ULB

CHU Saint-Pierre
UMC Sint-Pieter

VINGT-CINQUIÈME JOURNÉE
SCIENTIFIQUE DE L'ASPECAF

ASPECAF

SAMEDI
09/11/19

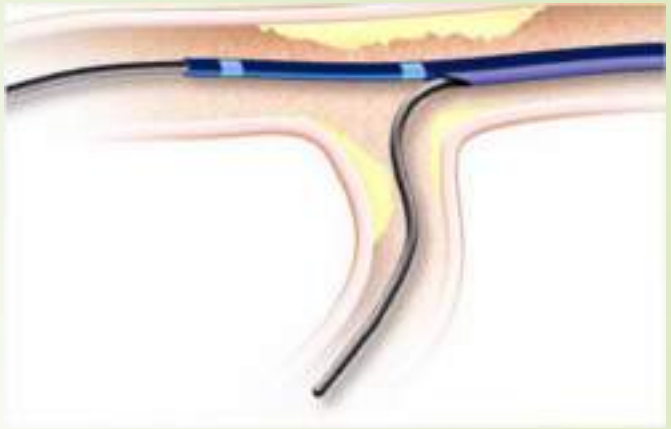
CHU Saint-Pierre
UMC Sint-Pieter

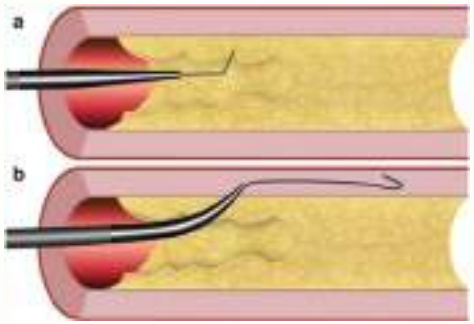
Angioplastie complexe

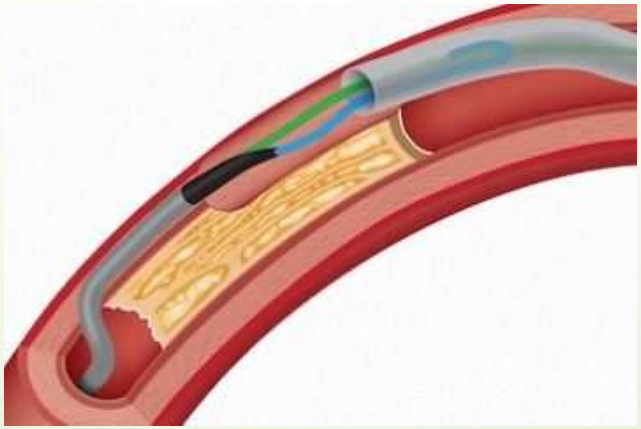
Dr Quentin de Hemptinne, CHU Saint-Pierre, Bruxelles


DEWALT
DEWALT
FLEXVOLT
60V
MAX
POWER


SAWKA Shaft
Tungsten Braiding
Stainless wire:




a
b

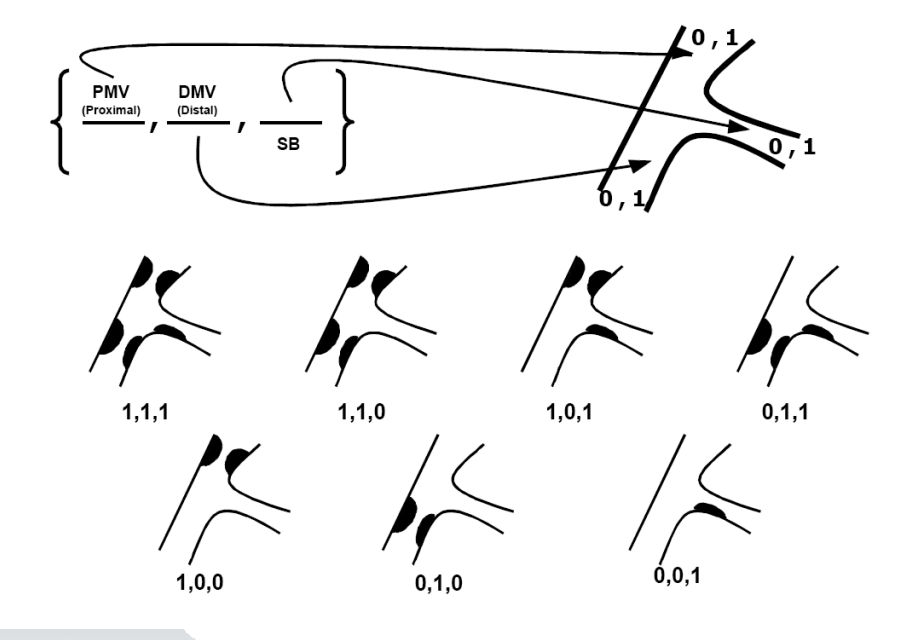


Angioplastie complexe

- Bifurcations
- Lésions calcifiées
- CTO
- Dysfonction VG

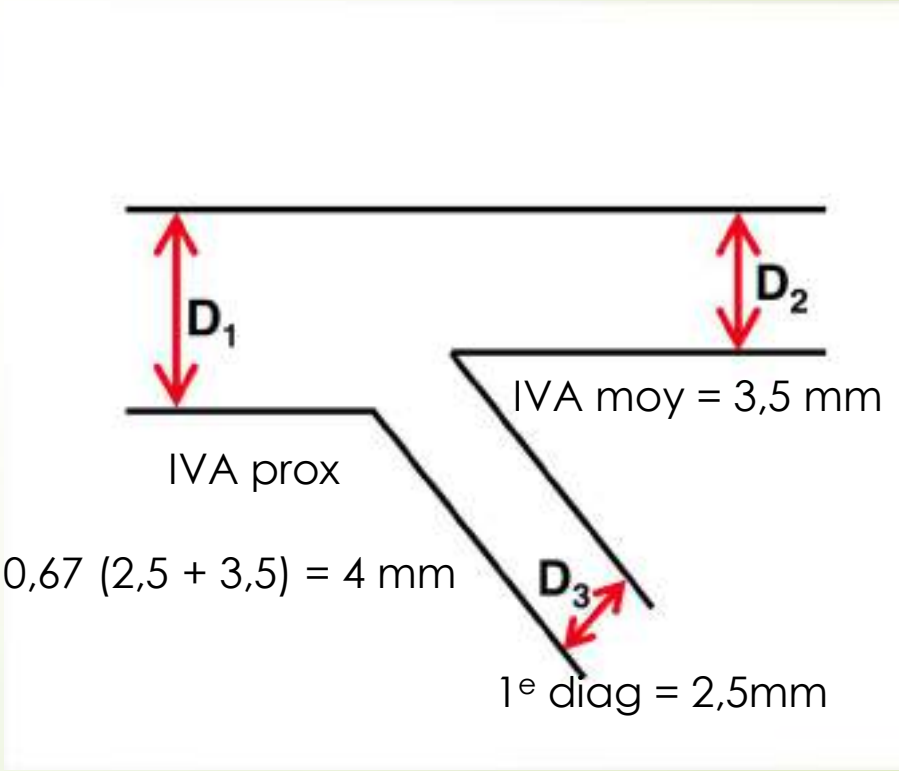
Bifurcations

Classification Medina



Loi de Finet

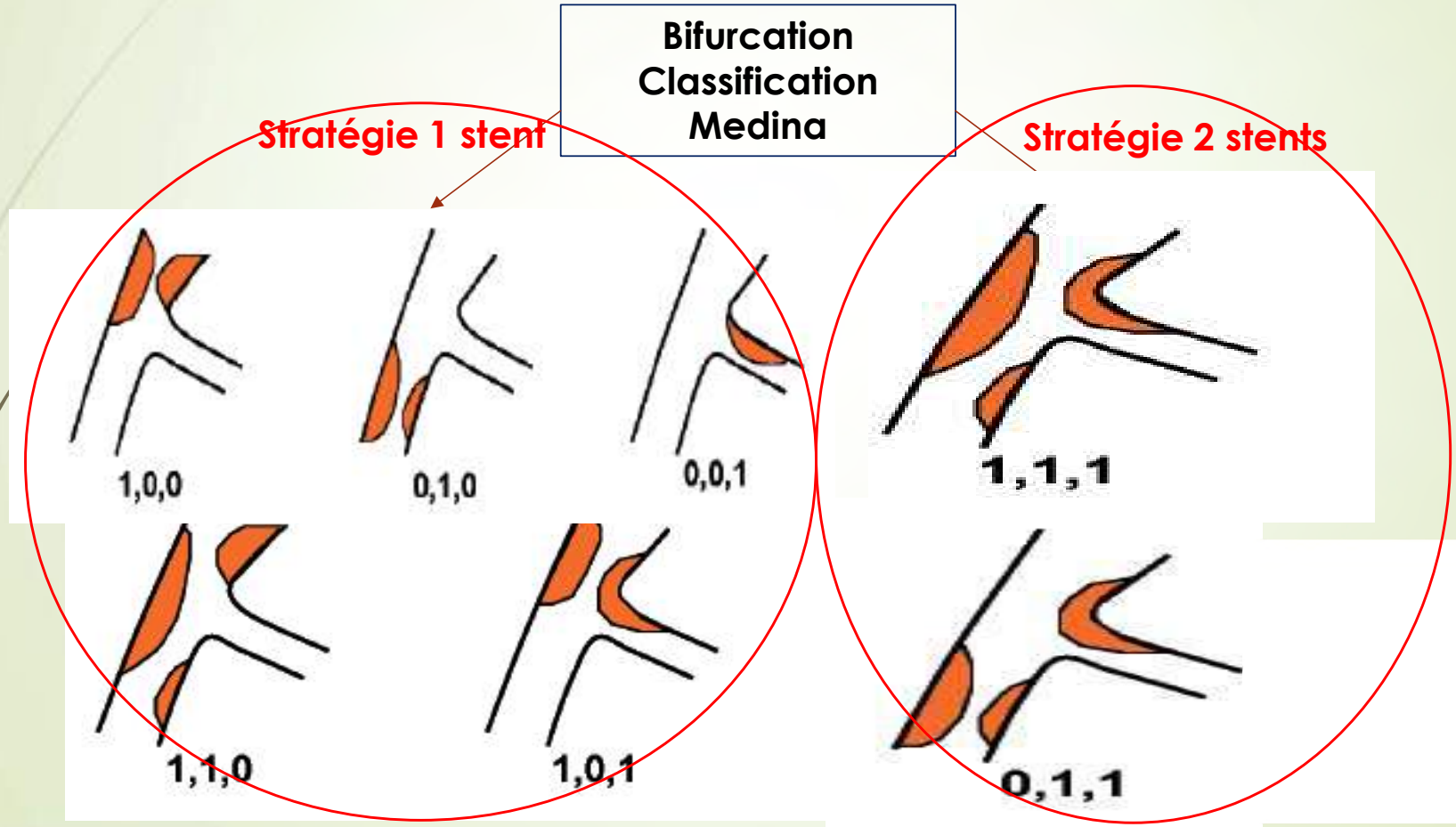
D1 = 2/3 (D2+D3)



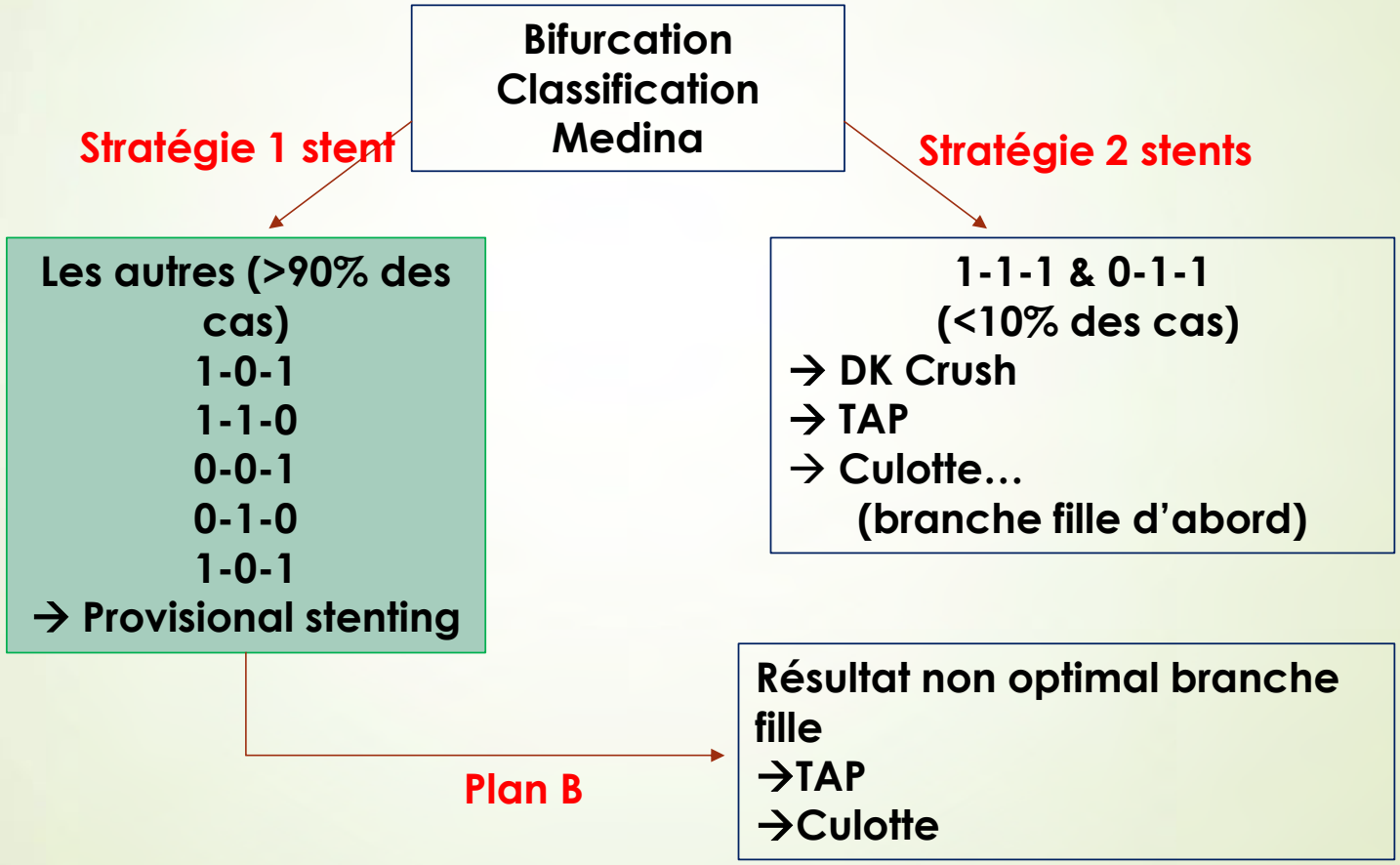
Stratégie

- La « side-branch » (SB)
  - Va-t-on la perdre ?
  - Est-elle importante ? Assez grande pour un stent (>2.5mm)
  - Sténose diffuse de la SB
  - Angle < 70°
  - Difficulté à repasser un guide dans SB
- Si la réponse est oui à une de ces questions : il faudra probablement utiliser une stratégie 2 stents

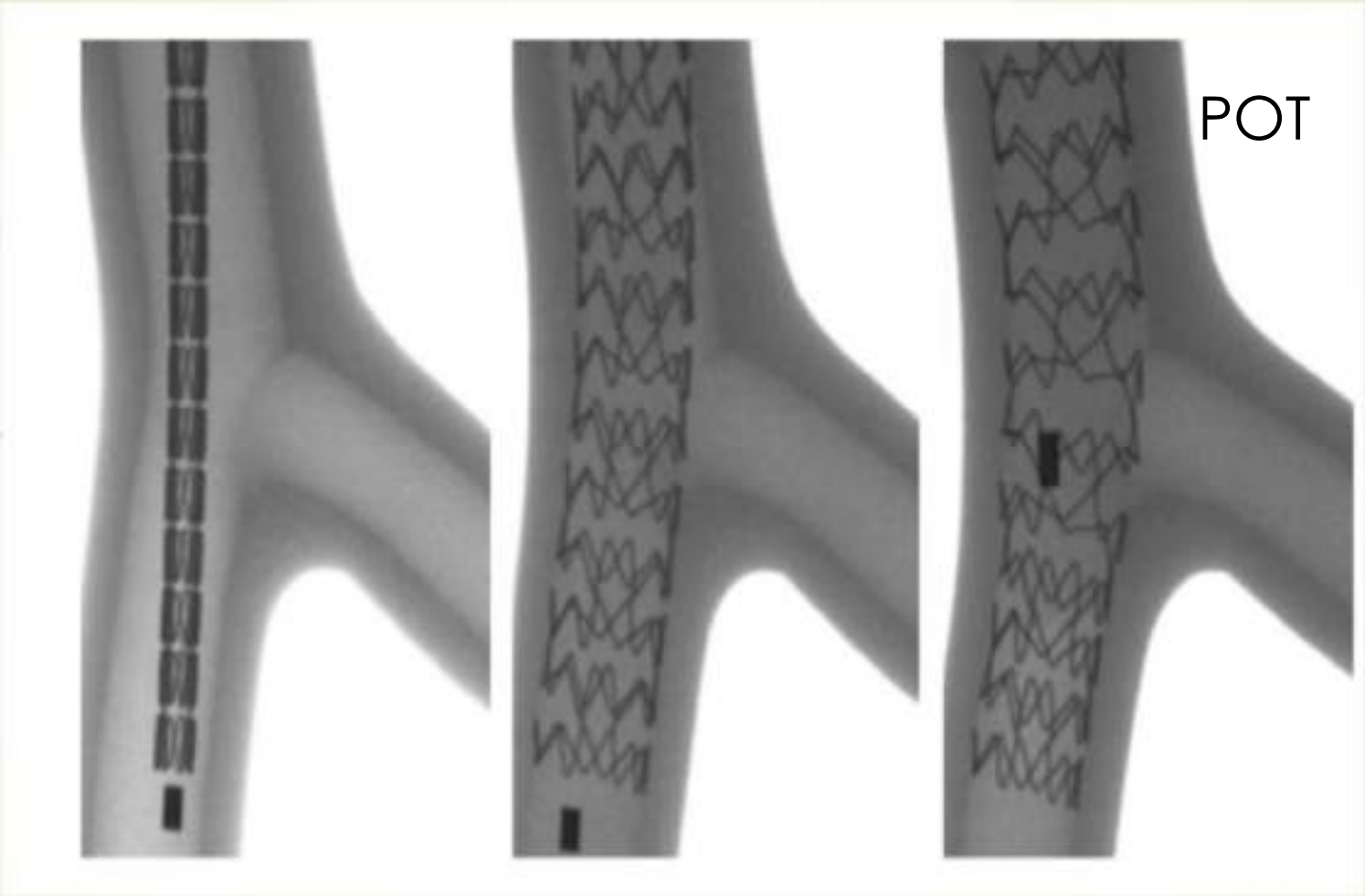
Angioplastie des bifurcations



Angioplastie des bifurcations

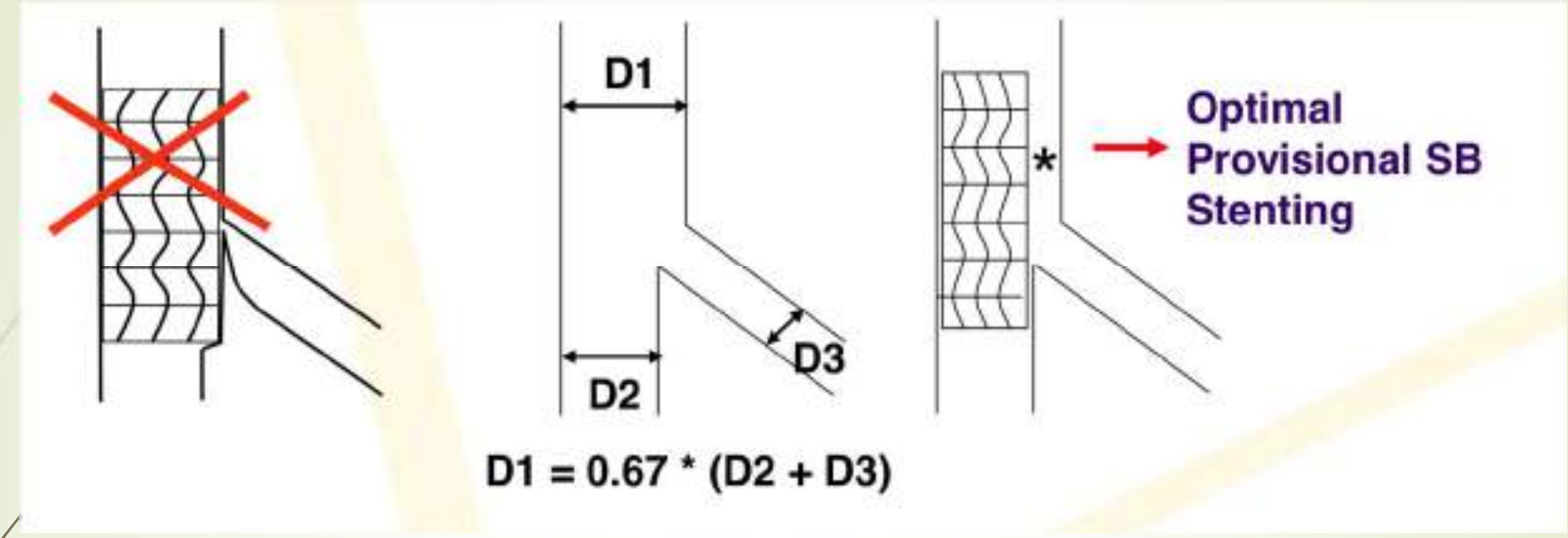


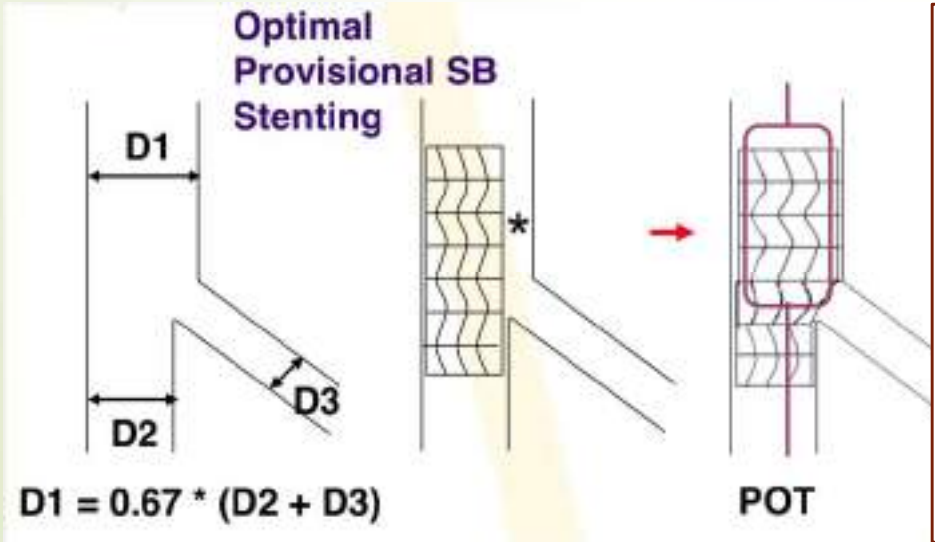
Provisional stenting



Sawaya et al. J Am Coll Cardiol Intv. 2016;9(18):1861–78.

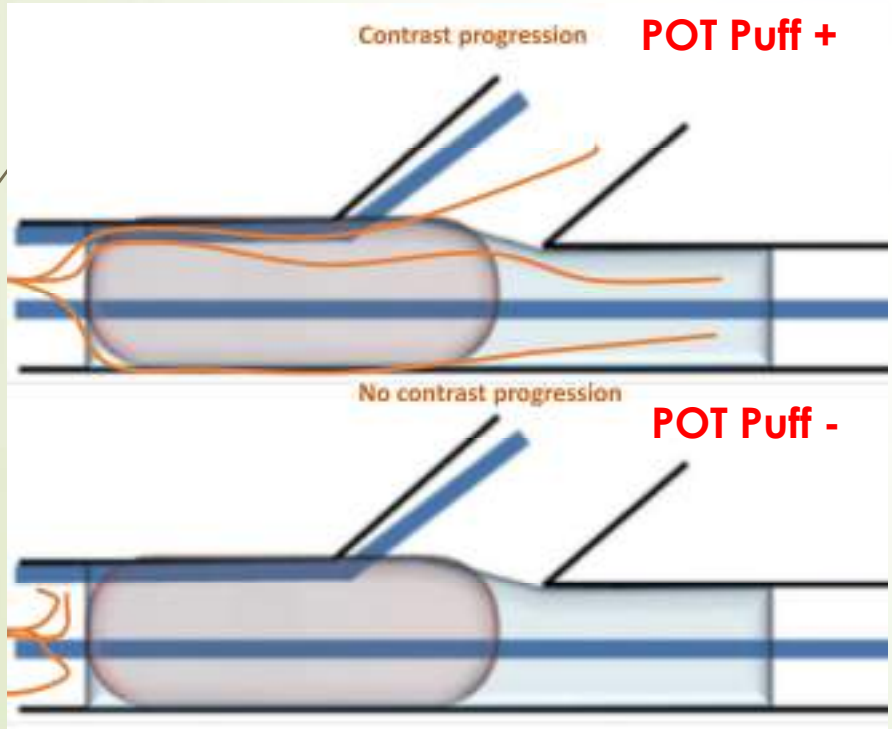
Provisional stenting pourquoi?

