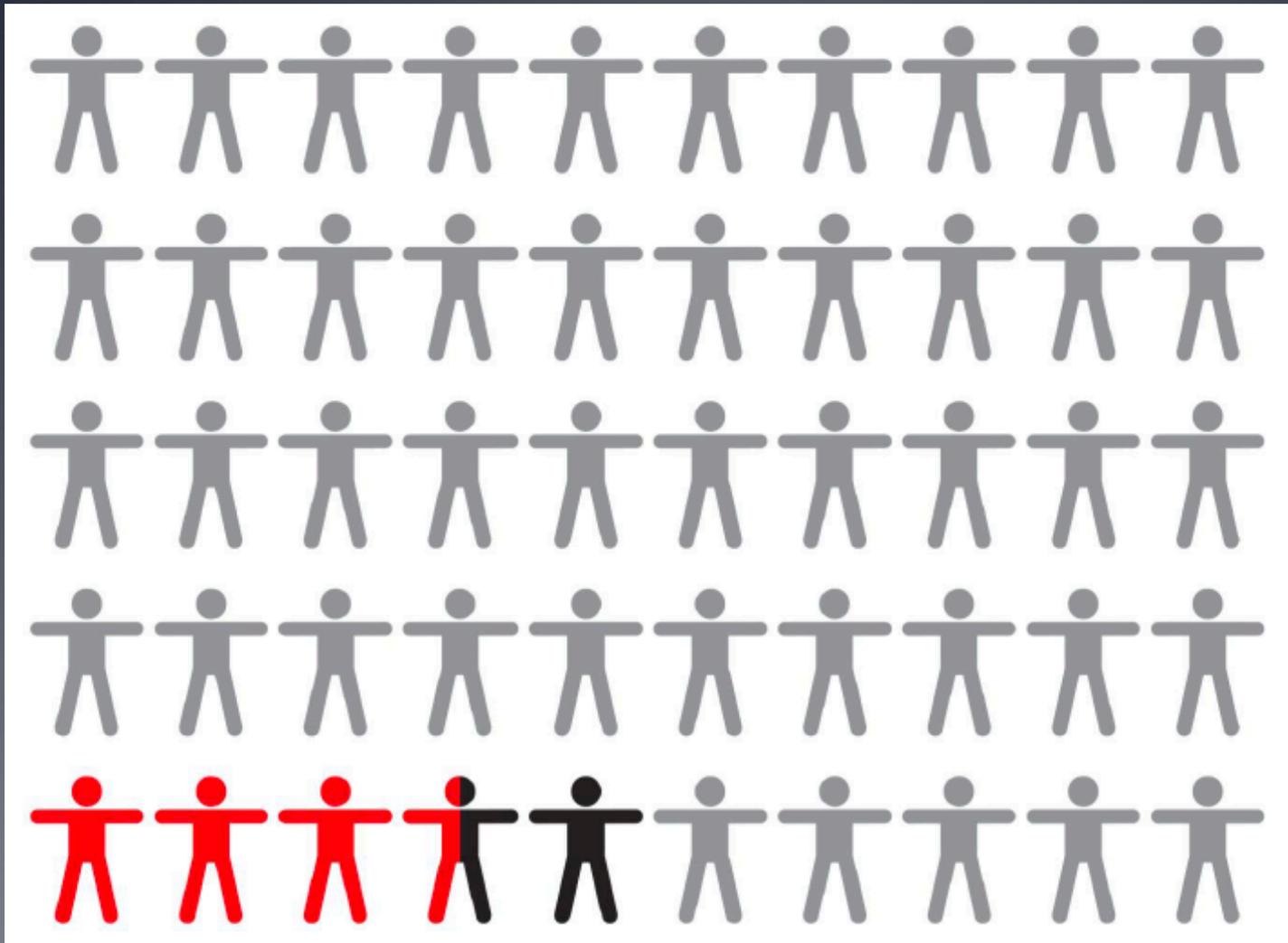
Souvent ?



PCI

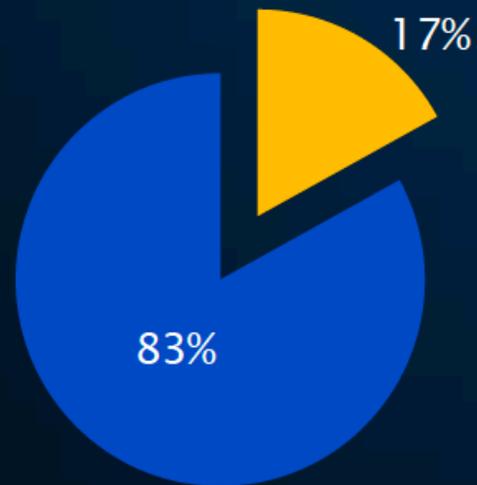


Success



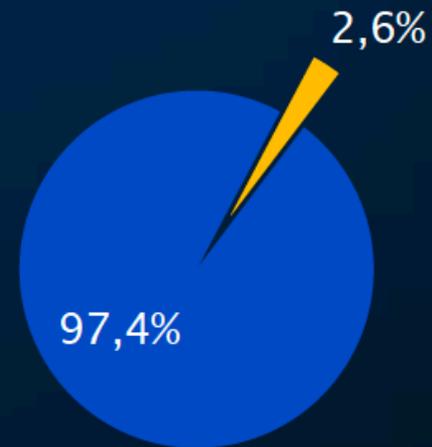
Demande?

Overall CTO Prevalence



■ CTO Present
■ No CTO Present

Real World CTO PCI



■ CTO PCI
■ All other PCI

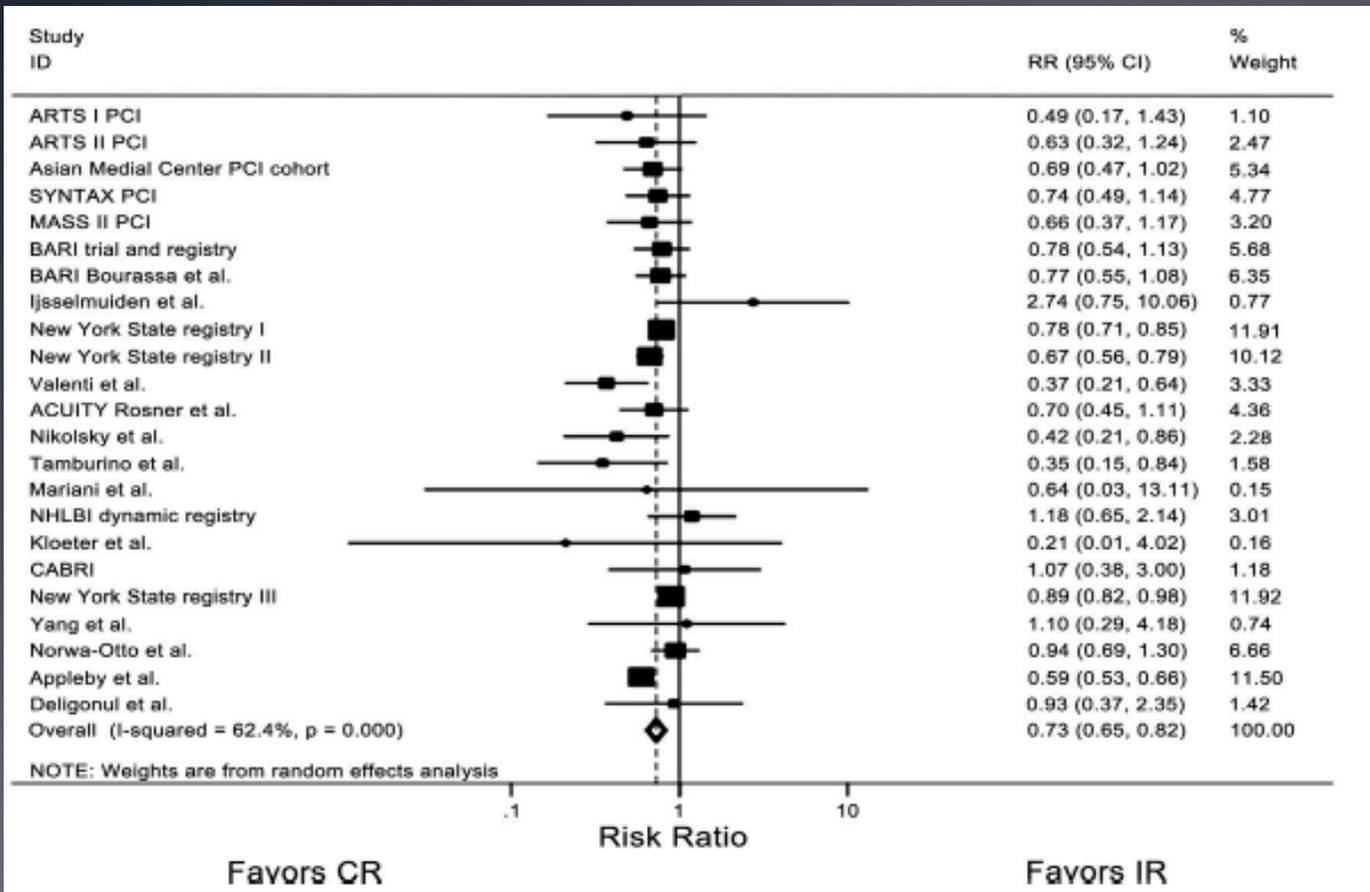
University of Calgary, University of Toronto
7559 Patients with Coronary Angiography March-December 2008,
Courtesy Bradley Strauss and Canadian CTO registry investigators

Brilakis ES, et al., JACC Cardiovasc Interv 2012 Apr, 5(4): 357-70

Le pourquoi?

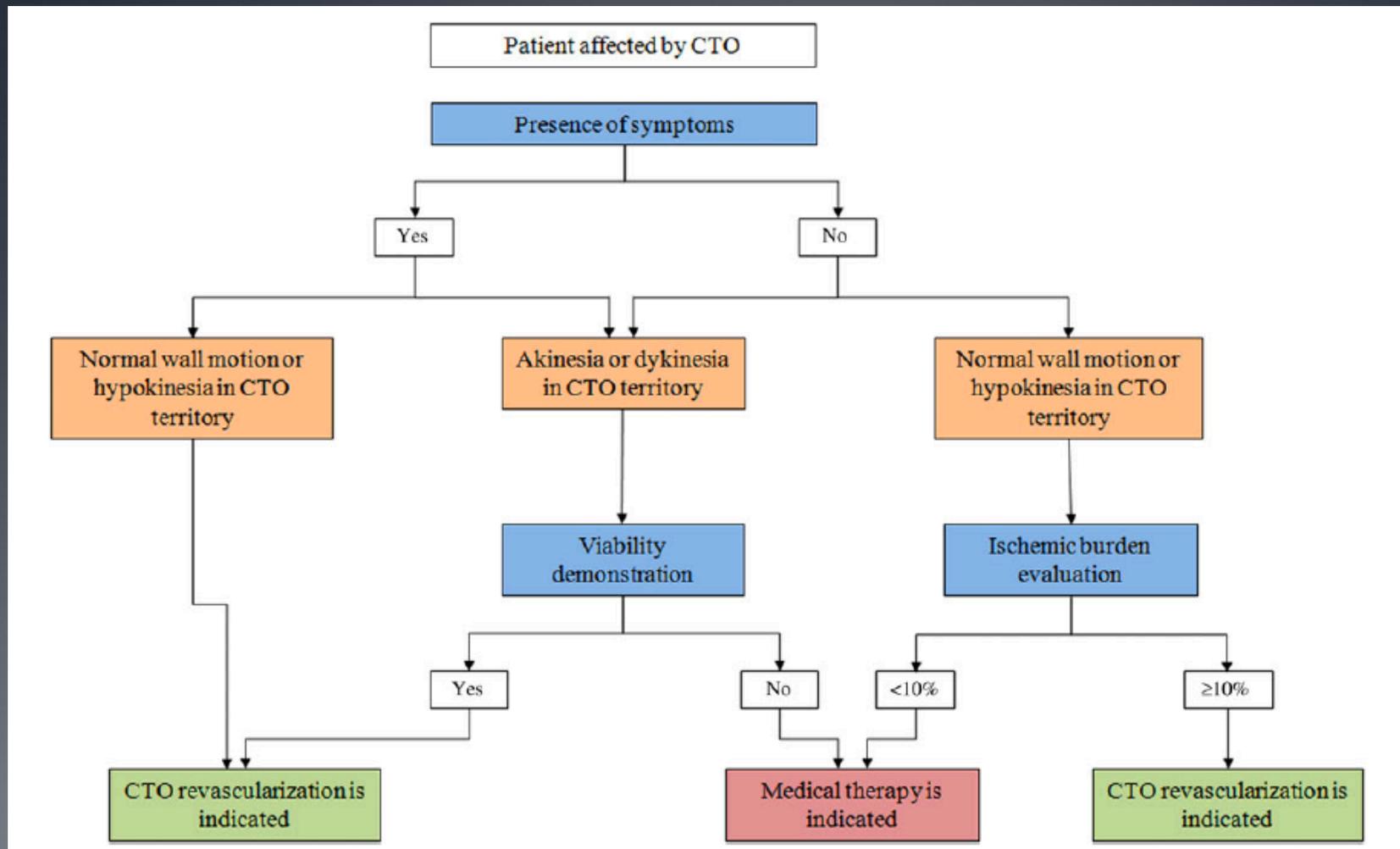
- Réduit les symptômes
 - Diminue CABG
 - Augmente FE
 - Peut améliorer le pronostic
-

R Complète vs R Incomplète: Mortalité



Complete rev for CTO, incomplete for ≥ 1 other lesions	19.1	1.11 (0.74, 1.68)	0.6090
Incomplete rev for CTO	44.1	1.63 (1.28, 2.08)	<0.0001

Le Quand?

