



Lésions résistantes

“Comment le Shockwave a sauvé la mise”

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Clinique Pasteur
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Je ne voulais
pas faire de
ROTABLATOR
et ...



J'ai fait du
ROTABLATOR
mais ...

J'ai un sentiment
mais ...

Madame G, 83 ans , supportrice du stade T. Hospitalisée pour SCA NST et poussée d'IC

- **ATCD :**

- Thomboendartériectomie bicarotidienne
- IRC - Clairance à 32 ml/min/m²
- Artériopathie de traitement médical

- **FDRCV :**

- HTA
- Diabète de type II IR
- Obésité

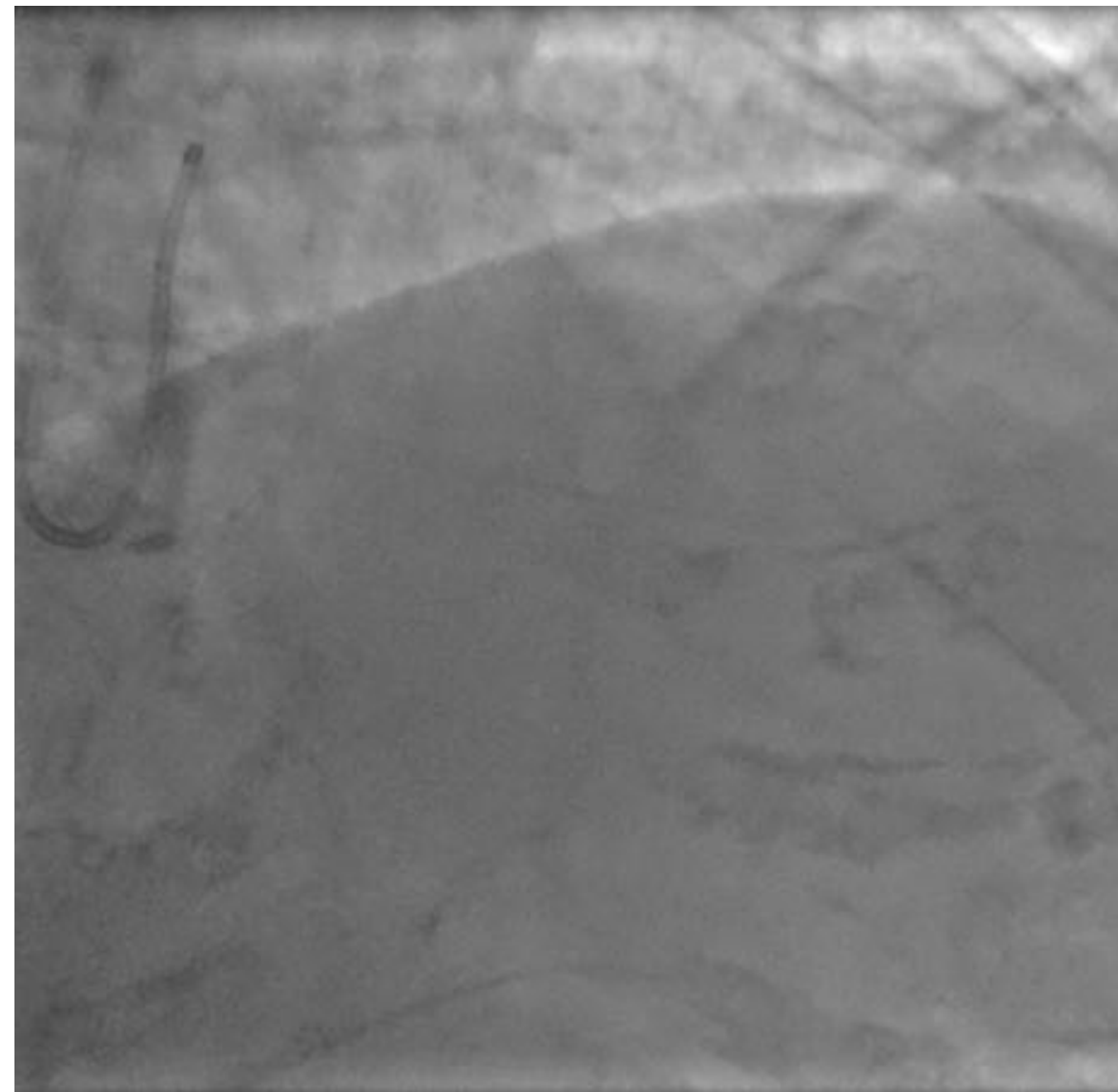
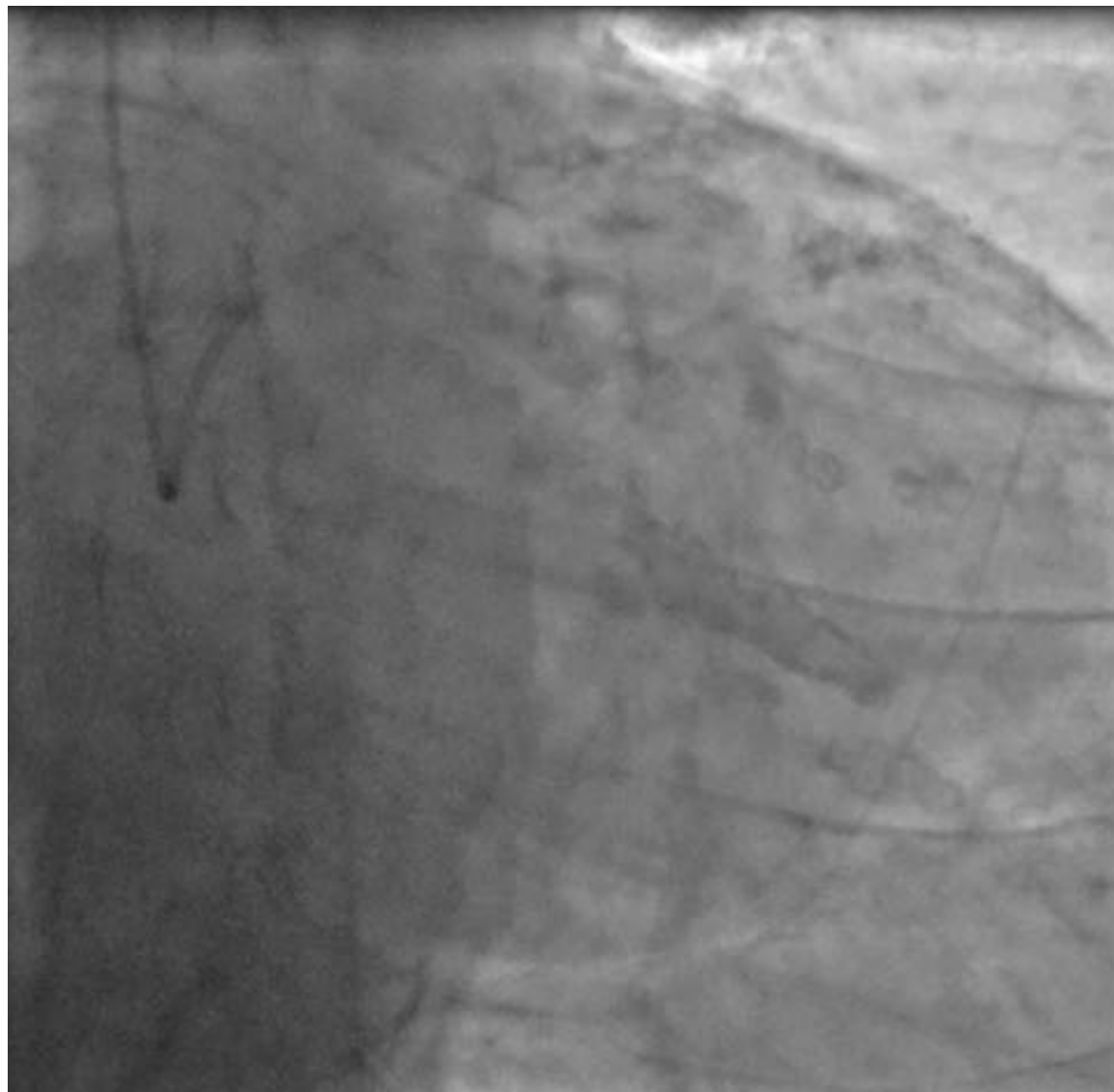
- **Biologie :**

Troponine 4800 pg/nl
Pro BNP 8543 pg/ml
Creat à 226 µmol/l

- **ETT :**

FEVG : 22%
Absence de RAO
IM 2/4 par restriction PVM
AK inférieure – HK globale sévère
HTAP avec PAPS à 56 mmHg

Madame G, 83 ans , supportrice du stade T.



Heart Team

EuroSCORE (European System for Cardiac Operative Risk Evaluation)