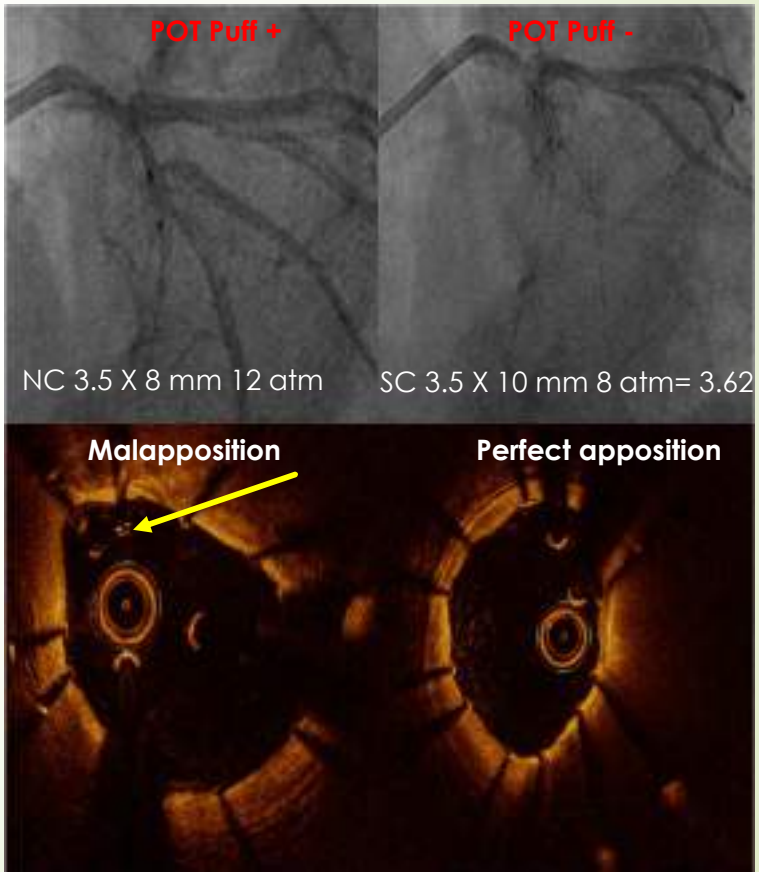




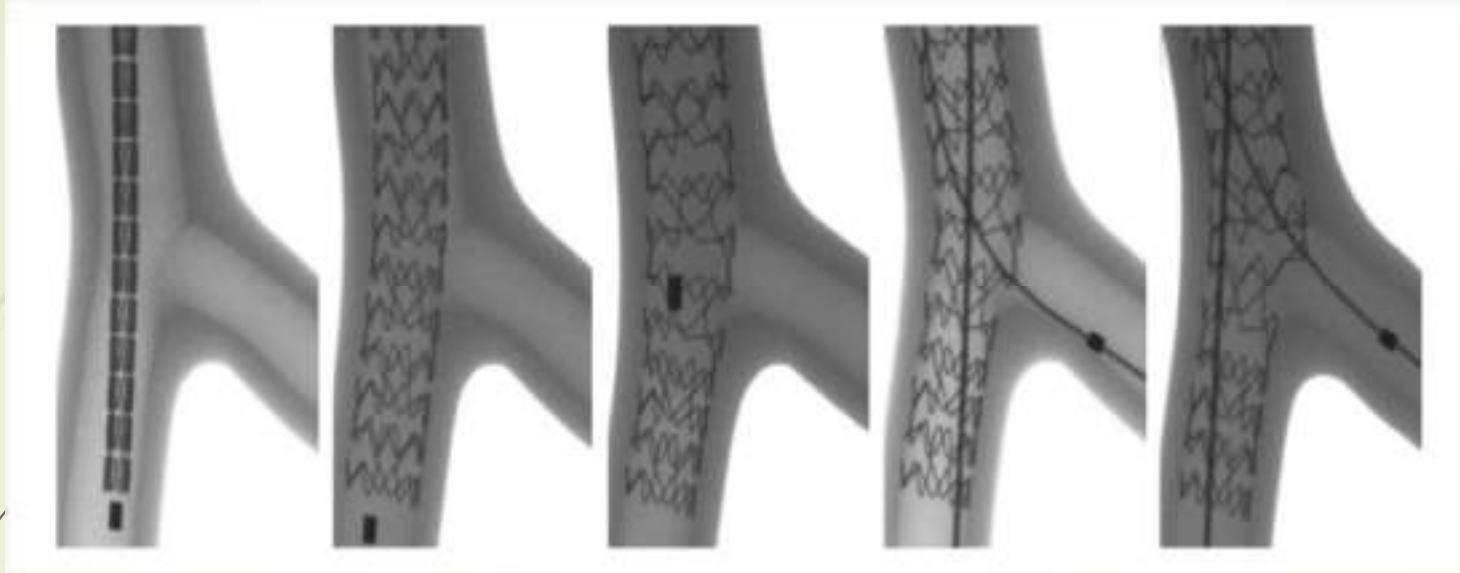
POT Systematique

- Ballon semi ou non compliant de la taille du vaisseaux principal en diamètre
- S'aider du rehaussement de stent
- Une astuce: POT Puff





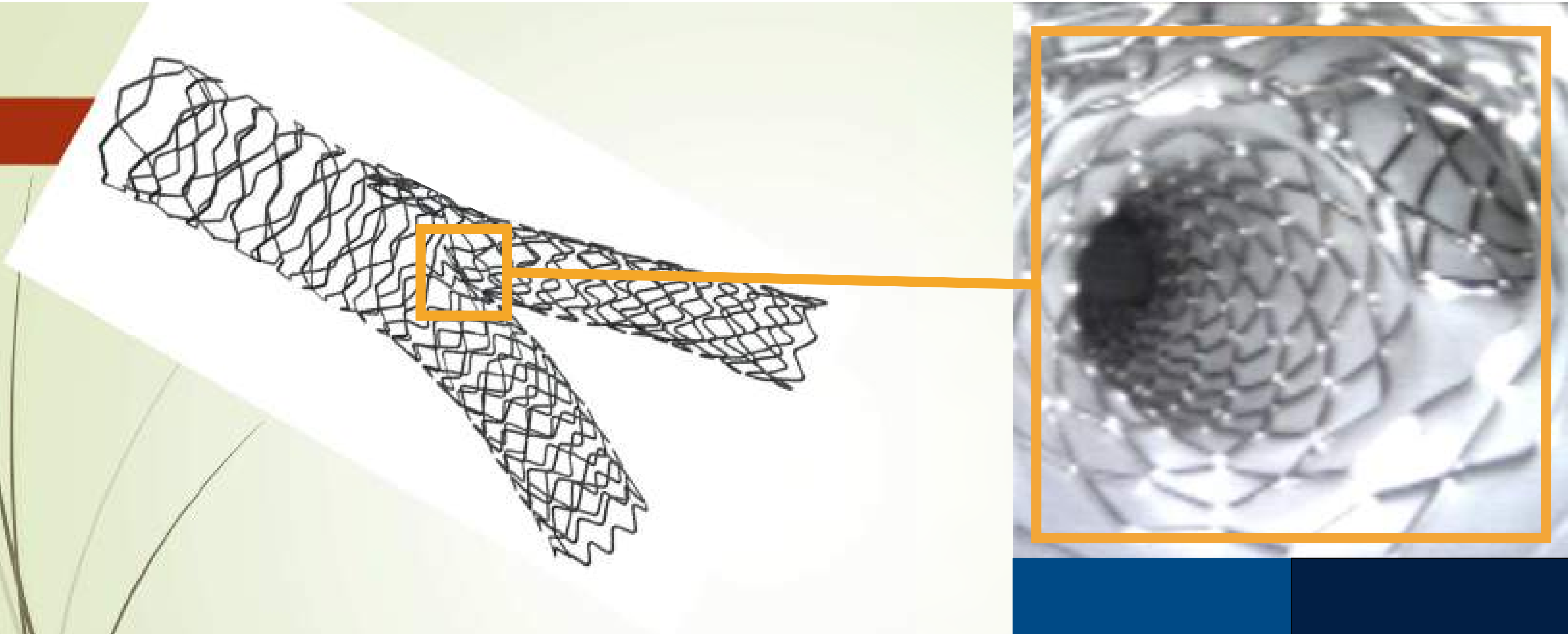
Quand ouvrir la branche fille?



- Grande branche > 2,5mm
- Sténose critique sur 2 vues
- Retard de flux
- Symptôme, signe ECG
- Décision de traiter la branche fille
- FFR pathologique
- Nécessité de revenir sur ce vaisseau (Tronc commun)

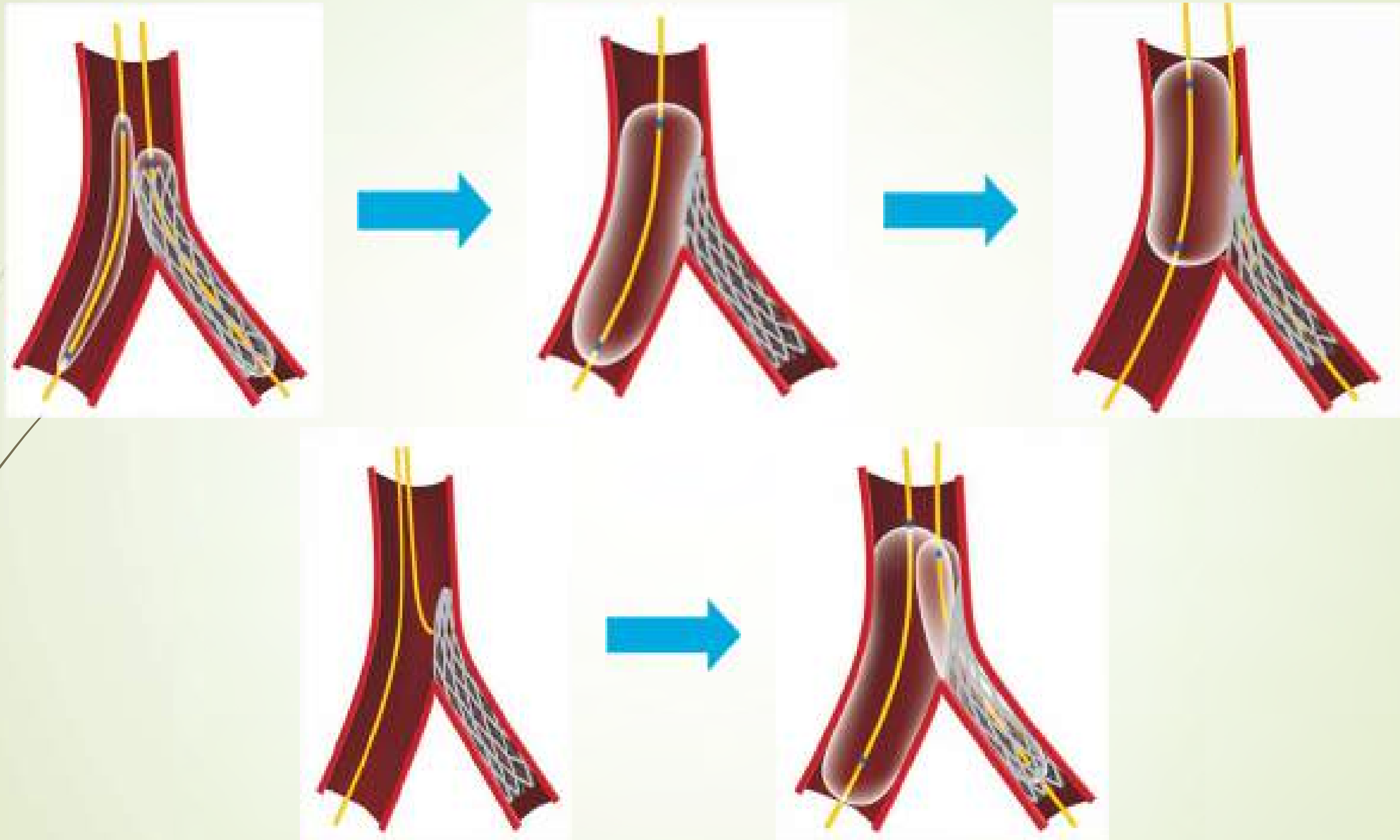
Sawaya et al. J Am Coll Cardiol Intv. 2016;9(18):1861–78.

TECHNIQUES 2 STENTS

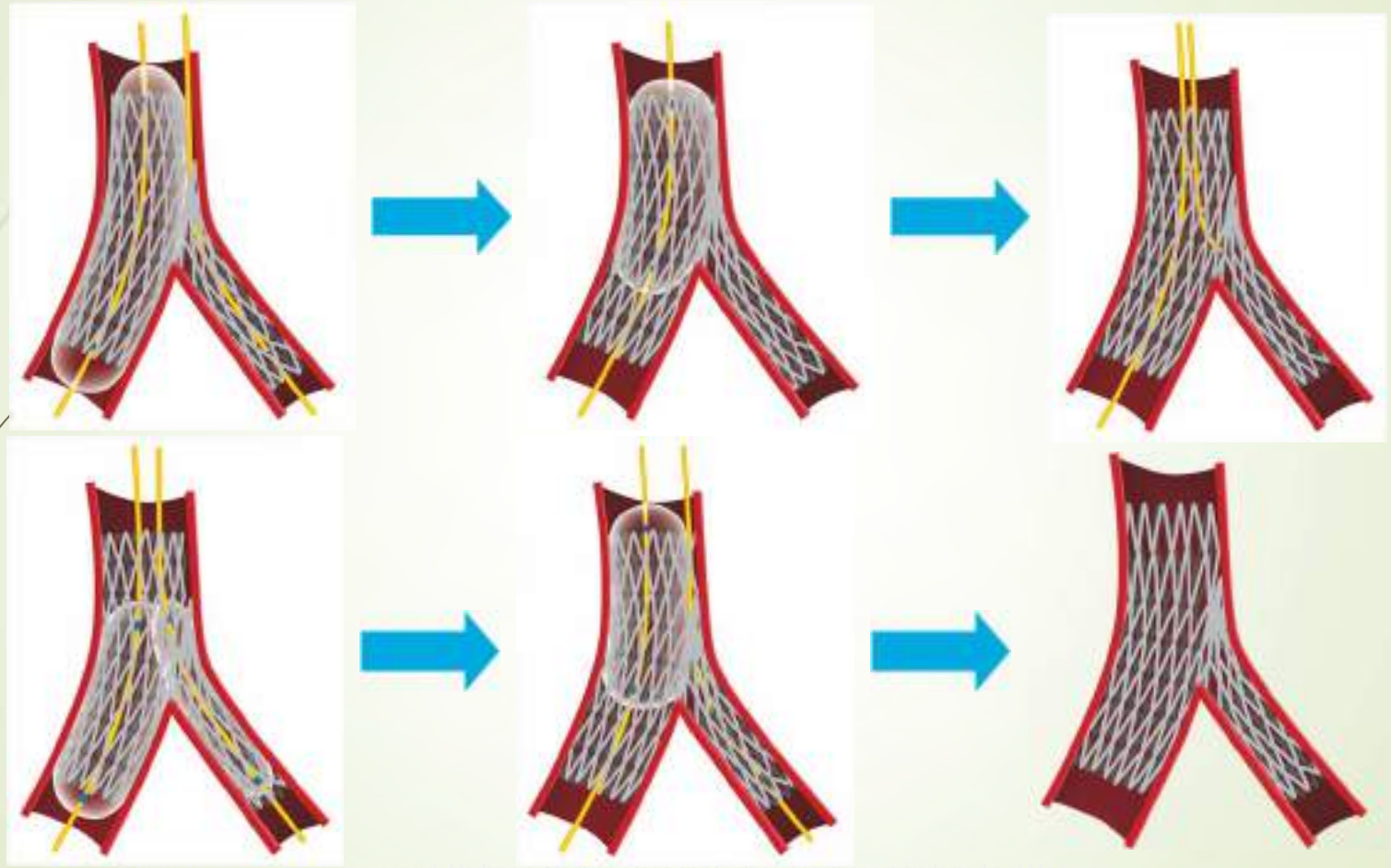


DK CRUSH STENTING

DK CRUSH
STEP BY STEP



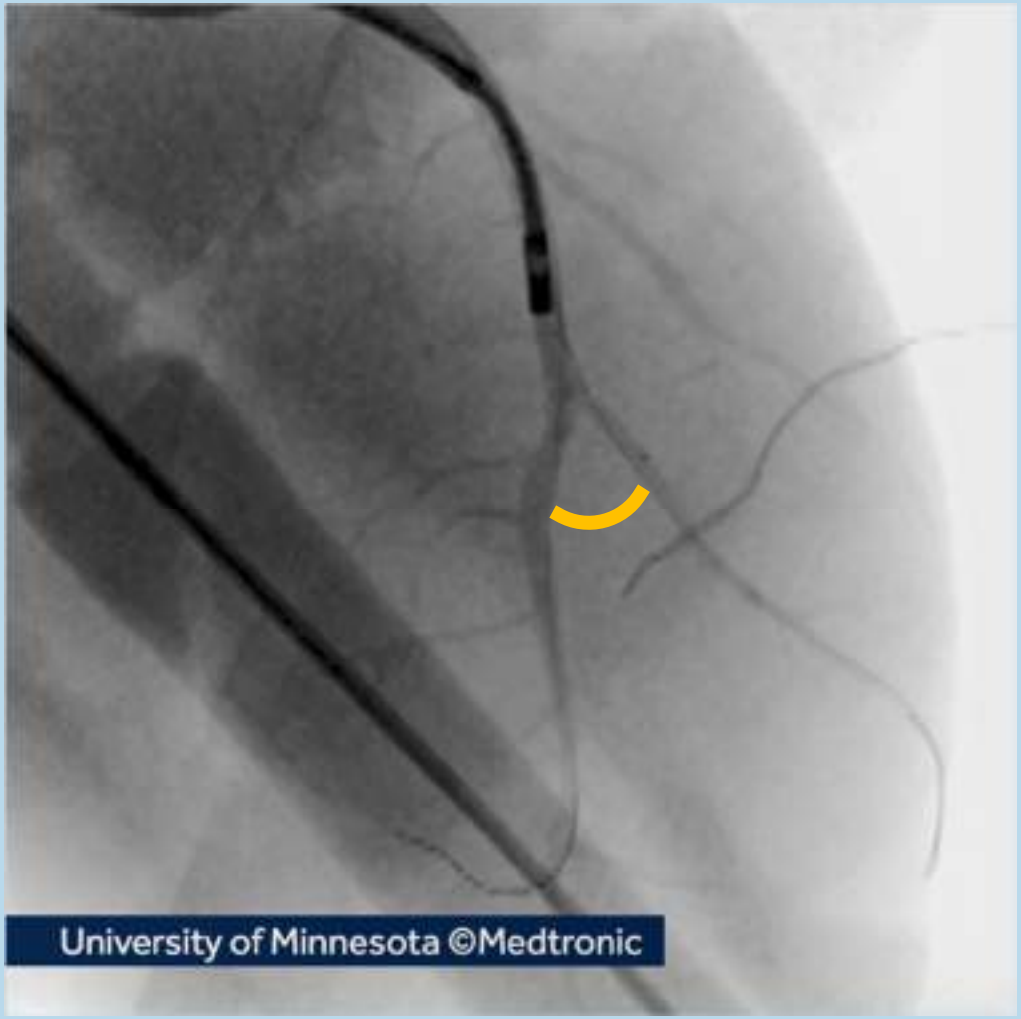
DK CRUSH
STEP BY STEP



DK CRUSH TECHNIQUE
ACUTE ANGLE BIFURCATION IN PORCINE ANATOMY

Vessel Diameters:

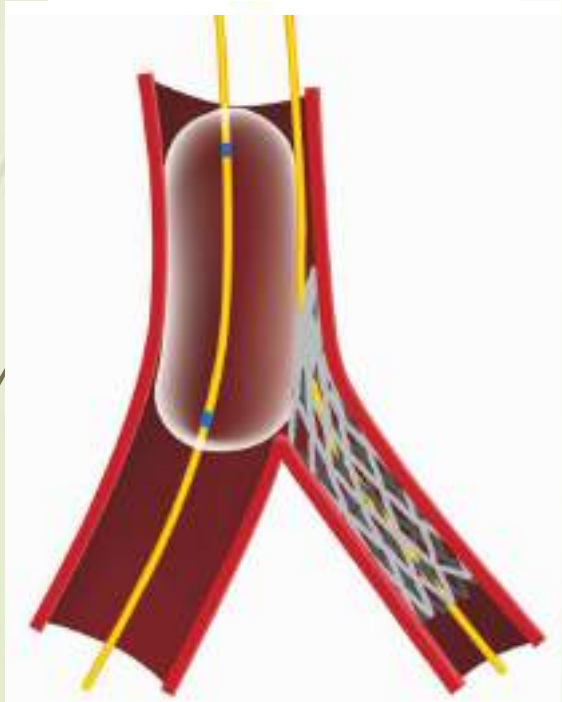
- Proximal Main Branch: 4.0 mm
- Distal Main Branch: 3.5 mm
- Side Branch: 2.5 mm

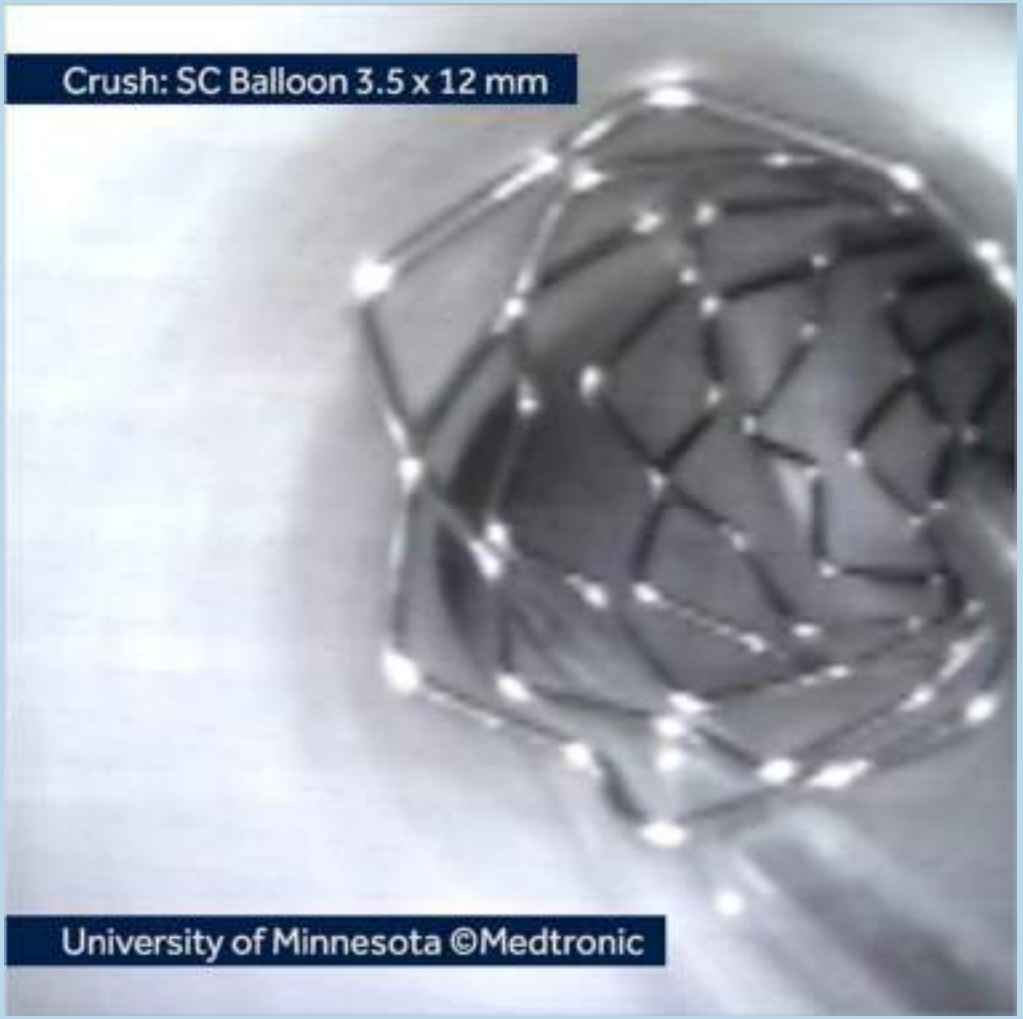


ACCURATE PLACEMENT
OF SIDE BRANCH STENT TO MINIMIZE AREA WITH THREE LAYERS OF STRUTS

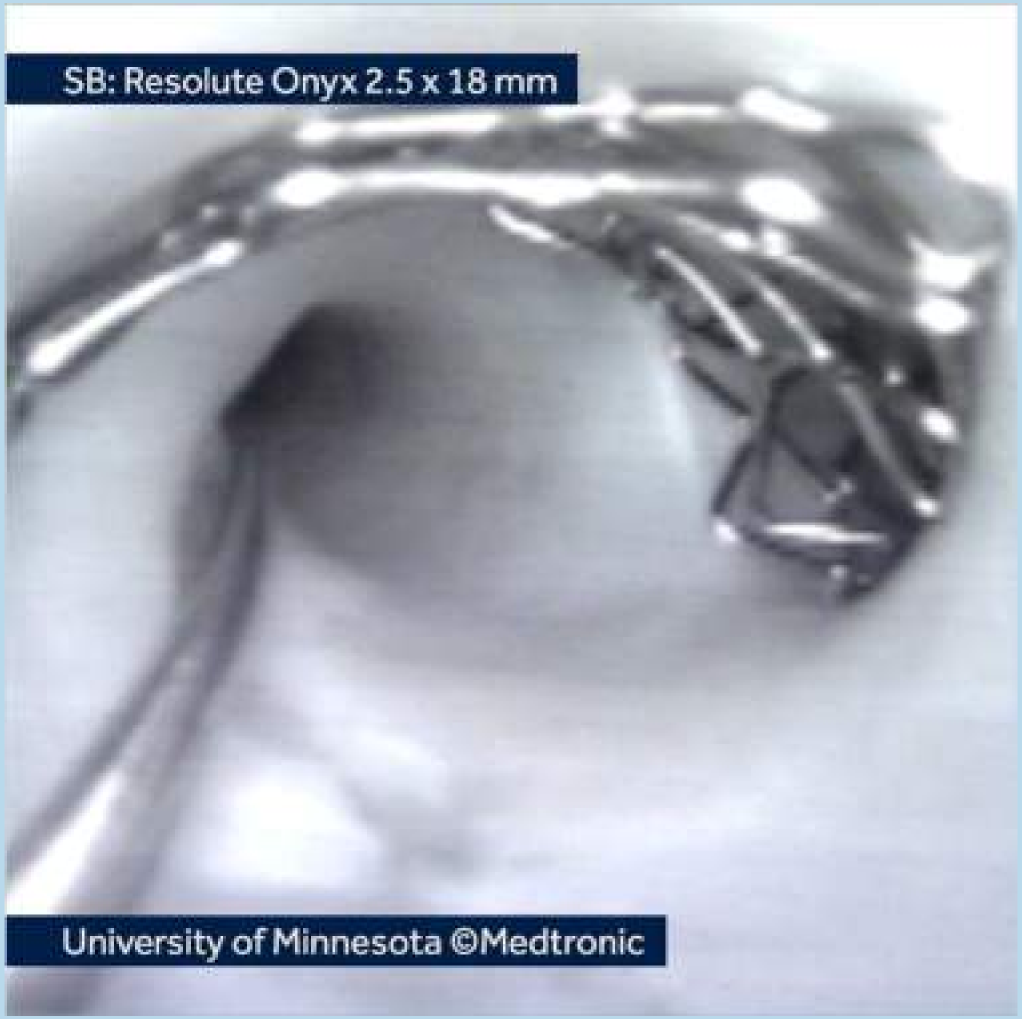
MULTIPLE INFLATIONS
TO ENSURE COMPLETE CRUSH