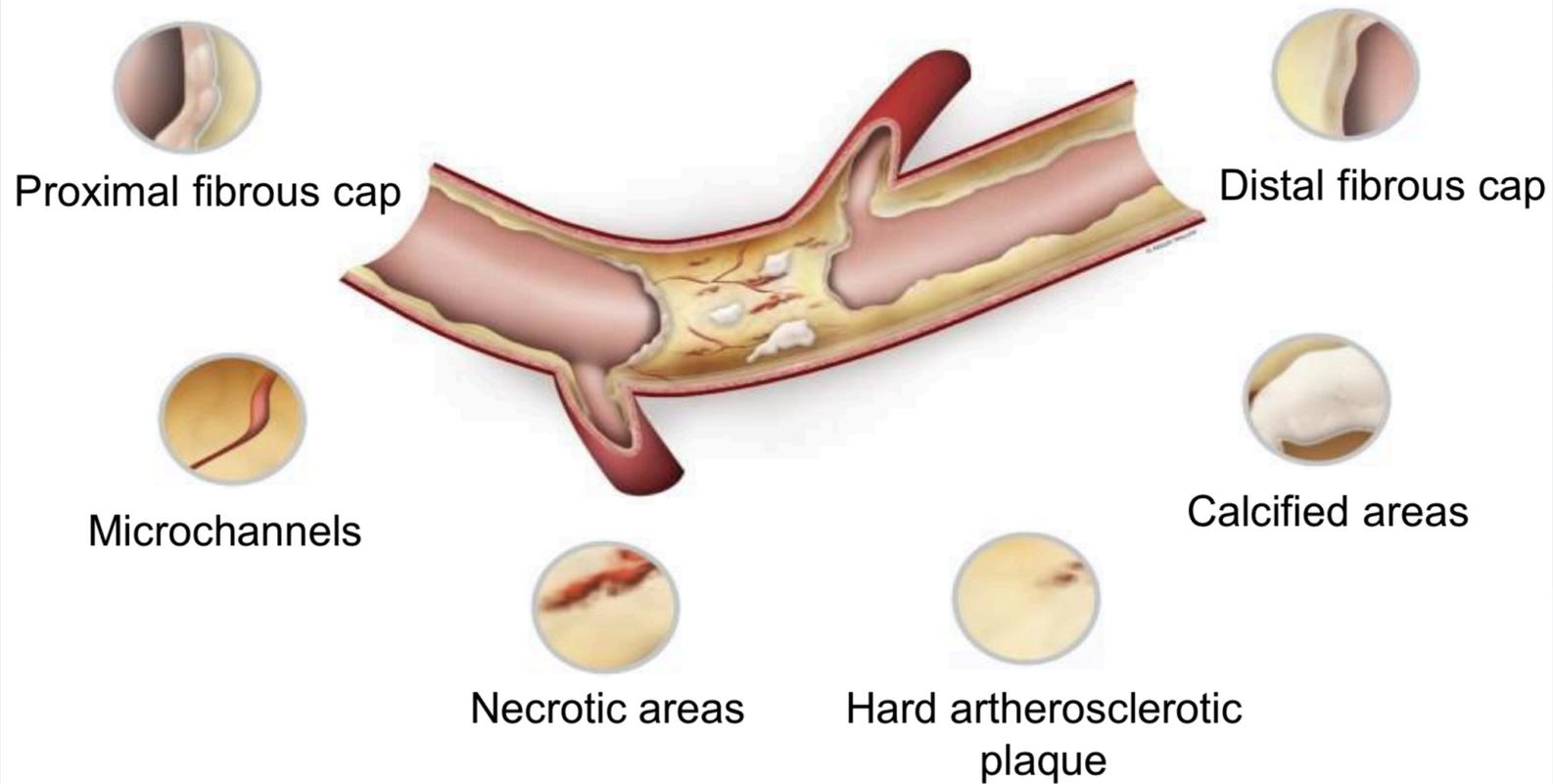


L'infirmier/ère dans tout ça?

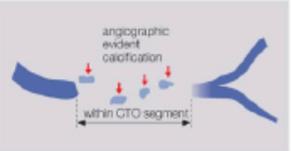
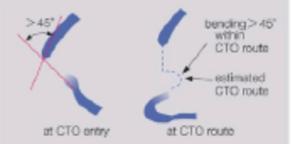
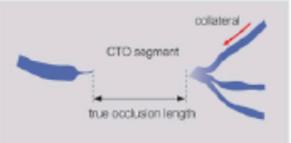
- Intégré(e) et dédié(e) au programme CTO
 - L'installation/préparation du patient
 - Connaître les accès
 - Connaître les techniques
 - Connaître le matériel
 - Anticiper la technique
 - Contrôle ACT (> 300) / 20 minutes !!!
 - Contribue largement au succès
-

CTO : l'anatomie

Characteristics of a CTO



Difficulté

Variables and definitions	
<p>Tapered</p> 	<p>Blunt</p>  <p>Entry with any tapered tip or dimple indicating direction of true lumen is categorized as "tapered".</p>
<p>Calcification</p> 	<p>Regardless of severity, 1 point is assigned if any evident calcification is detected within the CTO segment.</p>
<p>Bending > 45degrees</p> 	<p>One point is assigned if bending > 45 degrees is detected within the CTO segment. Any tortuosity separated from the CTO segment is excluded from this assessment.</p>
<p>Occlusion length</p> 	<p>Using good collateral images, try to measure "true" distance of occlusion, which tends to be shorter than the first impression.</p>
<p>Re-try lesion</p> <p>Is this Re-try (2nd attempt) lesion ? (previously attempted but failed)</p>	

J-CTO Score

Total points

0	easy
1	intermediate
2	difficult
≥3	very difficult

Morino Y et al., JACC Intv 2011;4:213-21

Les ingrédients

- Une CTO
 - Viabilité/ischémie
 - Un patient patient
 - Un opérateur CTO endurant
 - Une salle KT isolée du monde extérieur
 - Une équipe dédiée
 - Du matériel
-

Beaucoup de matériel



Les guides

a

Fielder



- Tip load1.0 g
- Tip radiopacity3 cm
- Polymer sleeve length 22 cm
- SLIP-COAT® coating over the spring coil
- PTFE coating over the shaft

Fielder FC



- Tip load0.8 g
- Tip radiopacity3 cm
- Polymer sleeve length 20 cm
- SLIP-COAT® coating over the spring coil
- PTFE coating over the shaft

Fielder XT



- Tip load0.8 g
- Tip radiopacity16 cm
- Polymer sleeve length 16 cm
- Tip outer diameter 0.23 mm(0.009 inch)
- SLIP-COAT® coating over the spring coil
- PTFE coating over the shaft

c

MIRACLEbros 3



- Tip load3.0 g
- Tip radiopacity11 cm
- PTFE coating over the shaft

MIRACLEbros 4.5



- Tip load4.5 g
- Tip radiopacity11 cm
- PTFE coating over the shaft

MIRACLEbros 6



- Tip load6.0 g
- Tip radiopacity11 cm
- PTFE coating over the shaft

MIRACLEbros 12



- Tip load12.0 g
- Tip radiopacity11 cm
- PTFE coating over the shaft
- Pilot wire family

d

3 Wires, 3 Tip loads

1. HT PILOT® 50 (1.5 g)
2. HT PILOT® 150 (2.7 g)
3. HT PILOT® 200 (4.1 g)

Polymer cover & hydrophilic coating designed for lubricity and lesion crossability

Durasteel core is made of a durable stainless steel



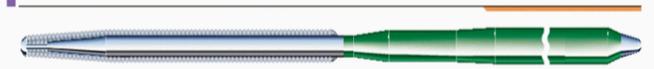
Polymer covered tip designed to tackle the challenging lesions

Gold marker located 4.5 cm from the tip

Parabolic core grind technology designed for torque response and support

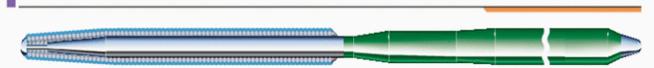
b

CONFIANZA



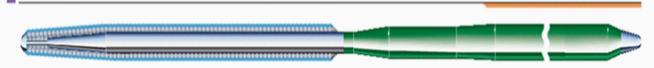
- Tip load9.0 g
- Tip radiopacity20 cm
- Tip outer diameter 0.23 mm(0.009 inch)
- PTFE coating over the shaft

CONFIANZA PRO



- Tip load9.0 g
- Tip radiopacity20 cm
- Tip outer diameter 0.23 mm(0.009 inch)
- SLIP-COAT® coating over the spring coil
- PTFE coating over the shaft

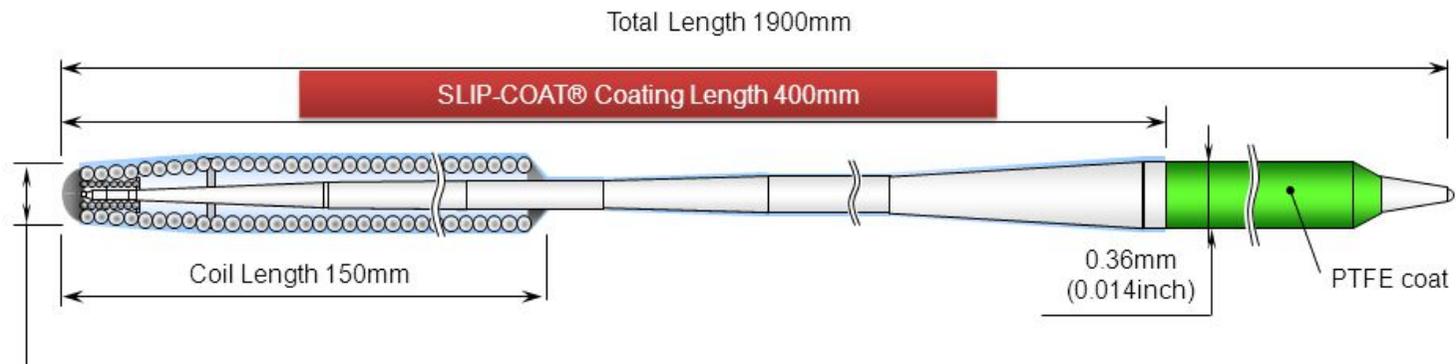
CONFIANZA PRO 12



- Tip load12.0 g
- Tip radiopacity20 cm
- Tip outer diameter 0.23 mm(0.009 inch)
- SLIP-COAT® coating over the spring coil
- PTFE coating over the shaft

Les guides (2)

ASAHI Gaia



Various models for different situations and/or lesions

ASAHI Gaia First

Diameter : 0.26mm (0.010") - 0.36mm (0.014")

Tip load : 1.7g

ASAHI Gaia Second

Diameter : 0.28mm (0.011") - 0.36mm (0.014")

Tip load : 3.5g

ASAHI Gaia Third

Diameter : 0.30mm (0.012") - 0.36mm (0.014")

Tip load : 4.5g

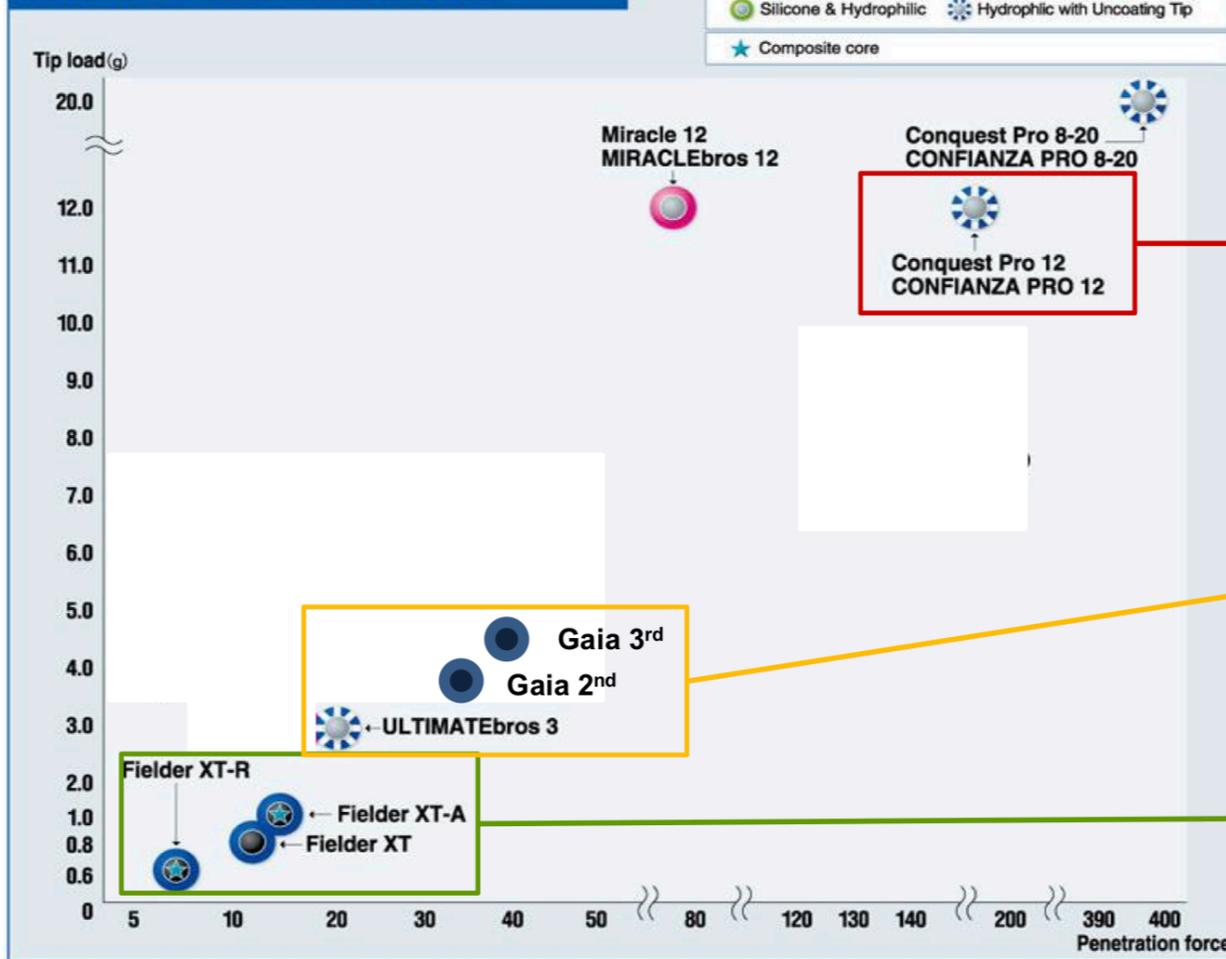
Coated with hydrophilic coating which enhances smooth controllability inside the micro catheter

Guides: Caractéristiques

- Penetrability
 - Tip load
 - Pushability
 - Trackability
 - Bending
 - Lubricity
-

Escalation

Chronic Occlusion Wires



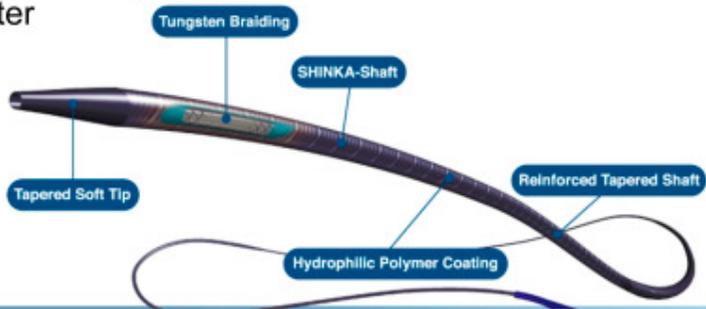
Hard (12g),
tapered tip

Moderate (3 – 4.5g)