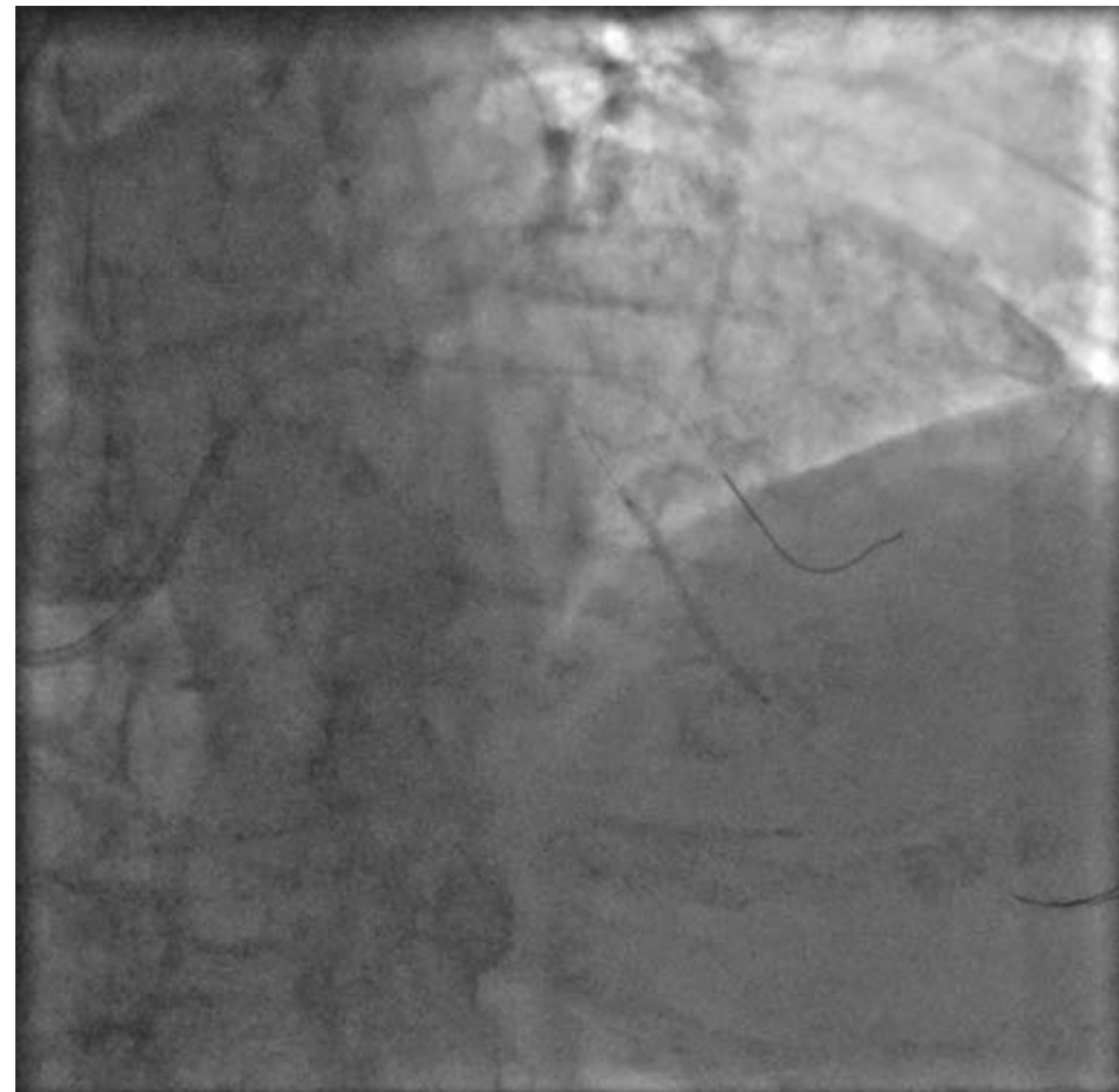
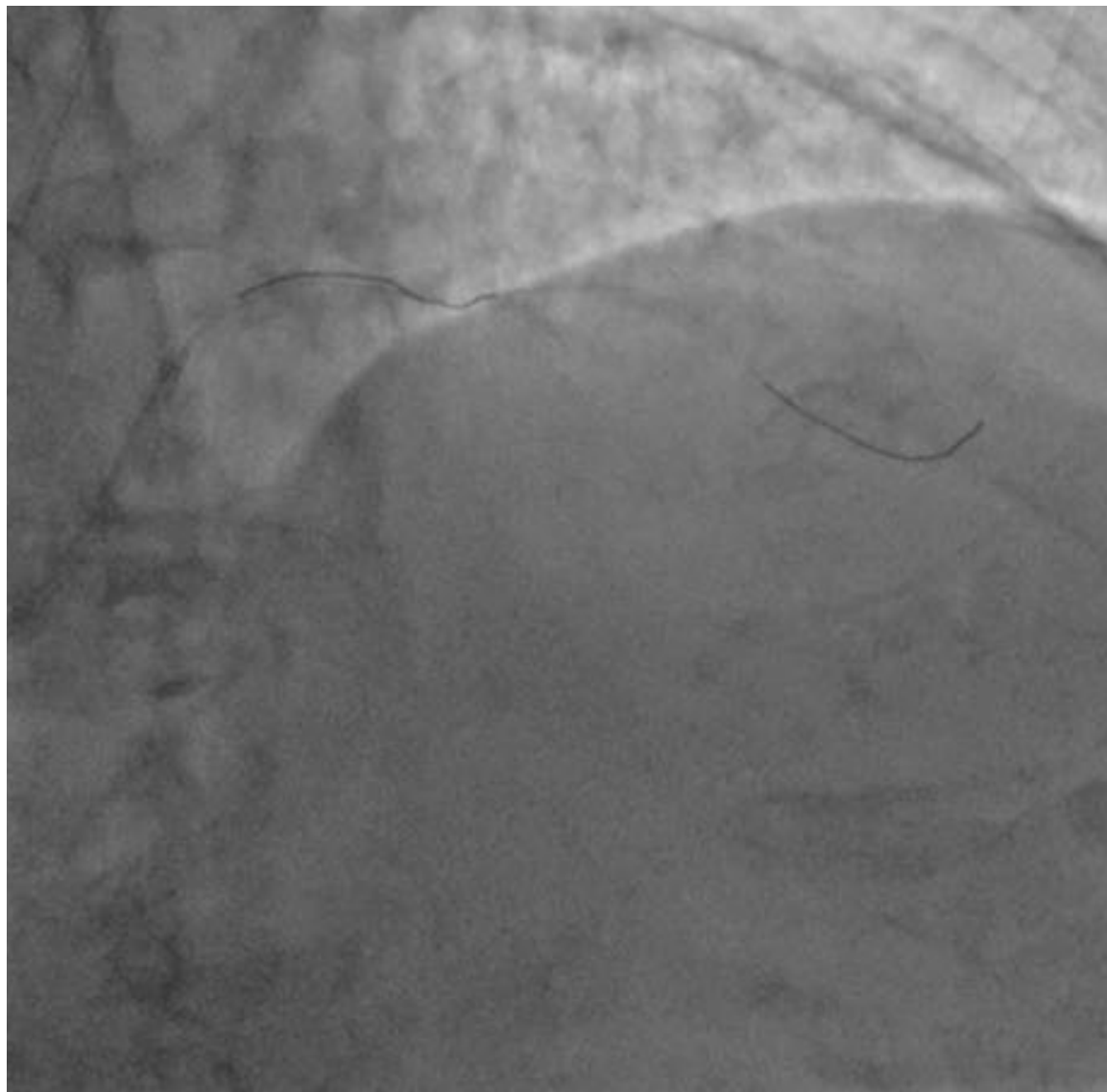
Variables (aide)	Valeurs	Bêta (Logistic EuroSCORE)	Points (EuroSCORE)
Age (années)	83 Valider		5
Sexe féminin	Oui ☐	.3304052	1
Urgence	Oui ☐	.7127953	2
Créatininémie > 200 µmol/ L	Oui ☐	.6521653	2
Fraction d'Ejection VG	< 30 % ☐	1.094443	3
BPCO	☐	0	0
Chirurgie de l'aorte thoracique	☐	0	0
Artériopathie périphérique	Oui ☐	.6558917	2
Troubles neurologiques	☐	0	0
Endocardite active	☐	0	0
Etat préopératoire critique	☐	0	0
Angor instable	Oui ☐	.5677075	2
Infarctus myocardique (< 90 jours)	☐	0	0
PAPS > 60 mmHg	☐	0	0
Chirurgie cardiaque antérieure	☐	0	0
Réparation septale postinfarctus	☐	0	0
Chir. cardiaque associée ou non aux coronaires	☐	0	0
		Logistic EuroSCORE: Mortalité prédite = 70.88 %	EuroSCORE: 17 EuroSCORE=



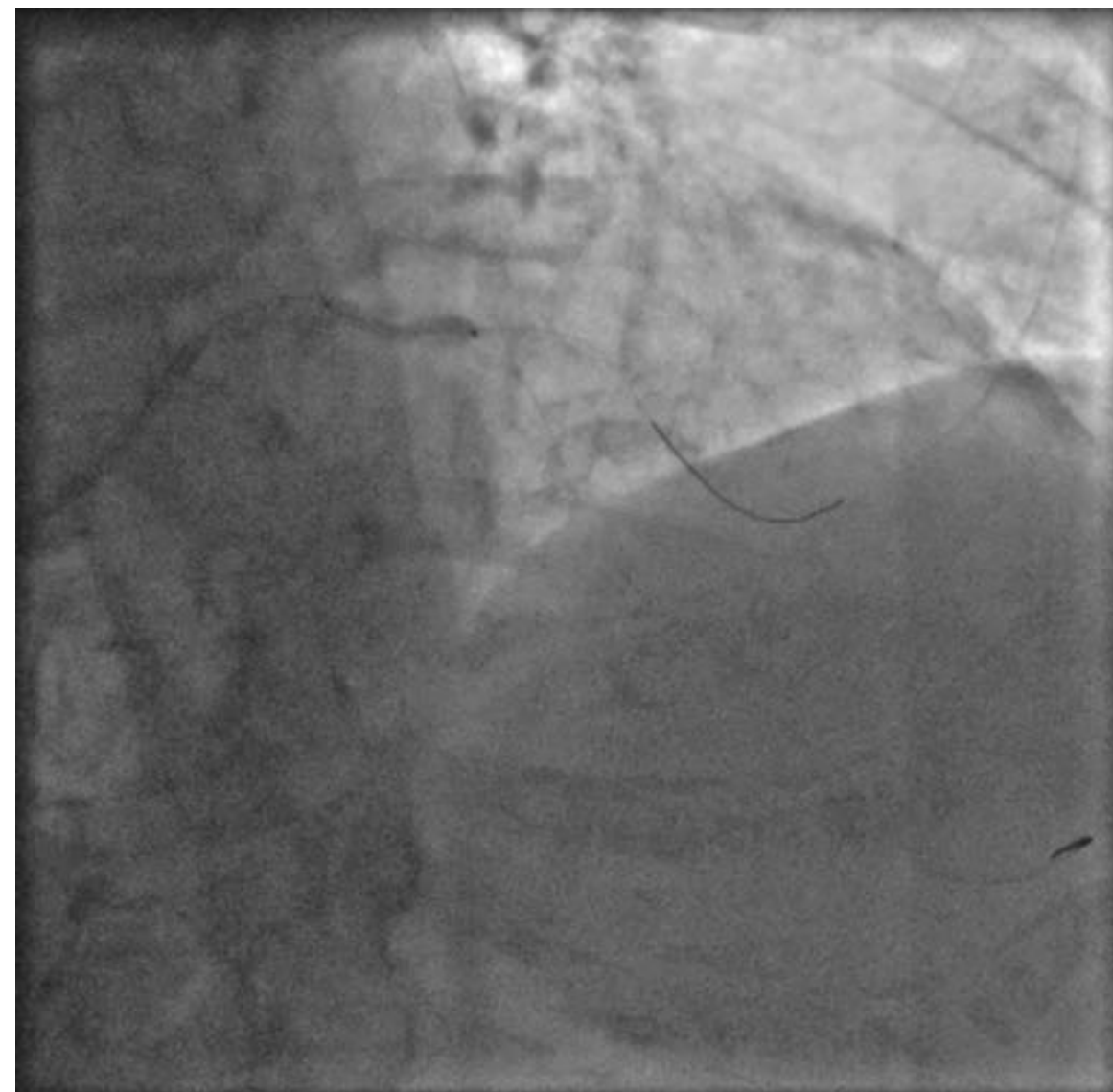
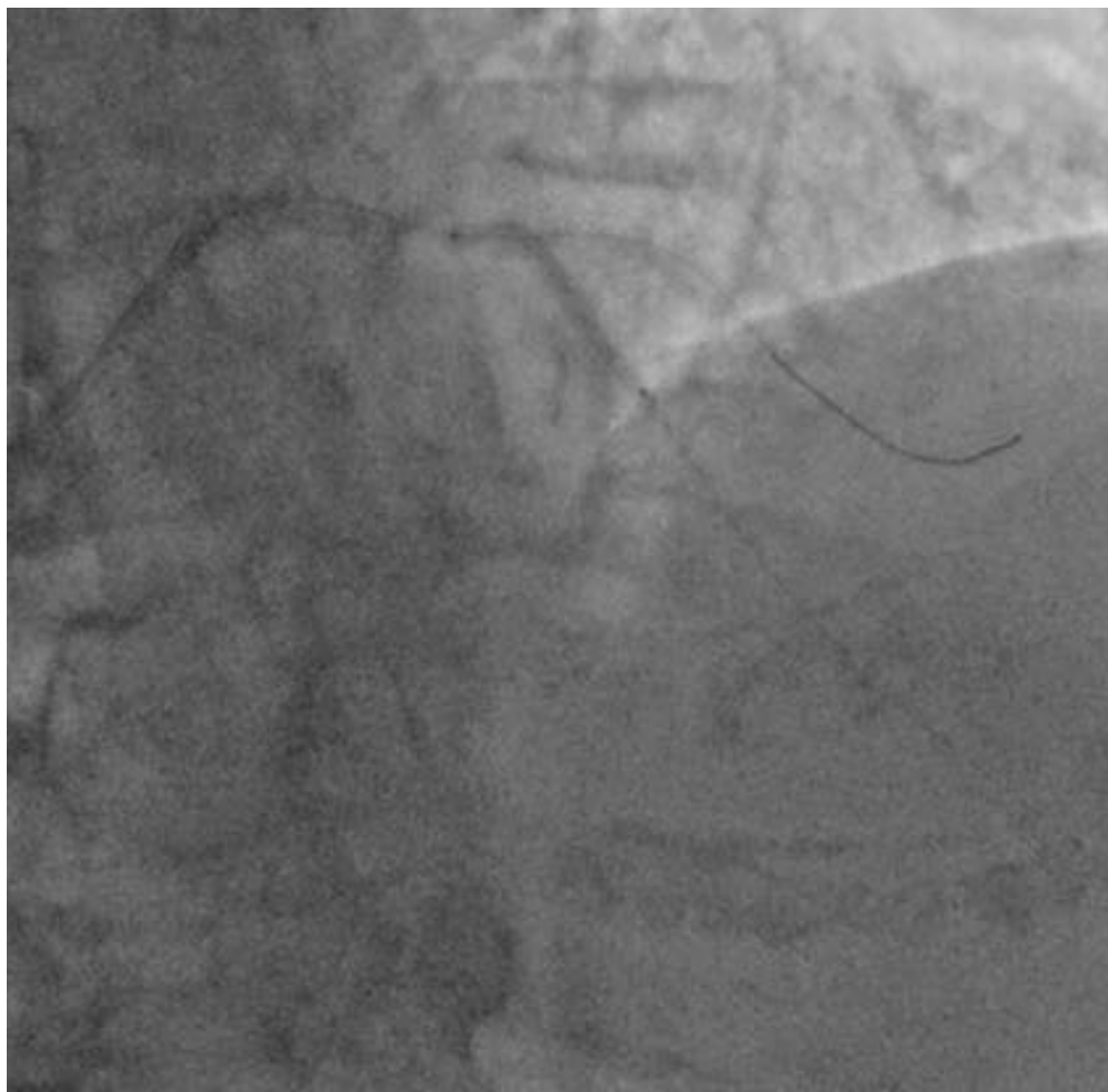
MEDICAL
ou
ENDOVASCULAIRE



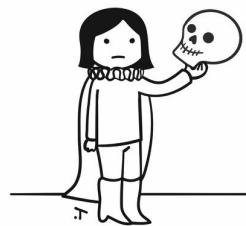
Madame G, 83 ans ...