AND THEN POT

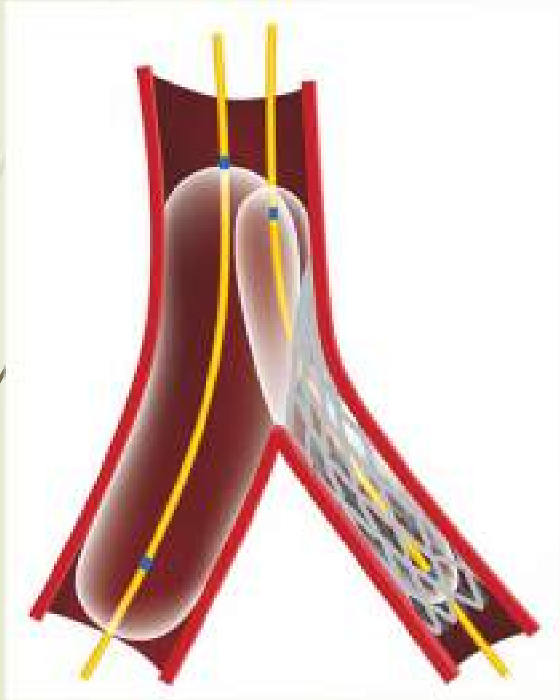


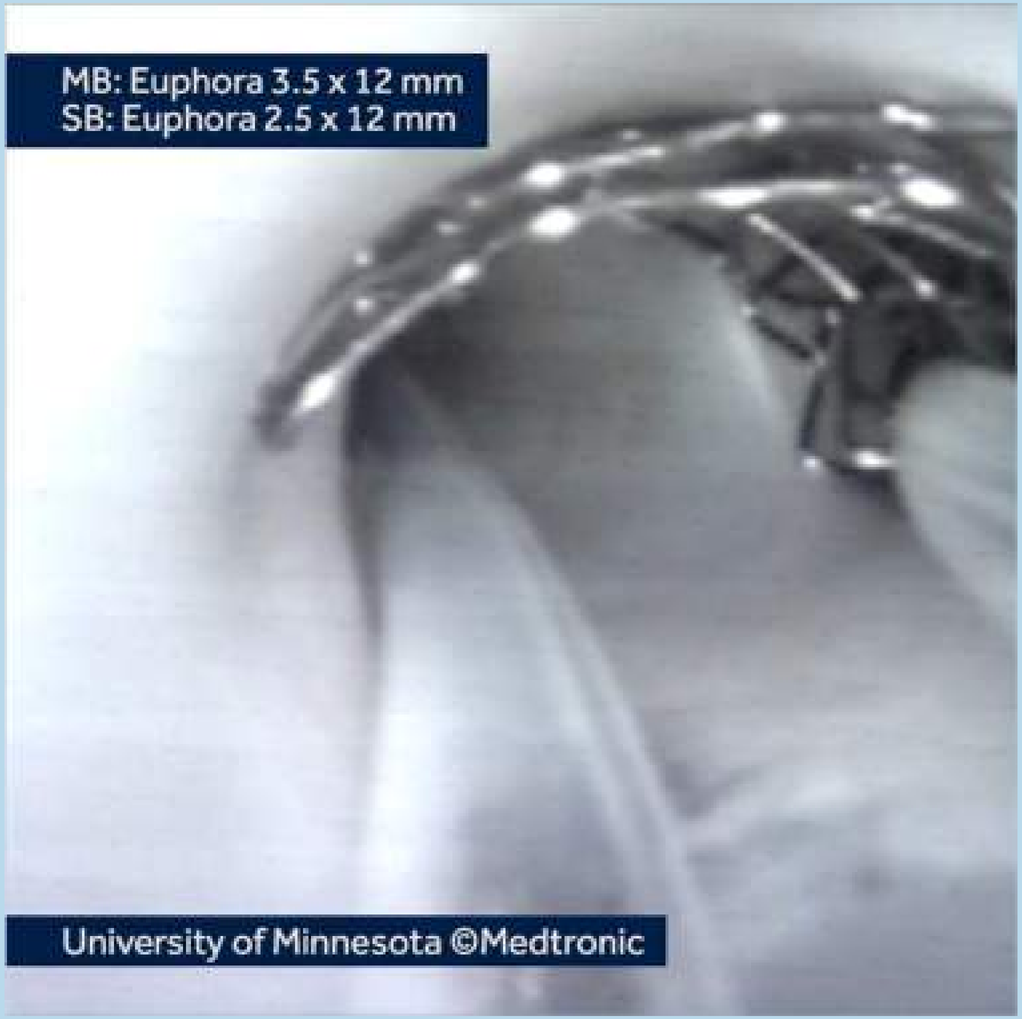


SMOOTH WIRE PASSAGE
INTO THE MIDDLE CELL



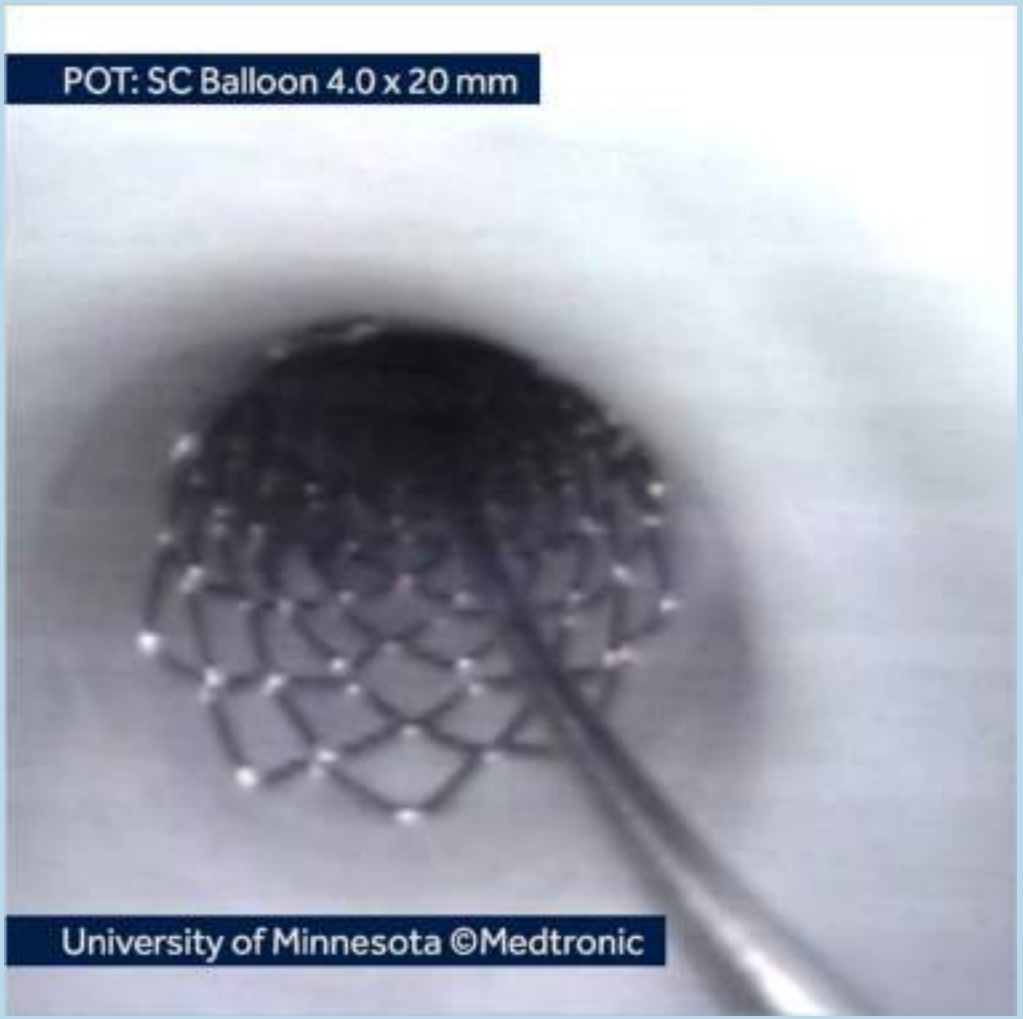
FIRST KISSING BALLOON TECHNIQUE TO OPEN SIDE BRANCH



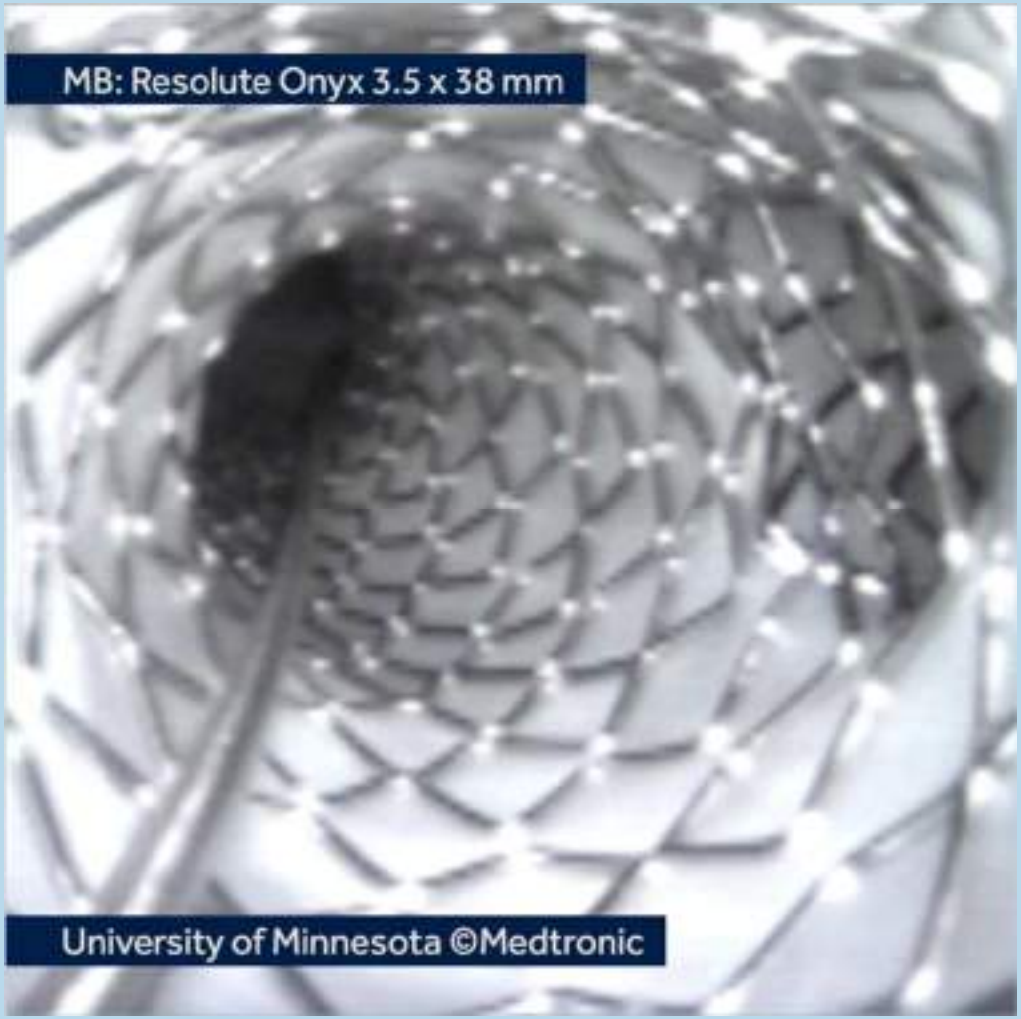


ACCURATE PLACEMENT
OF MAIN BRANCH STENT

POT TECHNIQUE PERFORMED
TO ENSURE GOOD APPOSITION

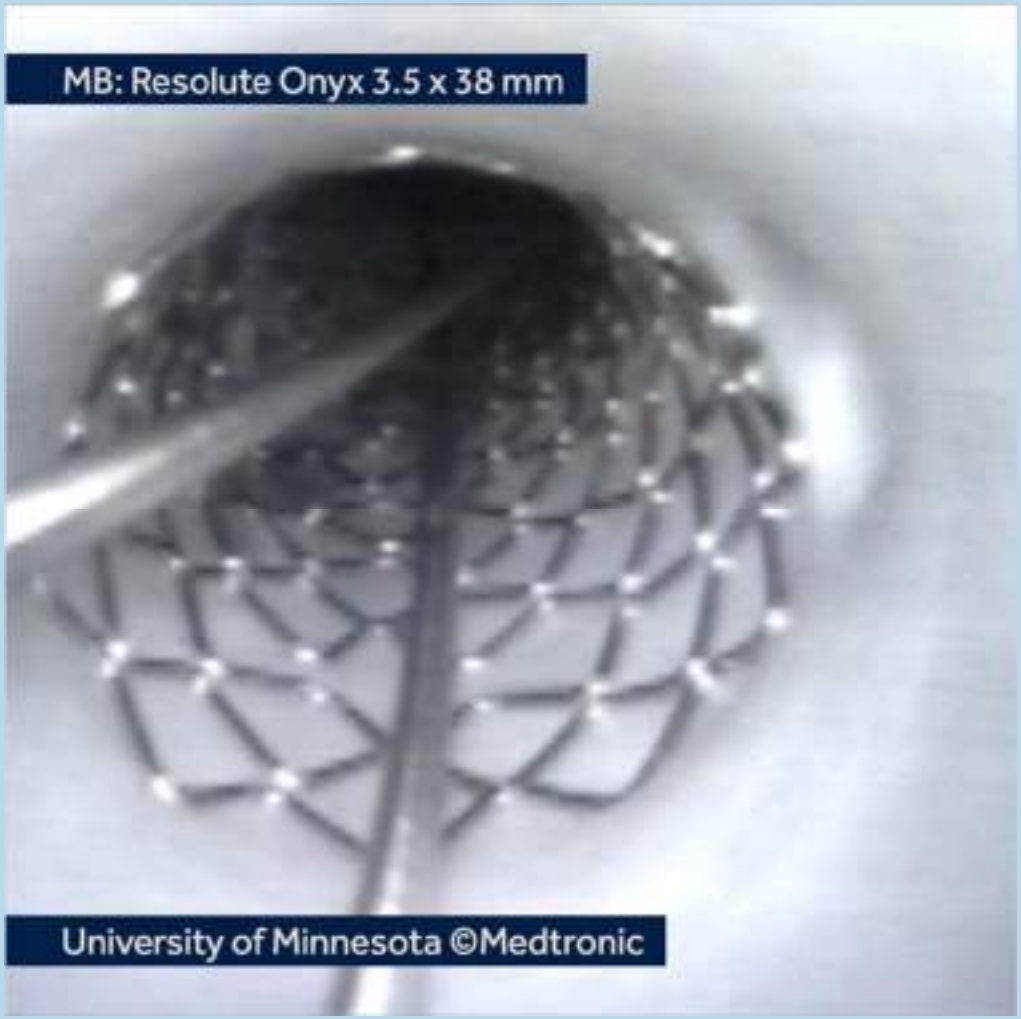


SMOOTH PASSAGE OF WIRE
INTO THE MID-DISTAL CELL

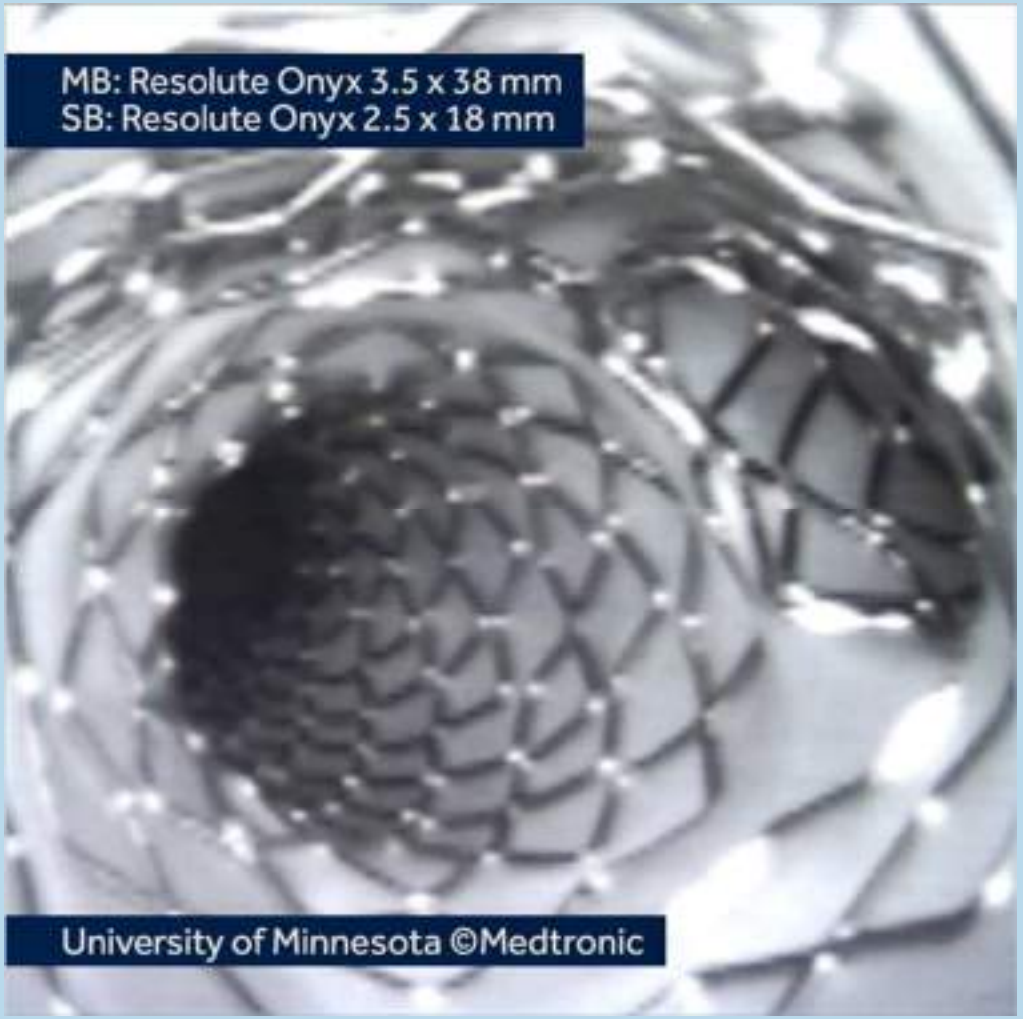


SECOND KISSING BALLOON
TECHNIQUE TO REOPEN SIDE BRANCH

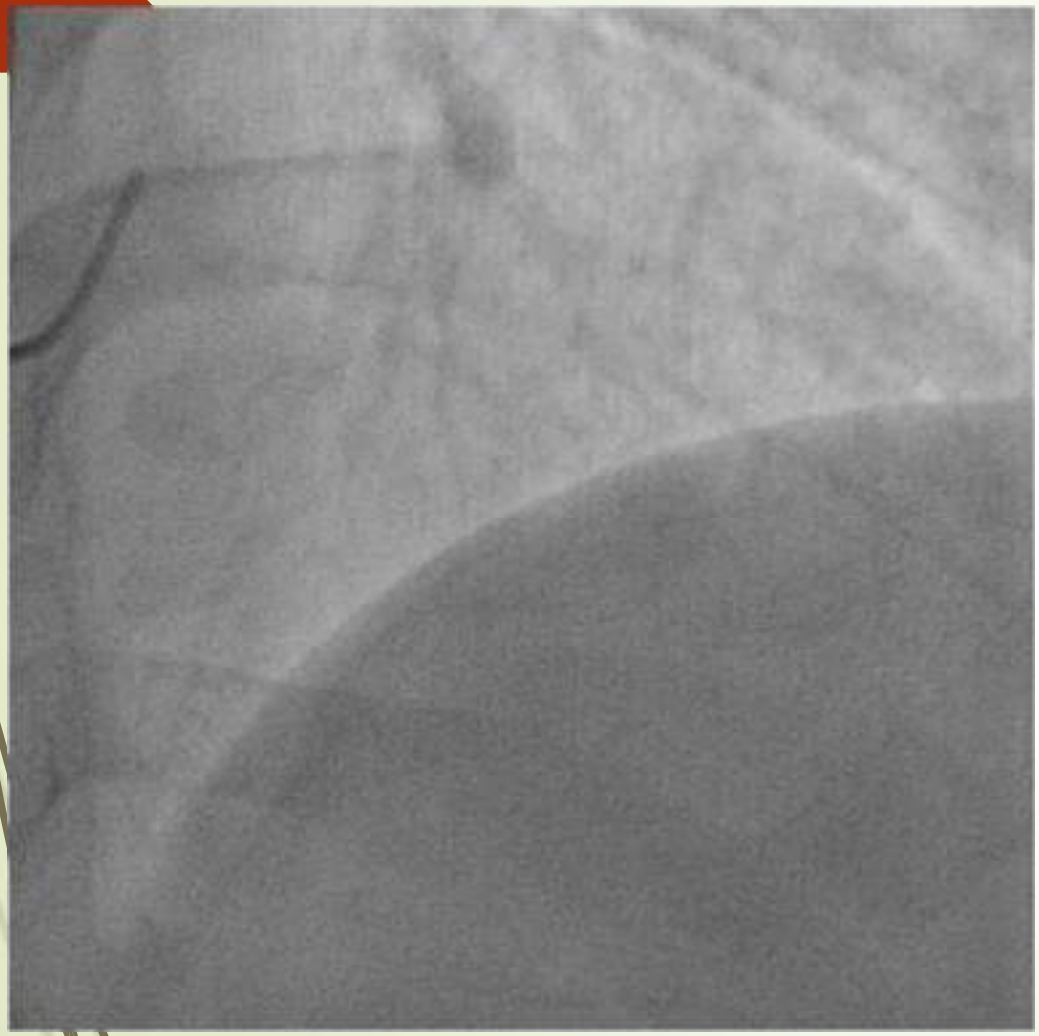
rePOT PERFORMED
TO OPTIMIZE THE FINAL RESULT