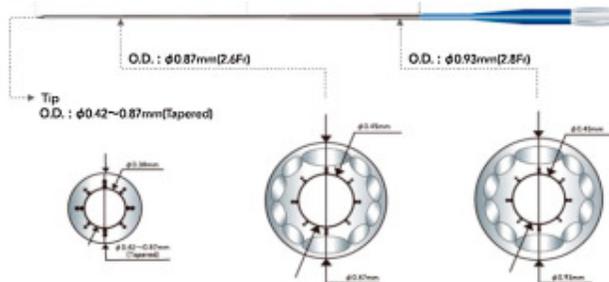
Soft (≤ 1 g),
polymeric,
tapered tip

Microcatheter

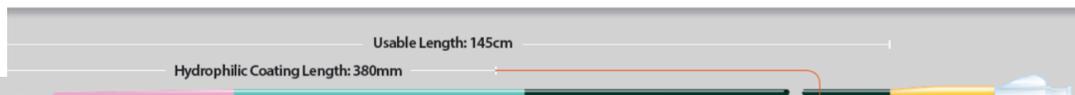
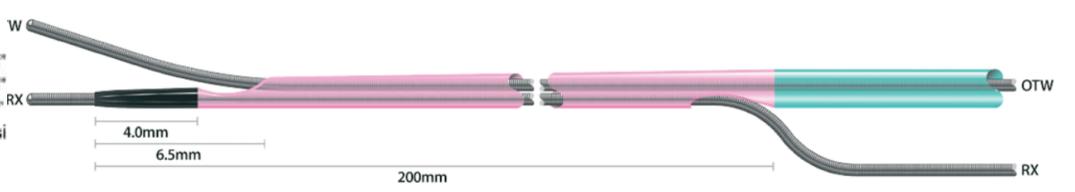
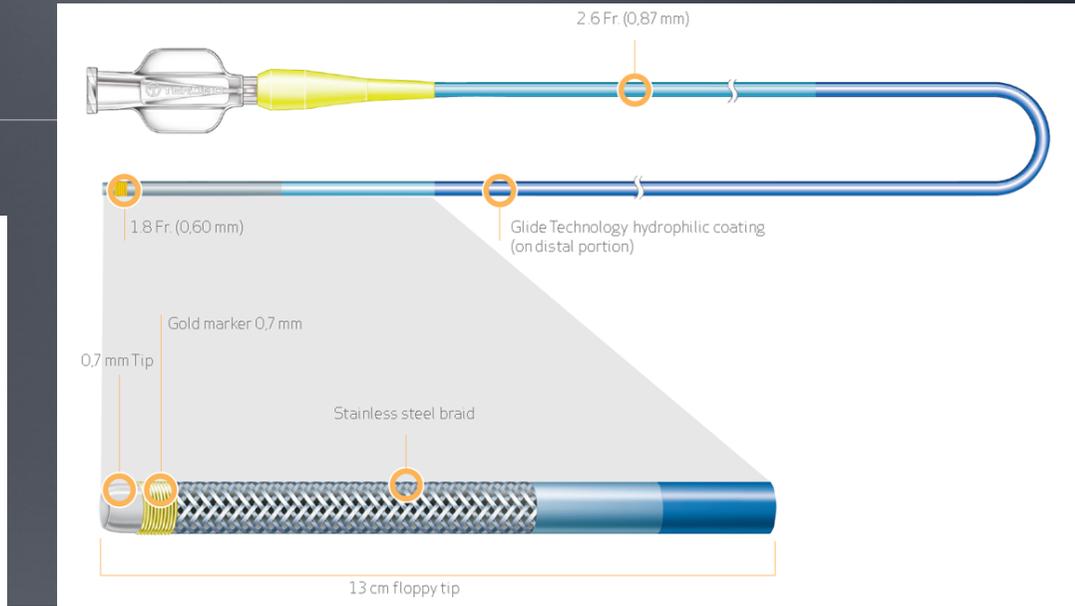
Corsair Micro-catheter



Corsair Cross-section



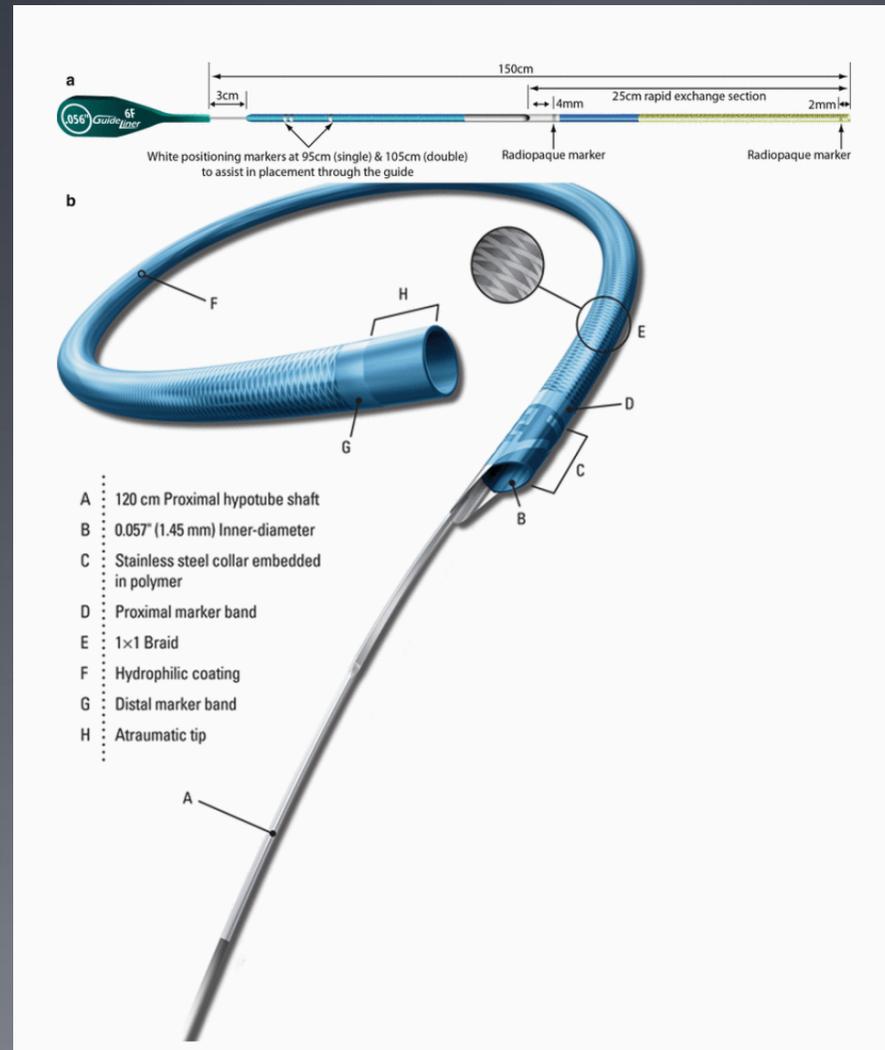
Shaft O.D. (Distal): 2.6 Fr.
 Shaft O.D. (Proximal) 2.8 Fr.
 Shaft I.D. 1: 0.018"
 Tip I.D.: 0.015"
 Max. Guidewire: 0.014"
 Max. Pressure: 300psi



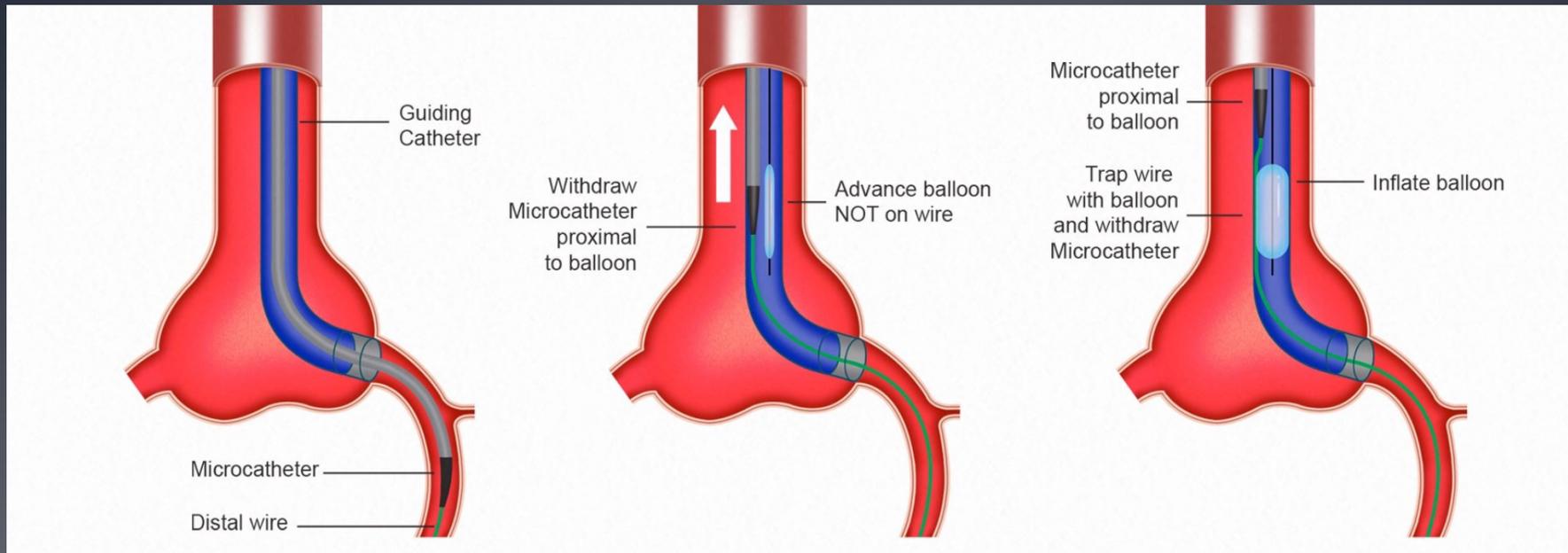
6.5mm TIP TO OTW PORT 	TAPERED SOFT TIP 	VISIBLE EXIT 	OVAL DESIGN 	DOUBLE STAINLESS STEEL CORE 	LUBRICITY x50
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6.5mm tip to OTW port – negates the need for deep engagement inside branches and CTOs
 Tapered soft tip – provides high trackability
 Visible exit – know exactly where the wire is exiting
 Oval design – a) 1.08mm (3.3Fr) x b) 0.84mm (2.5Fr)
 Double stainless steel core – kink resistance and pushability
 Lubricity - L² Coating (long lasting lubricity) maintains trackability

Support = extension



Guiding: trapping balloon



Recommended Guide & Balloon Combination:



= 2.0 / 2.5mm Balloon



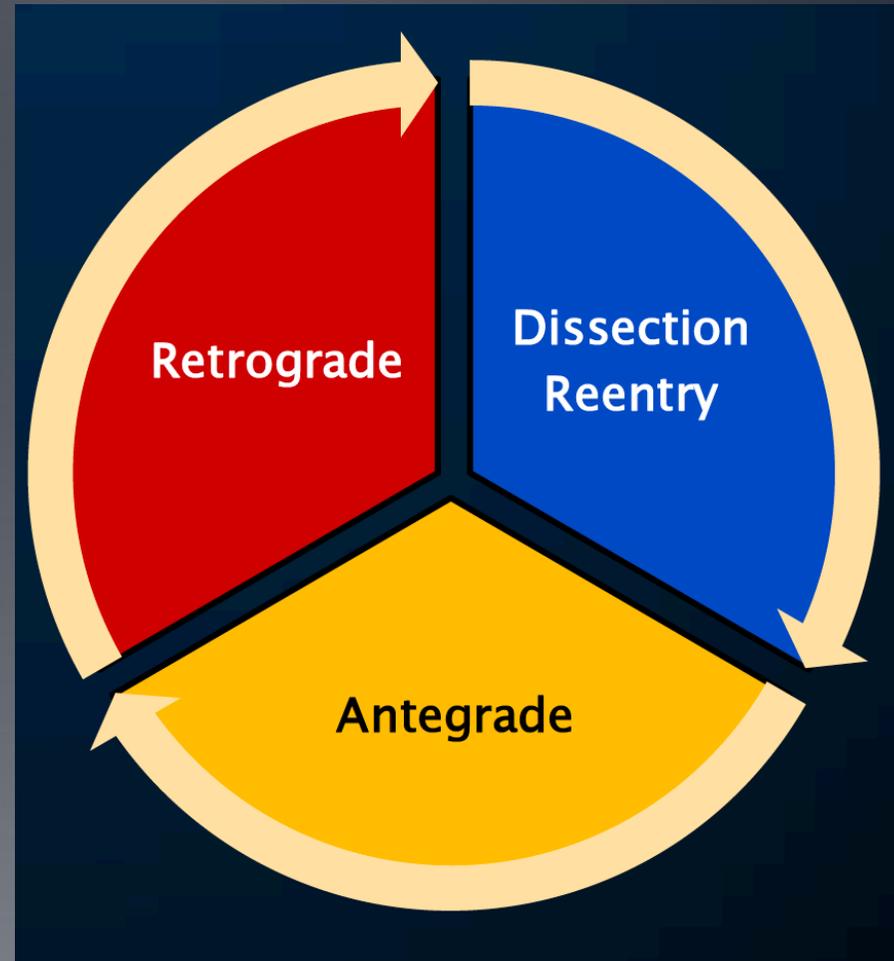
= 2.5mm Balloon



= 3.0mm Balloon

La stratégie hybride

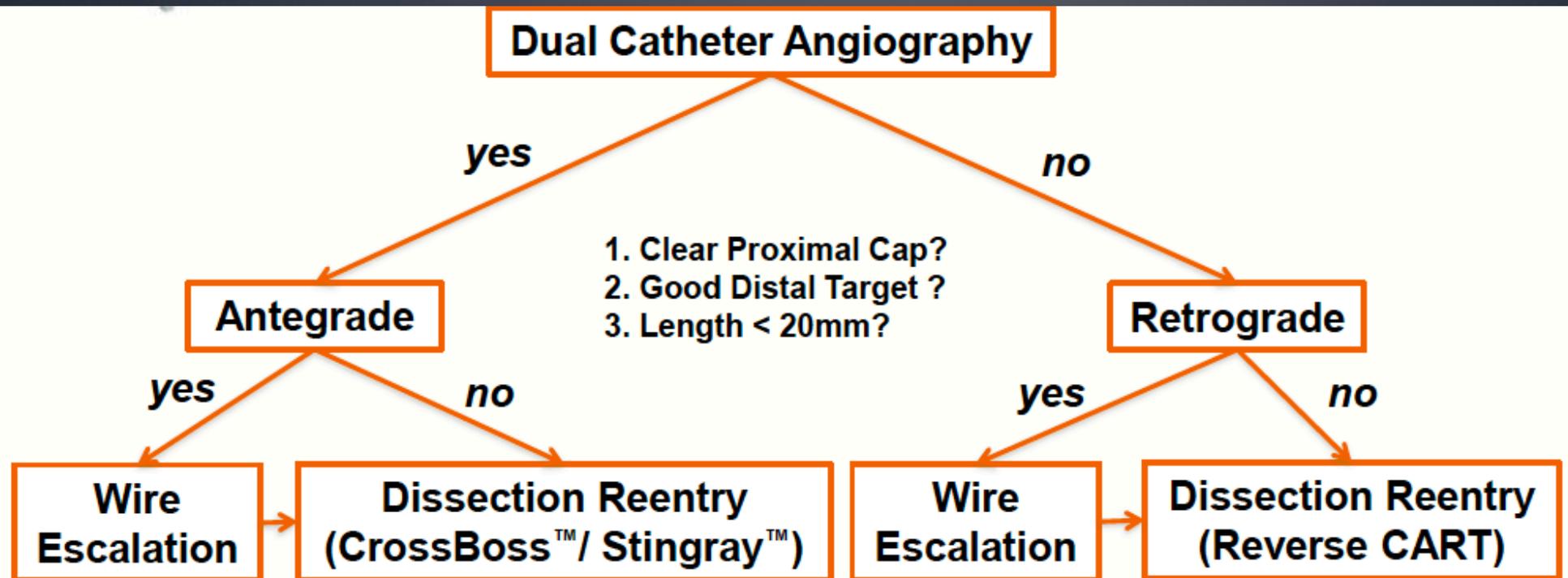
- Evaluation permanente de l'approche
- Permet une efficacité et succès de la procédure
- Switch si échec
- Optimisation des rayons et contraste