Madame G, 83 ans ...



To fraise or not to fraise ?



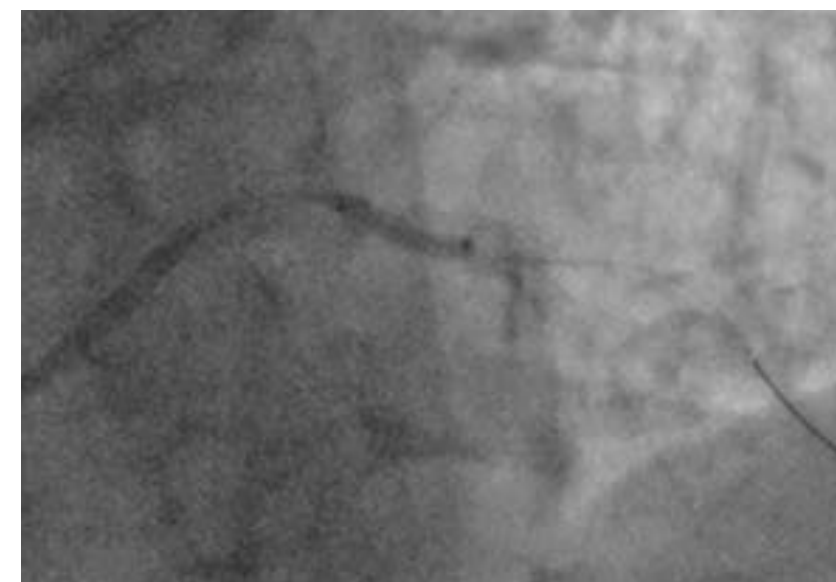
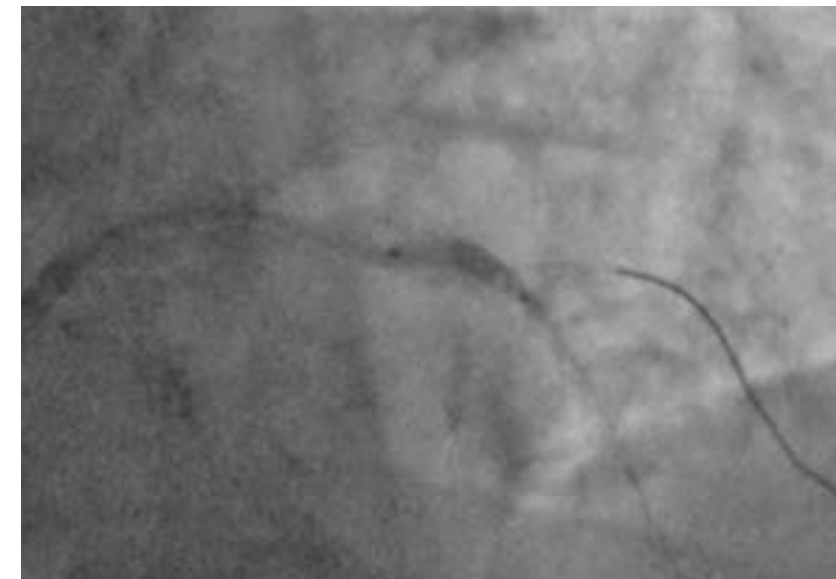
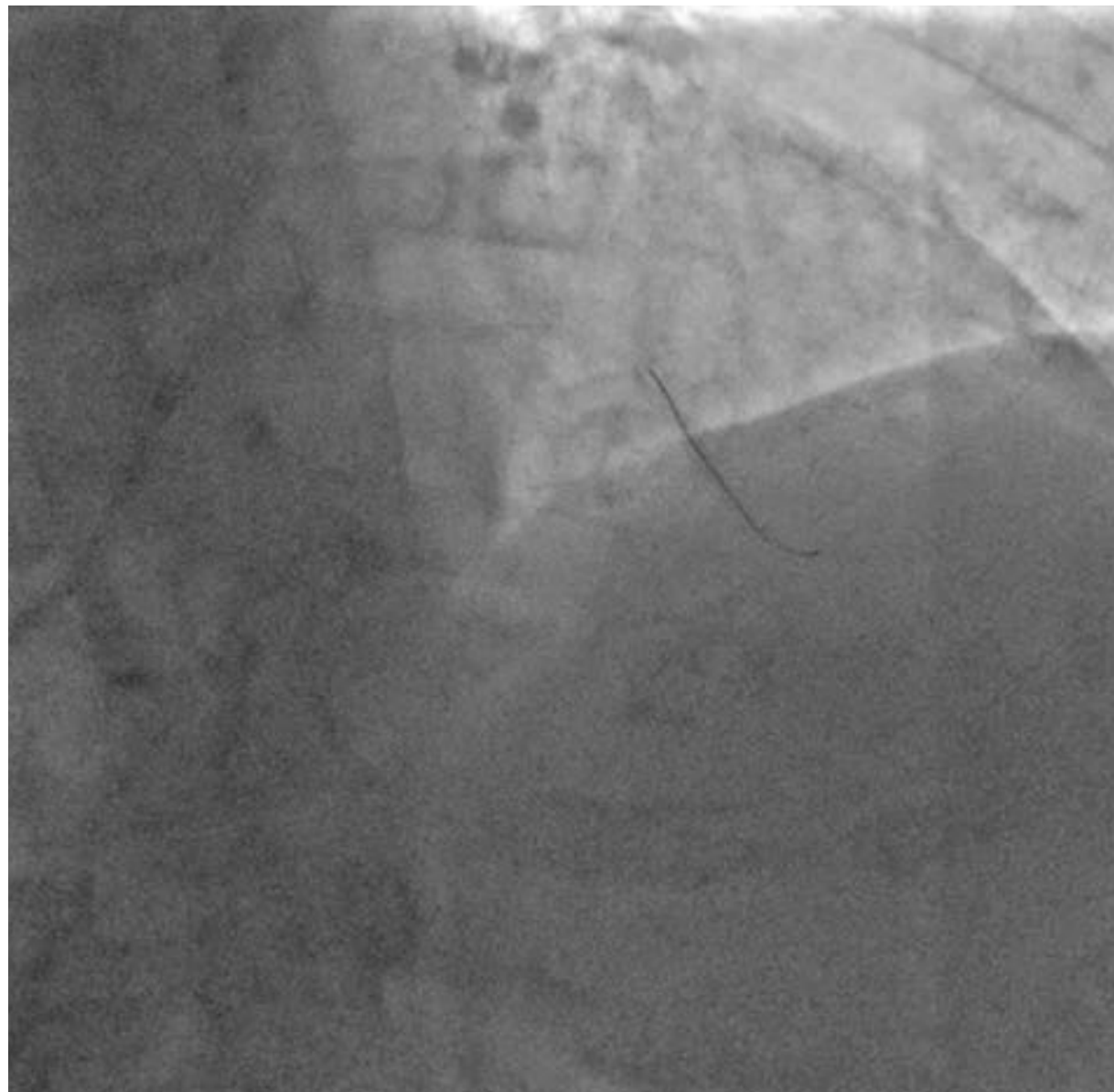
Rota +

Longue lésion

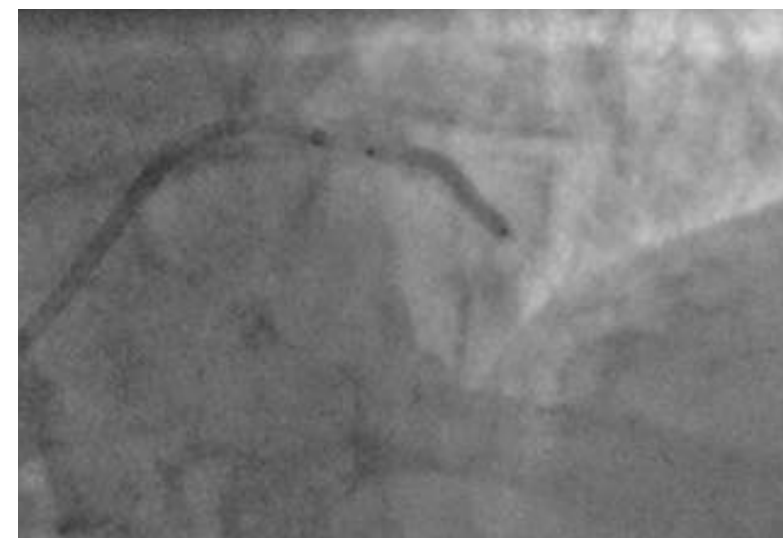
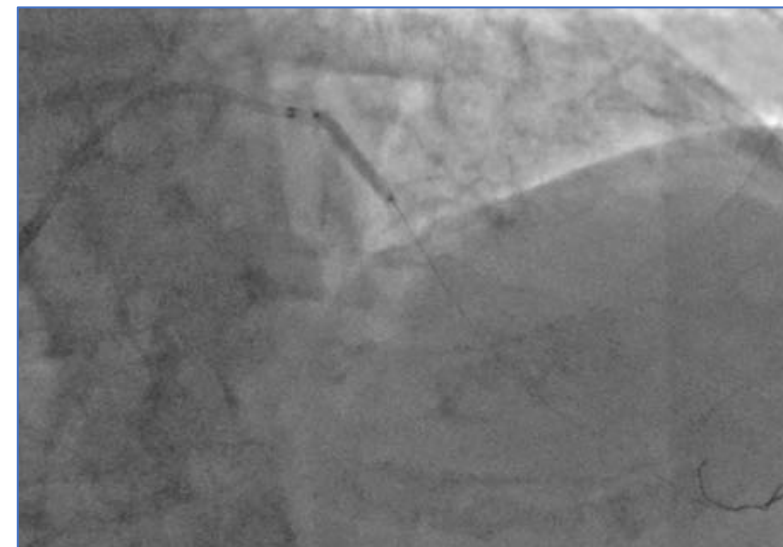
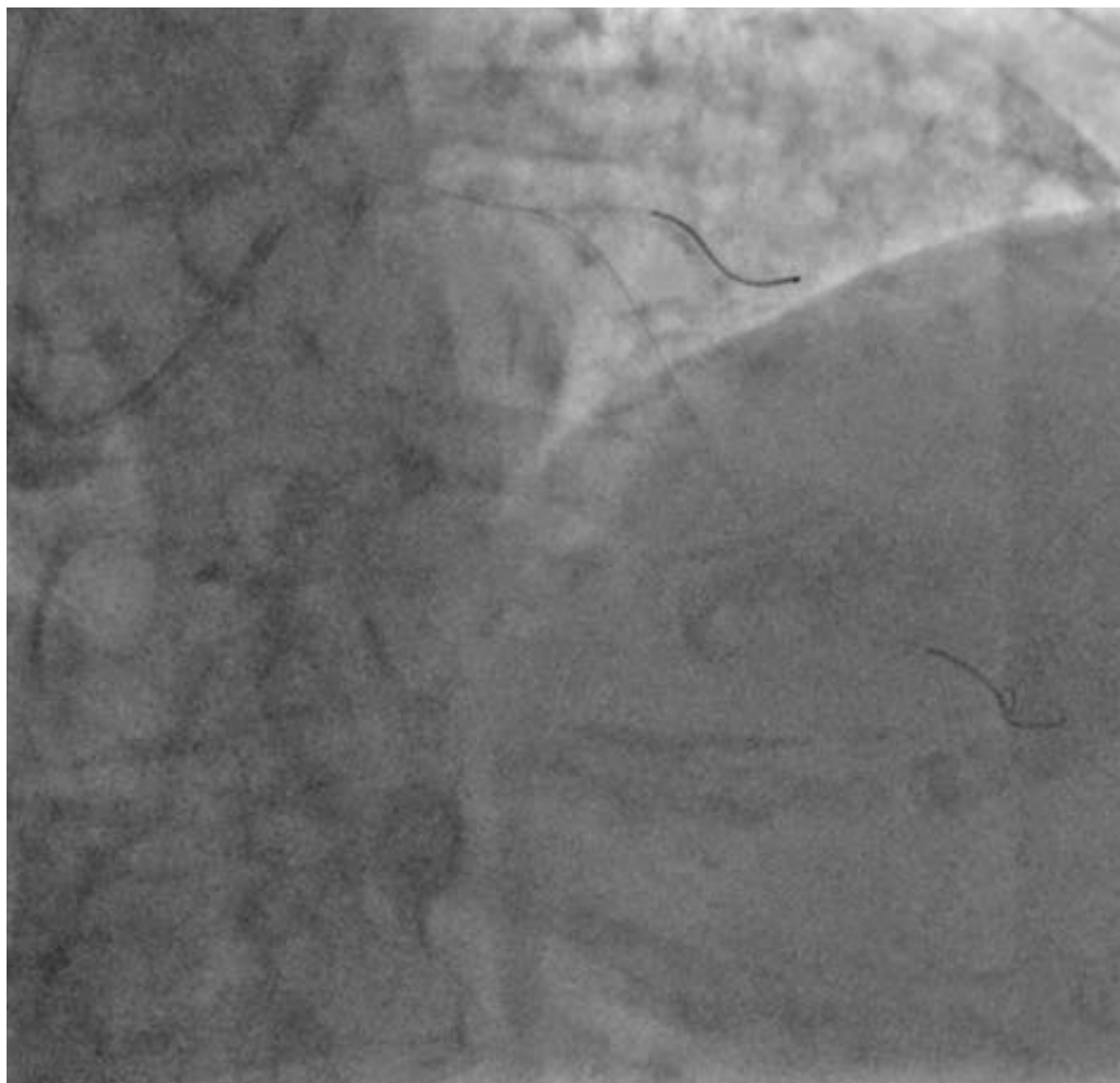
Rota -