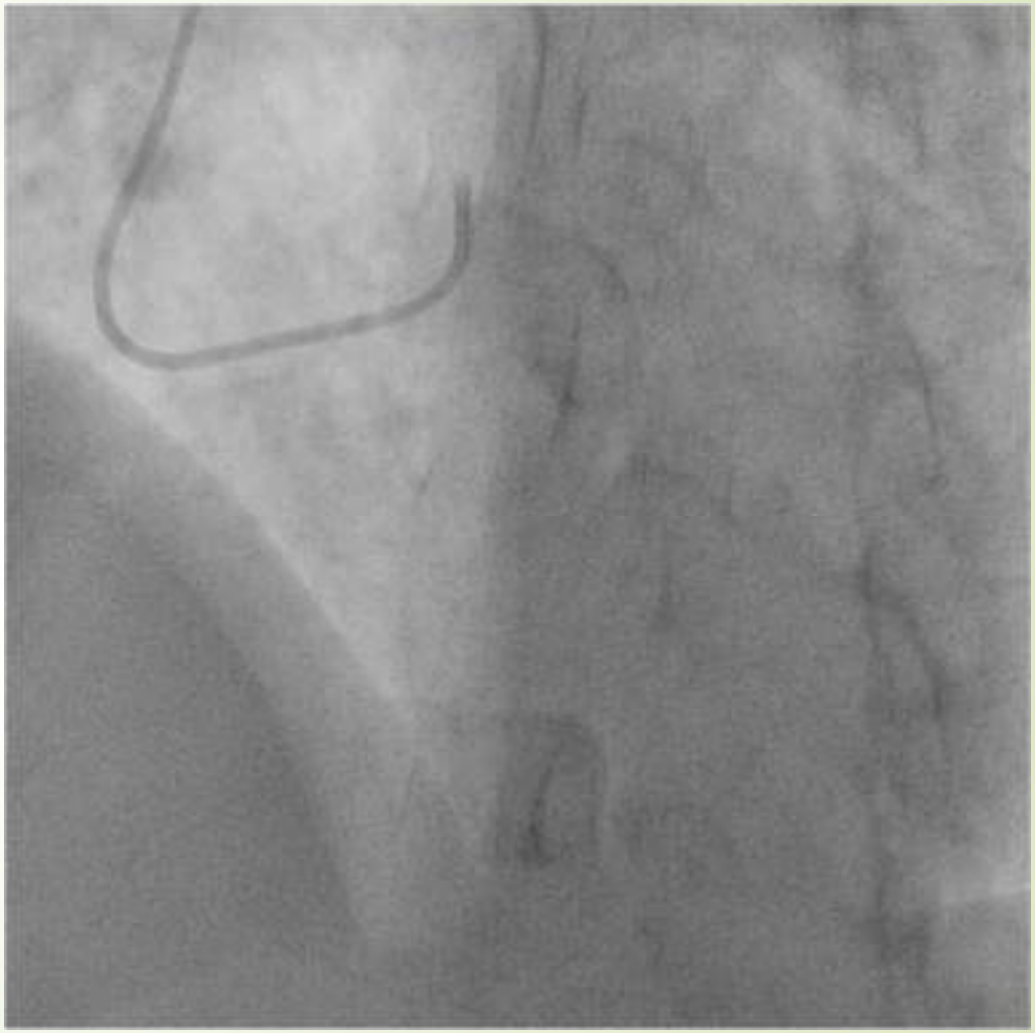


FULLY APPOSED SCAFFOLDING
IN DK CRUSH FINAL RESULT

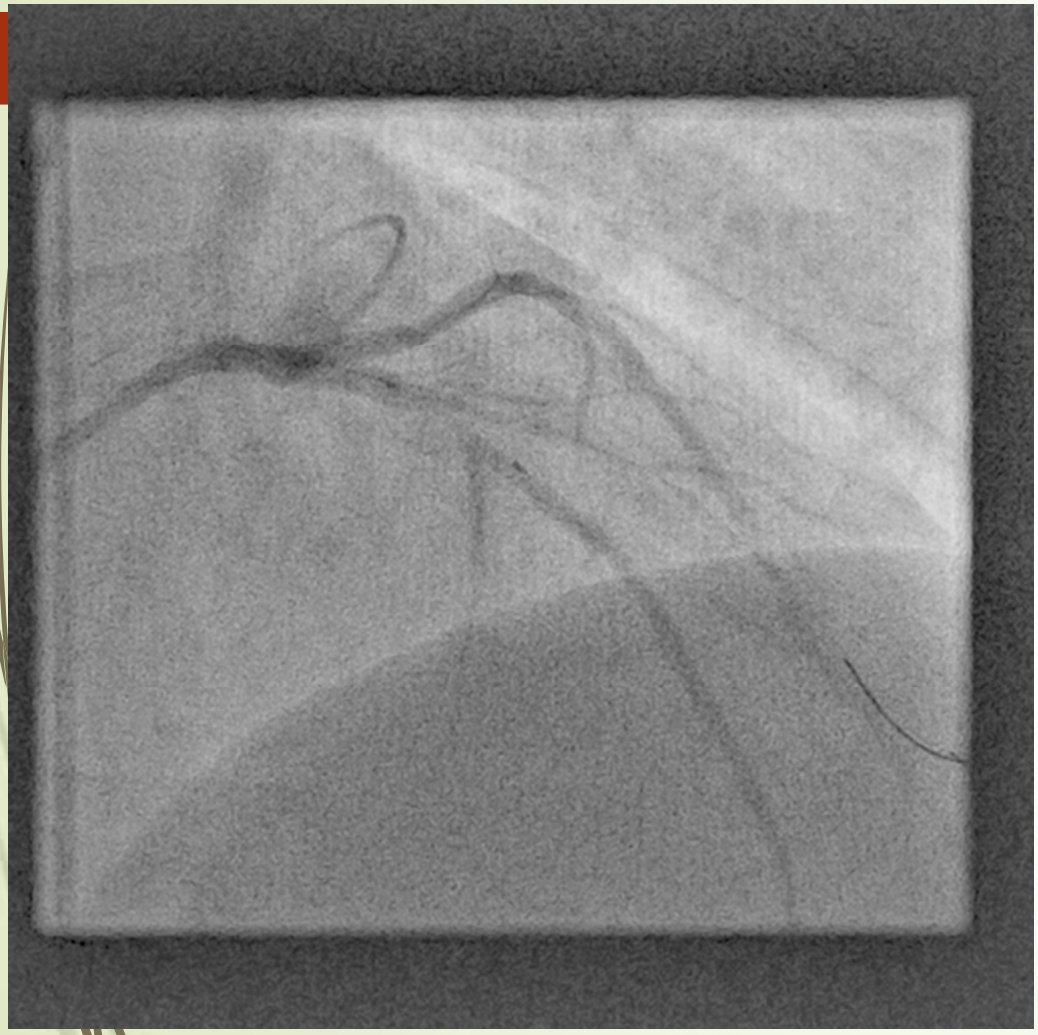


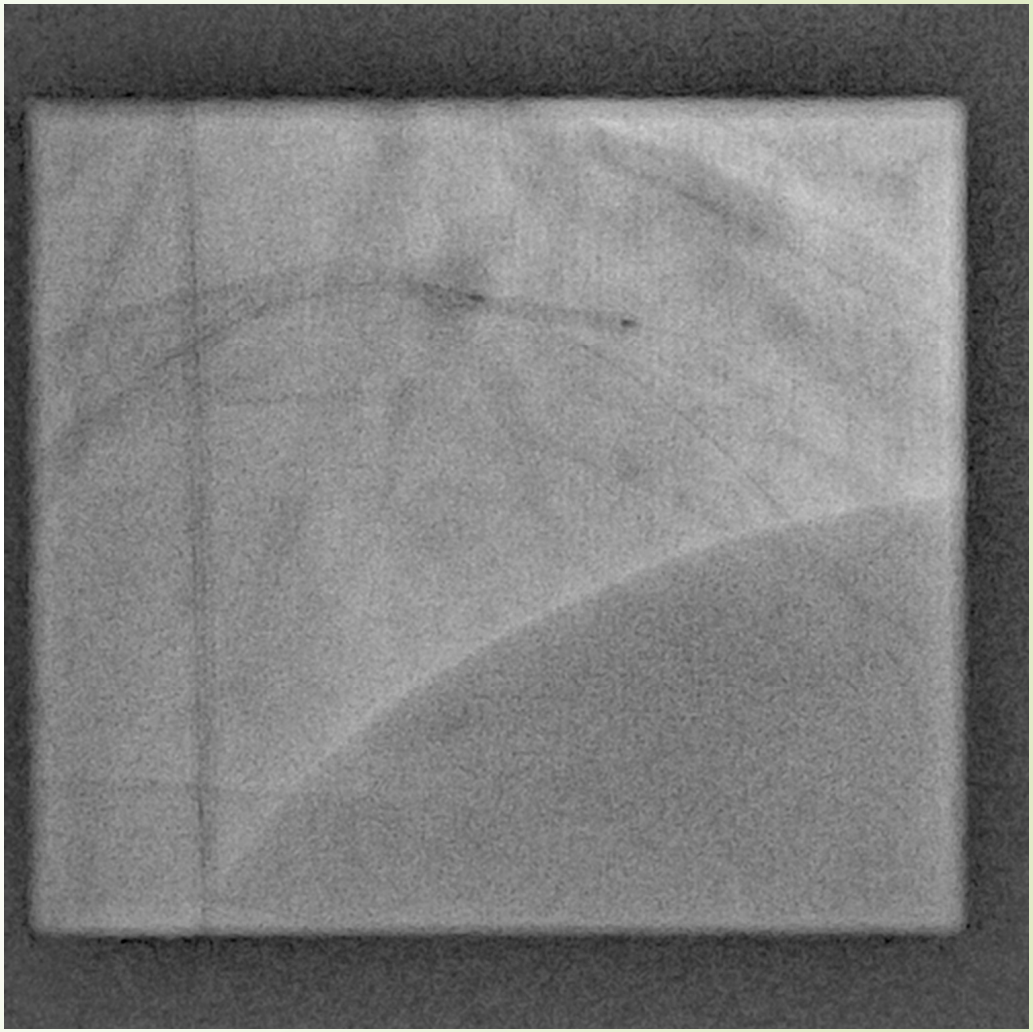
EXEMPLES

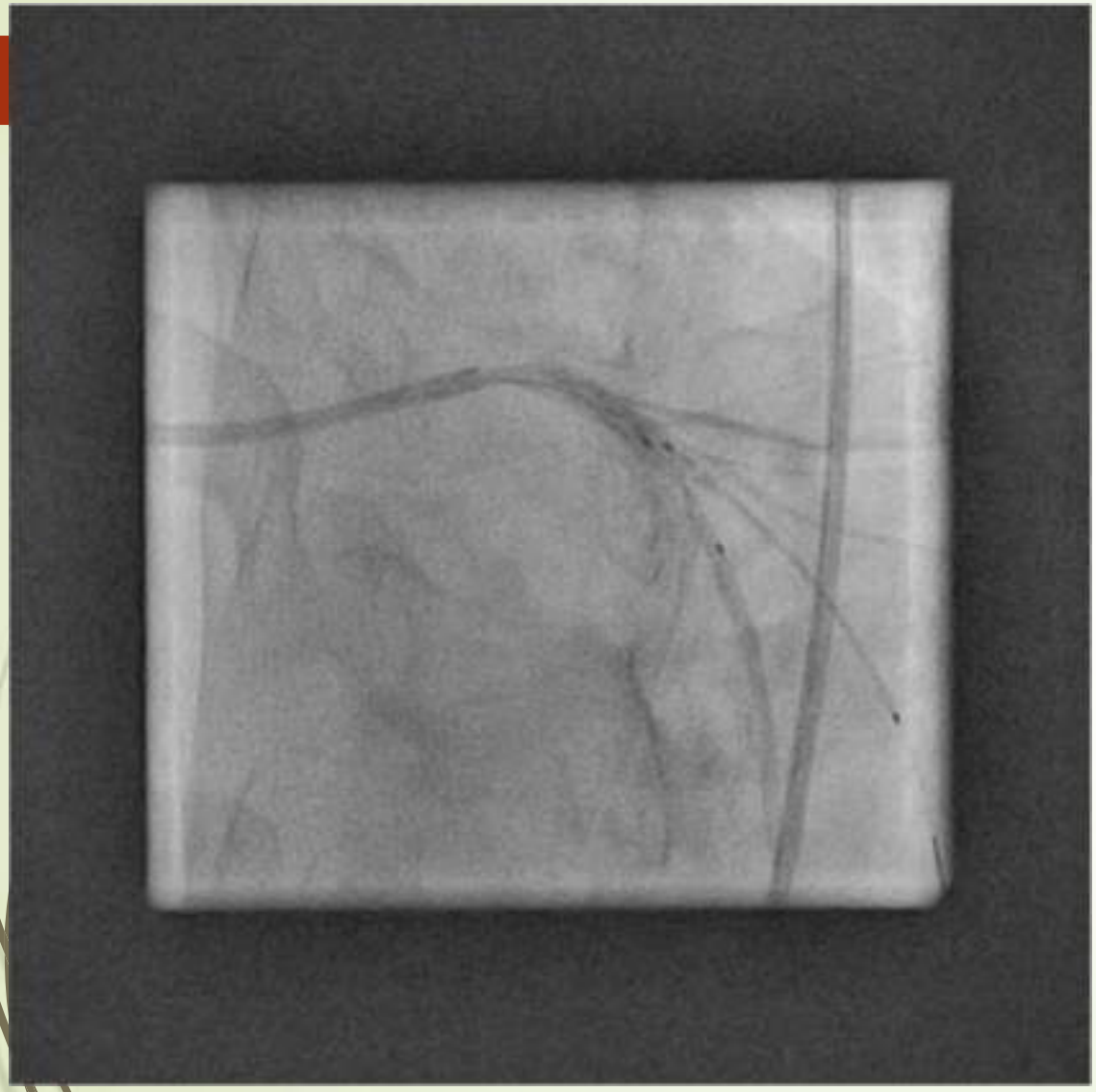


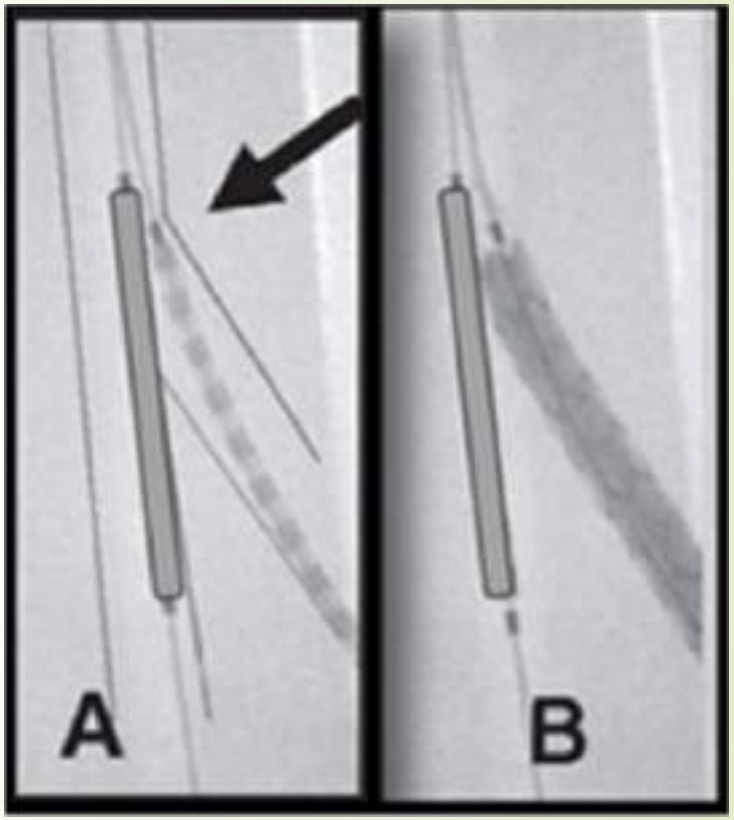


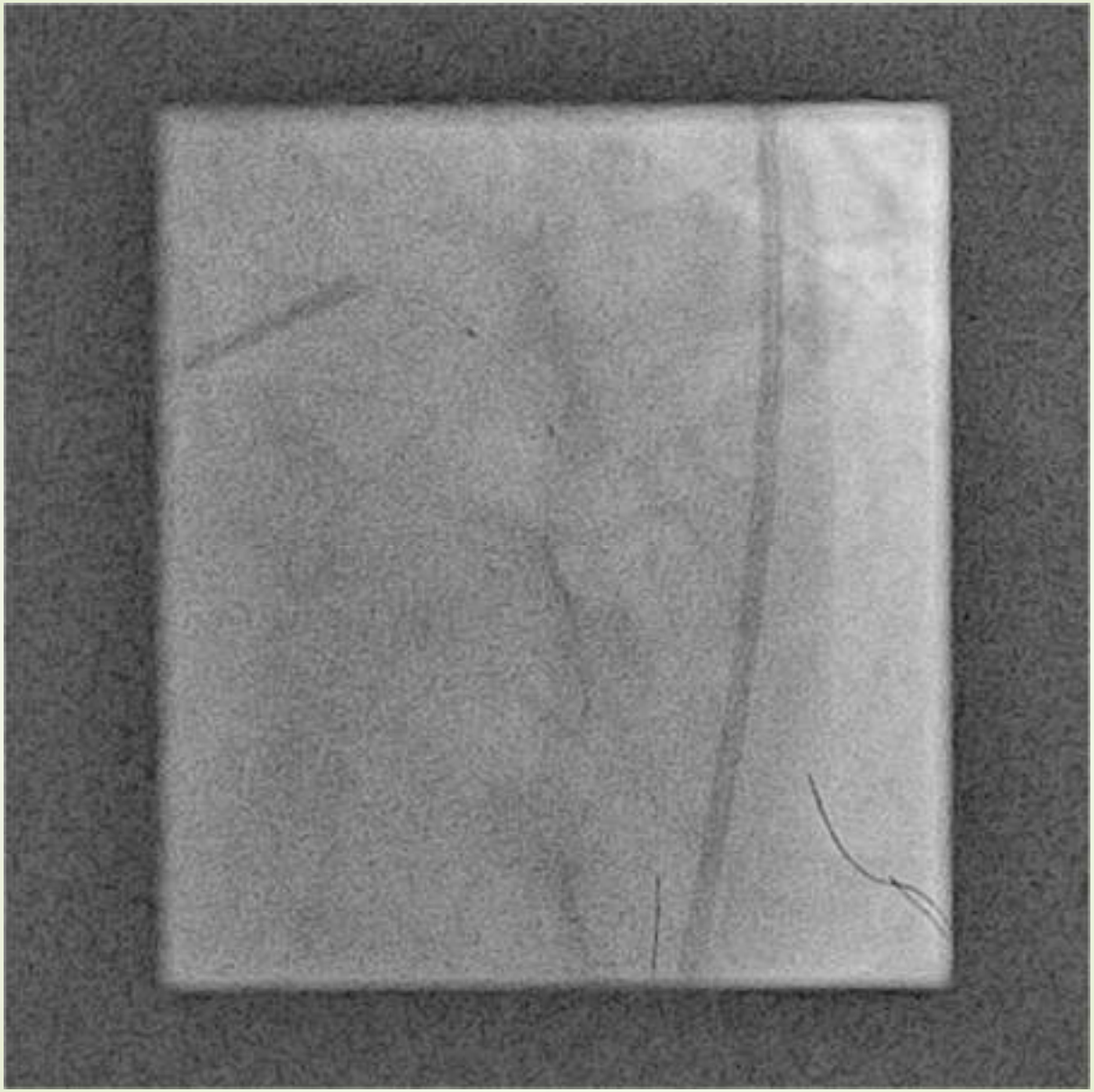
Stratégie ?

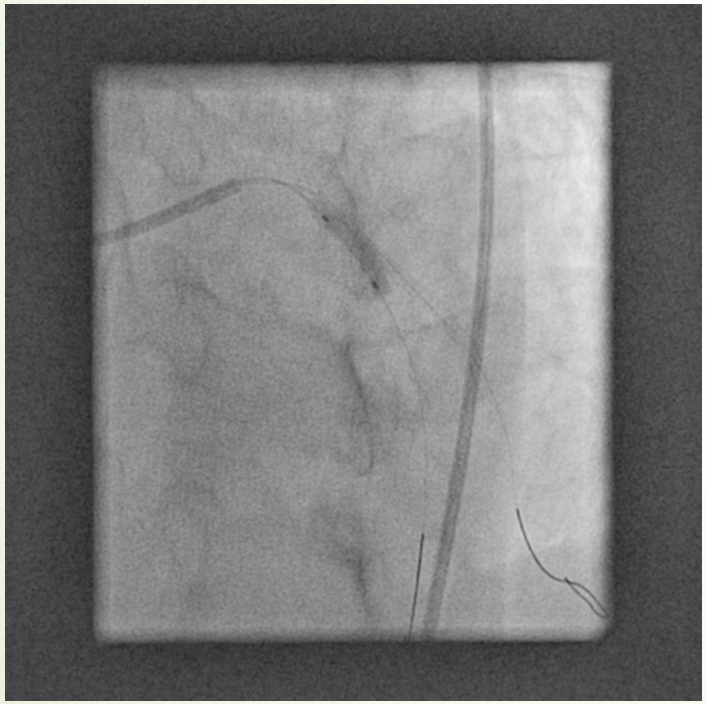


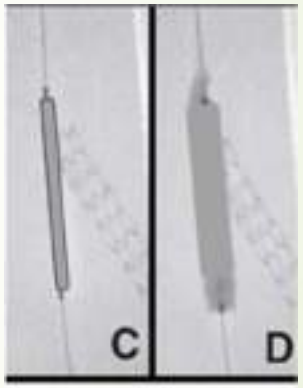


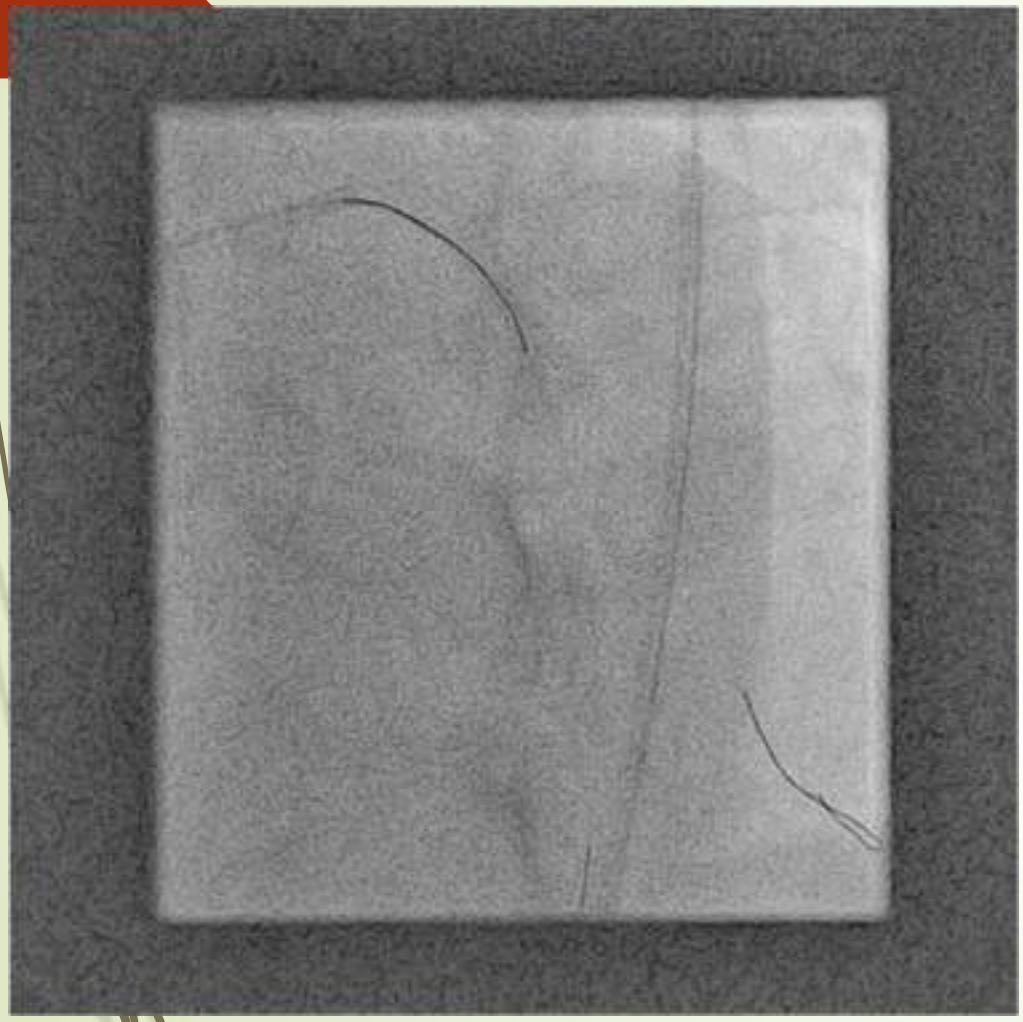


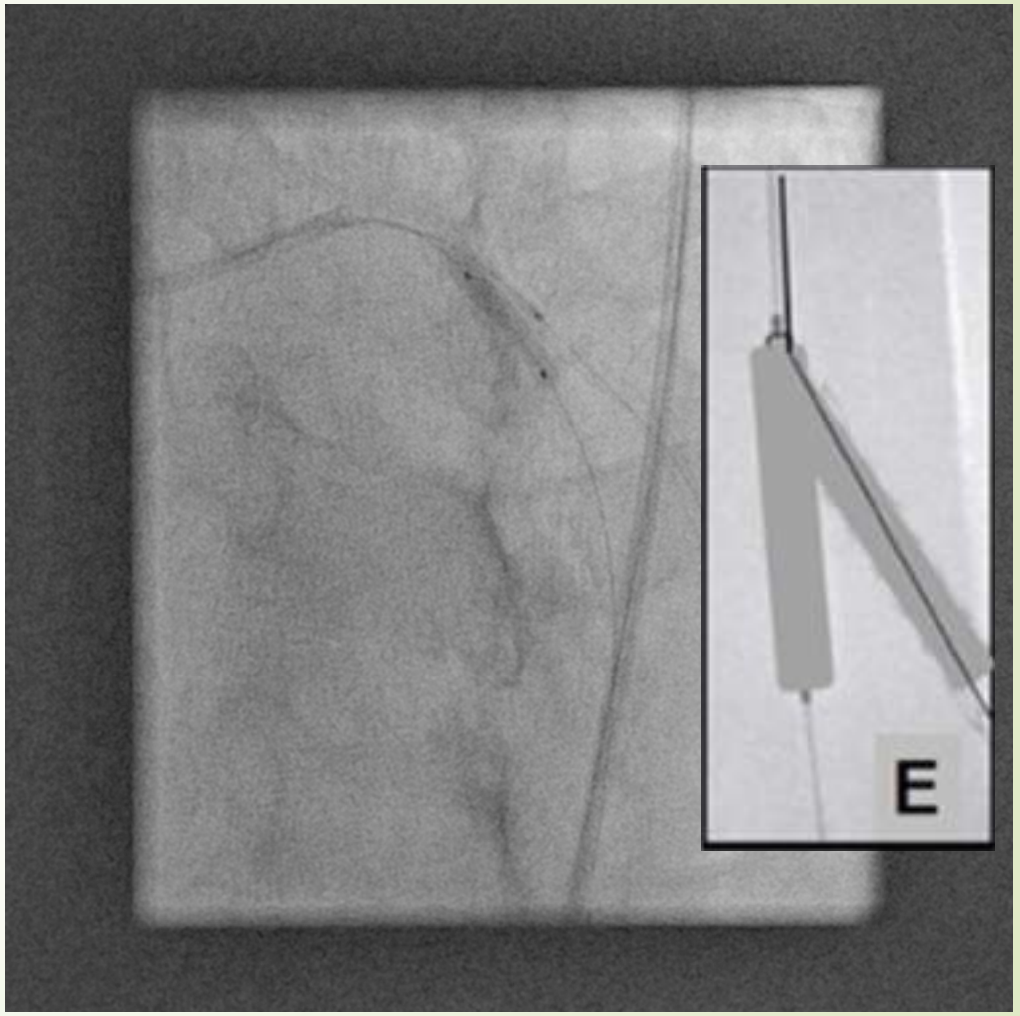

A
B

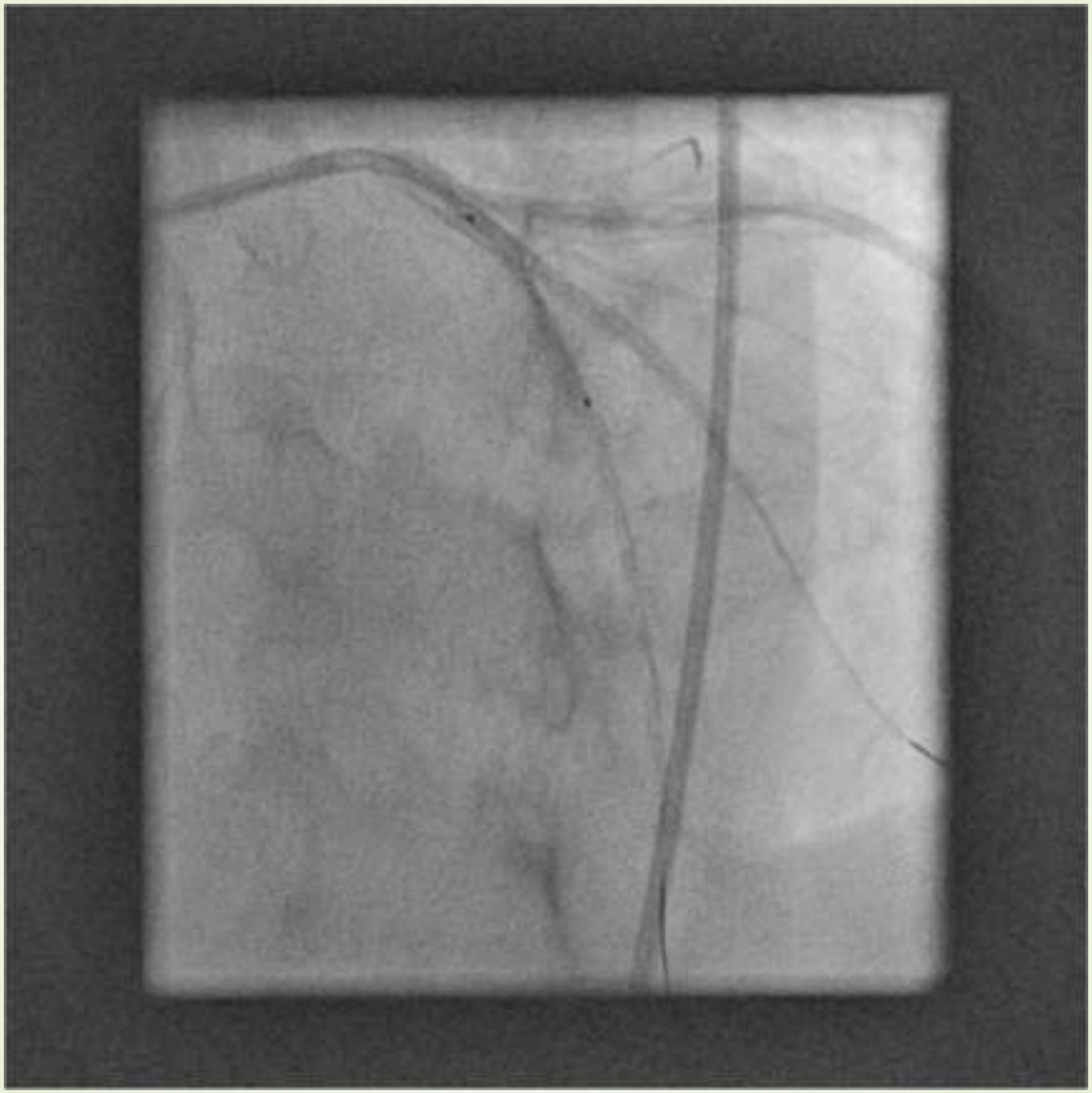


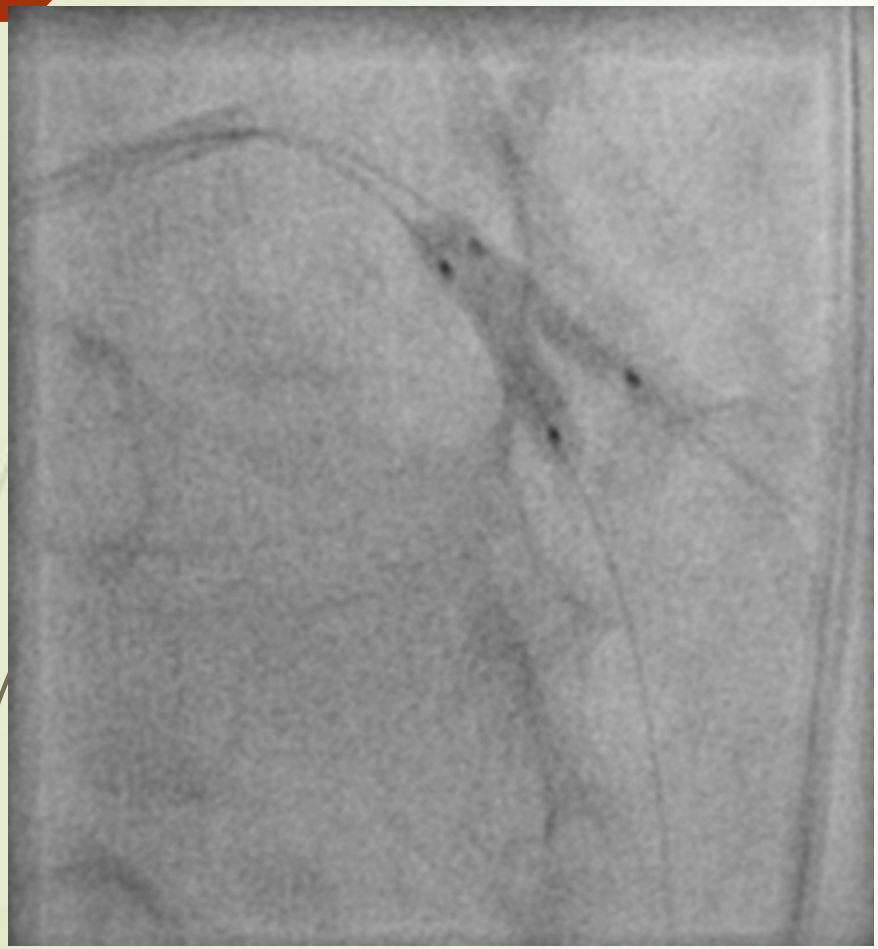


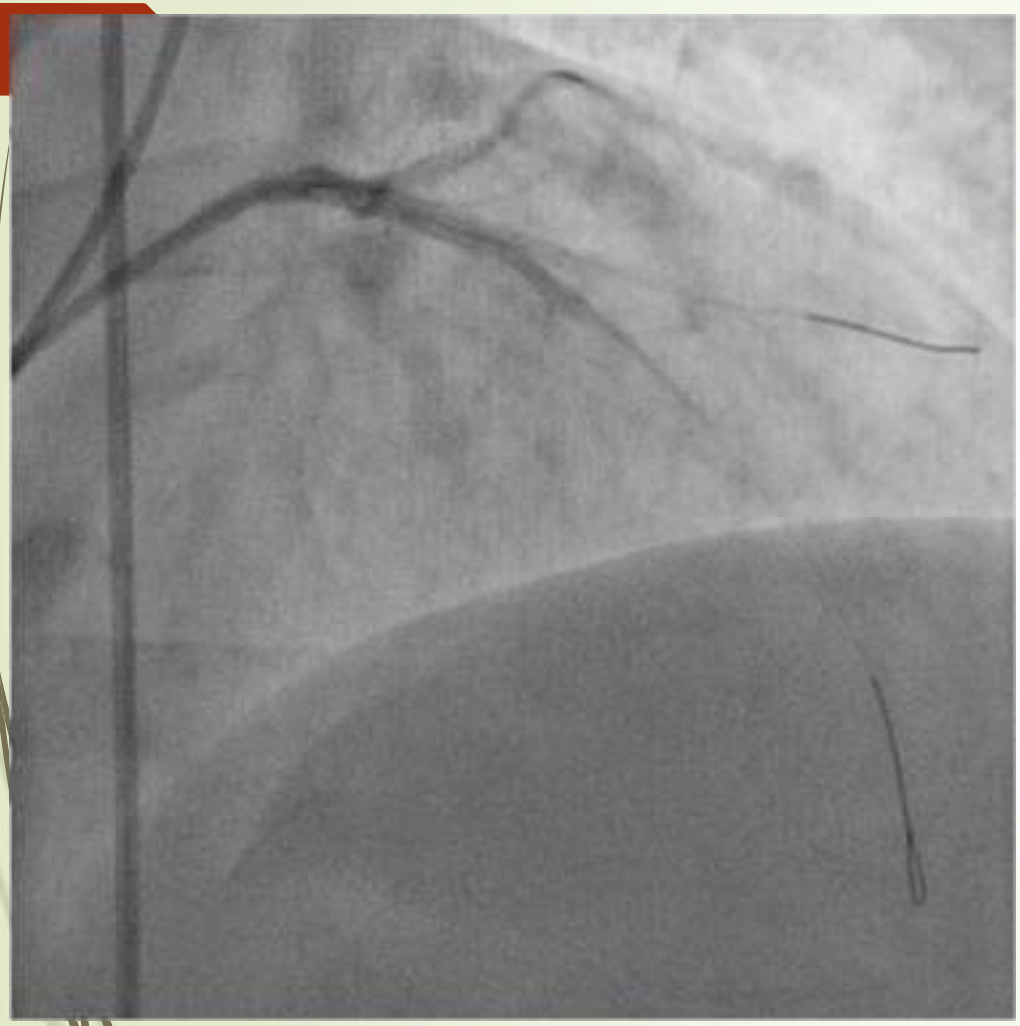

C
D

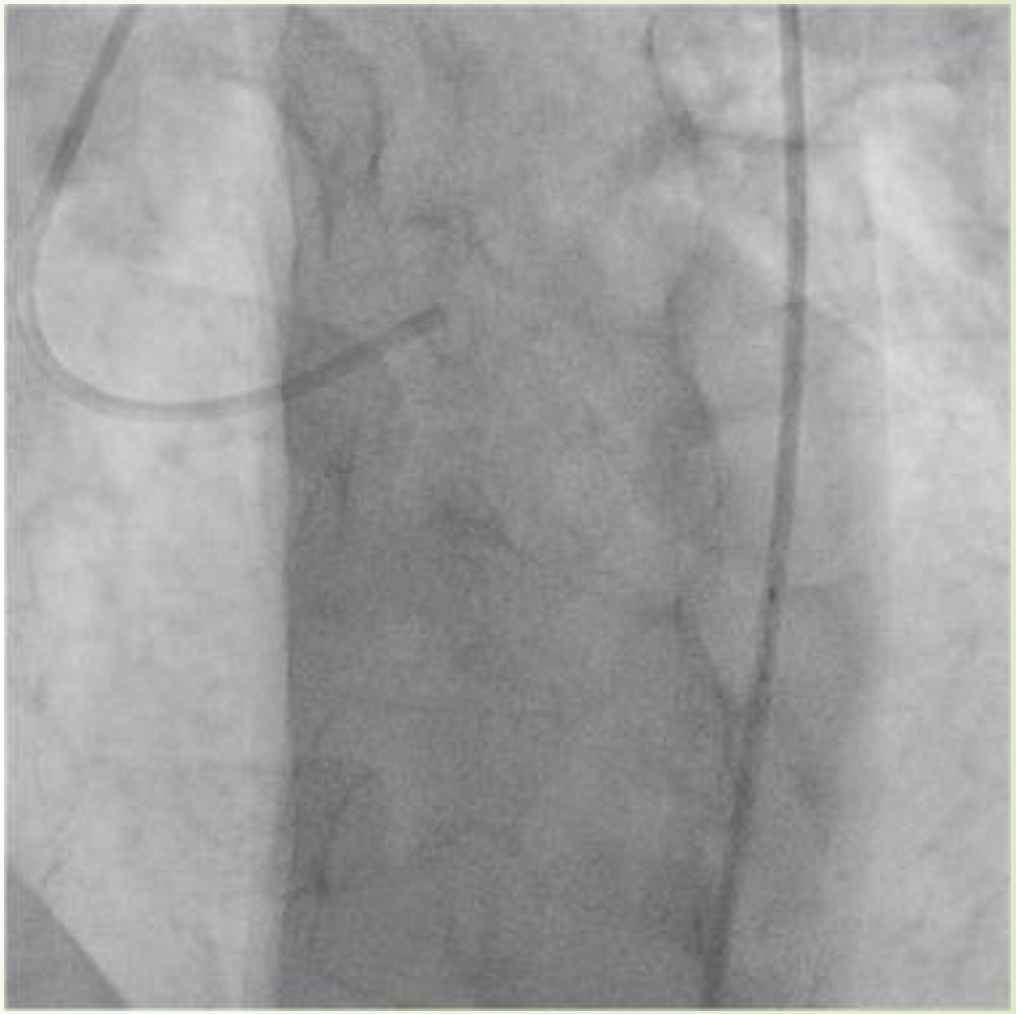



E







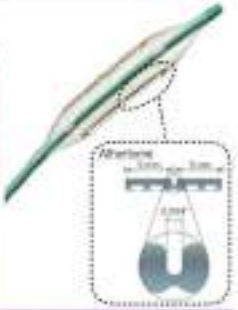


CALCIUM

Boîte à outils en cas de lésion résistante

Ballon non compliant

Cutting balloon Flextome ®



Scoring balloon Angiosculpt ®

Ballon très haute pression OPN ®

Athérectomie rotationnelle Rotablator ®

Athérectomie orbitale Diamondback 360 ®

Laser excimer Spectranetics ®

Lithotritie intra-coronaire Shockwave ®

+ toutes les techniques pour augmenter le support (cf)