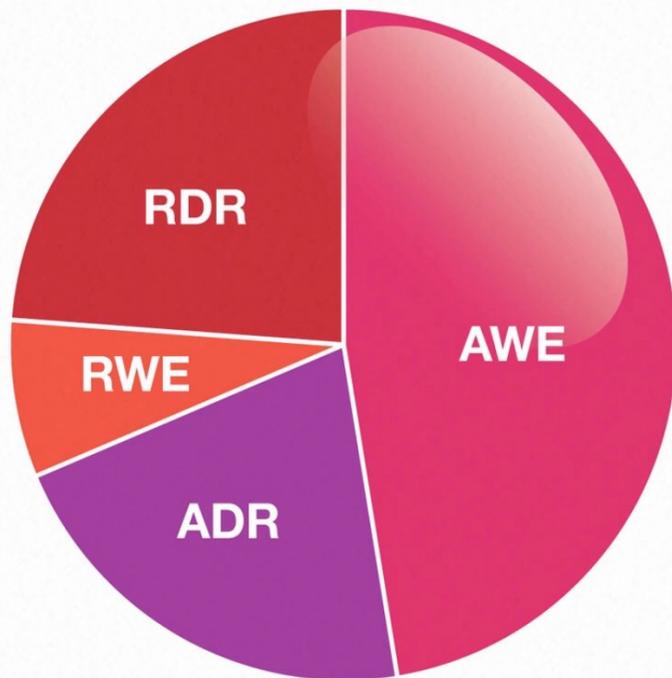
Approche hybrid: Les 4 questions

- Cap proximal ambigu?
 - Longueur > 20 mm ?
 - Qualité du lit d'aval ?
 - Collatérales?
-

L'approche Hybride



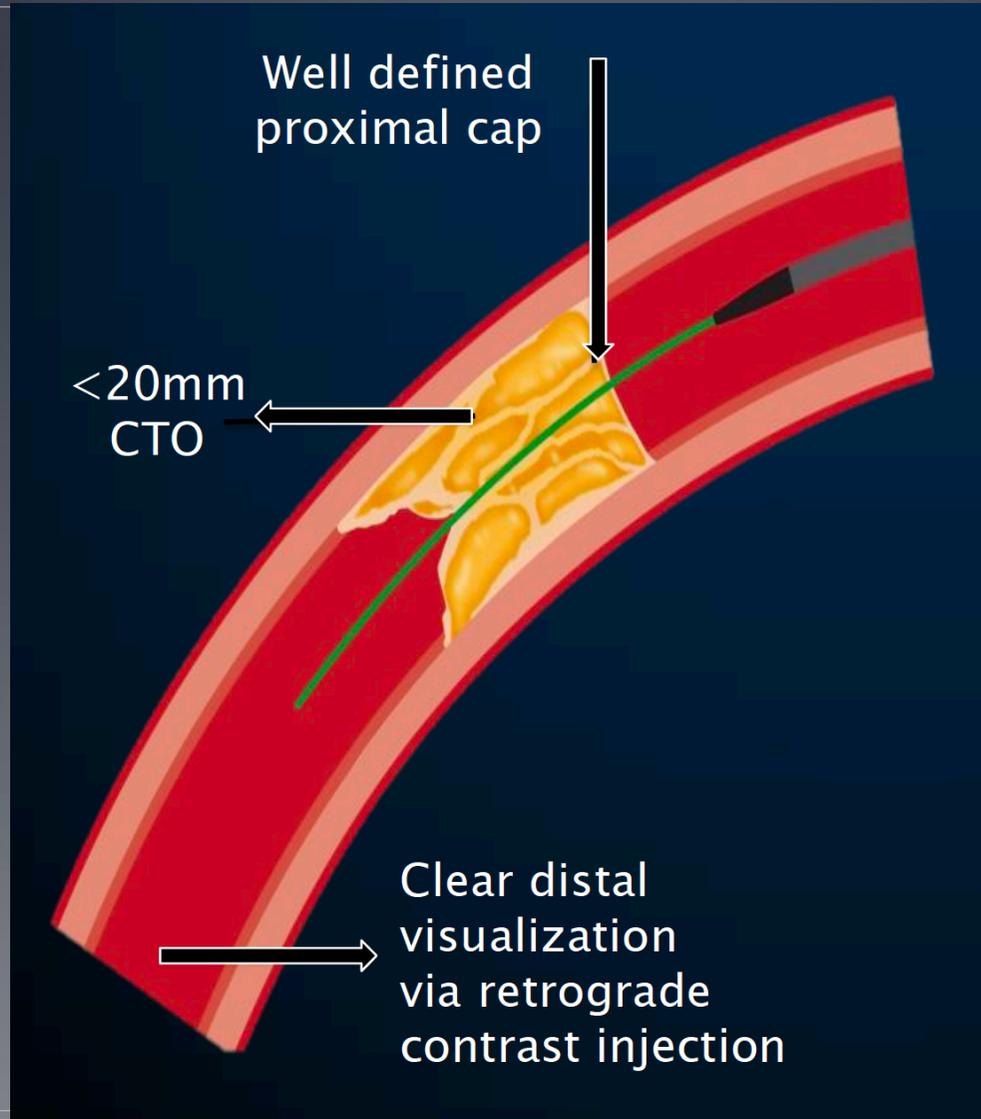
Les techniques



- **AWE** – Antegrade Wire Escalation
- **ADR** – Antegrade Dissection Re-entry
- **RWE** – Retrograde Wire Escalation
- **RDR** – Retrograde Dissection Re-entry

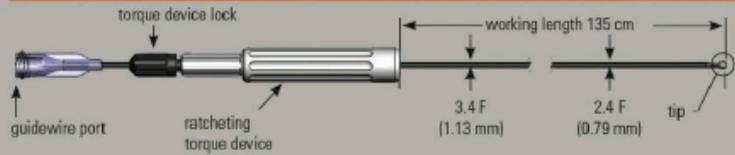
Data from UK hybrid registry, 1050 patients, 1150 CTOs

Antégrade escalation

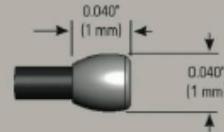


ADR: CrossBoss

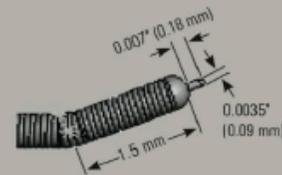
CrossBoss Catheter



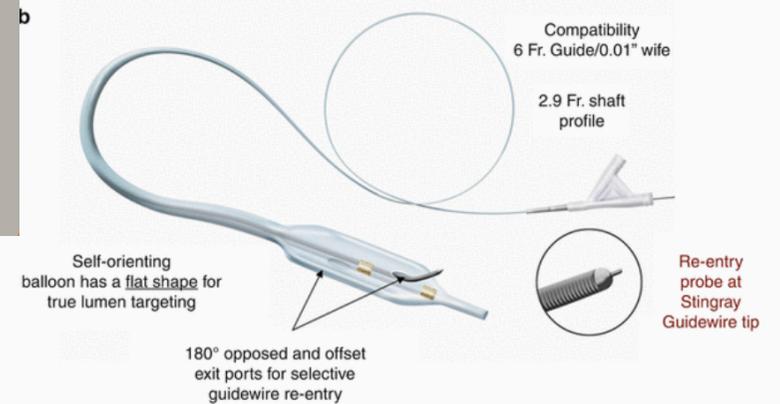
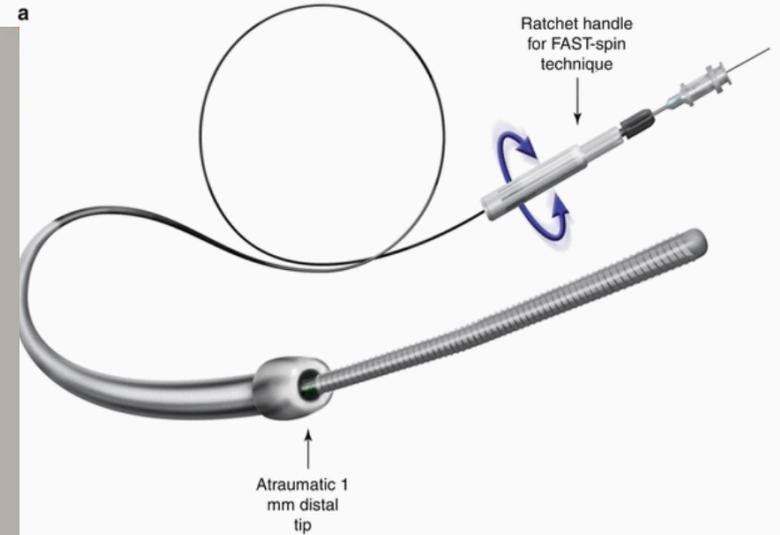
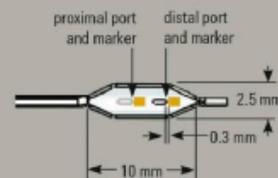
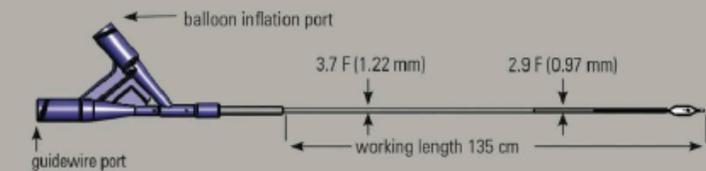
Tip Close Up



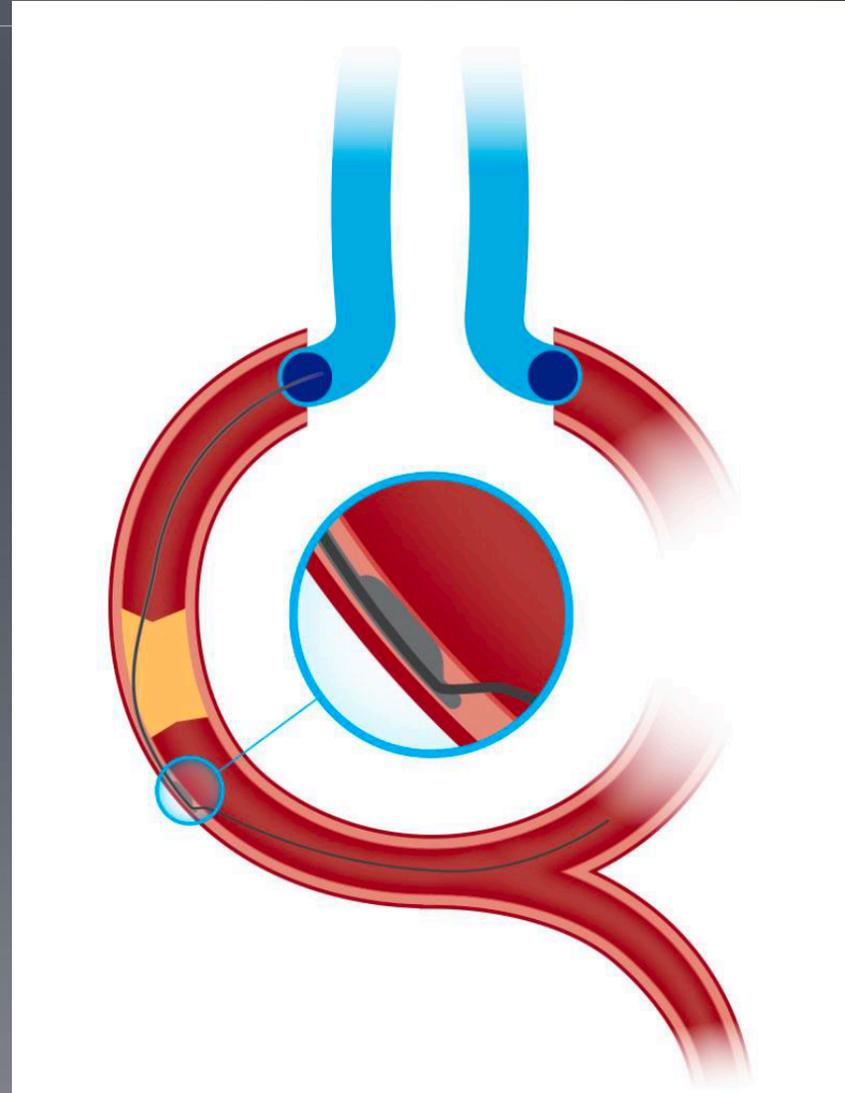
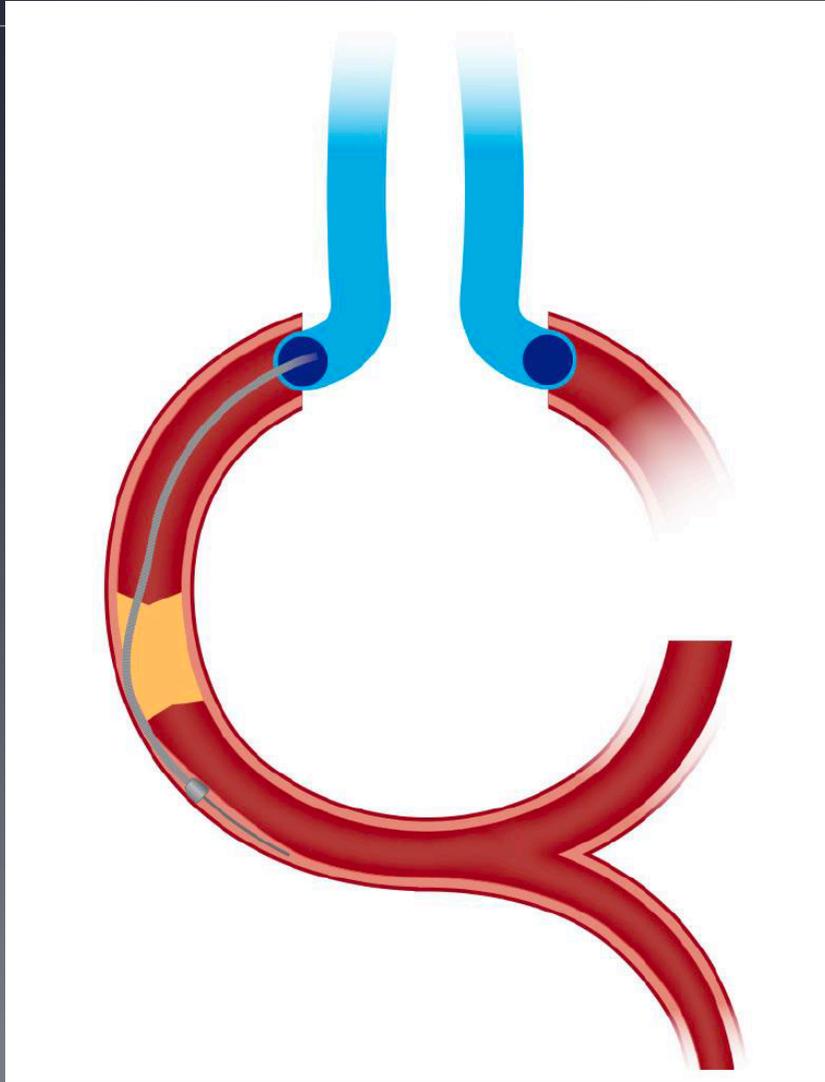
Stingray Guidewire