Tortuosité IVA moyenne
Discongruence IVA 1 – IVA 3
FEVG à 20%
CD occluse
Je la sentais pas ...

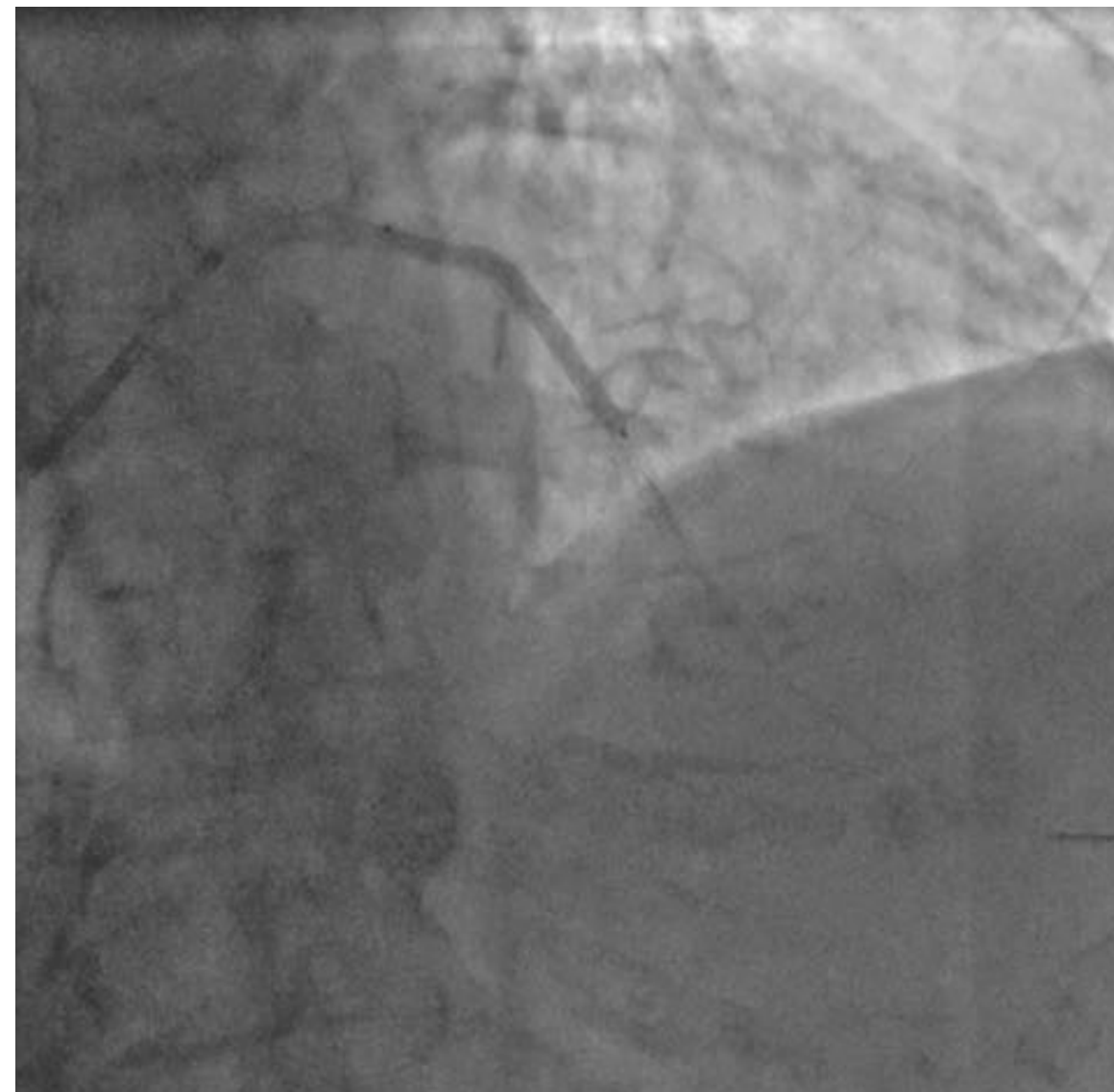
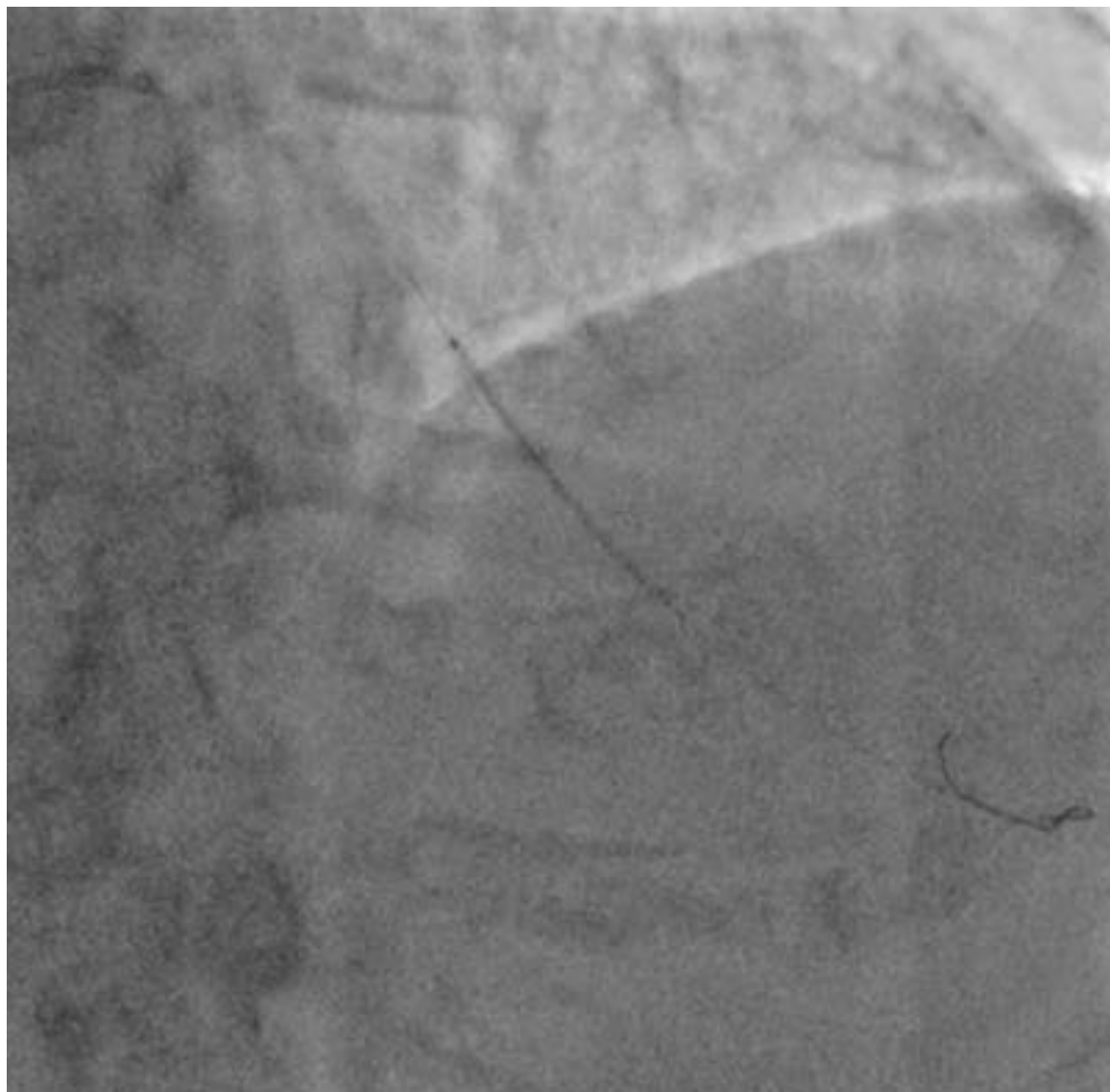
SW : Ballon de 3 x 12 mm