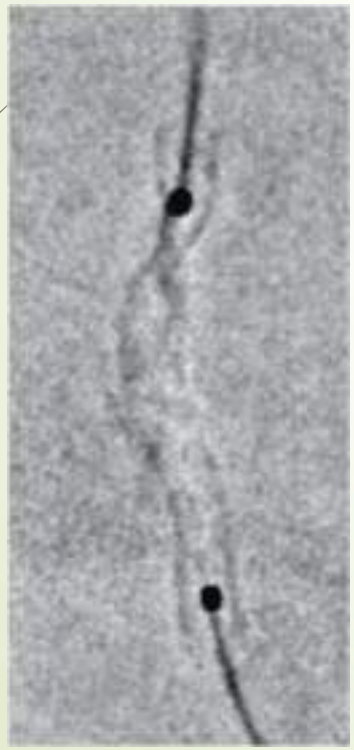

HAMMER
DRILL
CARTOONSTOCK
Search ID: abr0538

Complications des lésions resistantes

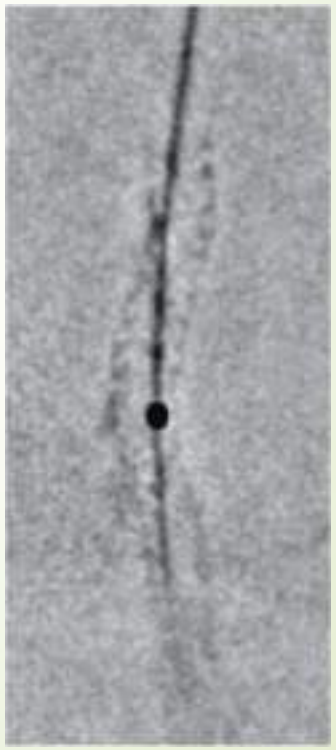
1) Mal-déploiement du stent (sous-expansion ou malapposition) :

⇒ thrombose aigue de stent

⇒ thrombose tardive de stent, resténose intra-stent



Post-dilatation
Ballon NC
Haute pression



Athérectomie rotative
Indications

1 Lésions calcifiées ++

2 Lésions calcifiées ++

3 Lésions calcifiées ++
(stent sous expandu)

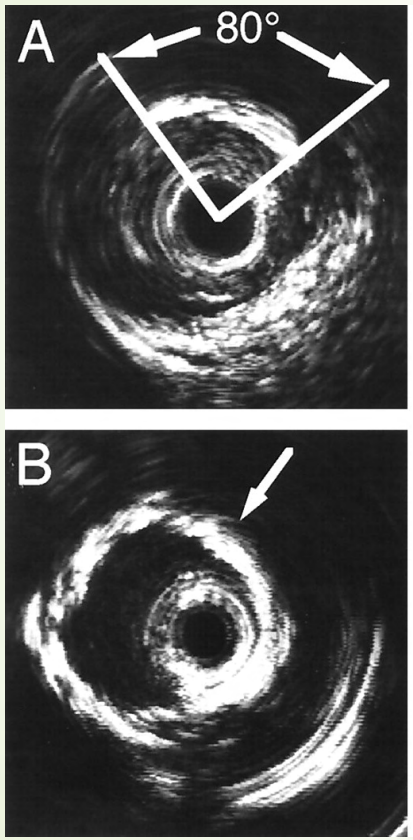
Détection de Lésions Coronaires Calcifiées

- L'angiographie détecte le calcium dans 38% des lésions (440 sur 1155)
- IVUS détecte le calcium dans 73% des lesions (841 of 1155)

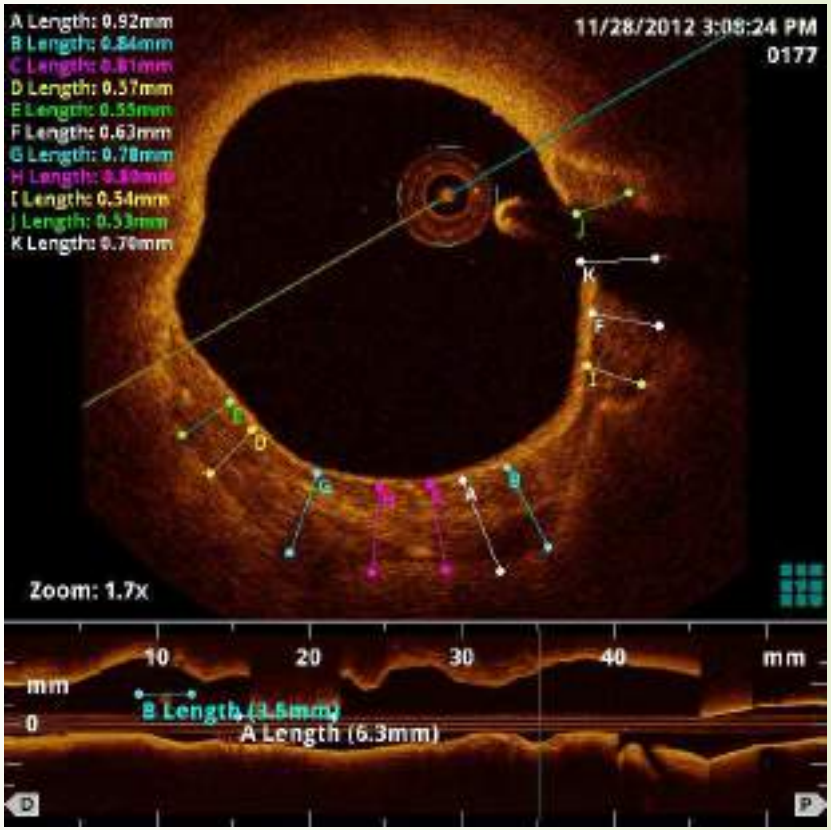
  (P<.0001 versus angiographie)
- L'angiographie est moins sensible à la présence de calcium

Mintz G S et al. *Circulation*. 1995;91:1959-1965

IVUS



OCT



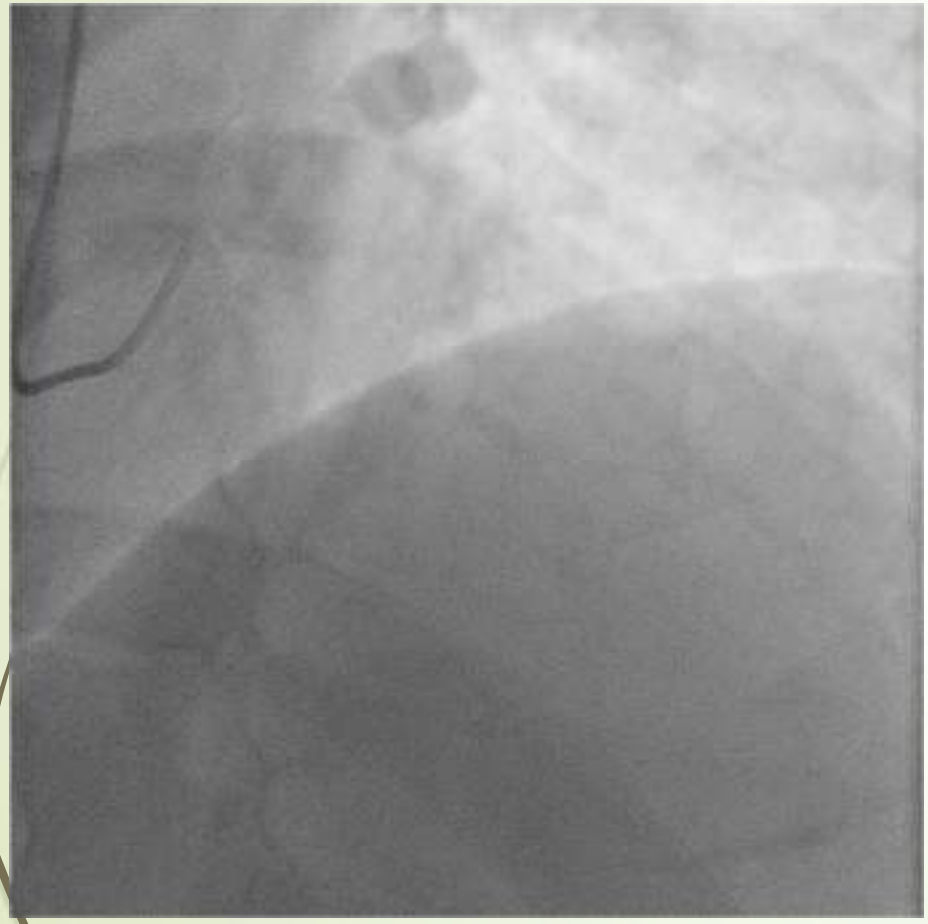
Mintz G S et al. *Circulation*. 1995;91:1959-1965

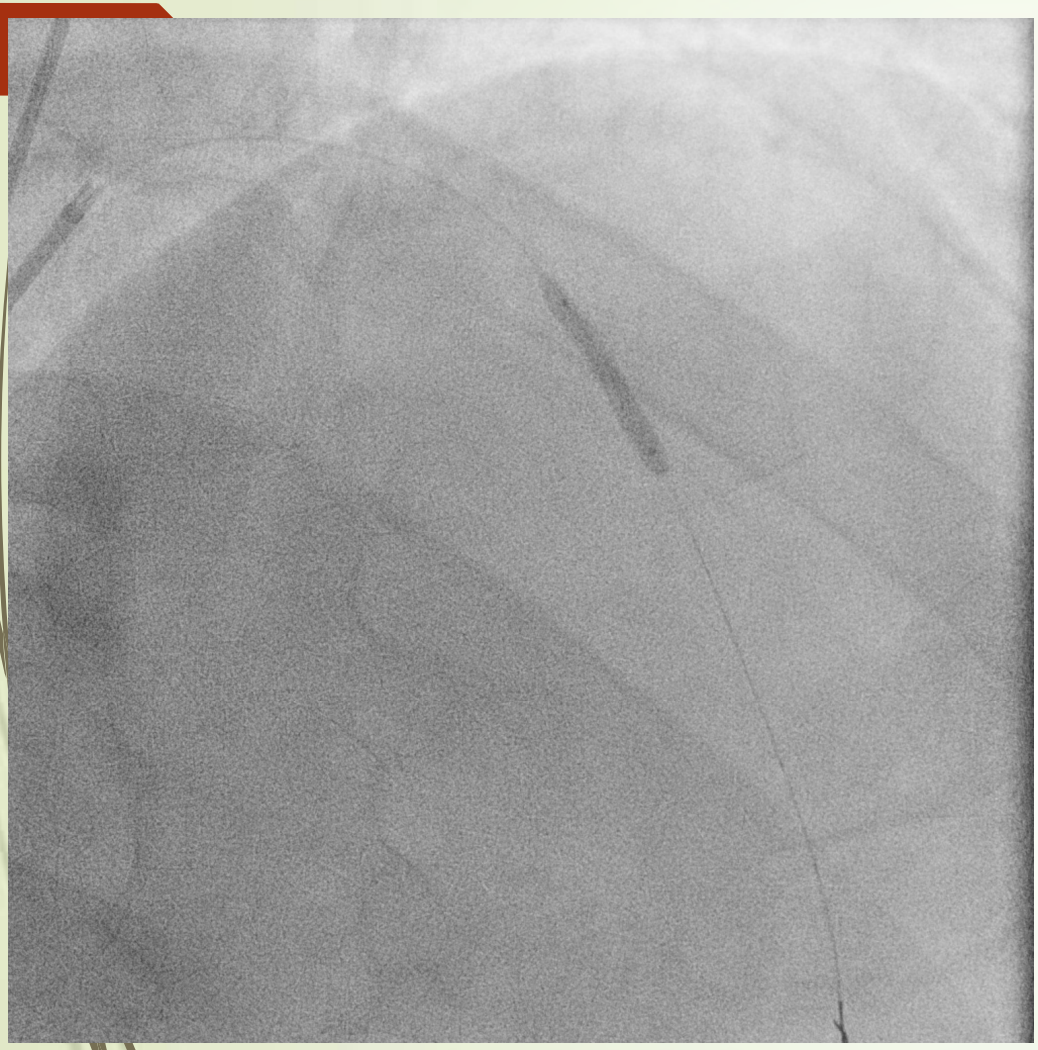
American Heart Association.

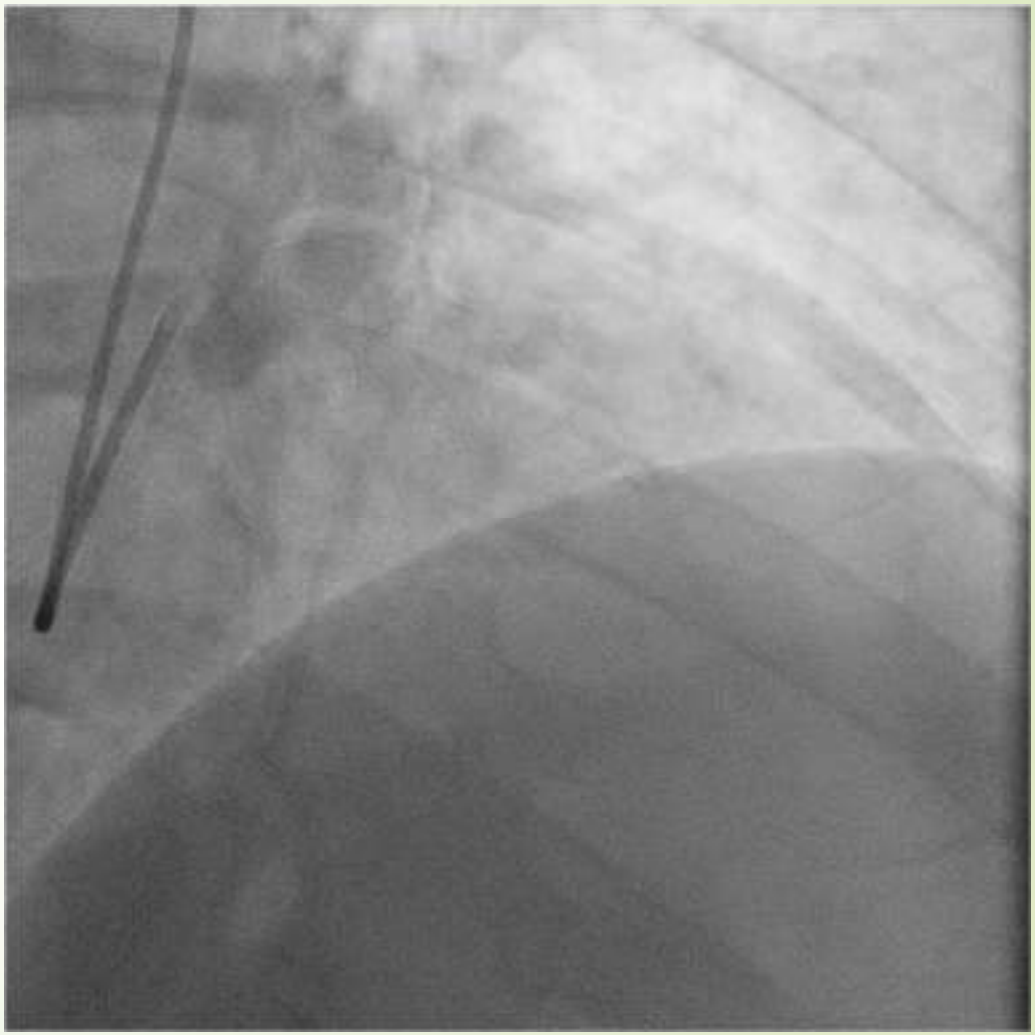
Excuses le plus souvent entendues pour éviter le Rotablator

- Trop tard pour y commencer: il est déjà 15 h.
- Trop coûteux
- Essayons d’abord sans, on verra ensuite
- Cette artère n’a pas l’air trop calcifiée

Exemple 1



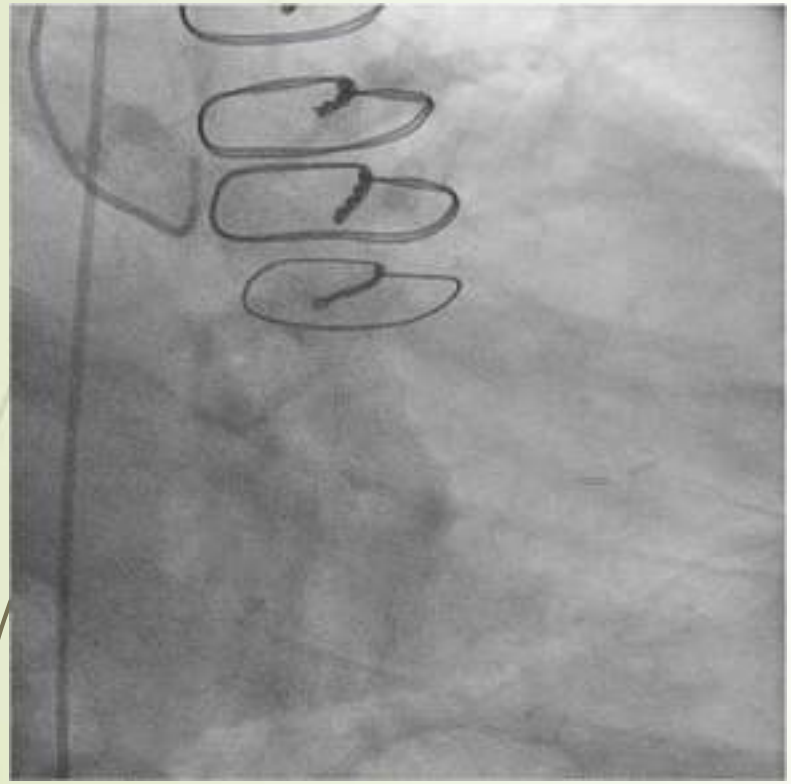




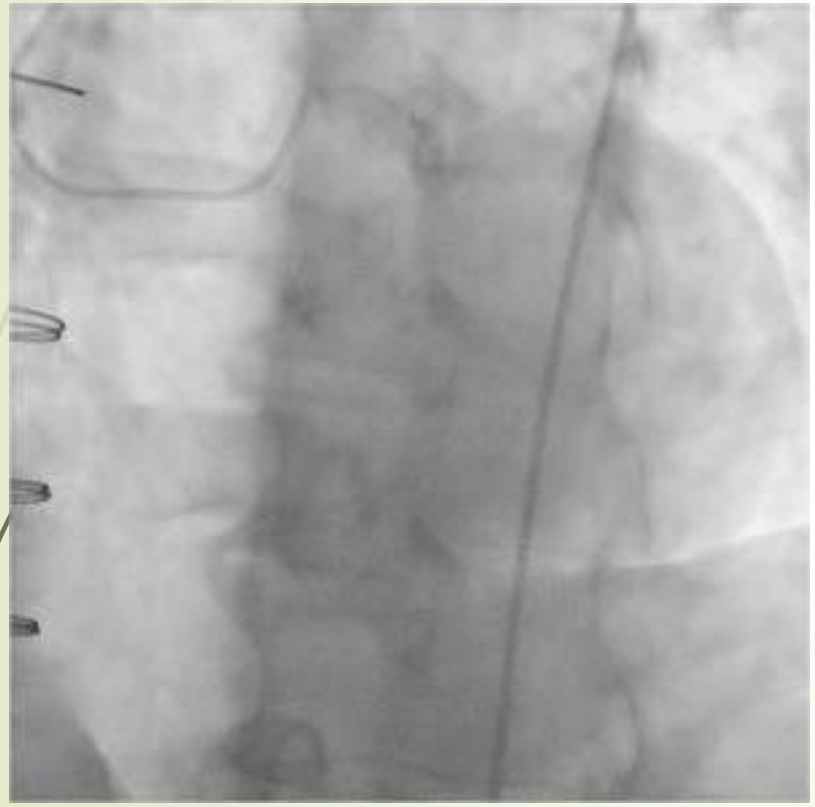
Exemple 2

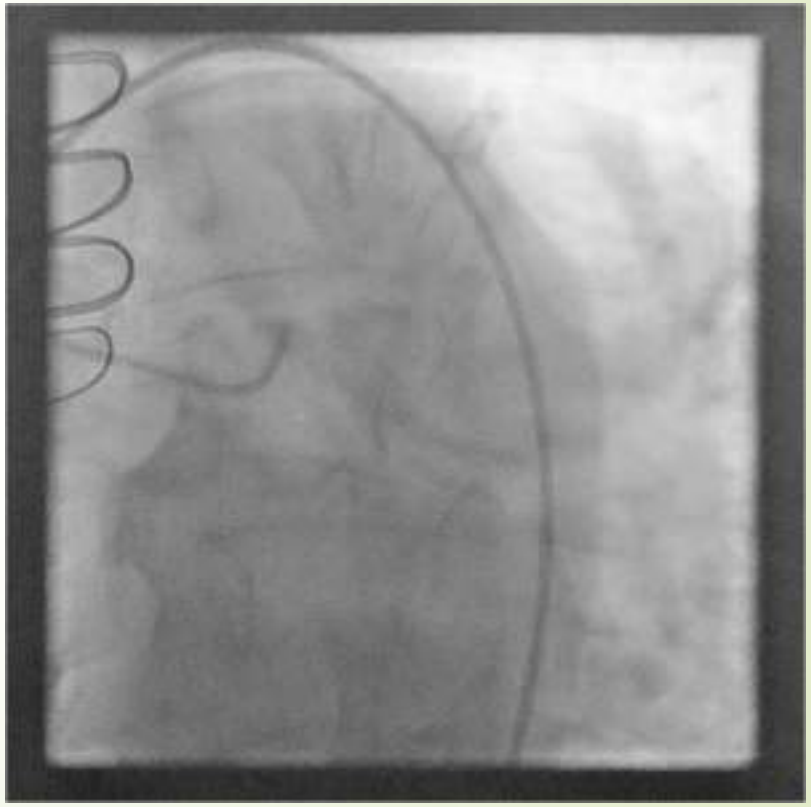
- Homme 61 ans
- Angor 6 mois après double pontage
- FEVG normale
- HTA, DLP, diabète

Angiogram



Angiogram





Bypasses

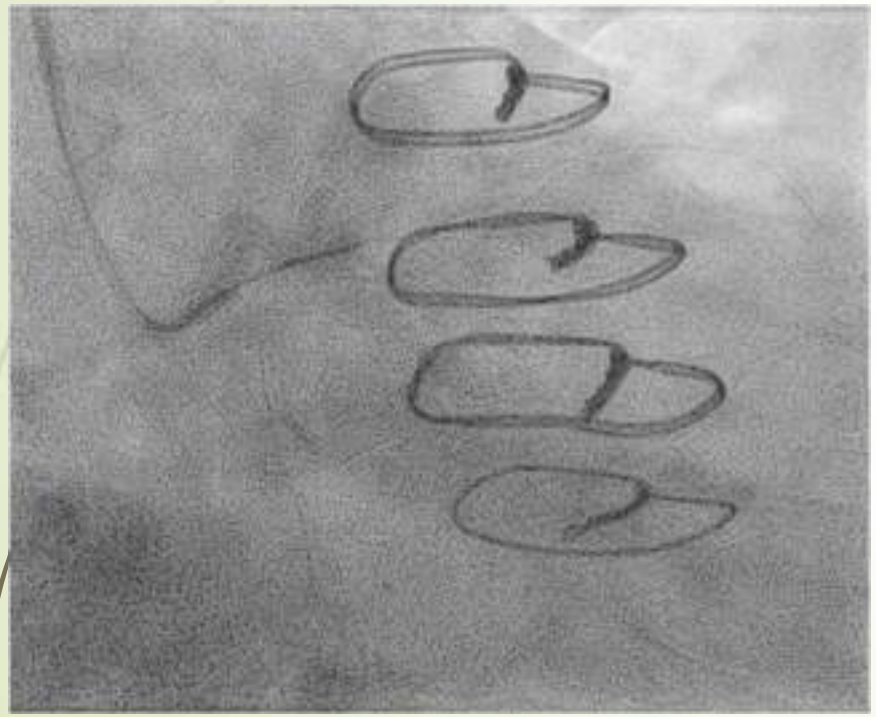
Que fait-on ?

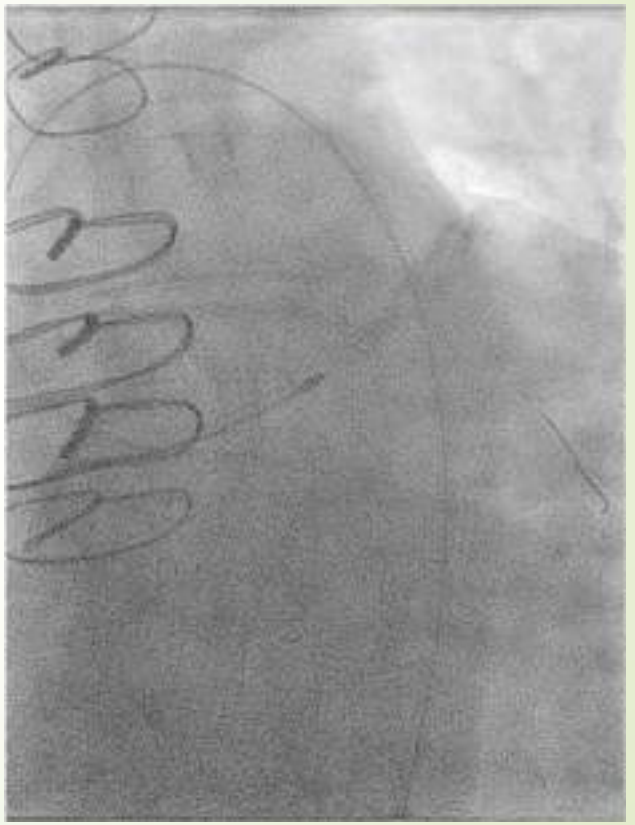
- Pause ?