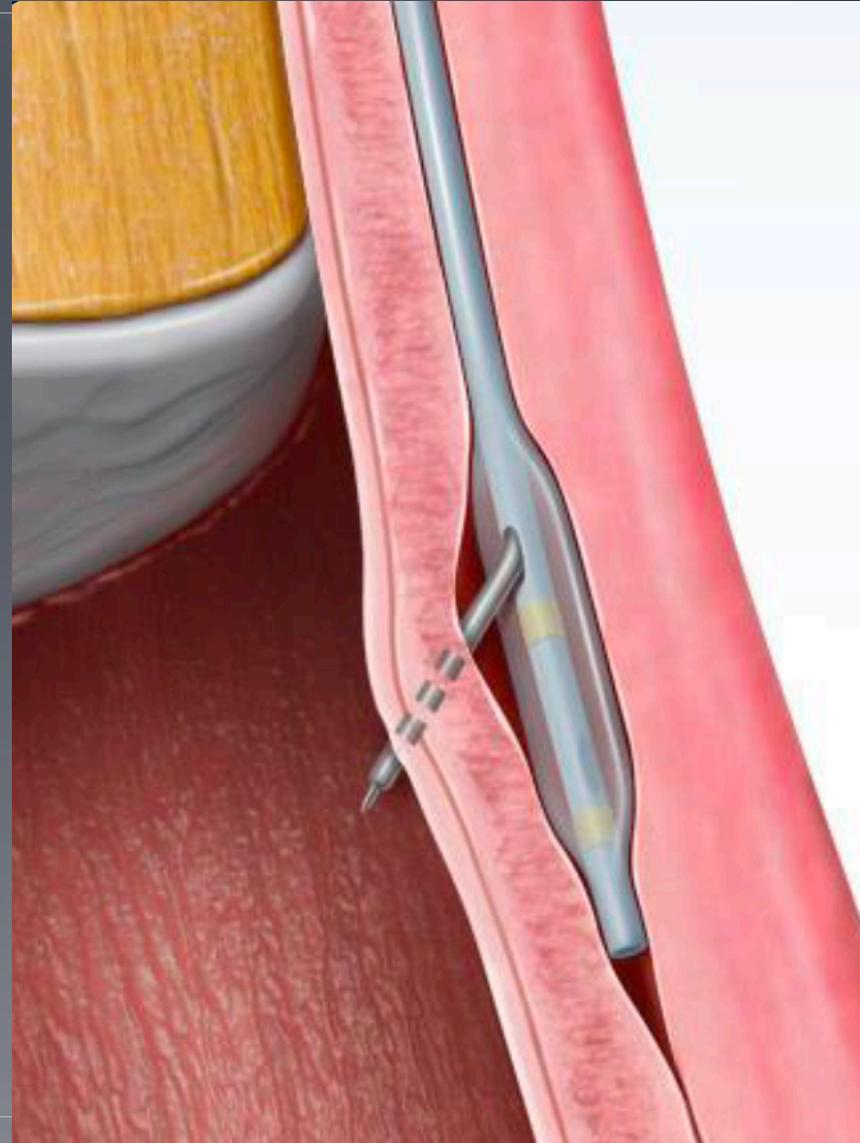
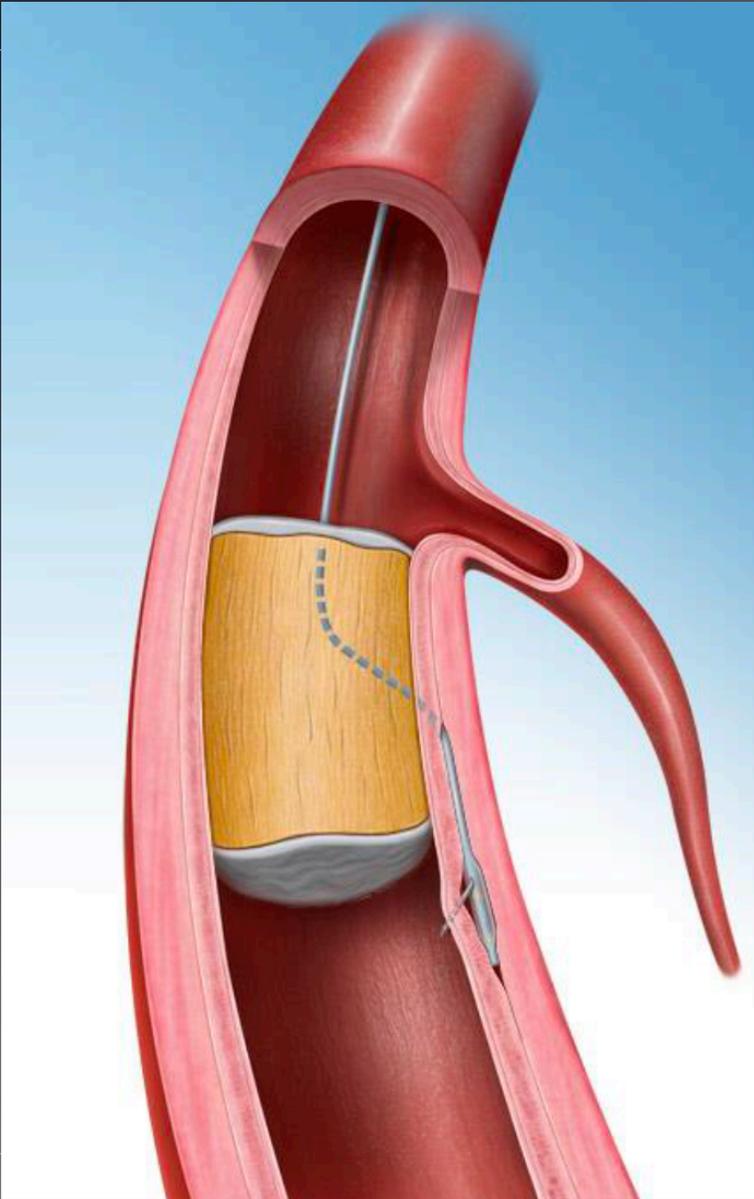
Stingray Catheter



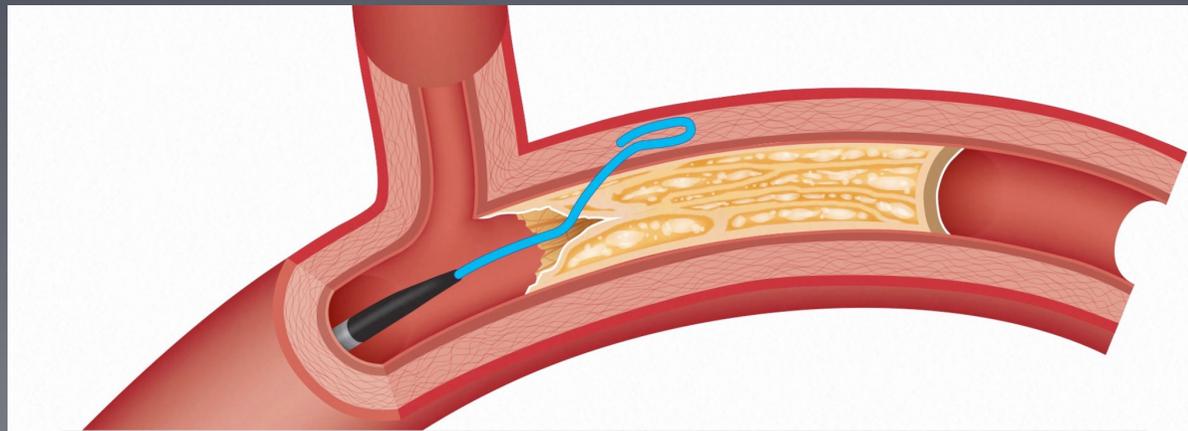
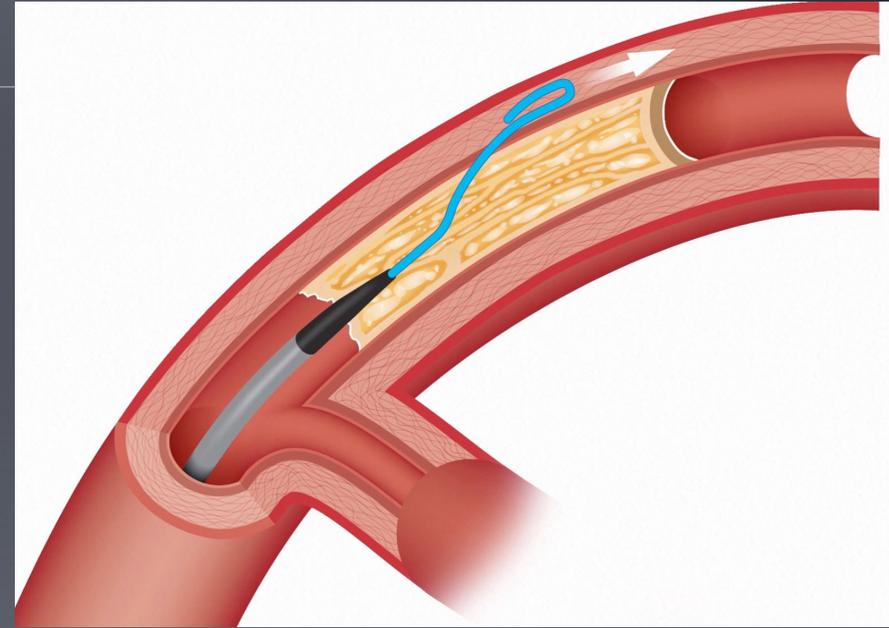
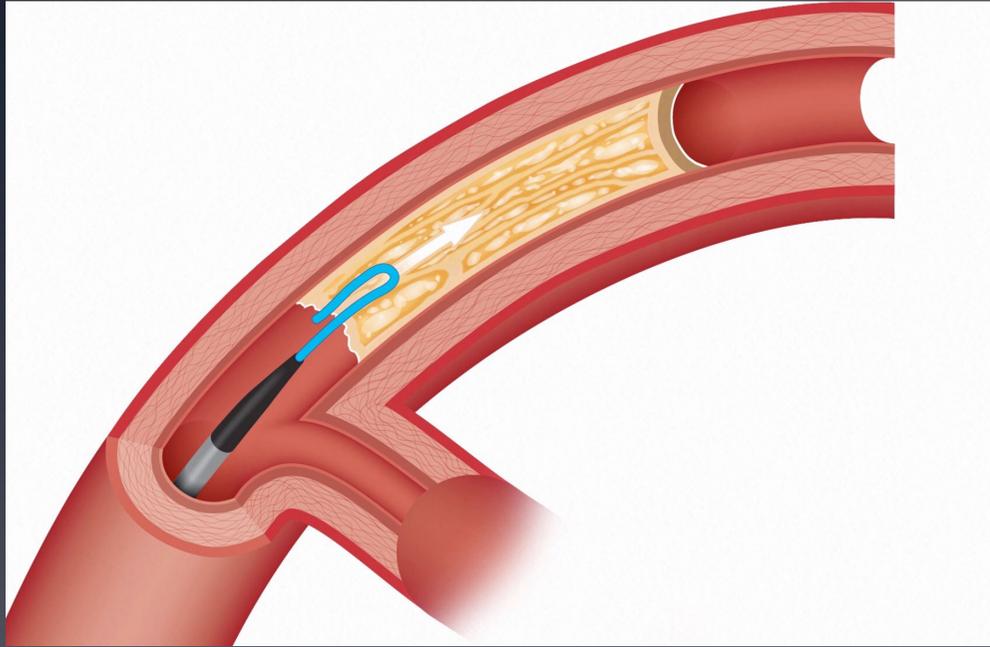
ADR