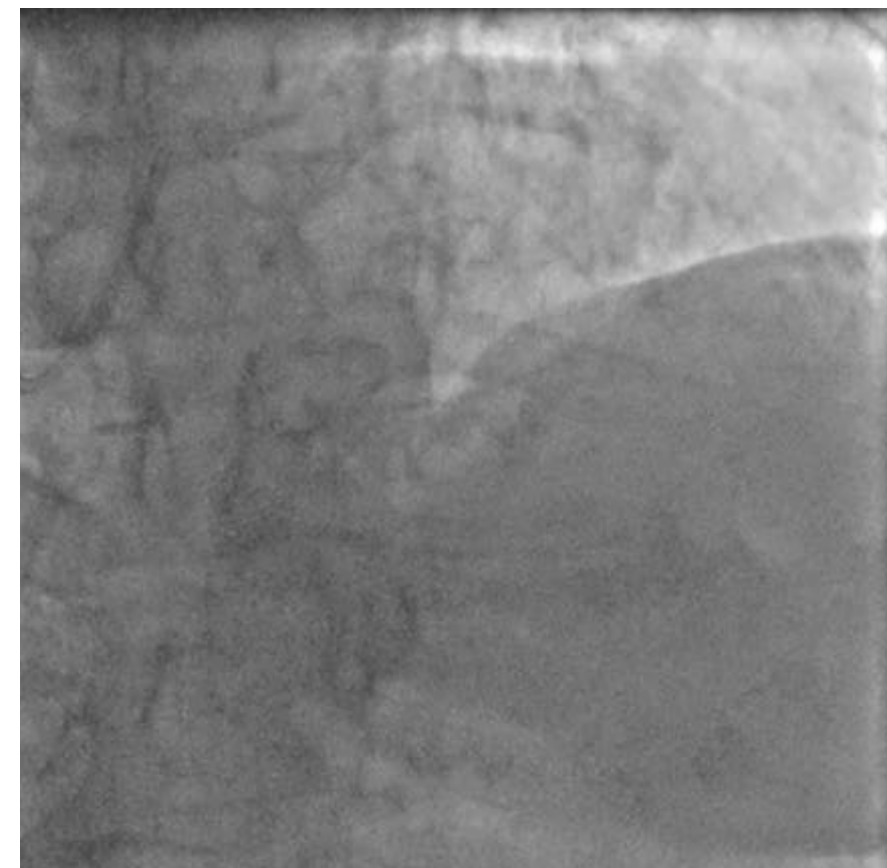
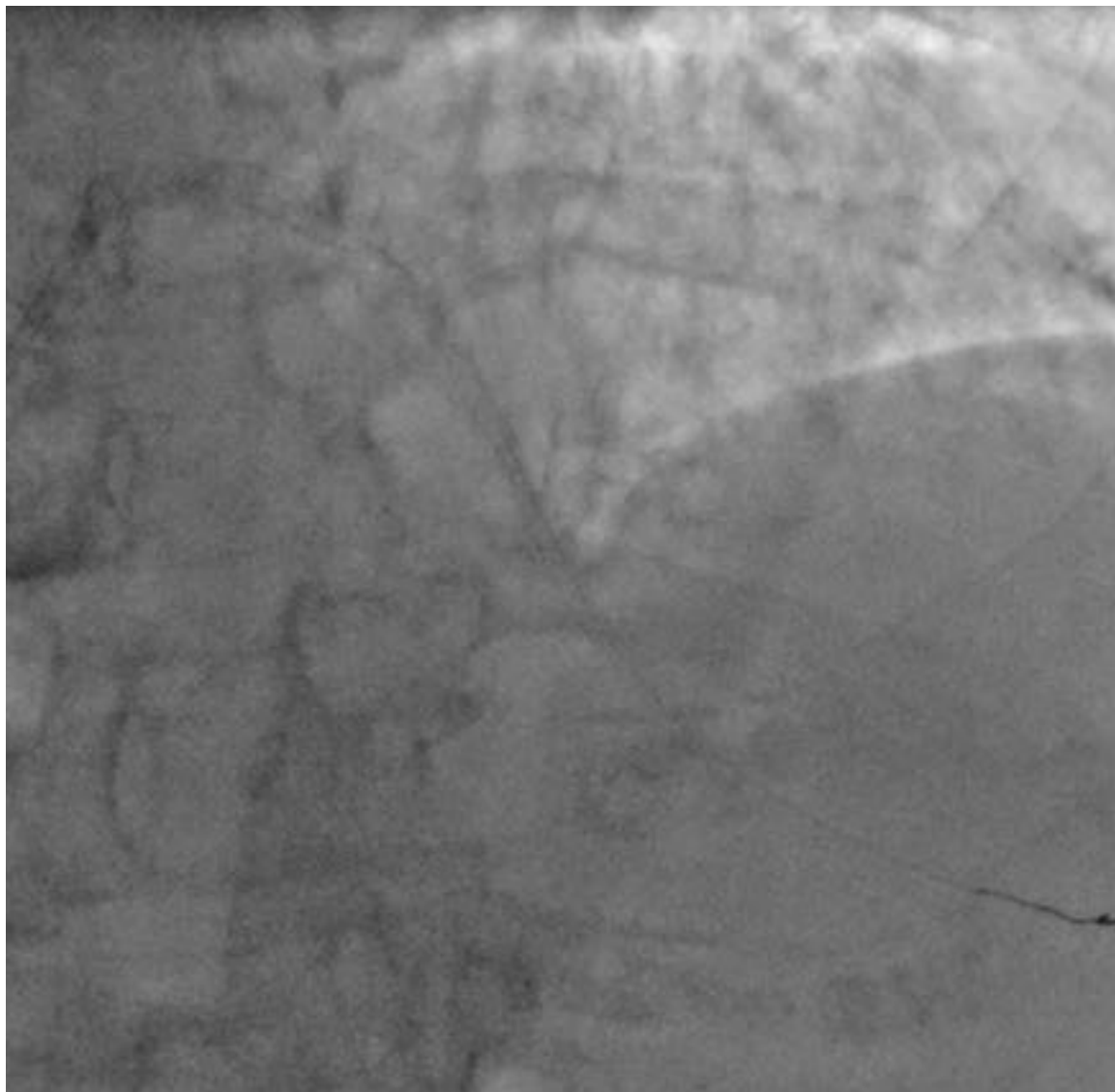
Angio Post IVL / Post dilat Post IVL (Ballon NC de 3mm)



Stent IVA 1 – IVA 3 (DES 2.5x38 mm et 3x38 mm)



Stent TCG– IVA 1 (4x33 mm & Angio finale)



IVL et longue lésion

IVL et longue lésion



Prospective, multicentre,
single-arm global IDE



Heavily calcified[†], *de novo* coronary lesions
RVD 2.5-4.0 mm, stenosis $\geq 50\%$, lesion length ≤ 40 mm
One roll-in patient per site allowed
47 global sites

Roll-in Population
N = 47

ITT Population
N= 384

30-day Follow-up

1-year Follow-up

2-year Follow-up

OCT Sub-study
N= 100



IVL et longue lésion



CAD
INCLUSION / EXCLUSION
CRITERIA



Heavily calcified†, *de novo* coronary lesions
RVD 2.5-4.0 mm, stenosis $\geq 50\%$, lesion length $\leq 40\text{mm}$
One roll-in patient per site allowed
47 global sites

- 24. High SYNTAX Score (≥ 33) if assessed as standard of care, unless the local heart team has met and recommends PCI is the most appropriate treatment for the patient
- 25. Unprotected left main diameter stenosis $>30\%$
- 26. Target vessel is excessively tortuous defined as the presence of two or more bends $>90^\circ$ or three or more bends $>75^\circ$
- 27. Definite or possible thrombus (by angiography or intravascular imaging) in the target vessel
- 28. Evidence of aneurysm in target vessel within 10 mm of the target lesion
- 29. Target lesion is an ostial location (LAD, LCX, or RCA, within 5 mm of ostium) or an unprotected left main lesion



ANATOMICAL GAPS :

LEFT MAIN

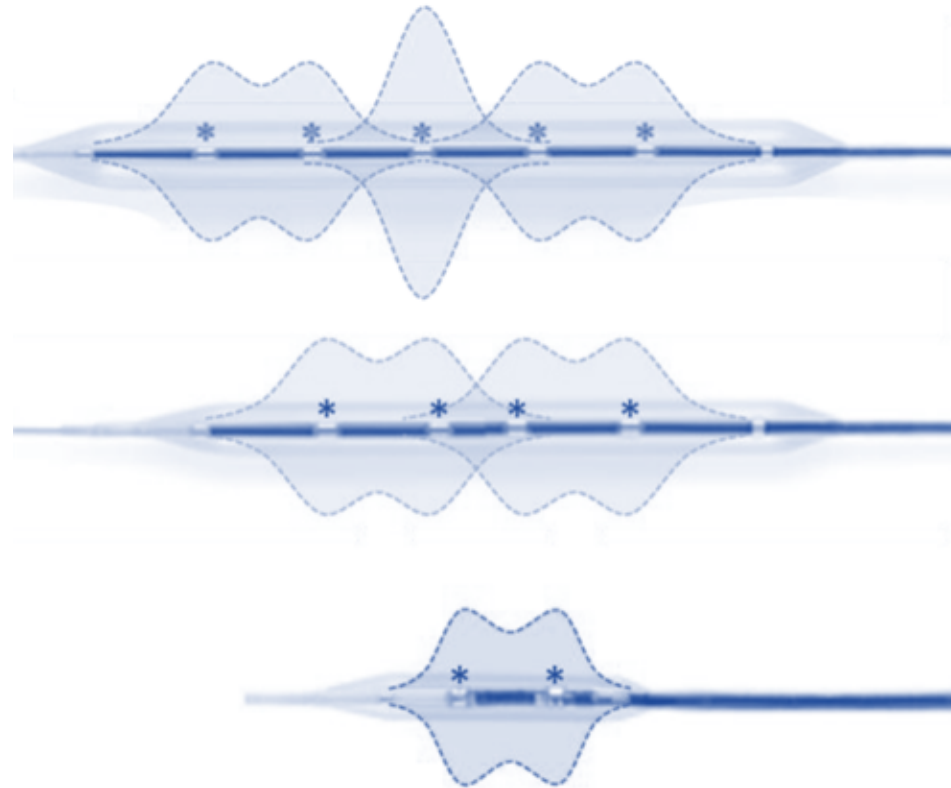
OSTIAL LESION

LONG / DIFFUSE LESION

BIFURCATION

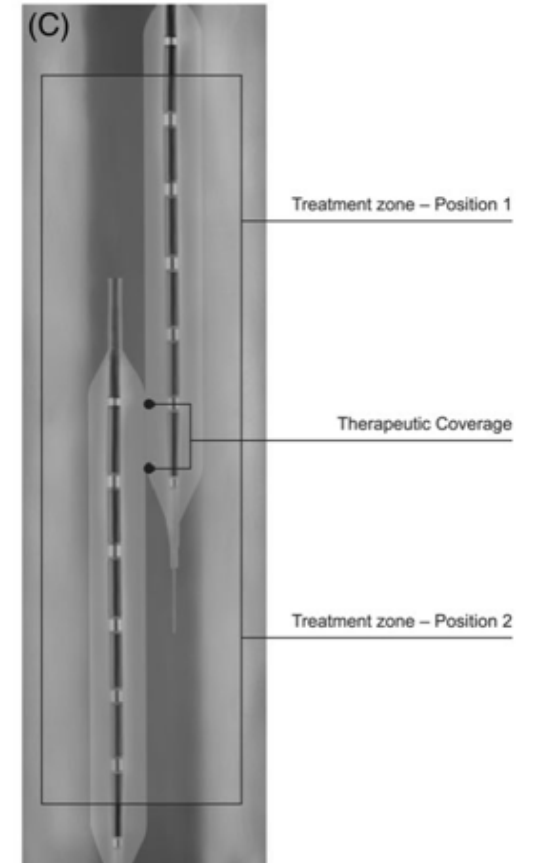
CTO

IVL et longue lésion



Energy Profile: To ensure full therapeutic coverage in the vessel, overlap by 2mm when delivering energy in consecutive treatment zones

Crossing Effort: It's important to recognize that there are multiple wires within the catheter than can be damaged with extremely rigorous catheter manipulation; do not aggressively traverse and cross with an IVL catheter in diffuse lesions



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mais ...

Monsieur C, 81 ans , n'aimant pas le rugby...