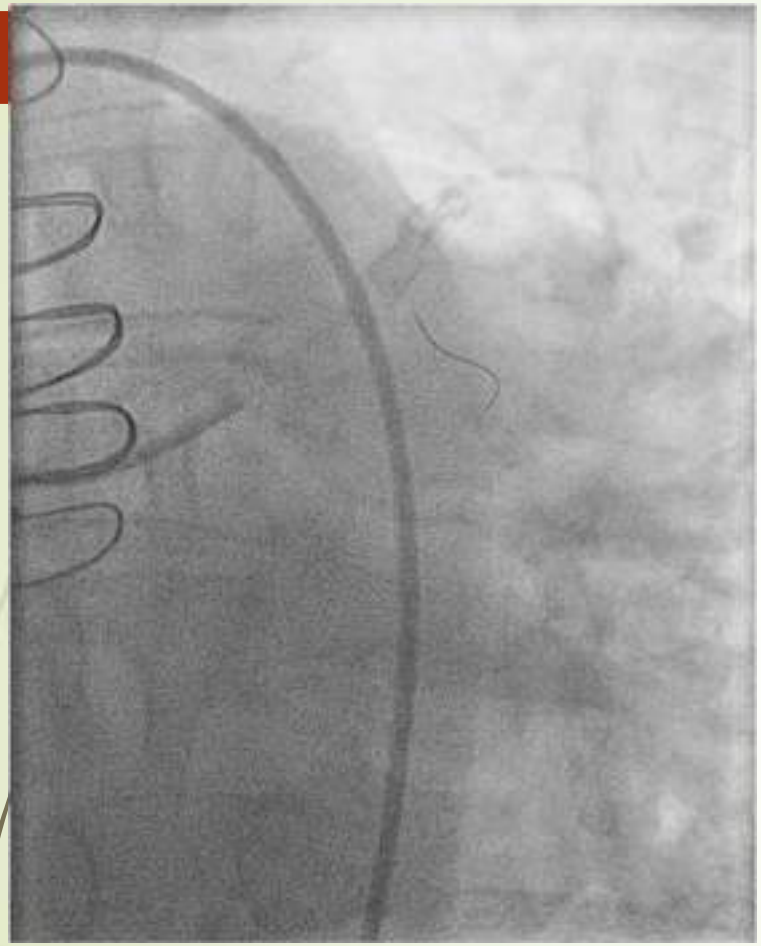
- Re-do chirurgical ?

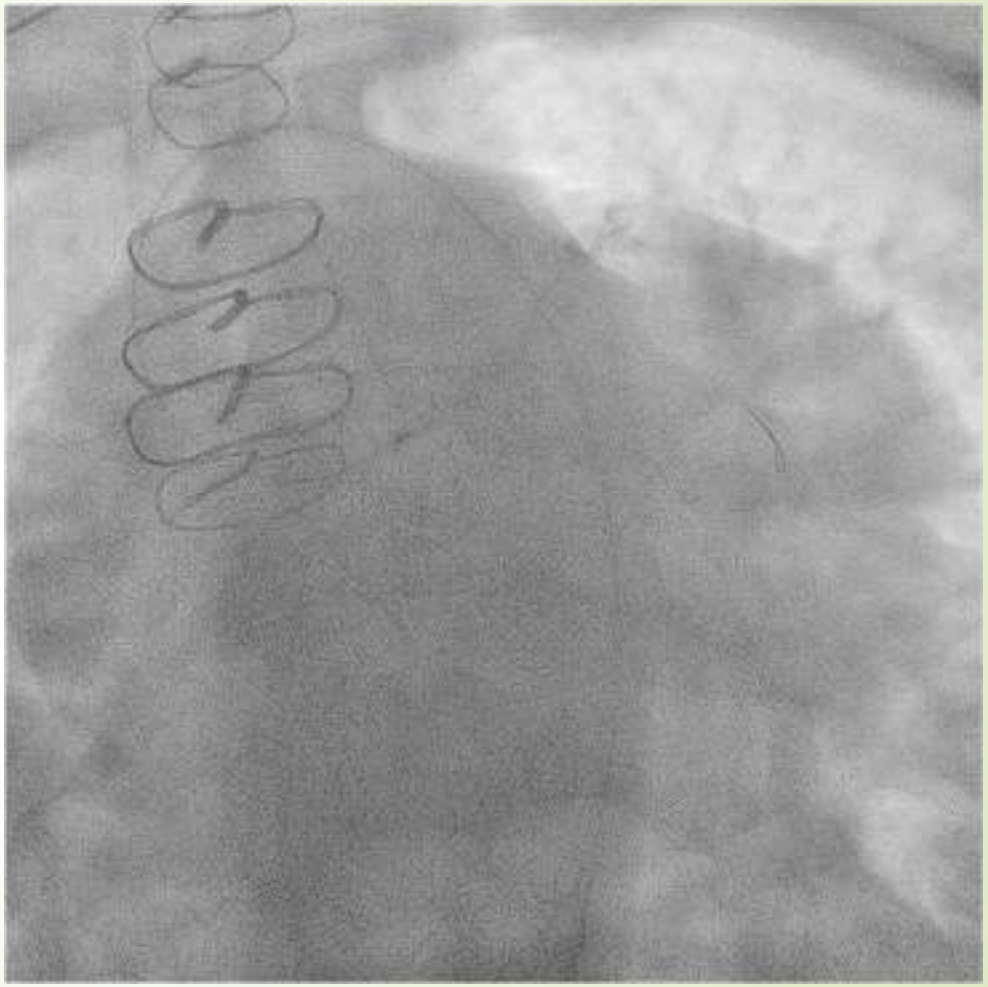
- Appeler nos conjoint(e)s pour dire qu'on sera en retard pour diner ?

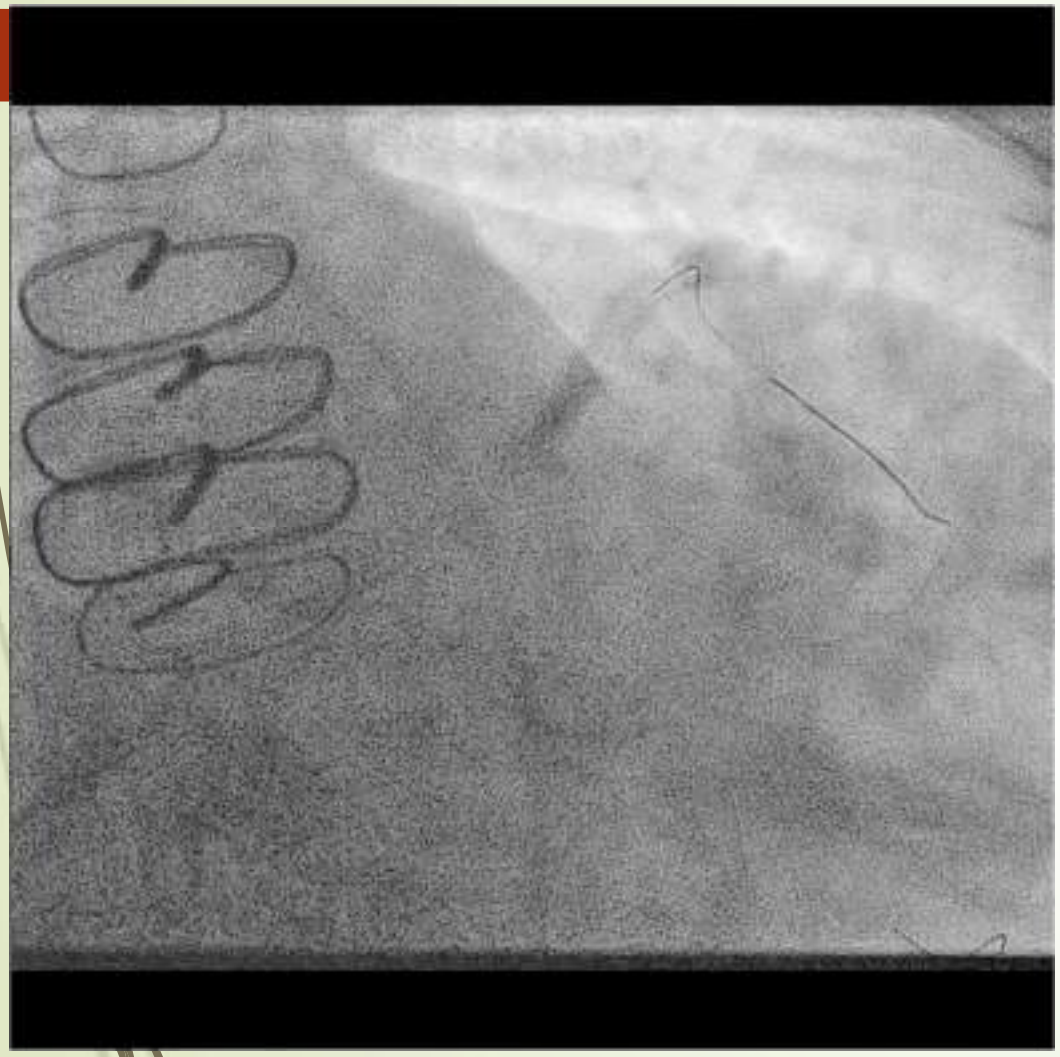
- Stratégie ?

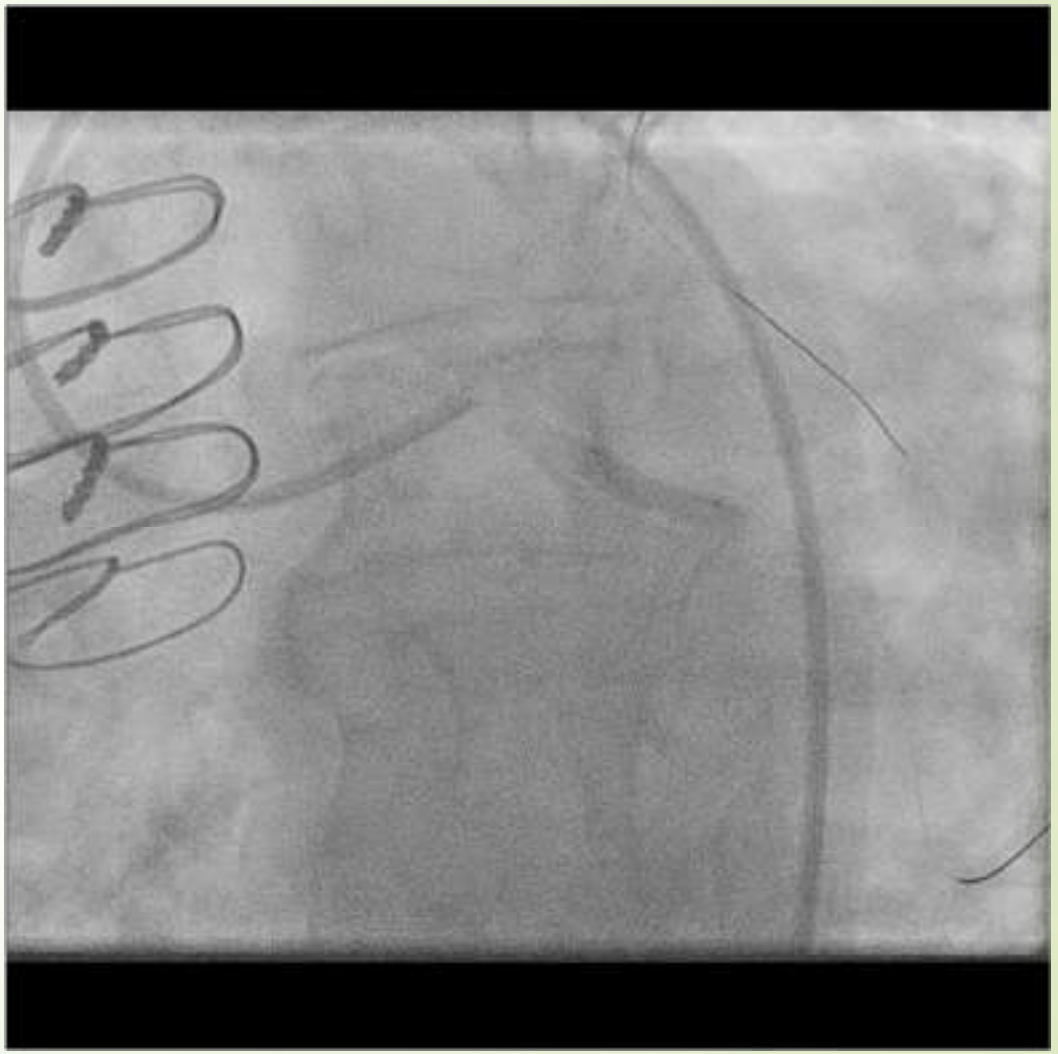


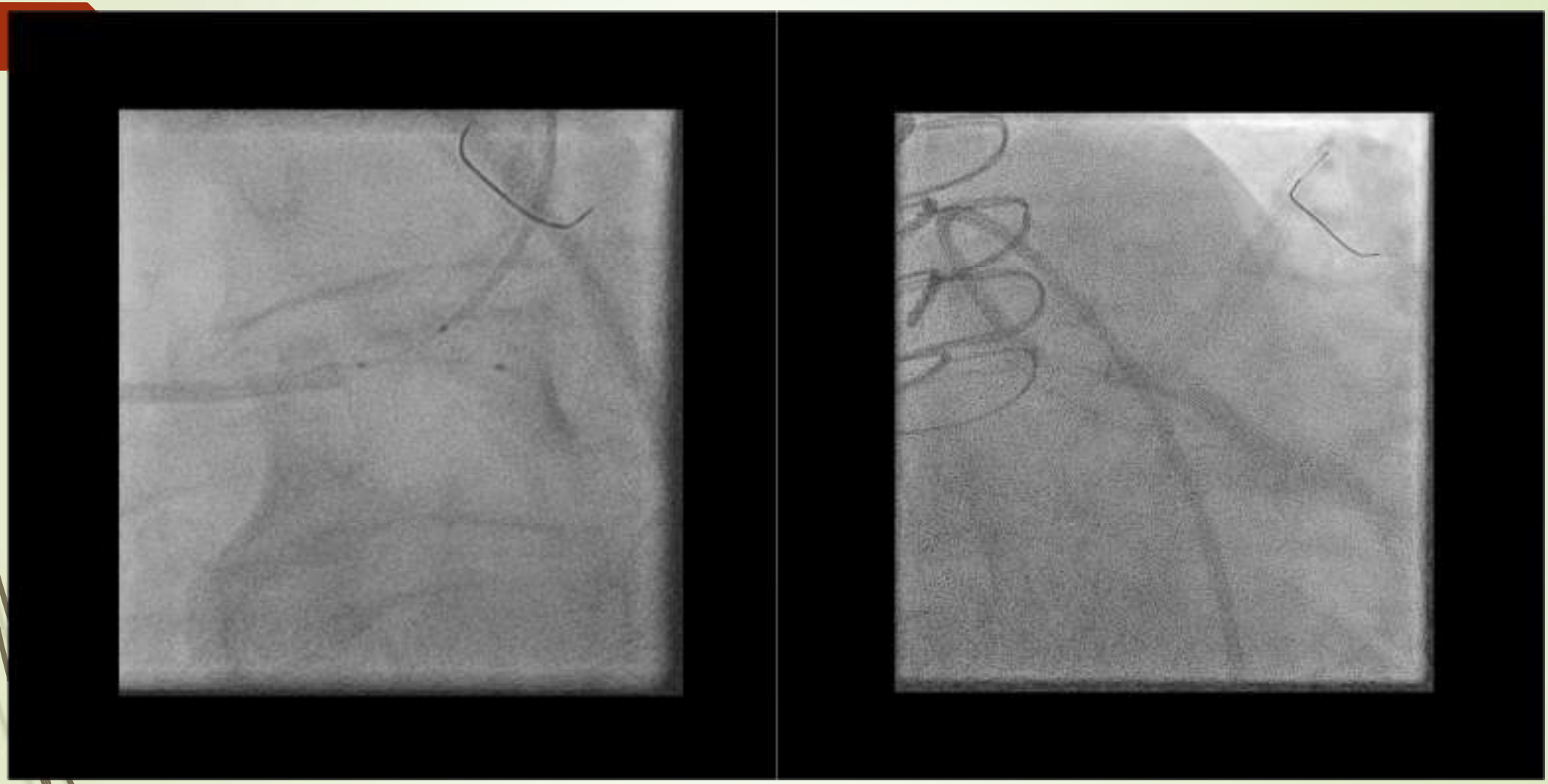


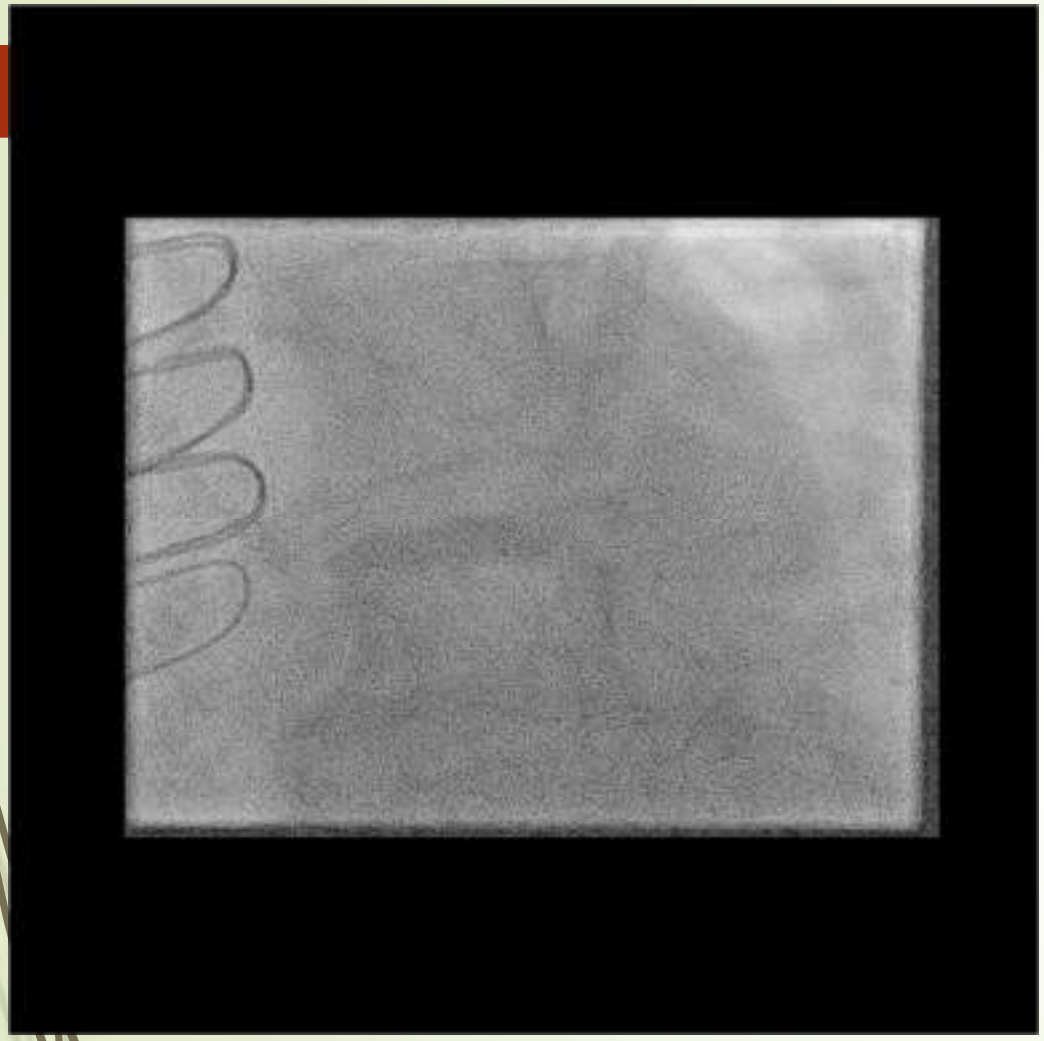


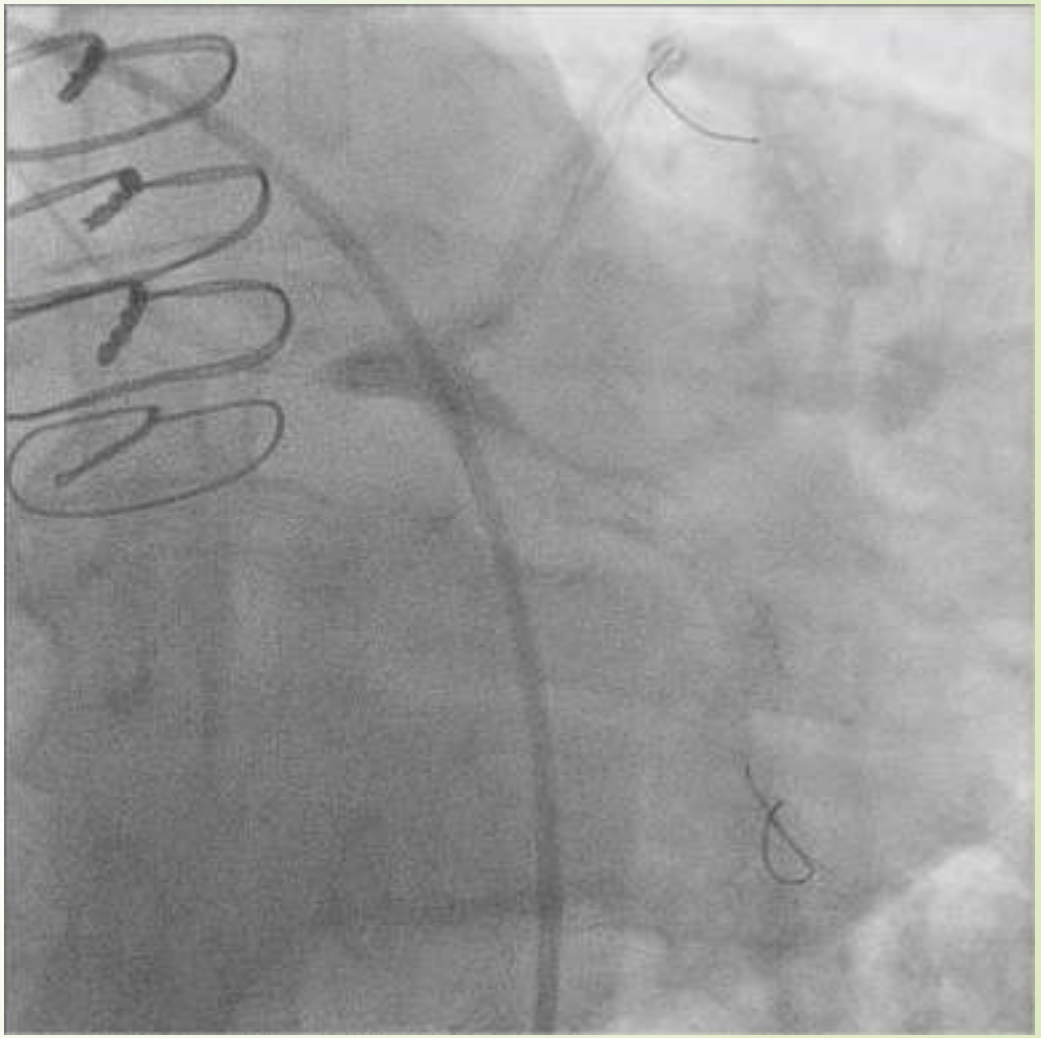




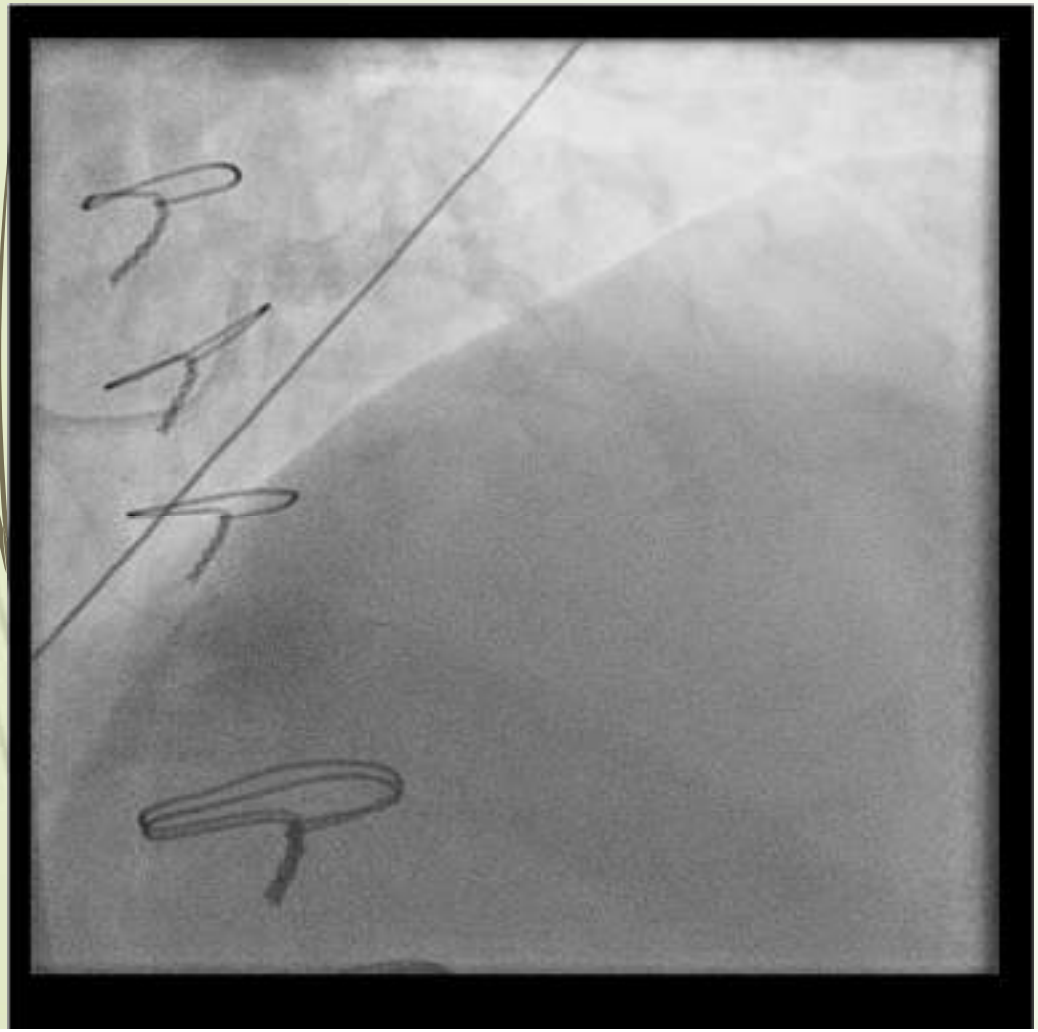








Final result



Rotablator

- Le rotablator doit faire partie de l'arsenal thérapeutique de toutes les salles de KT à haut volume
- Nécessite des compétences techniques, demande un temps d'apprentissage, mais elle permet de dilater des lésions qui n'étaient jusque là pas accessible à l'angioplastie traditionnelle.
- AR peut augmenter le taux de réussite dans les lésions calcifiée
- Hier: Rota-rescue en cas de lésion non dilatable ou inaccesible ou programmé
- Aujourd'hui: rota ad hoc, avec un seuil bas
- Vous ne regrettez jamais d'avoir utilisé AR, vous regrettez souvent de ne pas l'avoir utilisée