Antégrade dissection-réentrée



Knukkle



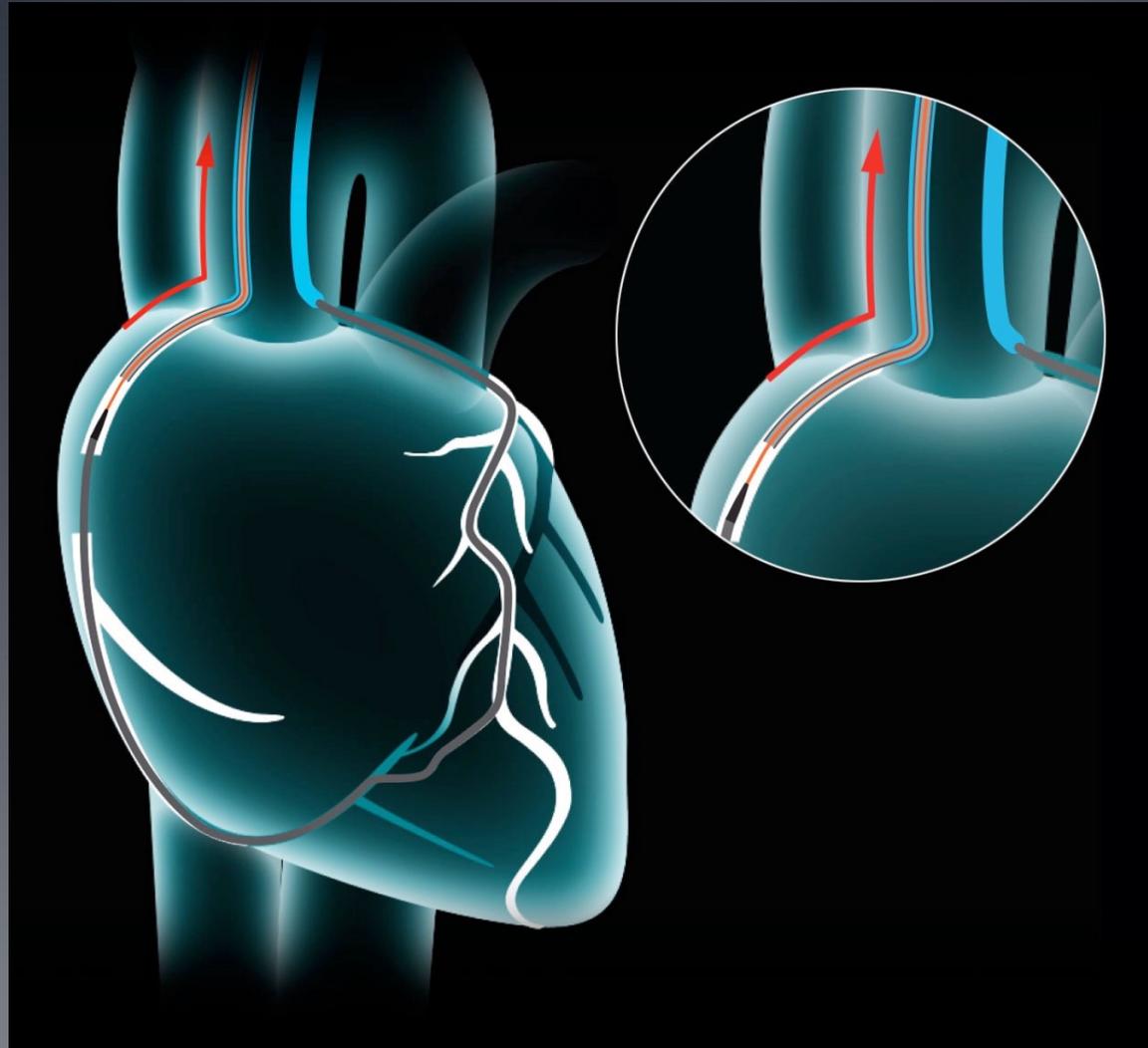
Fielder XT



Pilot 200

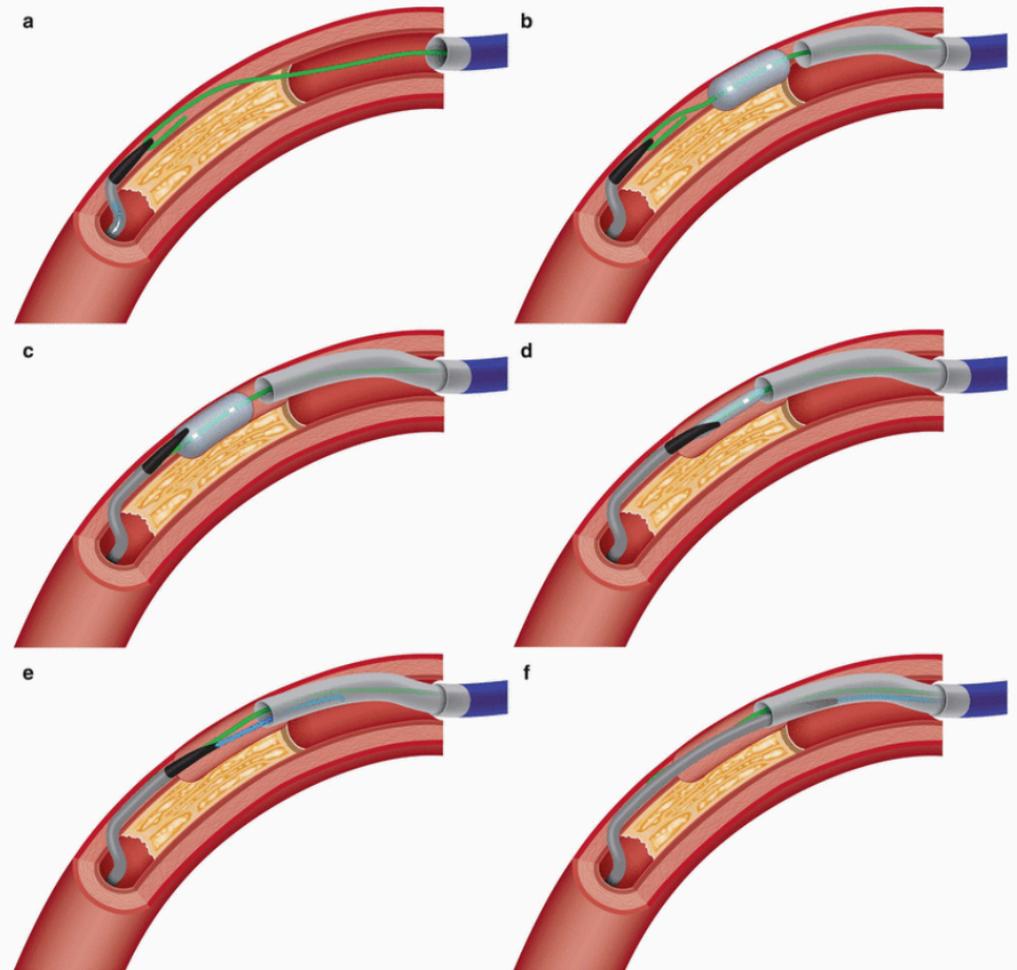
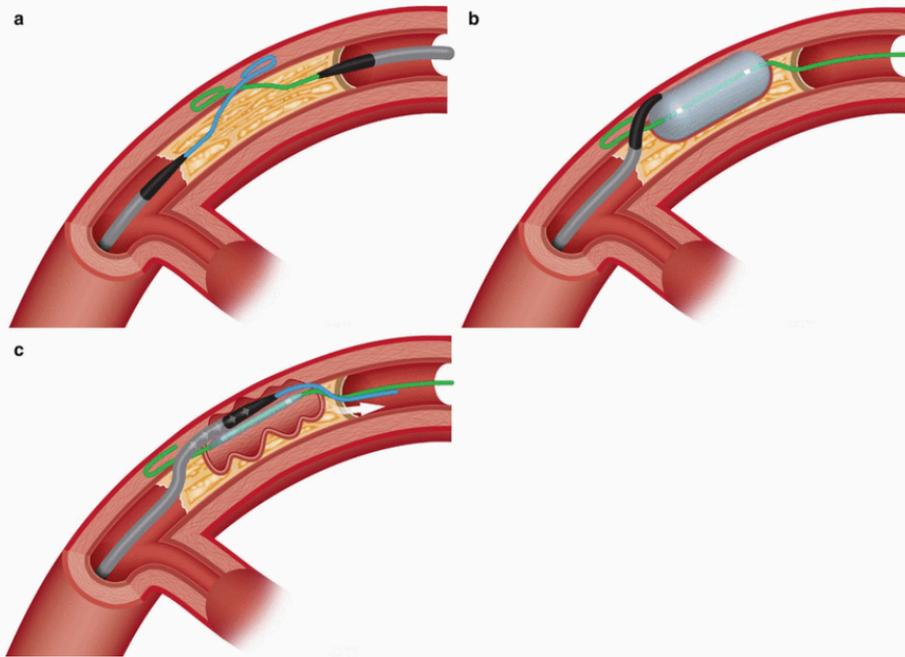


Rétrograde

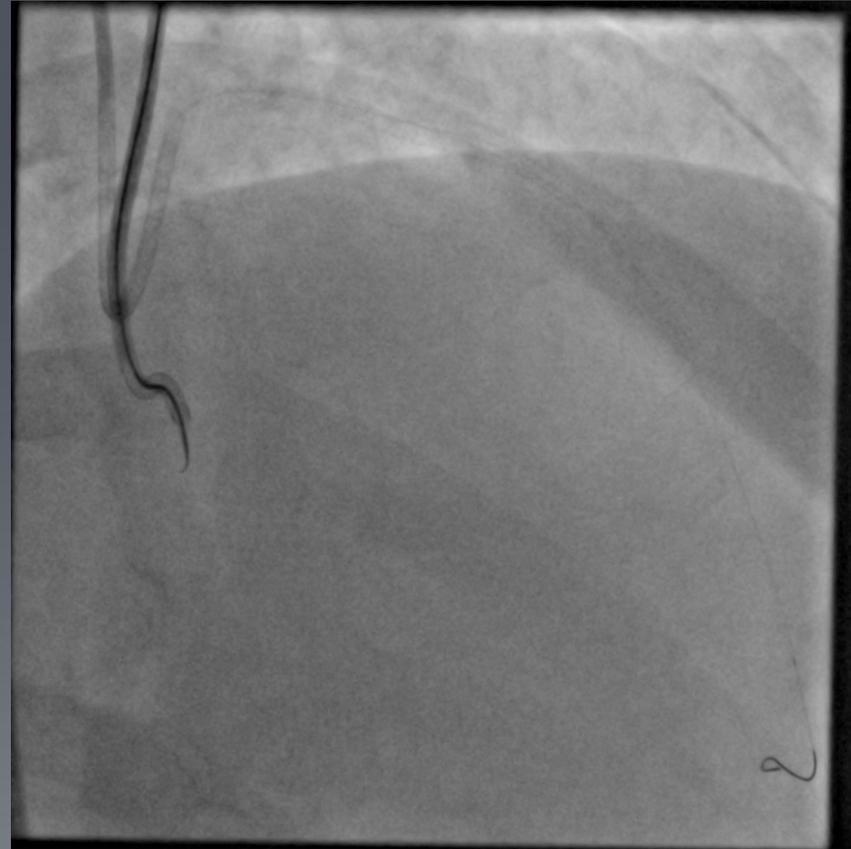
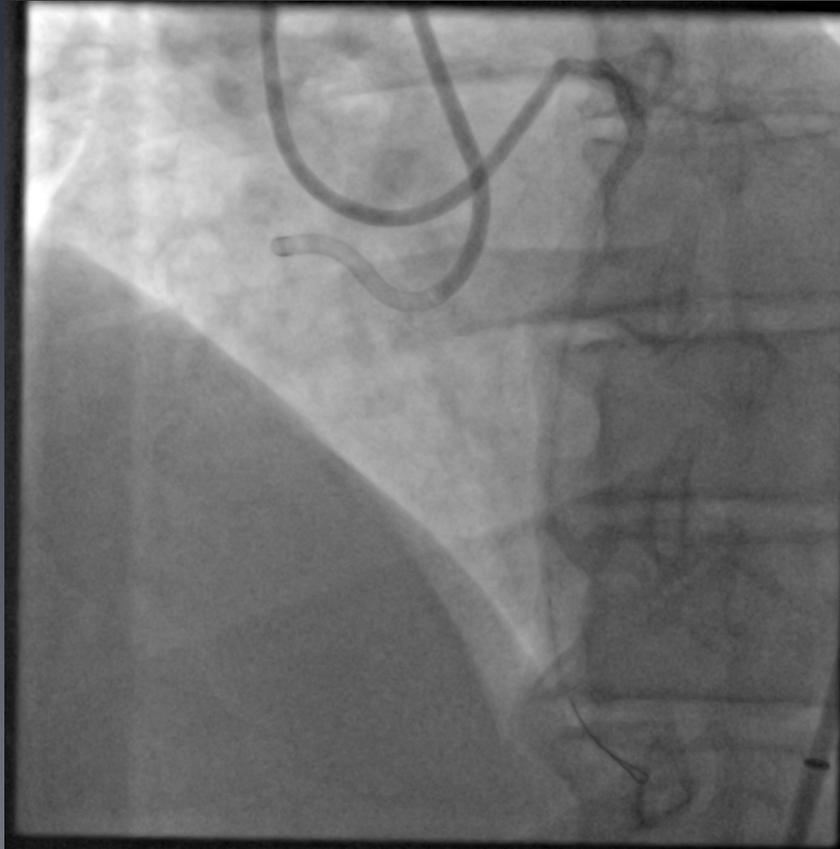