• **ATCD :**

- CMI 3PAC en 2015 :
 - MIG séquentiel IVA-D1
 - Saphène – MG
 - Saphène – CD3
- AOMI avec angioplastie AFS droite
- Endarteriectomie carotidienne bilatérale
- Néoplasie cavum

• **FDRCV :** HTA, Dyslipidémie, Tabagisme sevré

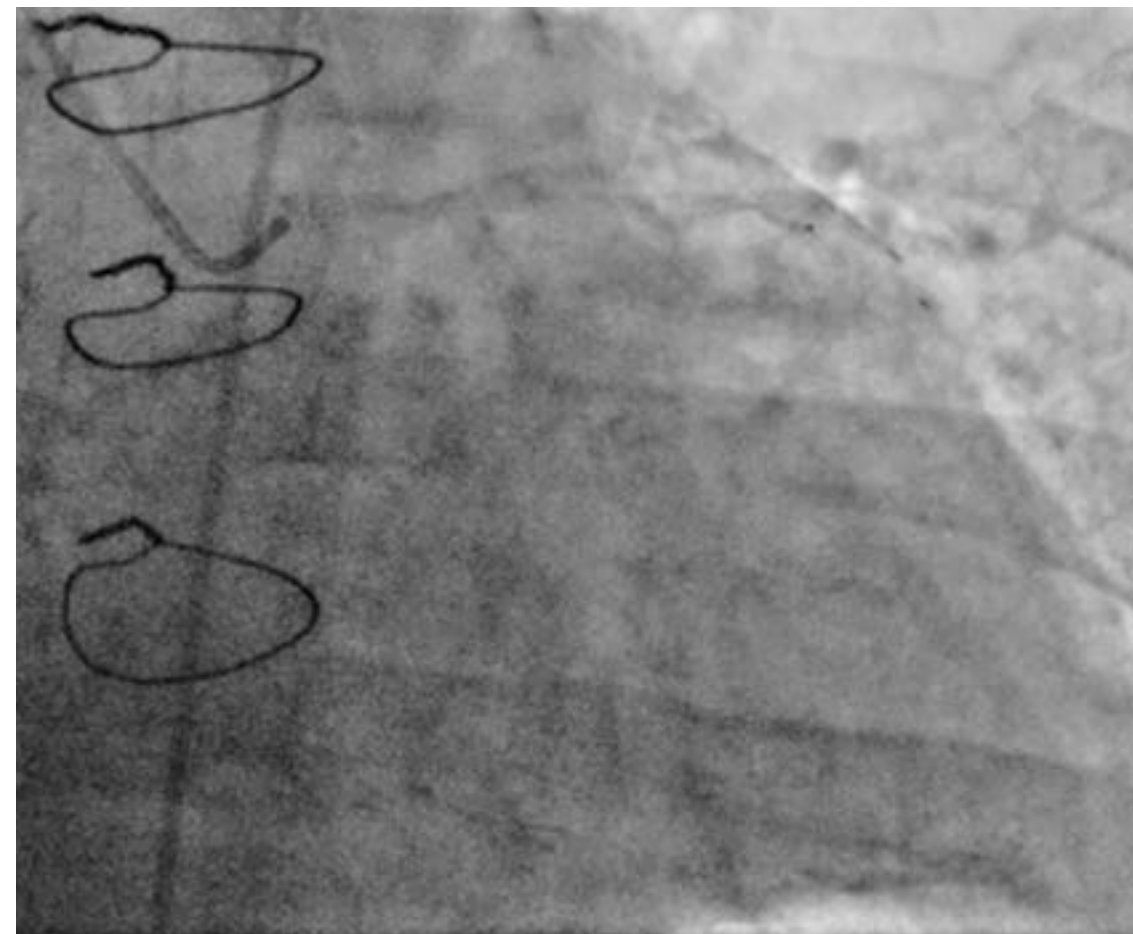
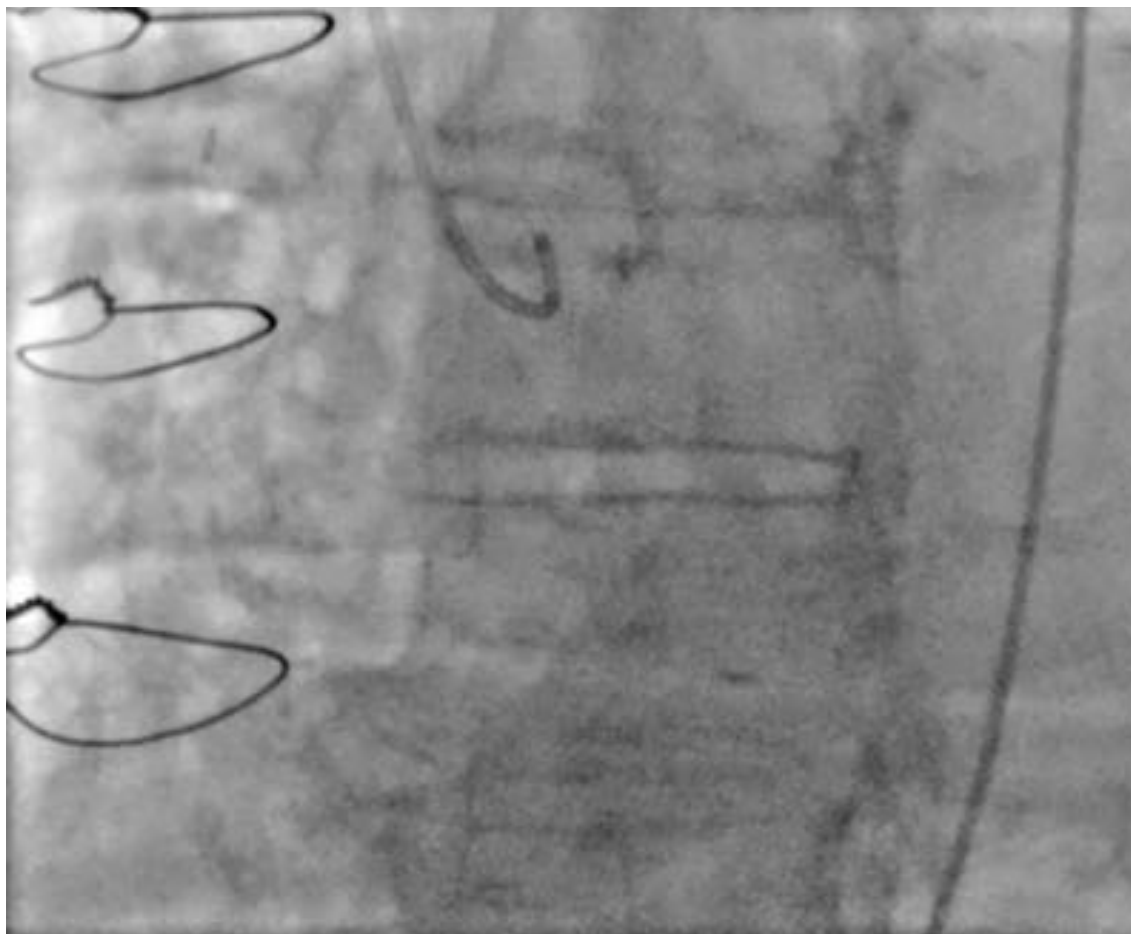
• **Scintigraphie :**

20% d'ischémie inférieure
 Stagnation de la FEVG à l'effort

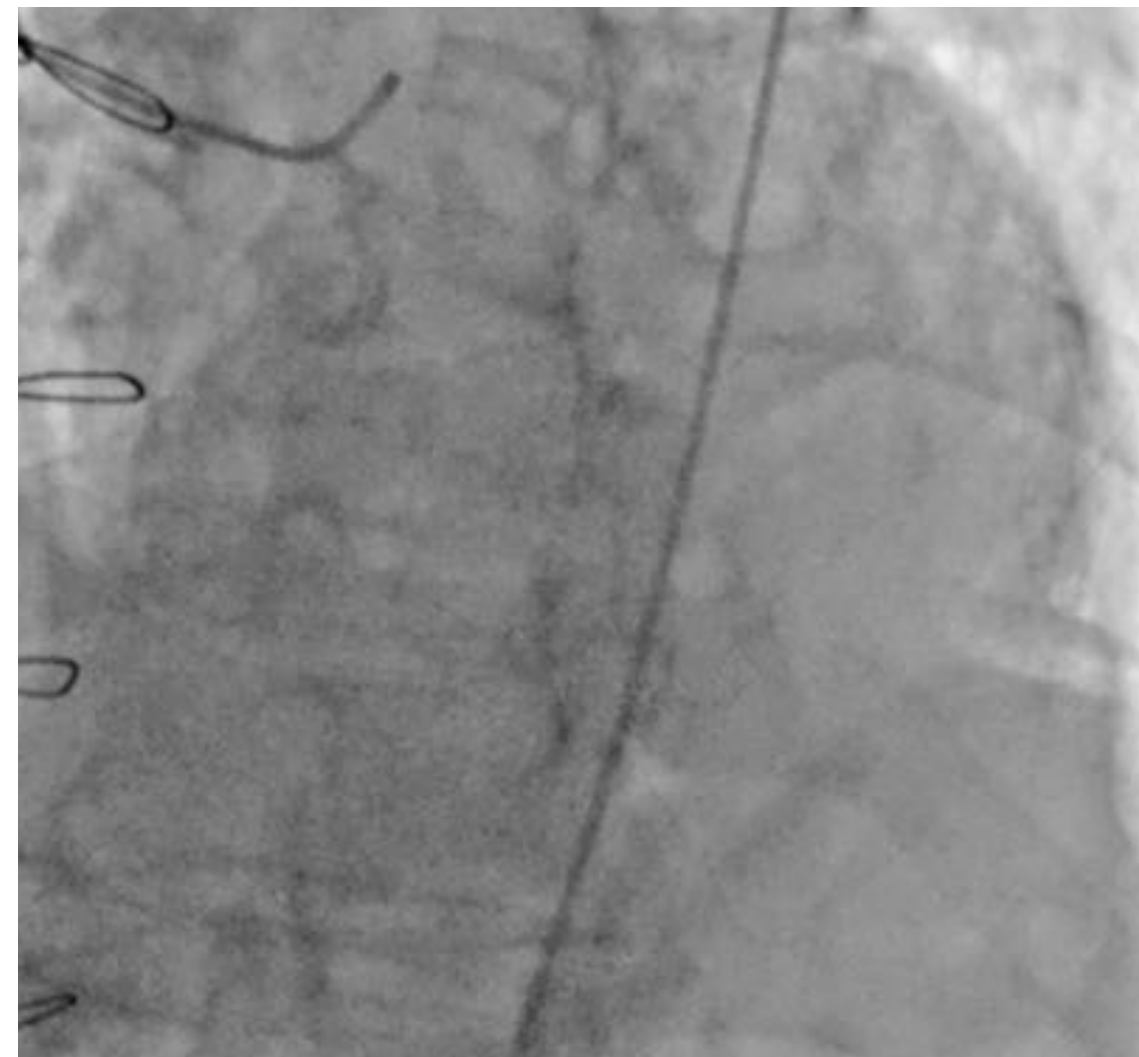
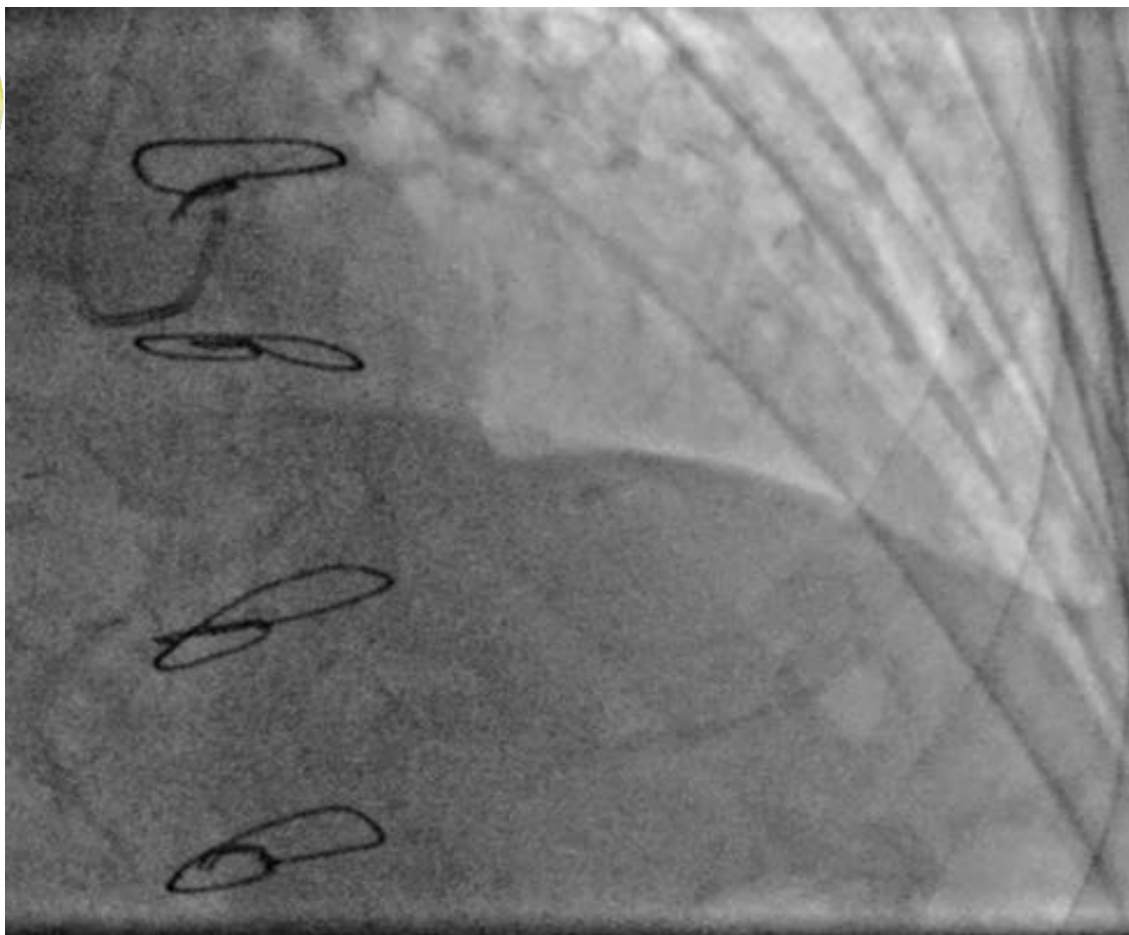
• **ETT :**