New kid on the block

Lithotripsy

- 4 atm – 4-10 pulses per lesion

Max 80 pulses

ORIGINAL ARTICLE

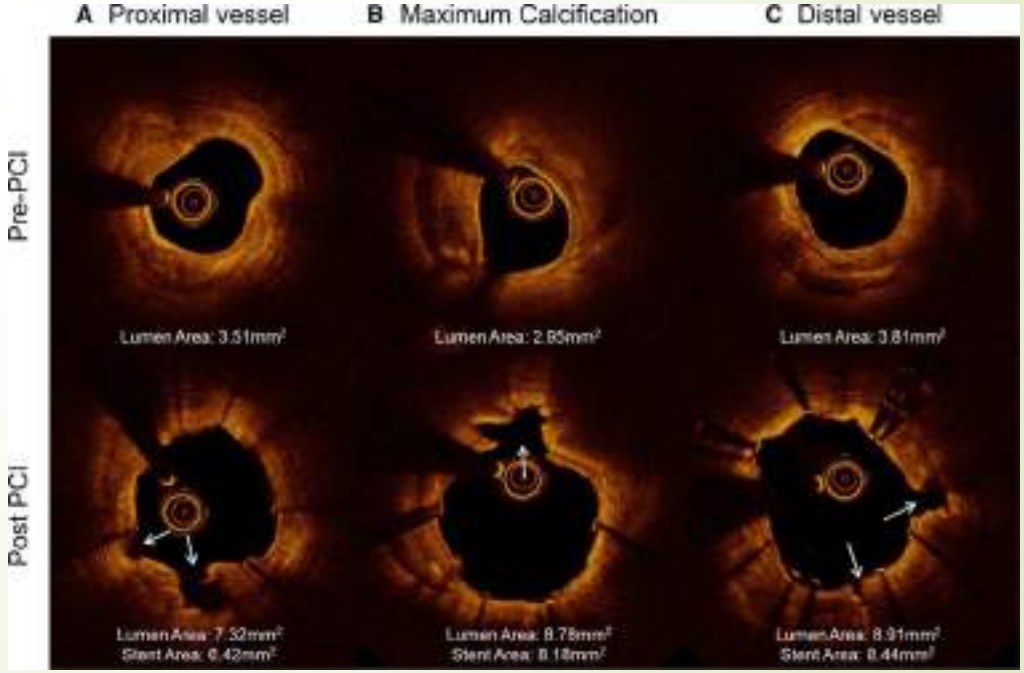
Safety and Effectiveness of Coronary Intravascular Lithotripsy for Treatment of Severely Calcified Coronary Stenoses

The Disrupt CAD II Study

Ali et al., Circ Cardiovasc Interv 2019

Table 5. Clinical and Angiographic Outcomes

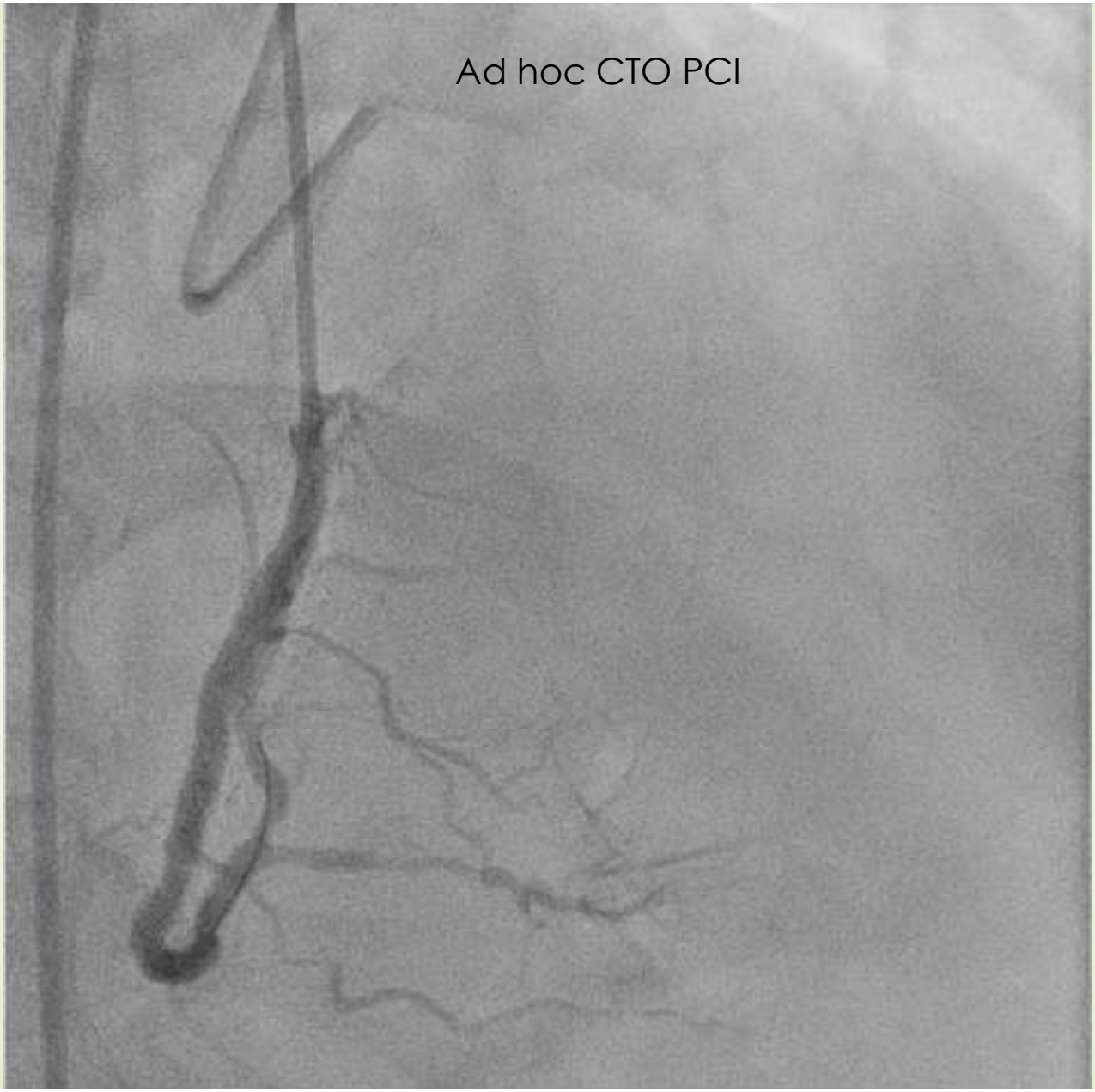
	N=120
Final angiographic complications	
Dissections, type	
None	98.3 (118)
A	0.0 (0)
B	0.8 (1)
C	0.8 (1)
D-F	0.0 (0)
Perforations	0.0 (0)
Abrupt closure	0.0 (0)
Slow flow	0.0 (0)
No reflow	0.0 (0)
MACE in hospital	5.8 (7/120)
Cardiac death	0.0 (0/120)
Non–Q-wave MI	5.8 (7/120)
Q-wave MI	0.0 (0/120)
Target vessel revascularization	0.0 (0/120)
MACE through 30 d	7.6 (9/119)
Cardiac death	0.8 (1/119)
Non–Q-wave MI	5.9 (7/119)
Q-wave MI	0.8 (1/119)
Target vessel revascularization	0.8 (1/119)
Stent thrombosis (definite or probable)	1.7 (2/119)



case

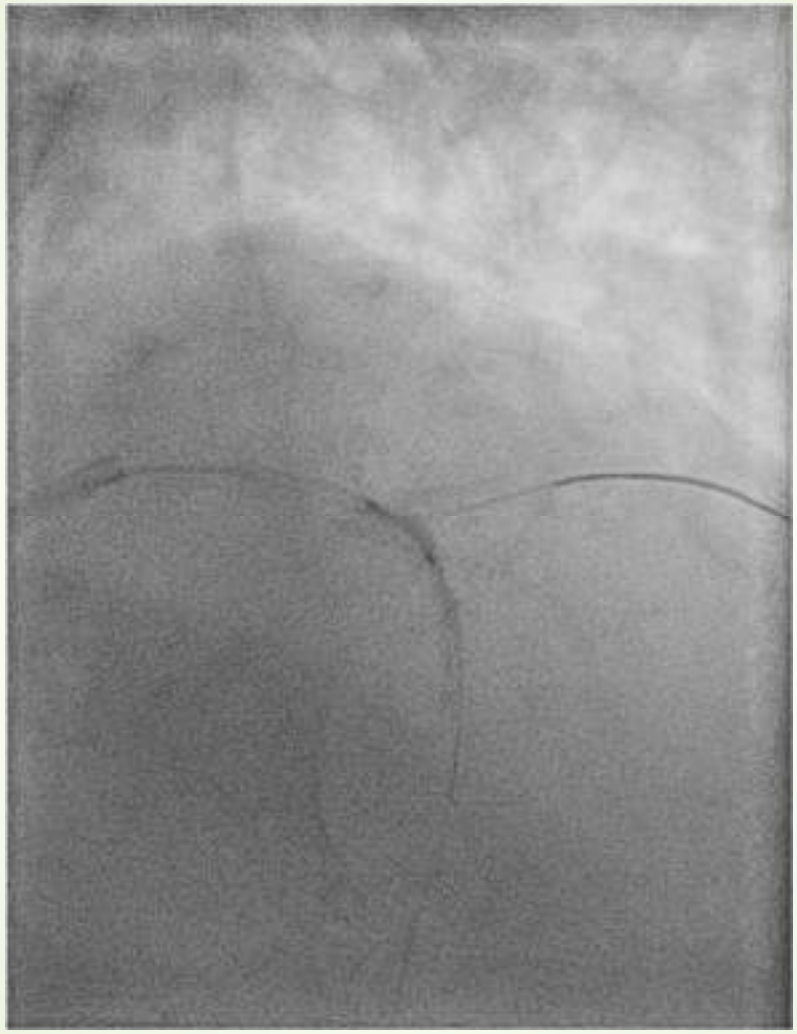
- 59 Y.O. MALE
- SMOKING HISTORY
- MAY 2019 : INFERIOR STEMI
- P-PCI of RCA, patient included in BEST-MAG study (MAGMARIS in STEMI)
- CTO of LAD (and OMCx) is subsequently diagnosed
- CMR shows viability of the anterior wall
- Decision to start OMT for LV dysfunction and re-assess angiogram 3 months later