Reverse CART

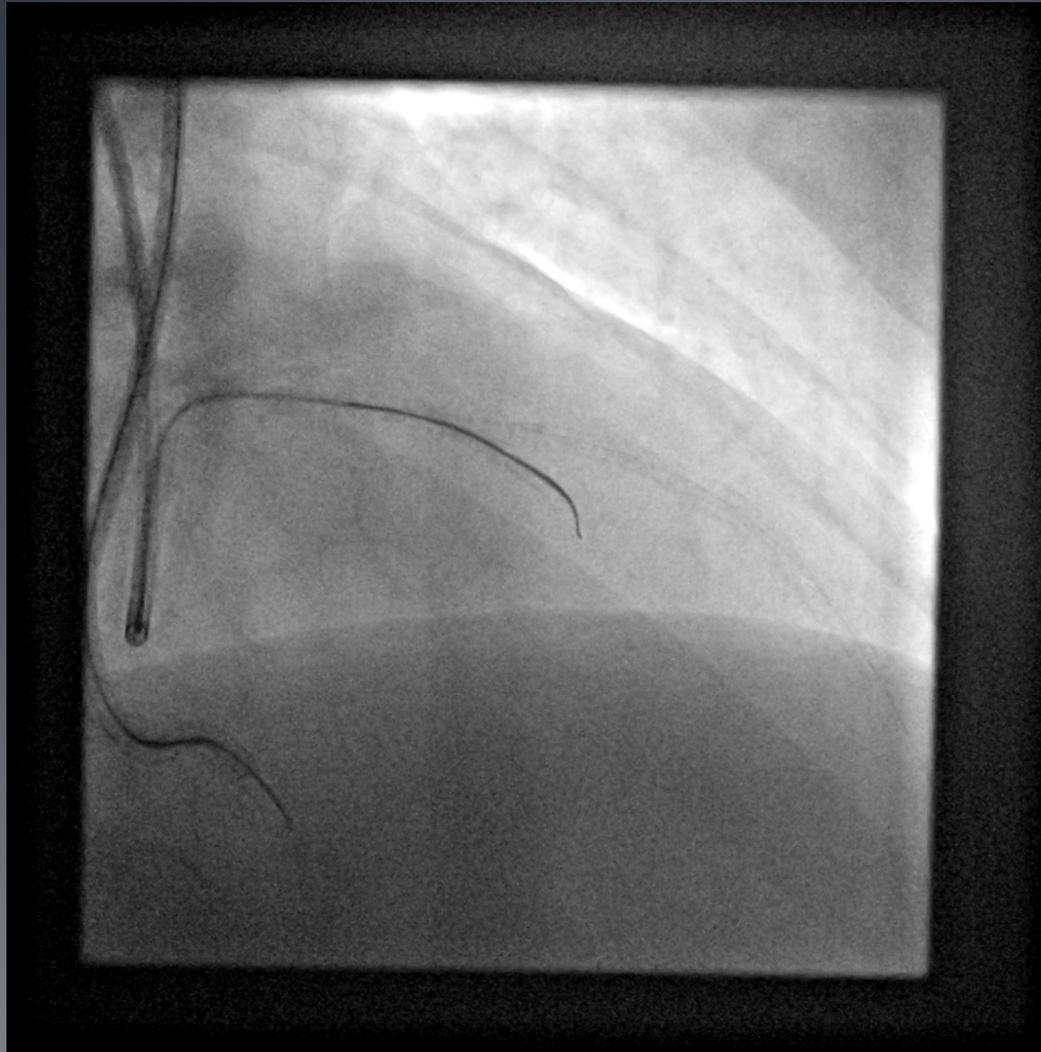
+ guideliner assisted RCART



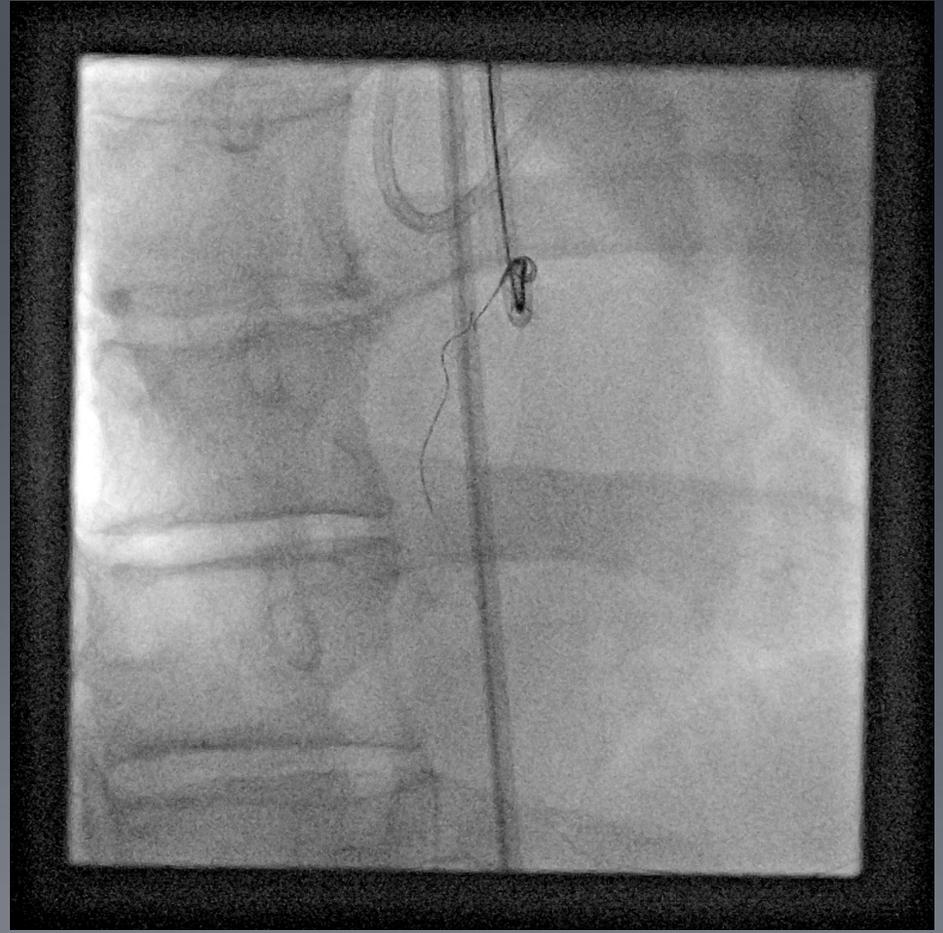
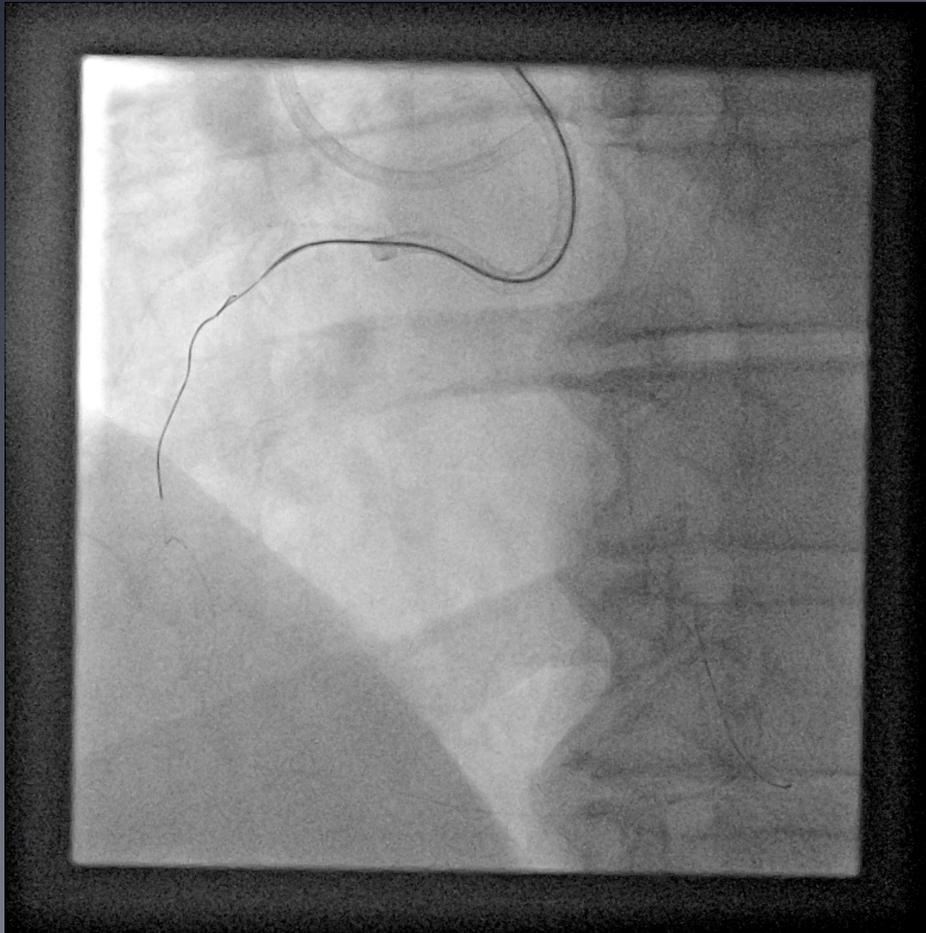
Double injection



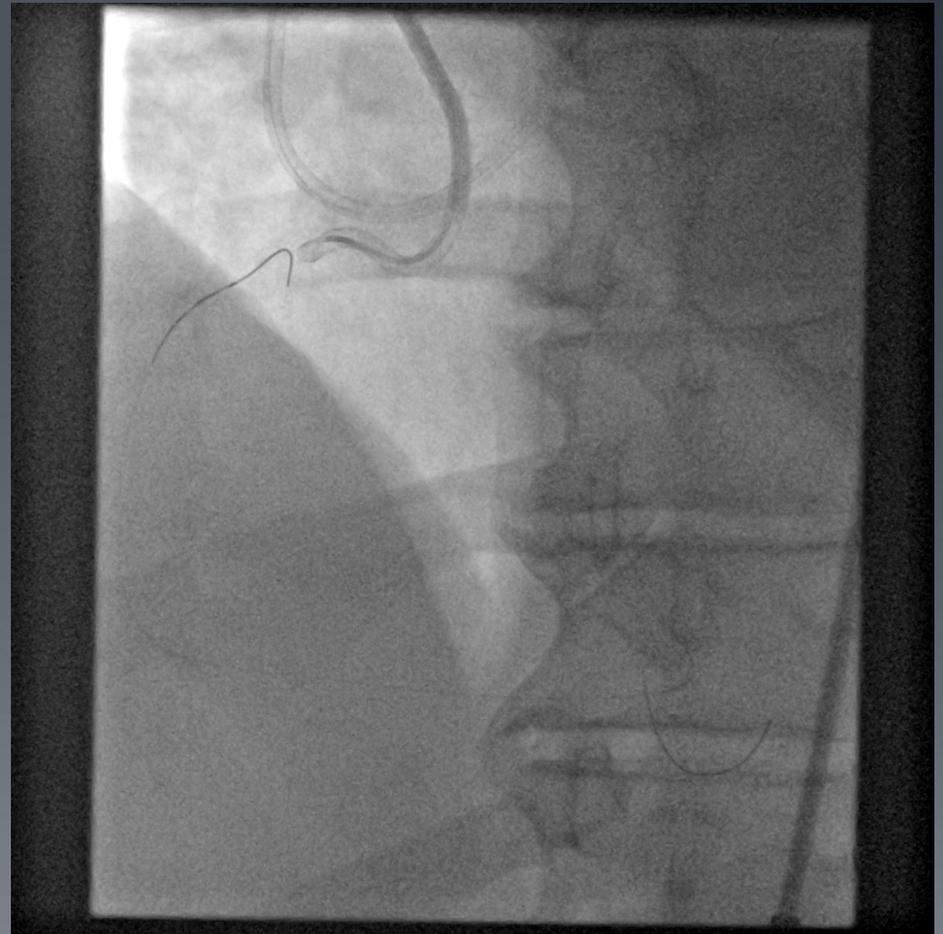
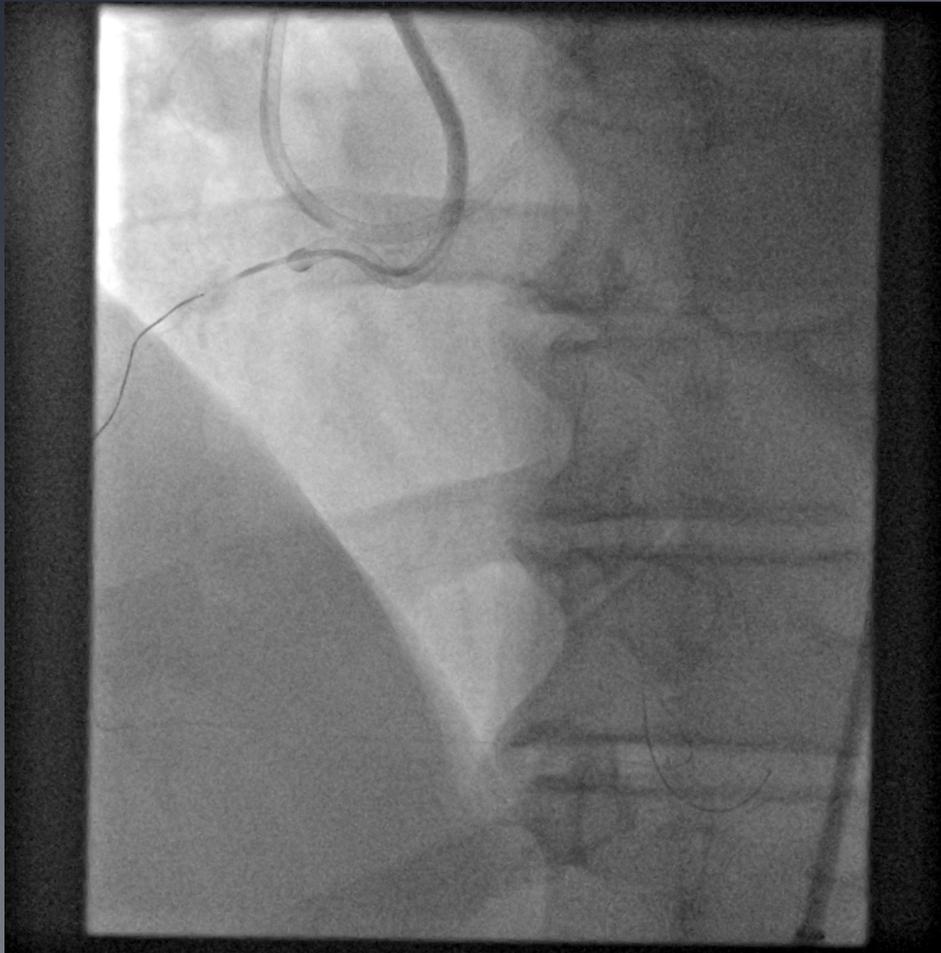
Septal surfing