FEVG : 60%
 Absence de valvulopathie
 Absence de trouble de la cinétique
 PAPS à 32 mmHg

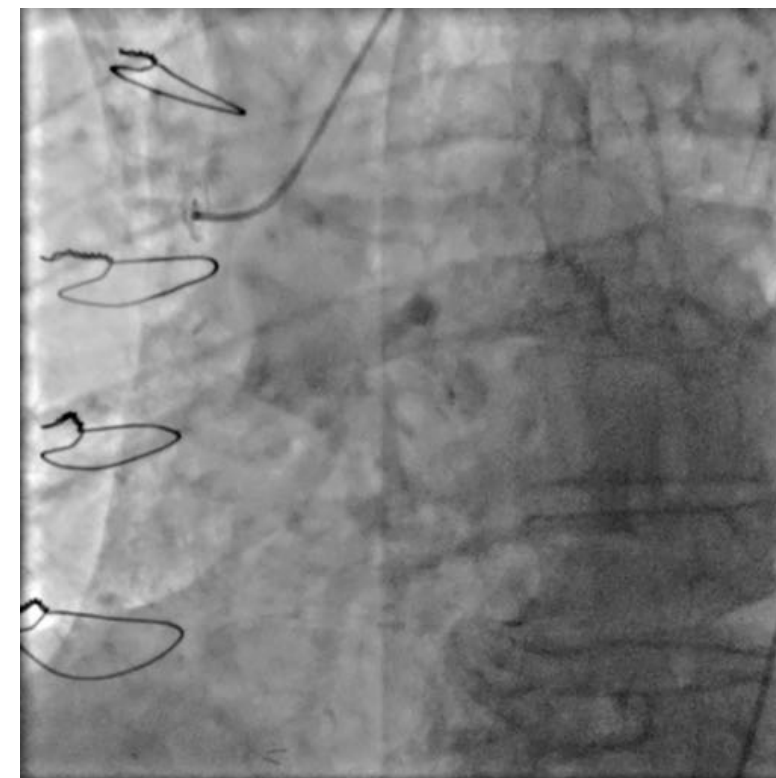
Monsieur C, 81 ans - 20% ischémie inférieure



Monsieur C, 81 ans - 20% ischémie inférieure



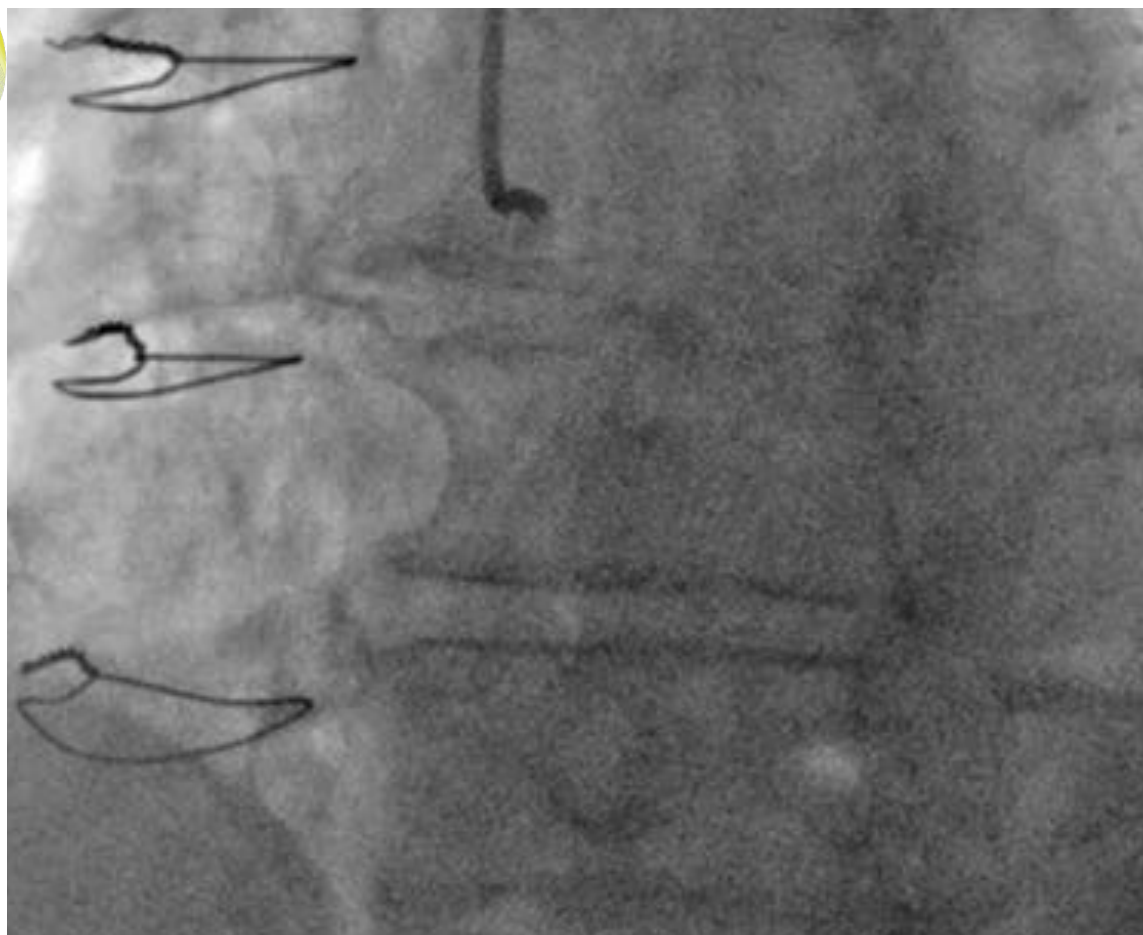
Monsieur C, 81 ans - 20% ischémie inférieure



CoroTDM :