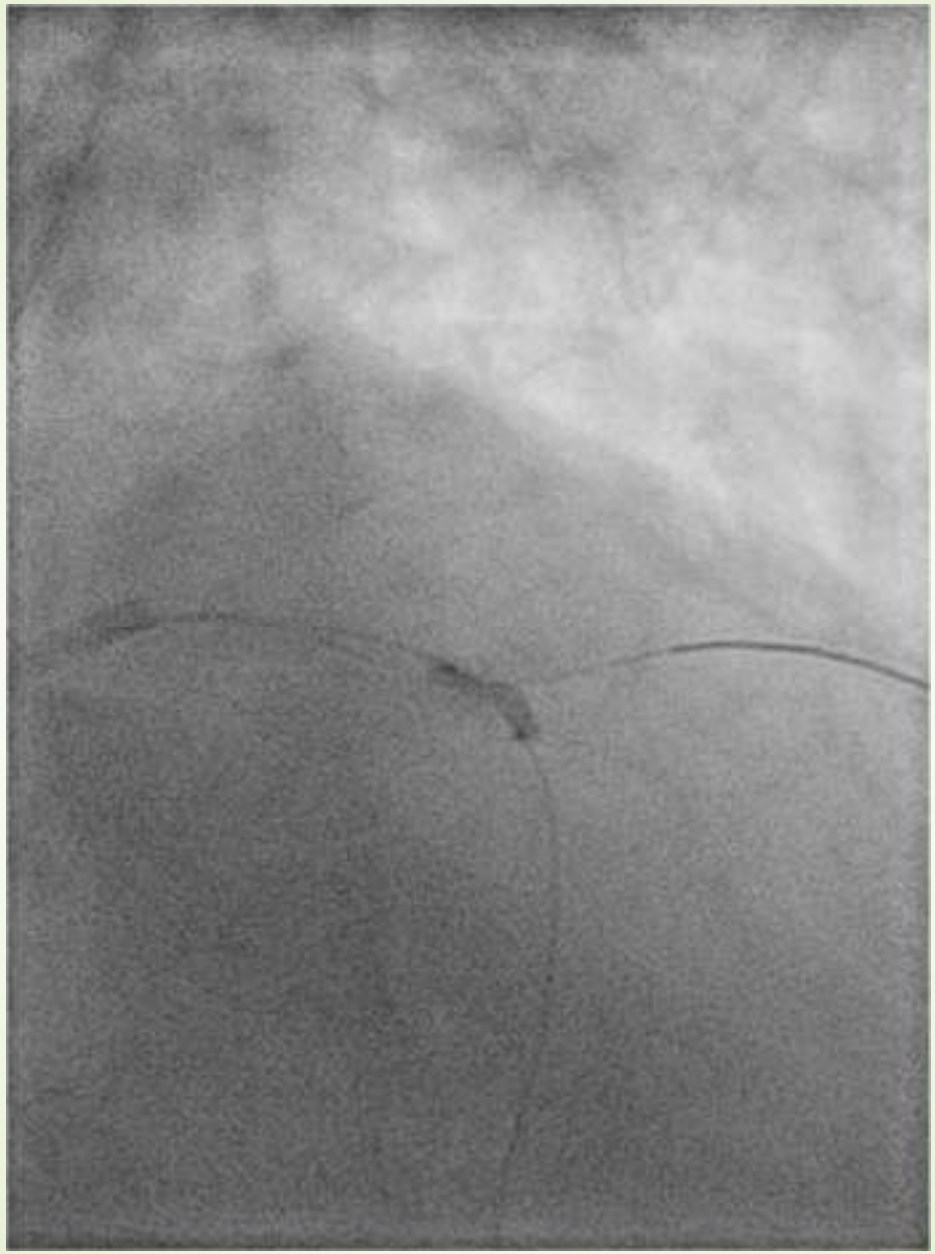
Ad hoc CTO PCI



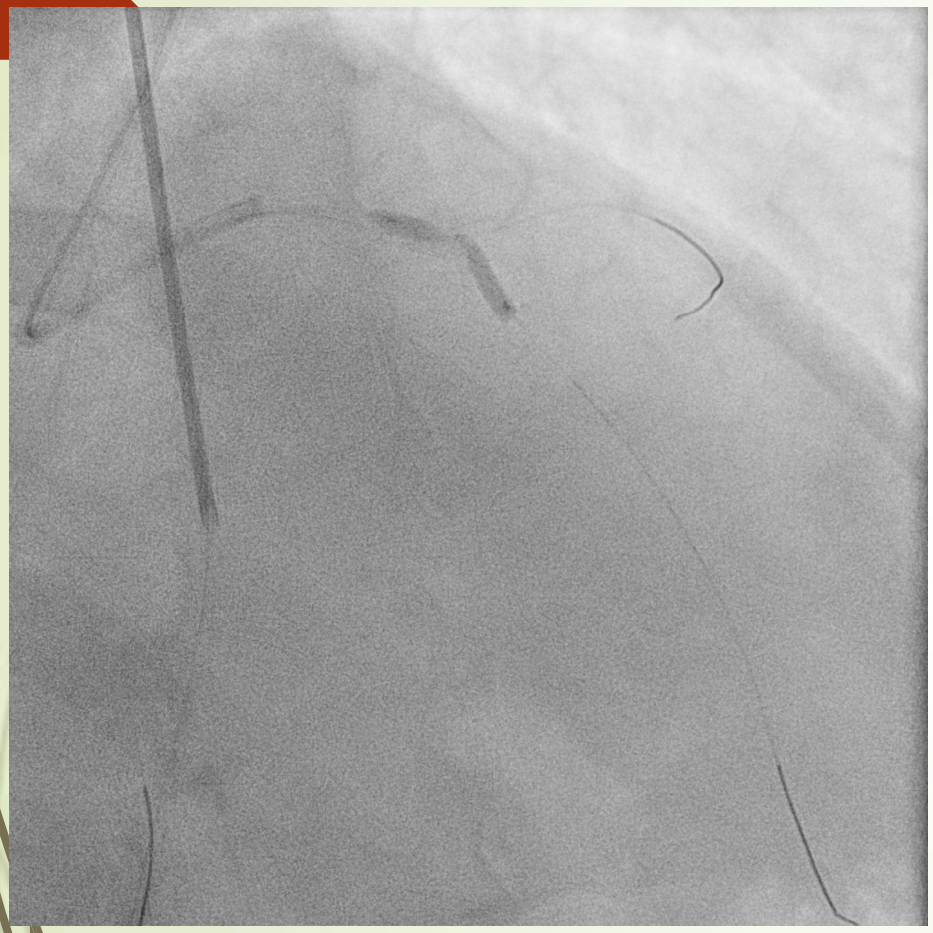

Gaia 2nd subintimal

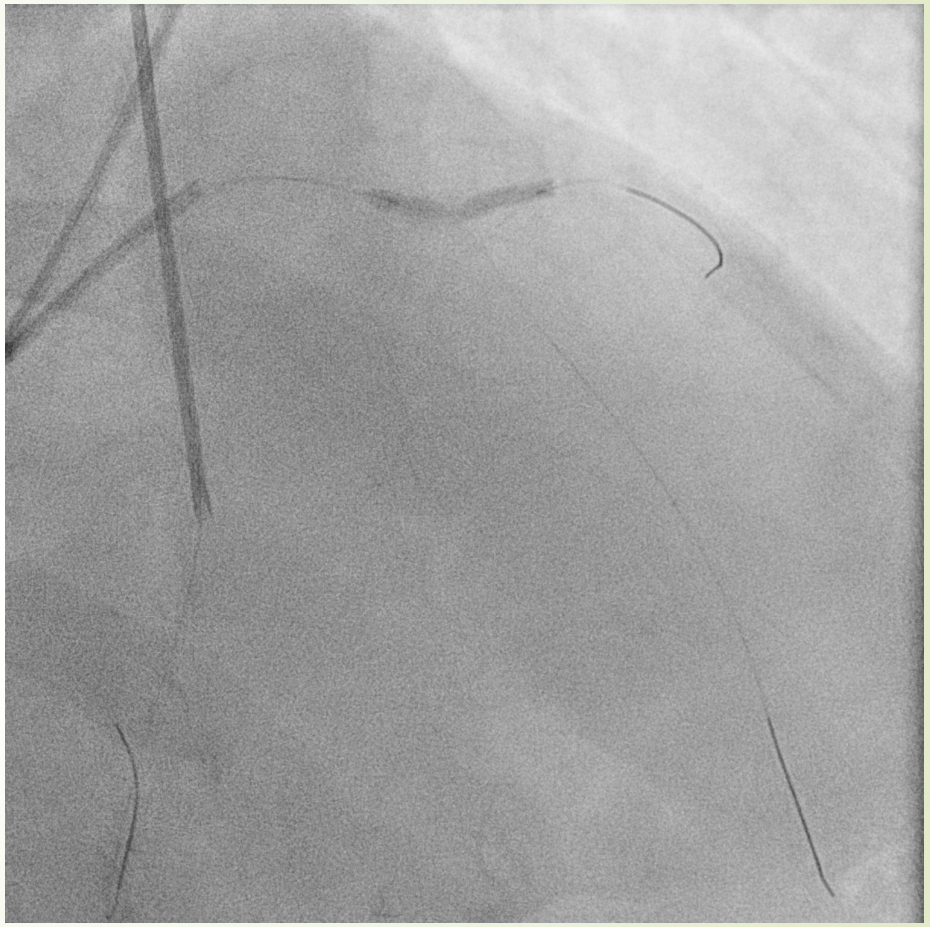

Gaia redirected



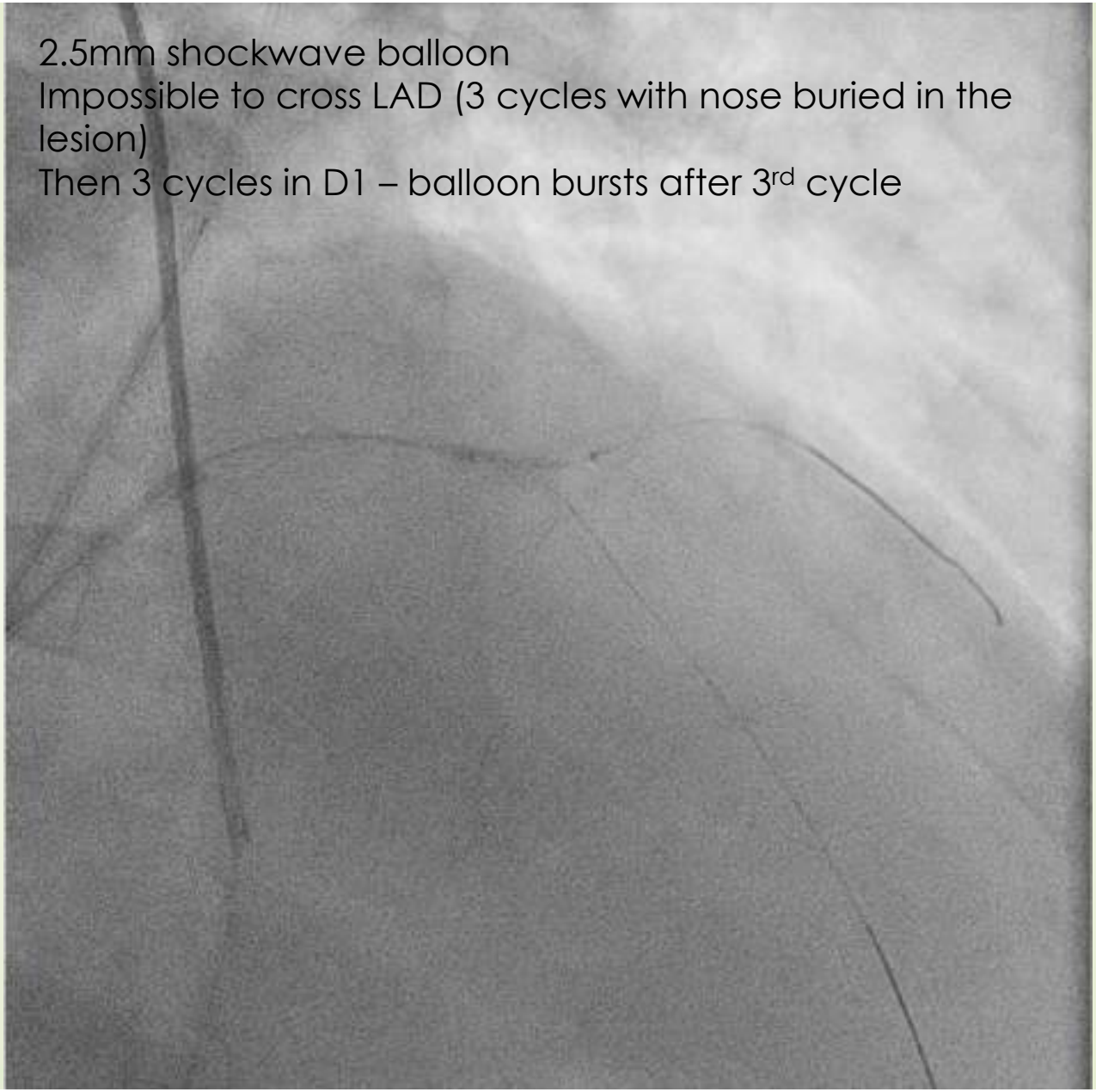


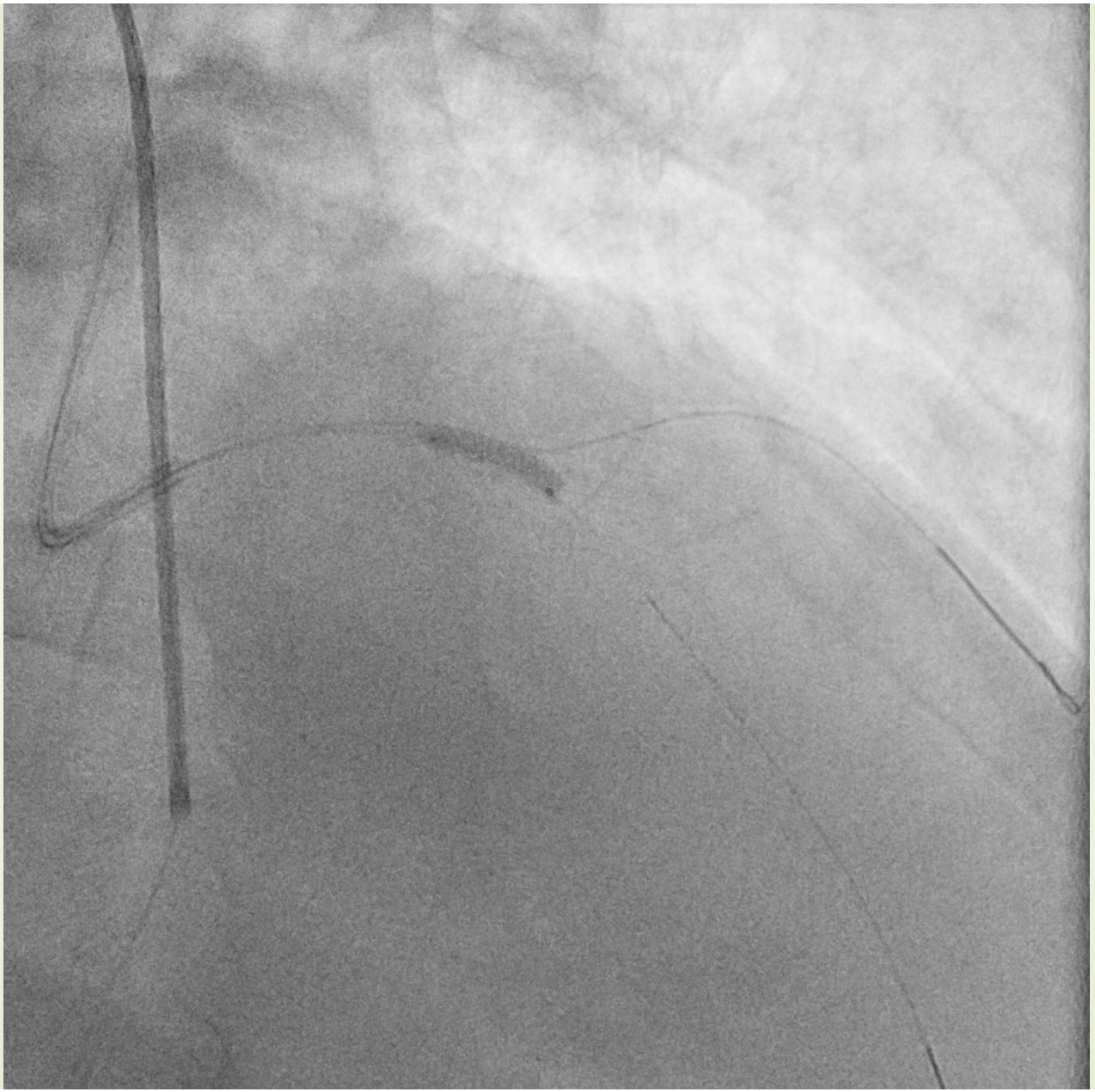

Dual lumen MC to re-enter LAD true lumen

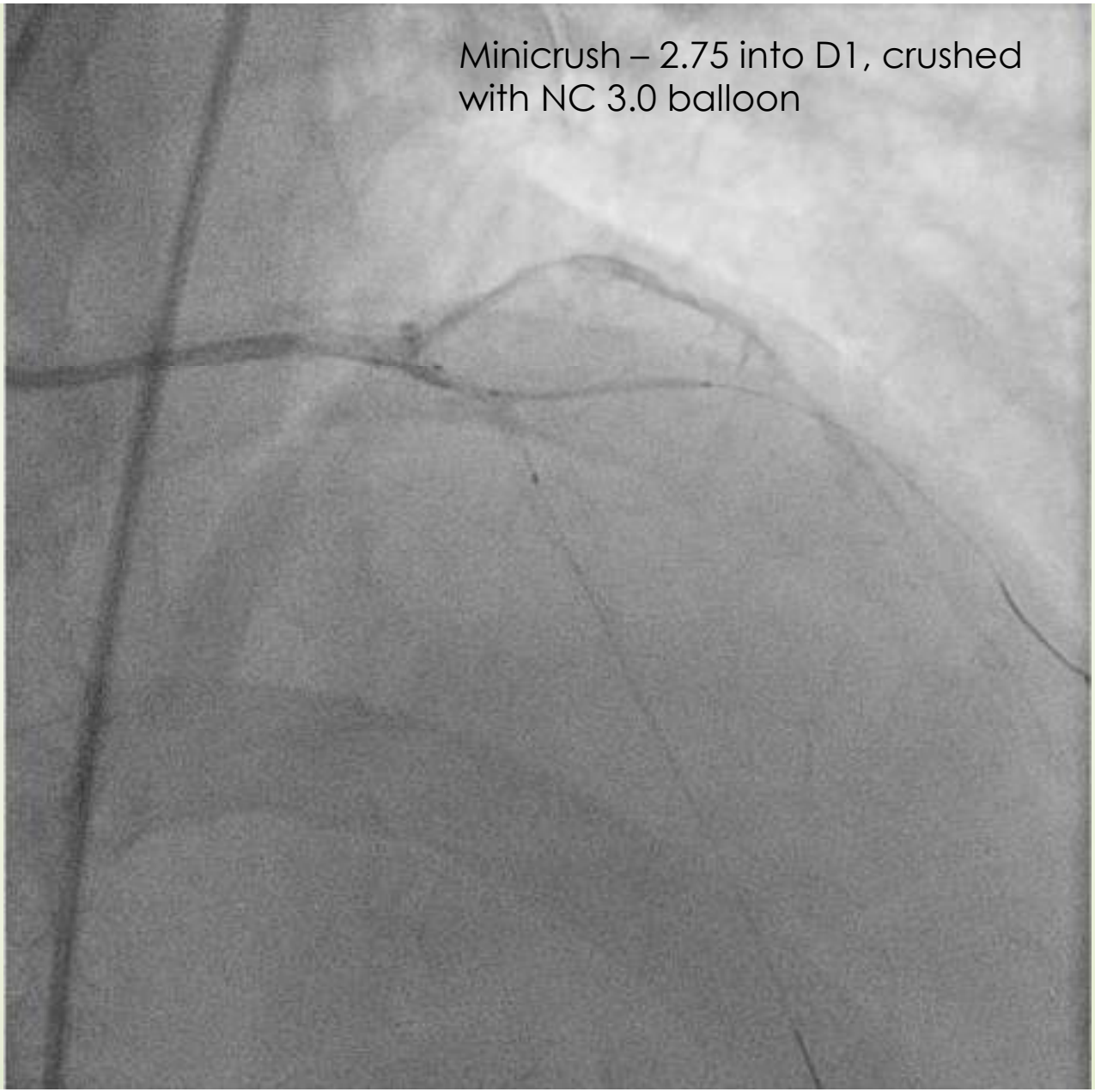


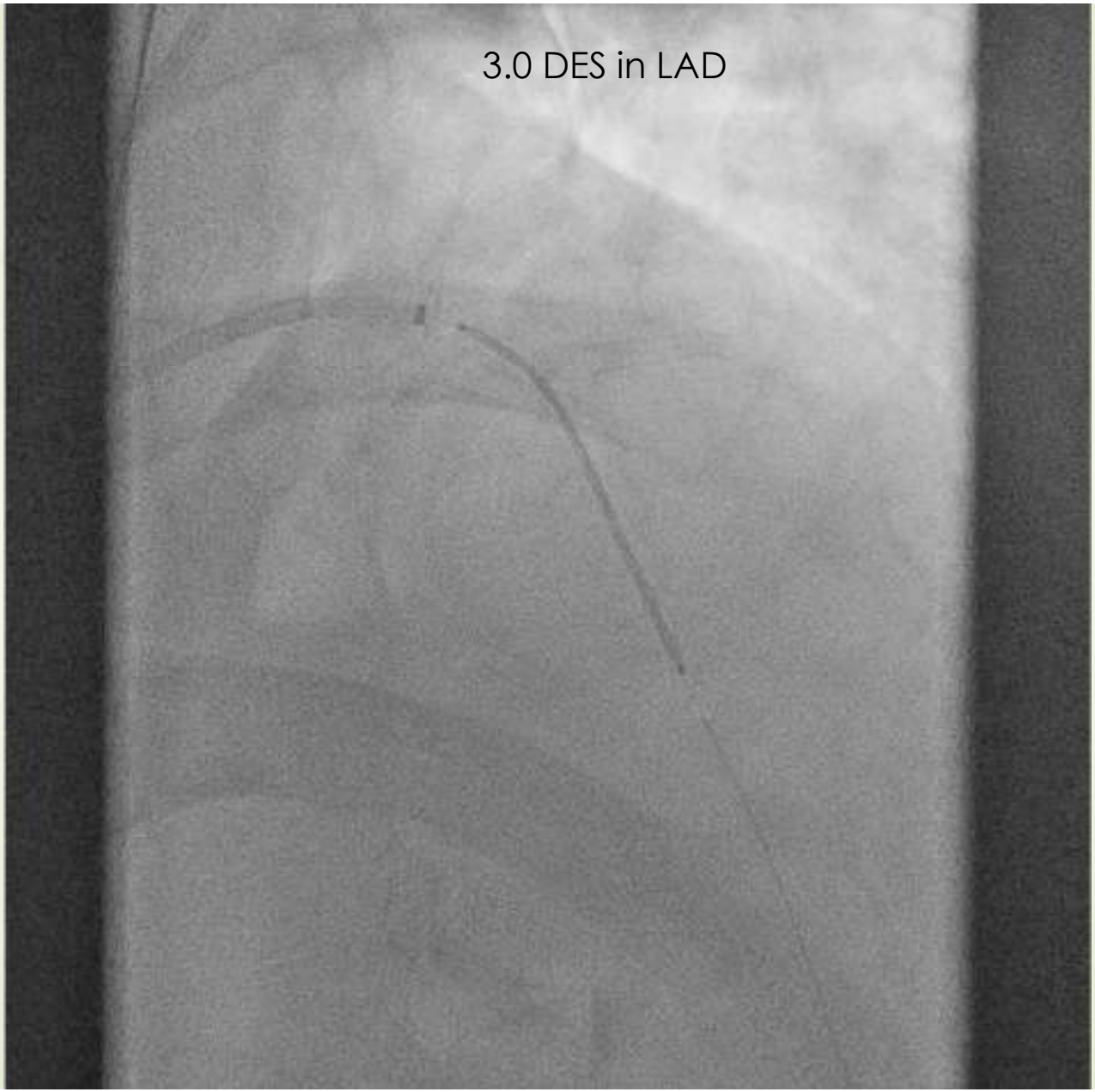


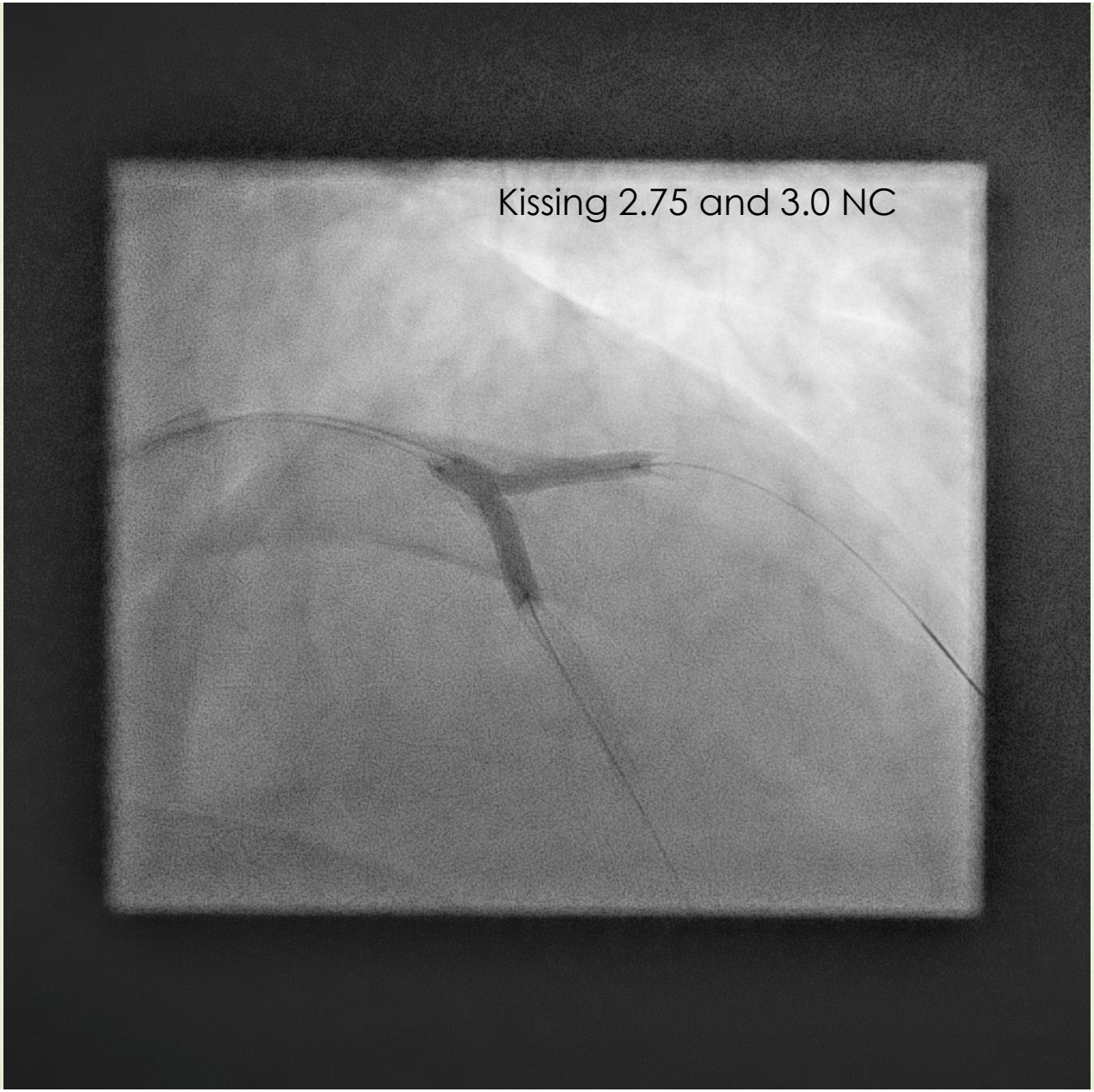
2.5mm shockwave balloon
Impossible to cross LAD (3 cycles with nose buried in the lesion)
Then 3 cycles in D1 – balloon bursts after 3rd cycle

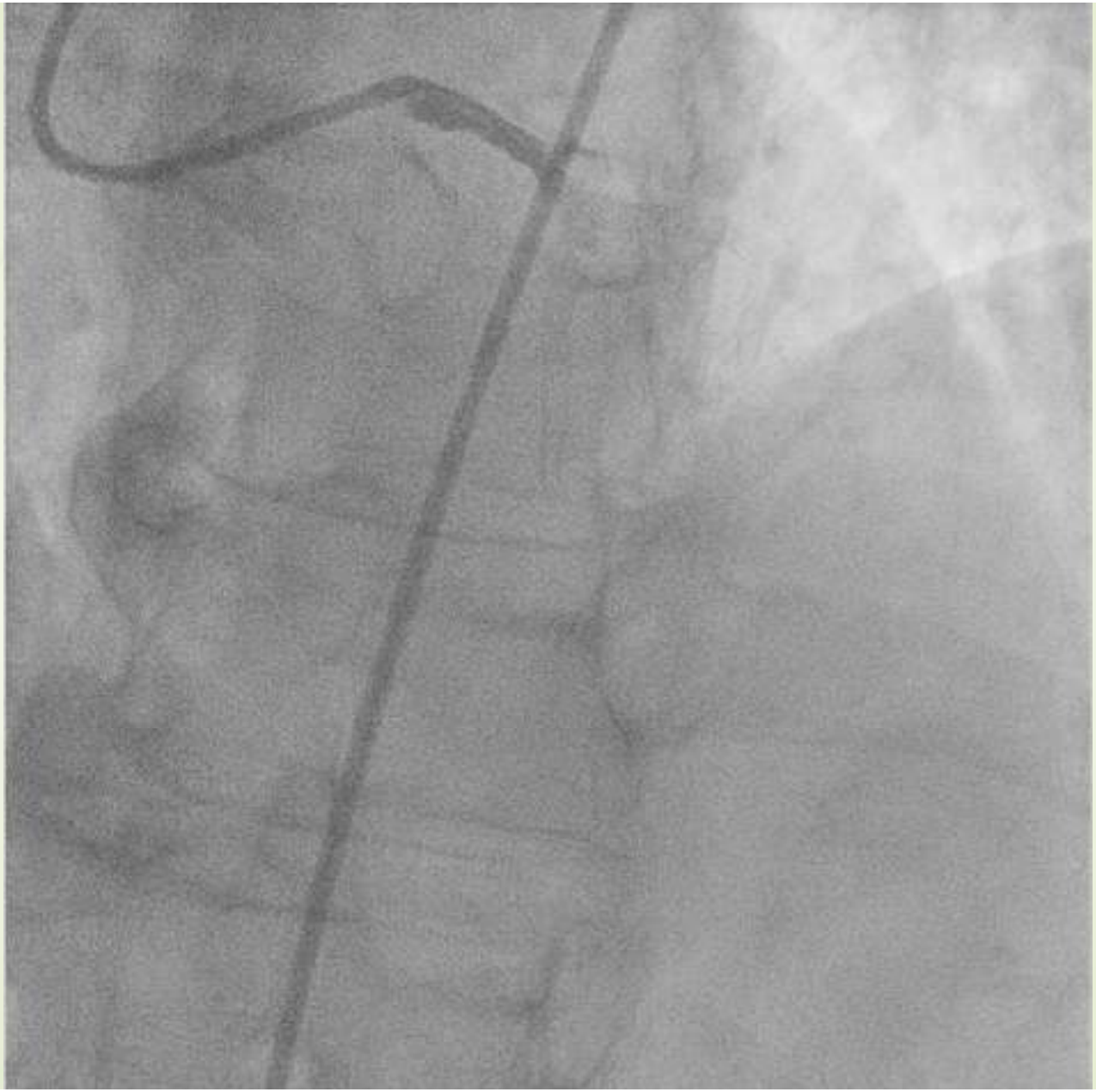




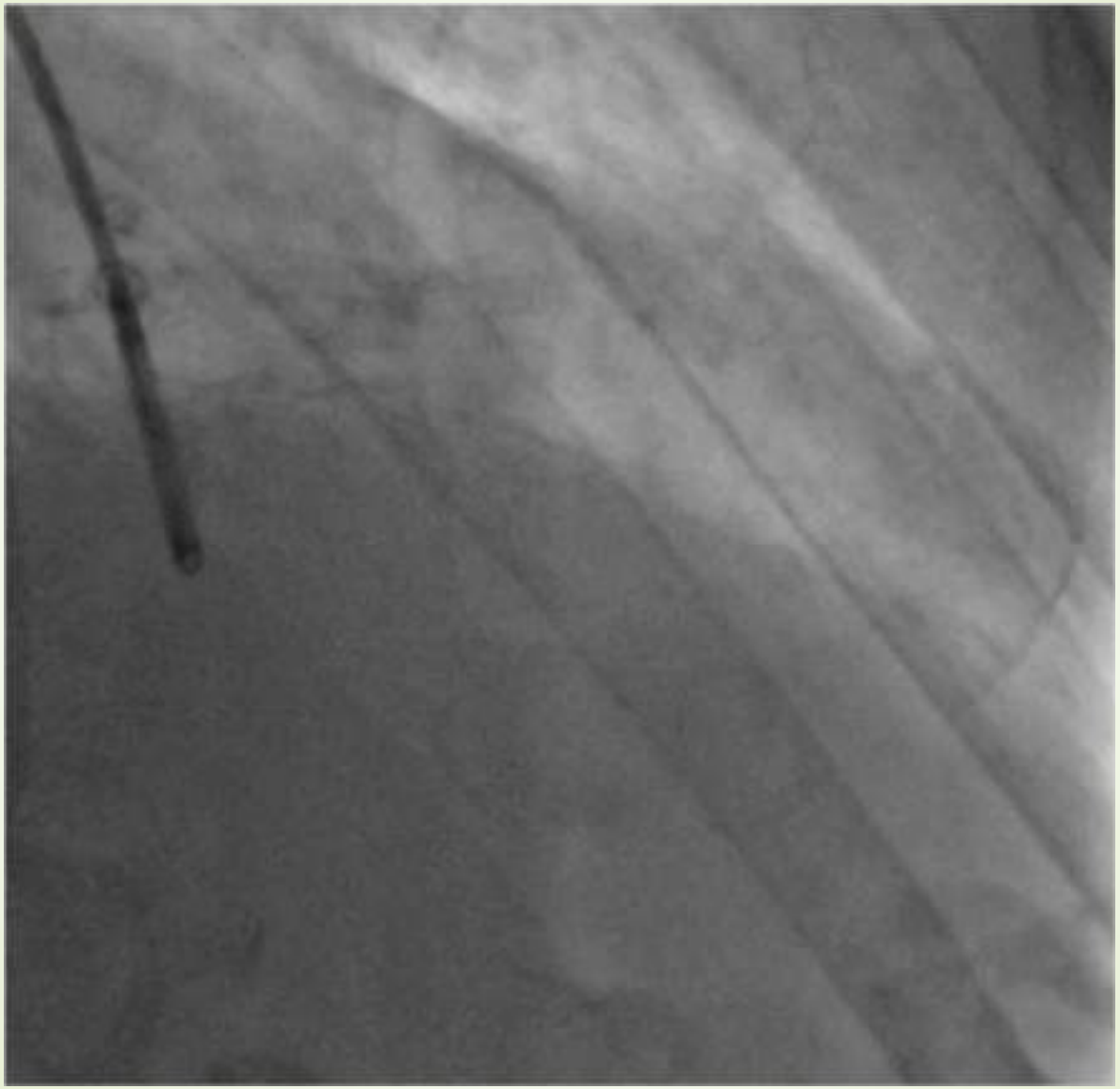

Minicrush – 2.75 into D1, crushed
with NC 3.0 balloon

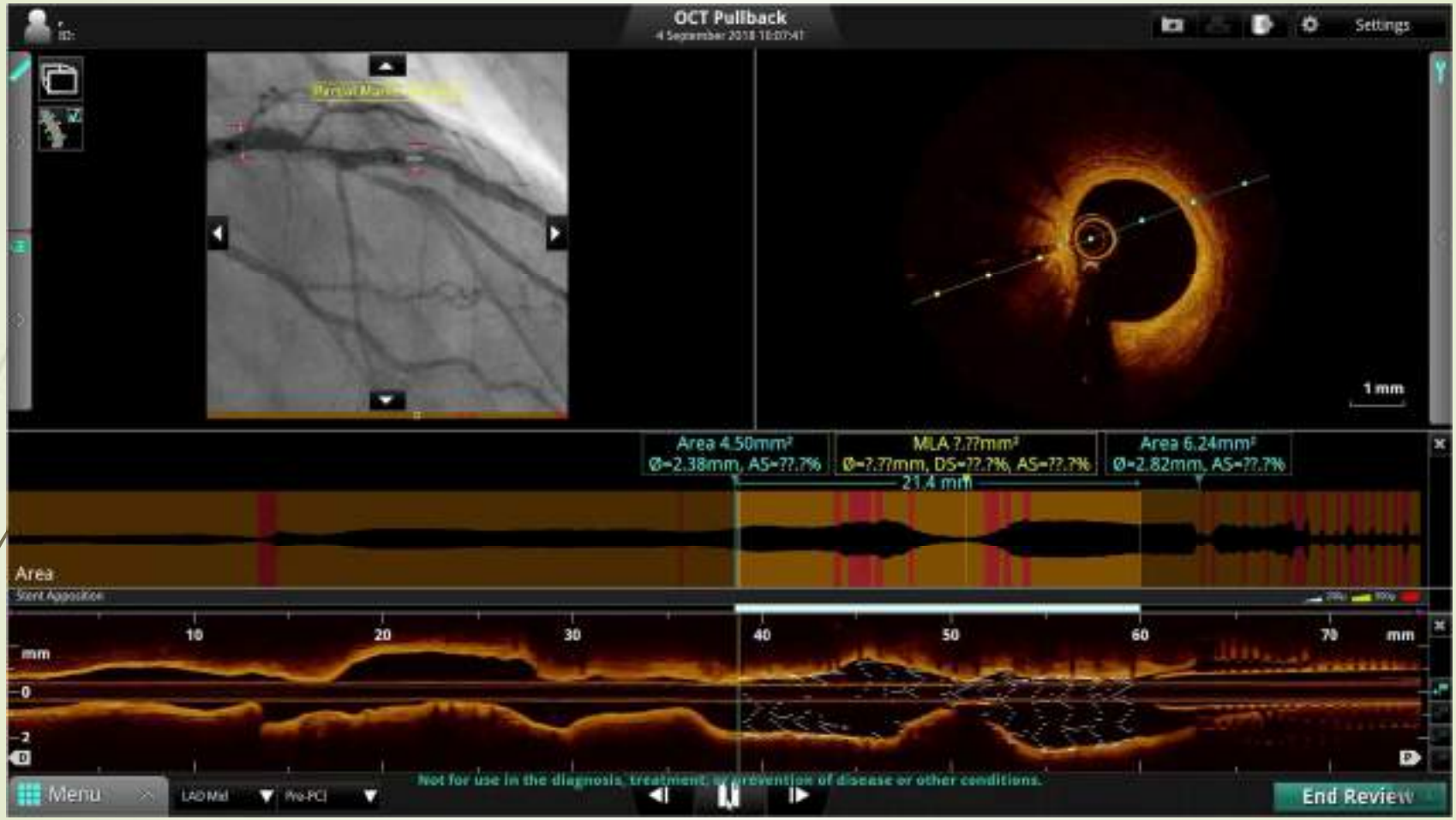

3.0 DES in LAD

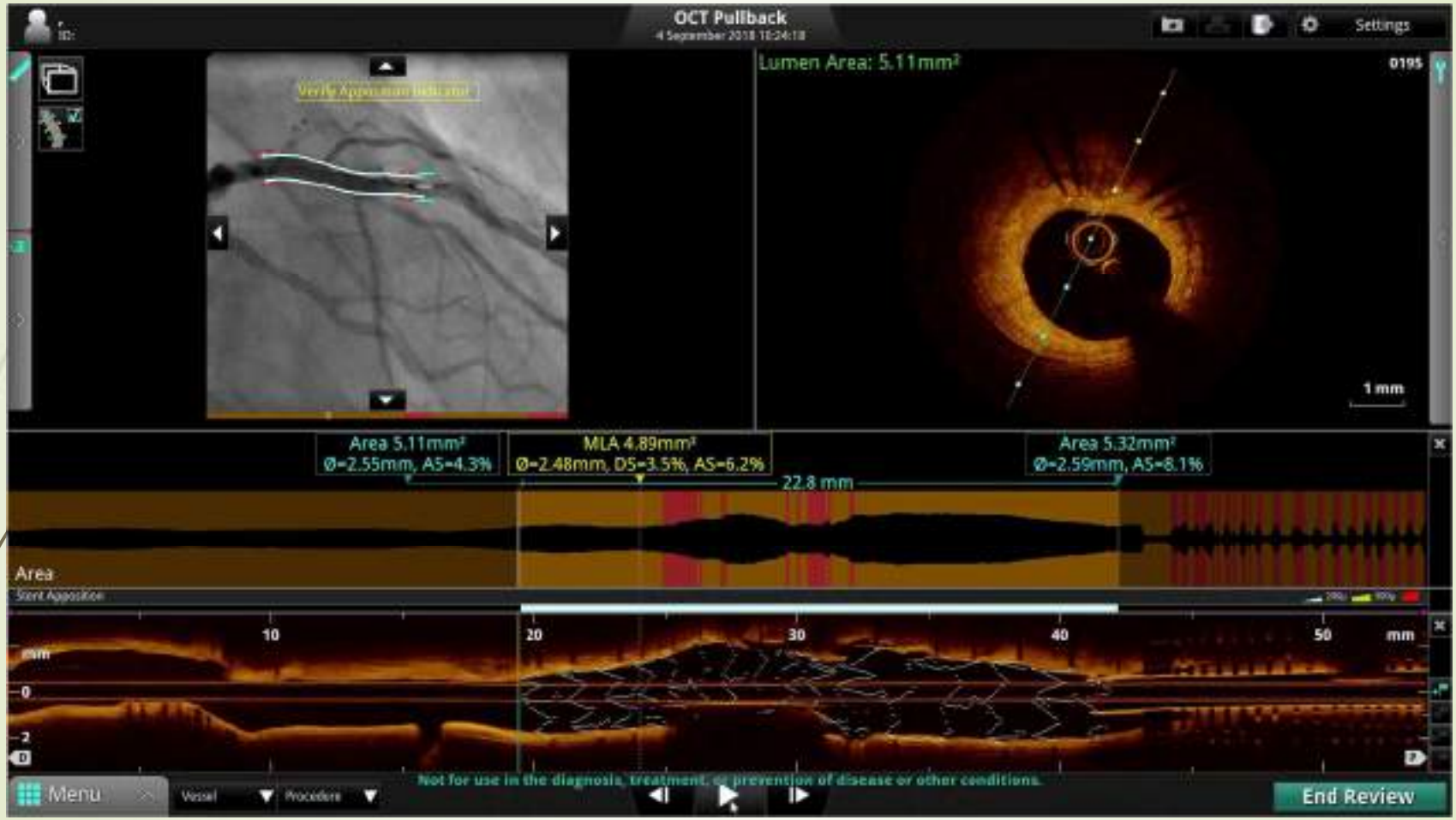

Kissing 2.75 and 3.0 NC

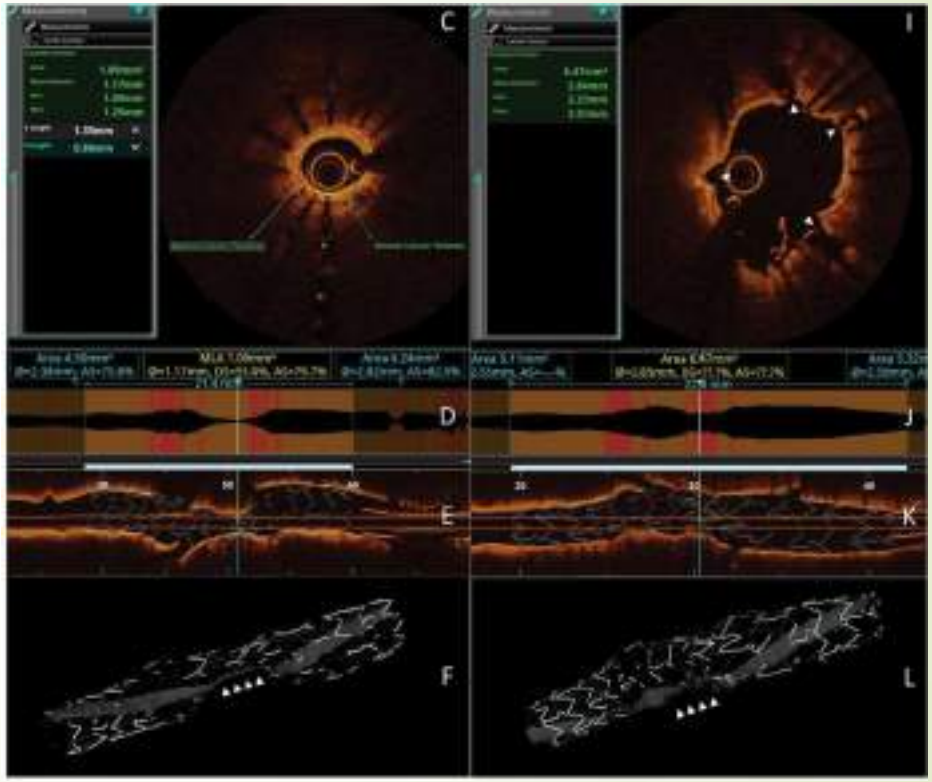


Shockwave et stent sous-expandu




OCT Pullback
Settings
1 mm
Area 4.50mm²
Ø=2.38mm, AS=??.?%
MLA 7.77mm²
Ø=?.??mm, DS=??.?%, AS=??.?%
Area 6.24mm²
Ø=2.82mm, AS=??.?%
21.4 mm
Area
Stent Apposition
10
20
30
40
50
60
70
mm
Not for use in the diagnosis, treatment, or prevention of disease or other conditions.
Menu
LAD Mid
Pre-PCI
End Review


OCT Pullback
Settings
Lumen Area: 5.11mm²
0195
1 mm
Area 5.11mm²
Ø=2.55mm, AS=4.3%
MLA 4.89mm²
Ø=2.48mm, DS=3.5%, AS=6.2%
Area 5.32mm²
Ø=2.59mm, AS=8.1%
22.8 mm
Area
Stent Apposition
10
20
30
40
50
mm
Menu
Vessel
Procedure
Not for use in the diagnosis, treatment, or prevention of disease or other conditions.
End Review


C
I
D
J
E
K
F
L

Take home messages

- Bifurcations
  - Provisional stenting 1 stent dans la majorité
  - Respect de la taille de la distalité et POT systématique
  - 2 stents quand c'est nécessaire d'emblée
- Calcium
  - Ennemi de l'angioplastie (parfois invisible)
  - Risque de sous-déploiement (ne pas minimiser)
  - Ne pas hésiter à sortir le rota
  - Shockwave