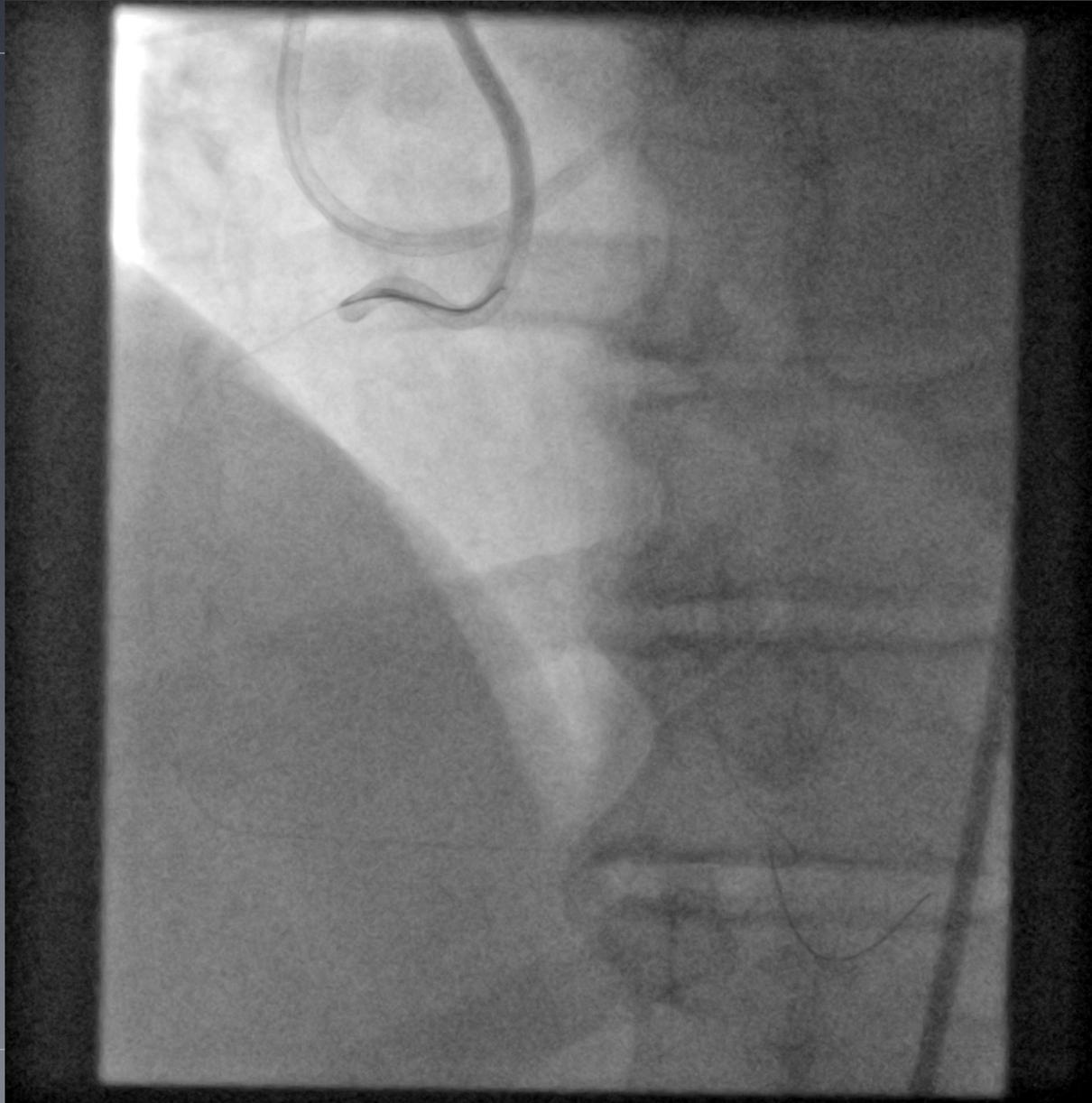
Différentes incidences



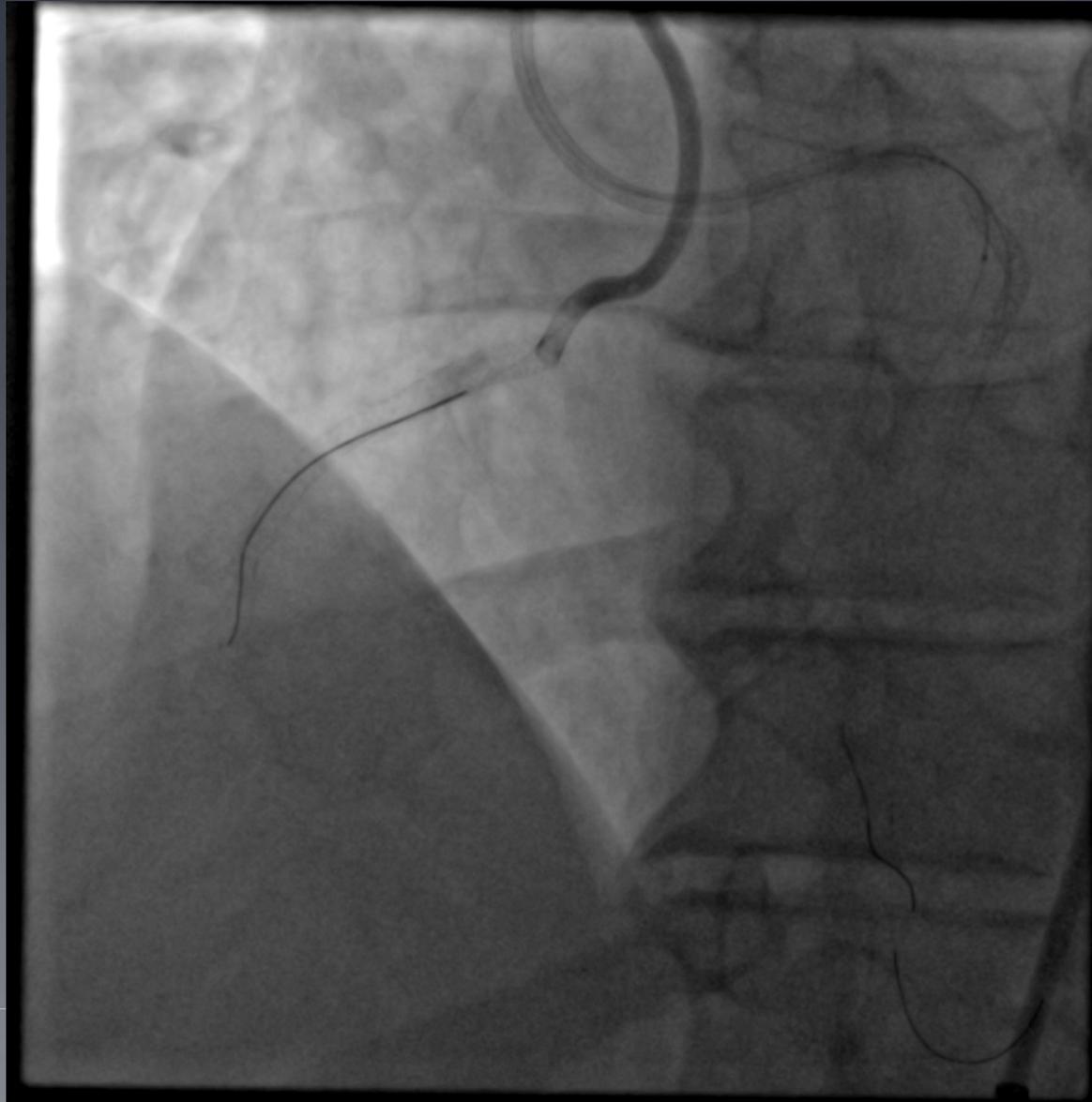
Passage retrograde + Guiding antégrade



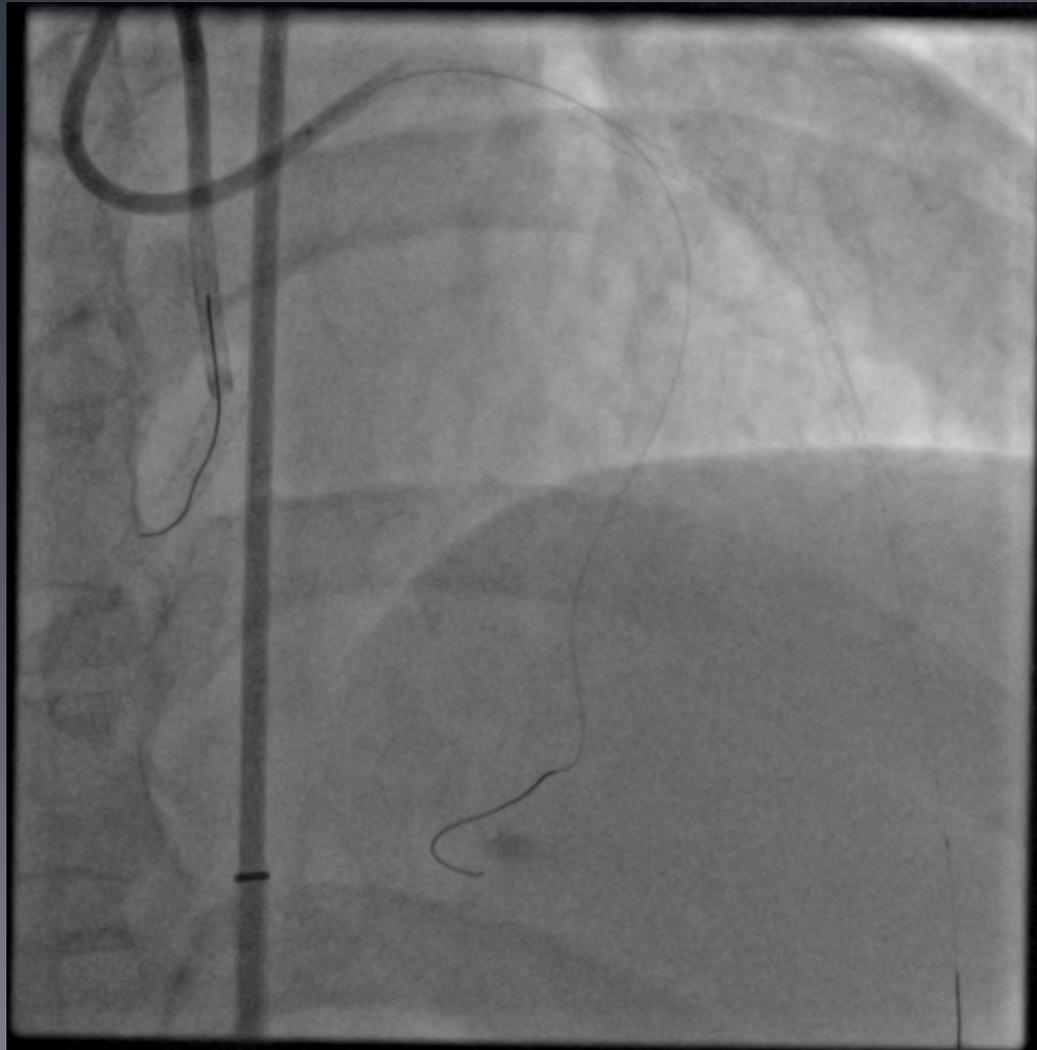
Tip in



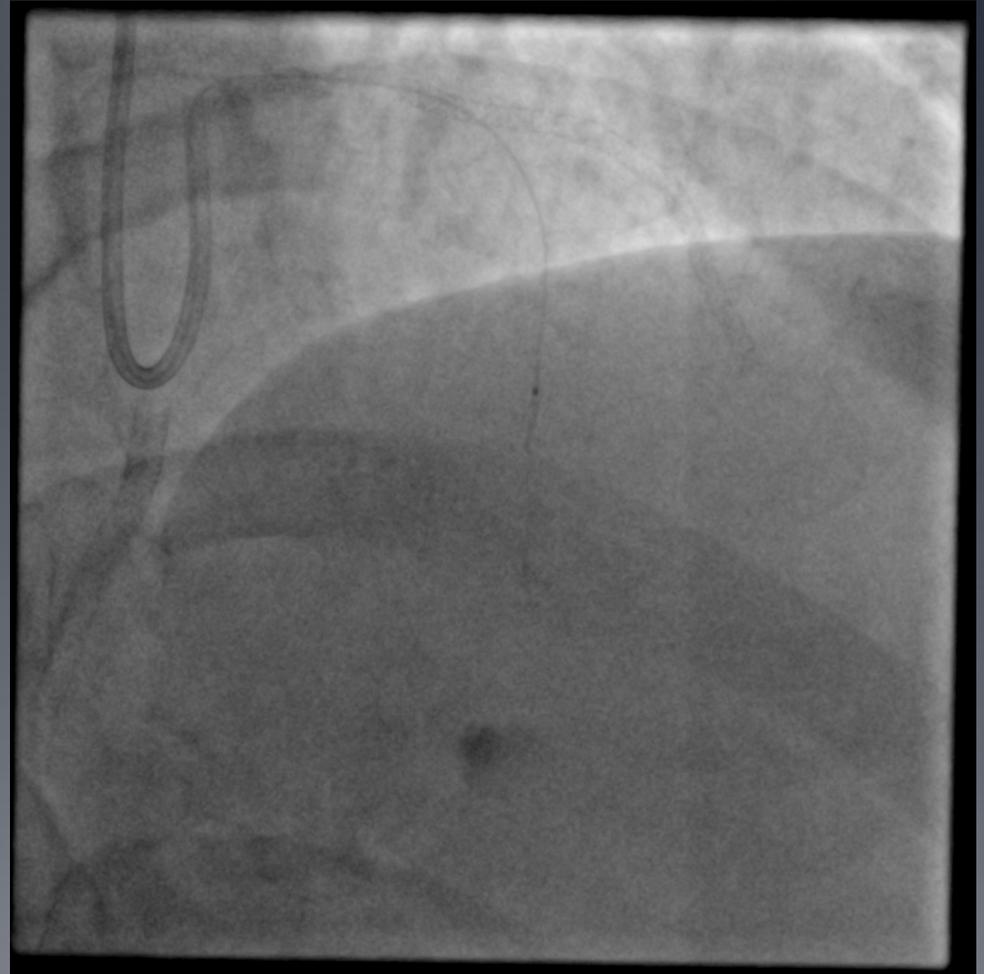
Résultat final?



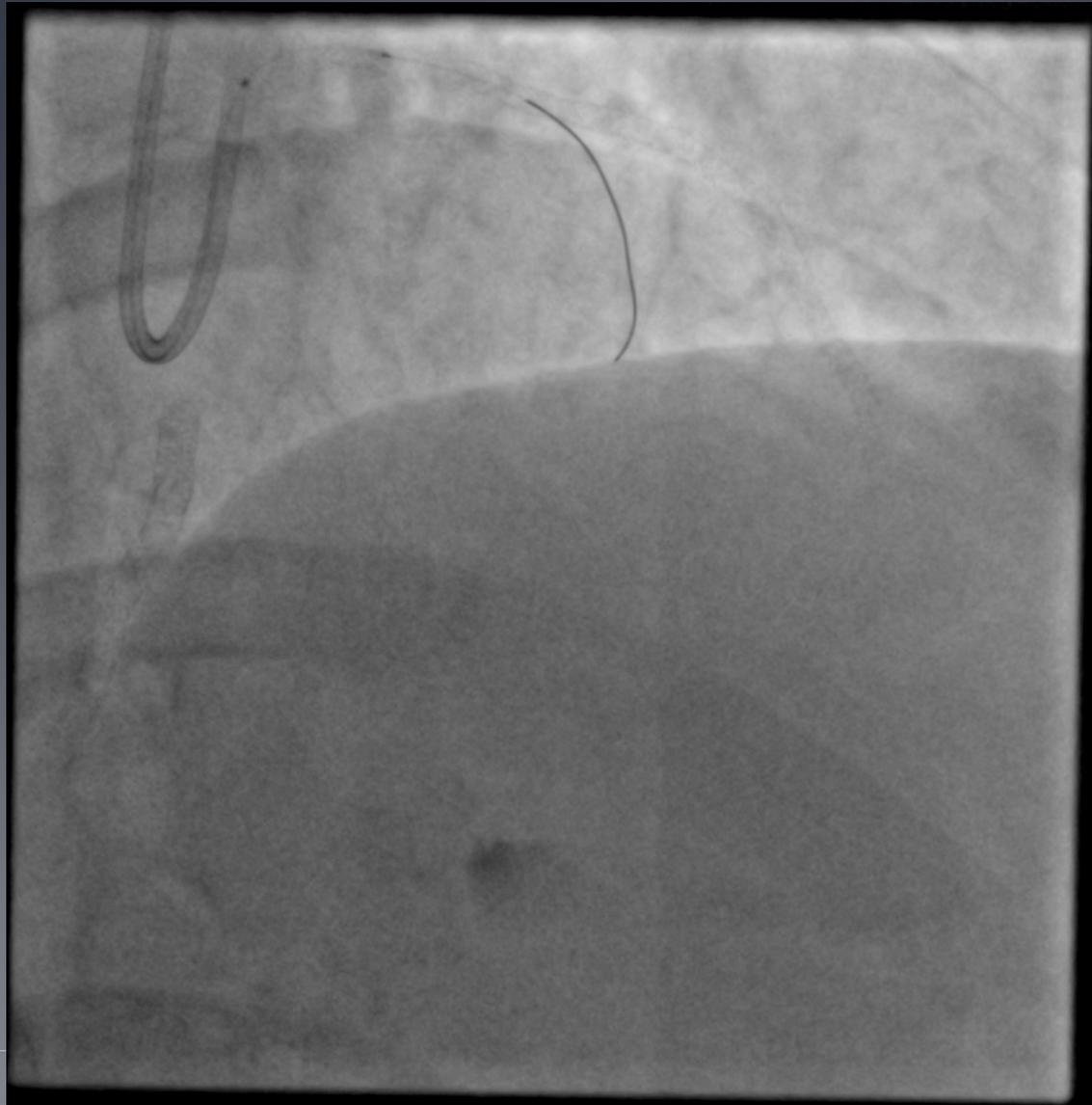
Problème ?



Pas de problème



Problème résolu



**La seule question stupide est celle
qu'on n'a pas osé poser.**

Proverbe chinois