- Occlusion pontage saphène - CD
- Perméabilité pontage saphène – MG1

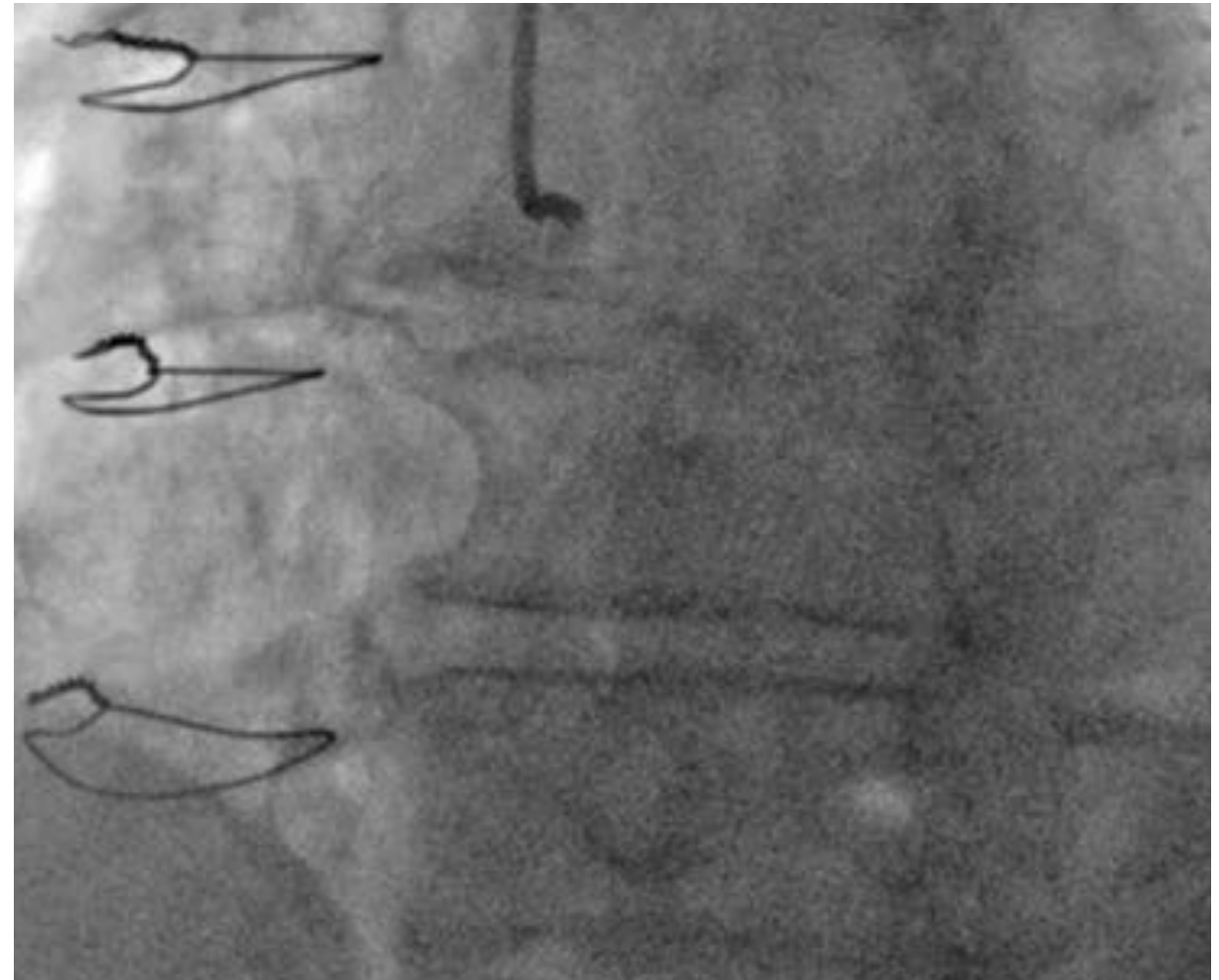
Décision d'angioplastie CD



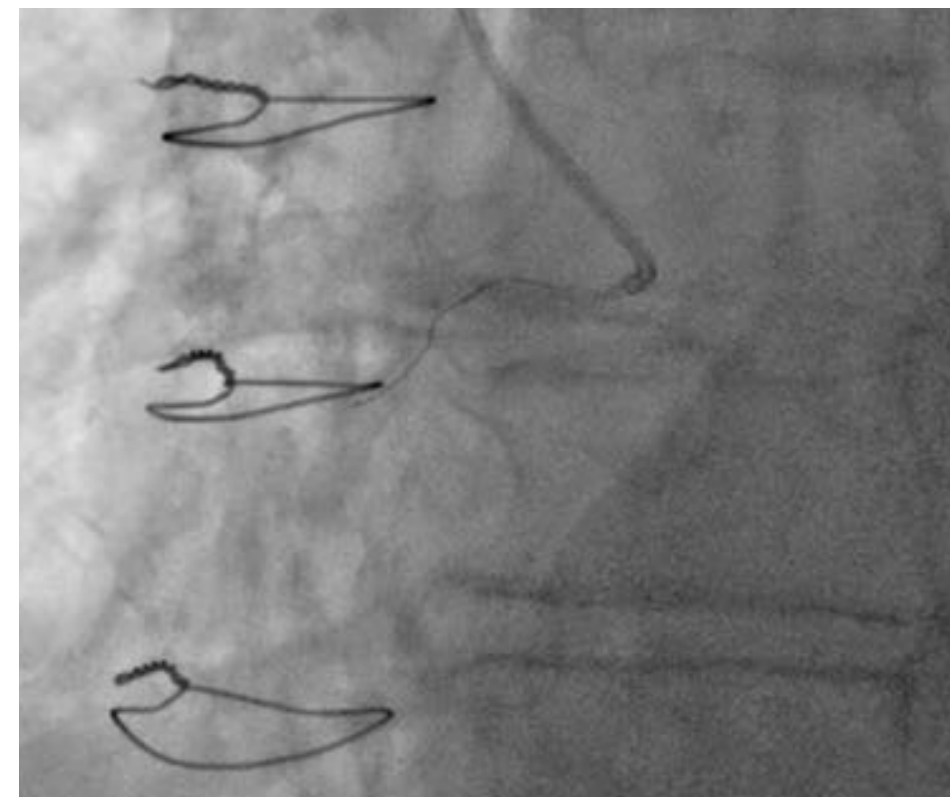
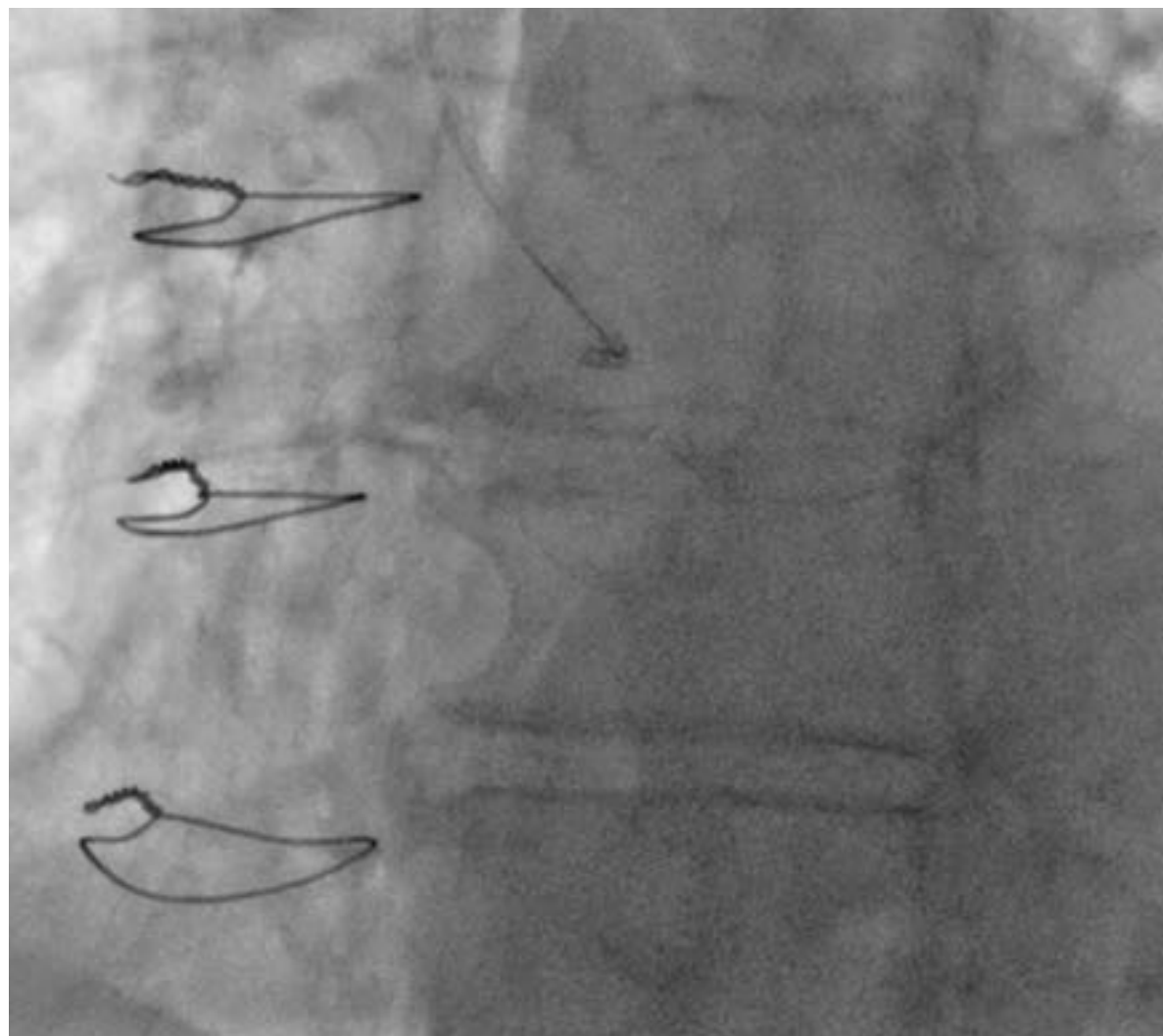
Stratégie d'angioplastie CD – Question to the floor

Préparation de l'artère :

- Ballon NC
- Rotablator
 - Fraise 1.25 mm
 - Fraise 1.50 mm
 - Fraise 1.75 mm
 - Fraise > 1.75 mm
- IVL
- Athérectomie orbitale
- Imagerie endocoronaire

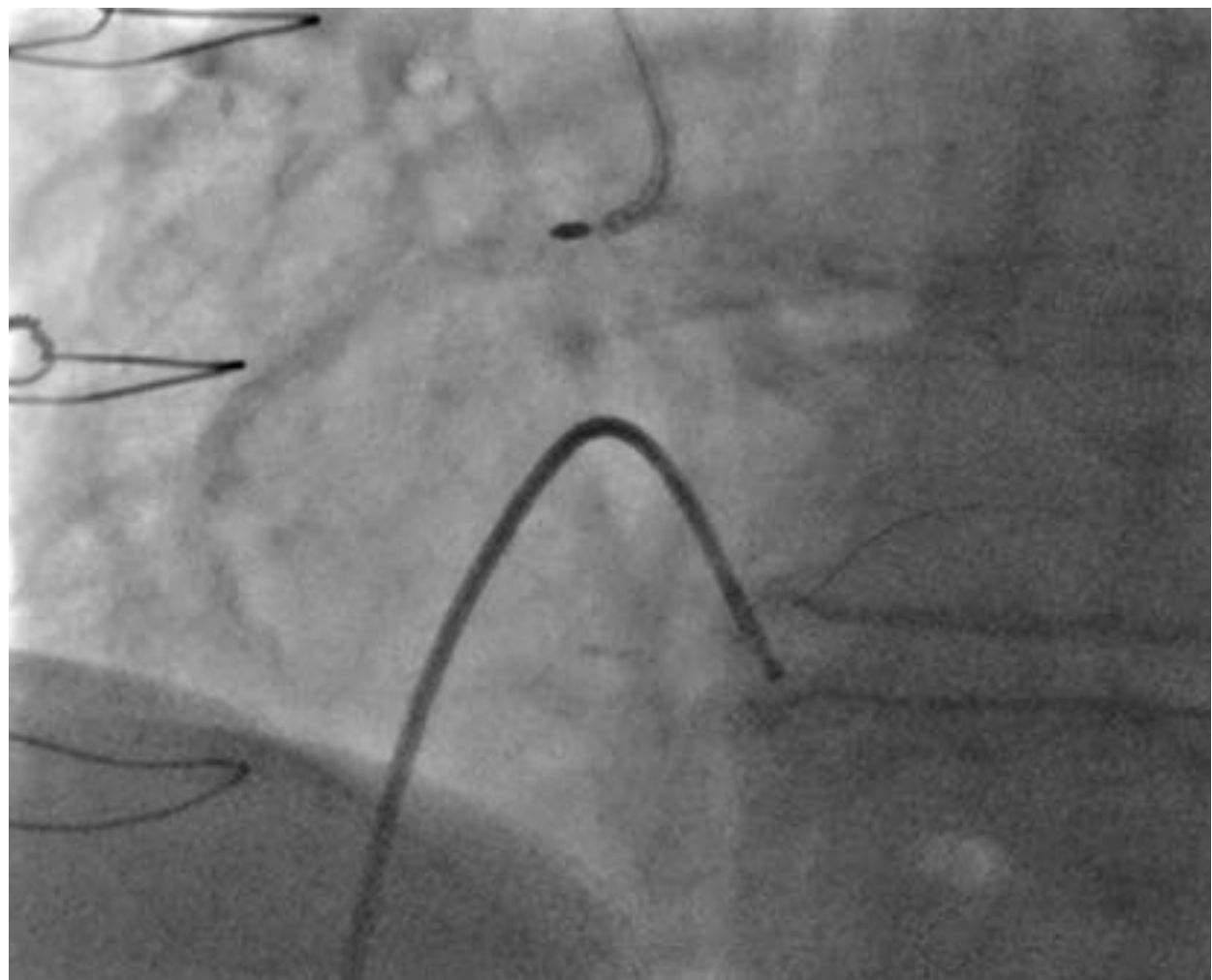


Angioplastie CD



Radiale droite 6F
Porteur 3D Right
Microcatheter
FIELDER XTa

Angioplastie CD : Atherectomie Fraise 1,75 mm



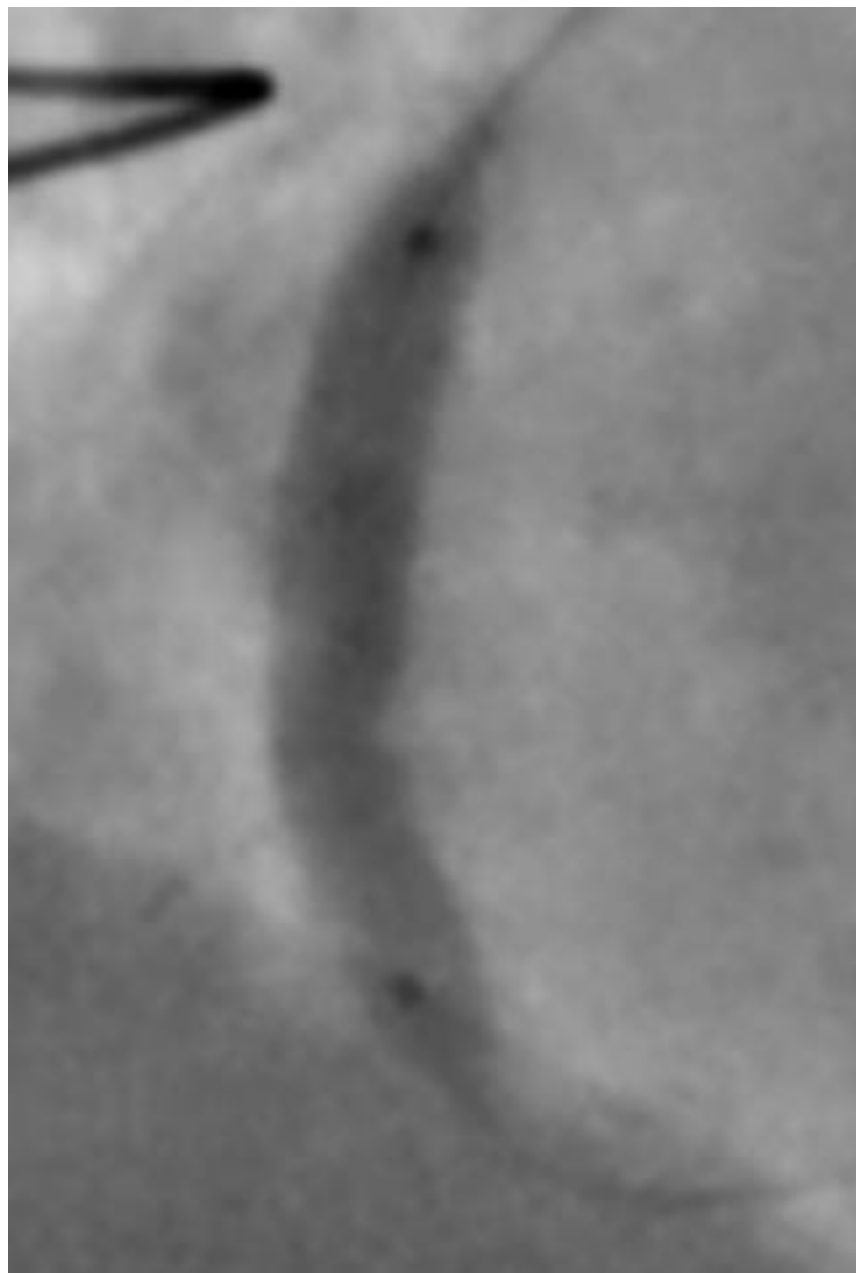
Contrôle Angio post atherectomie



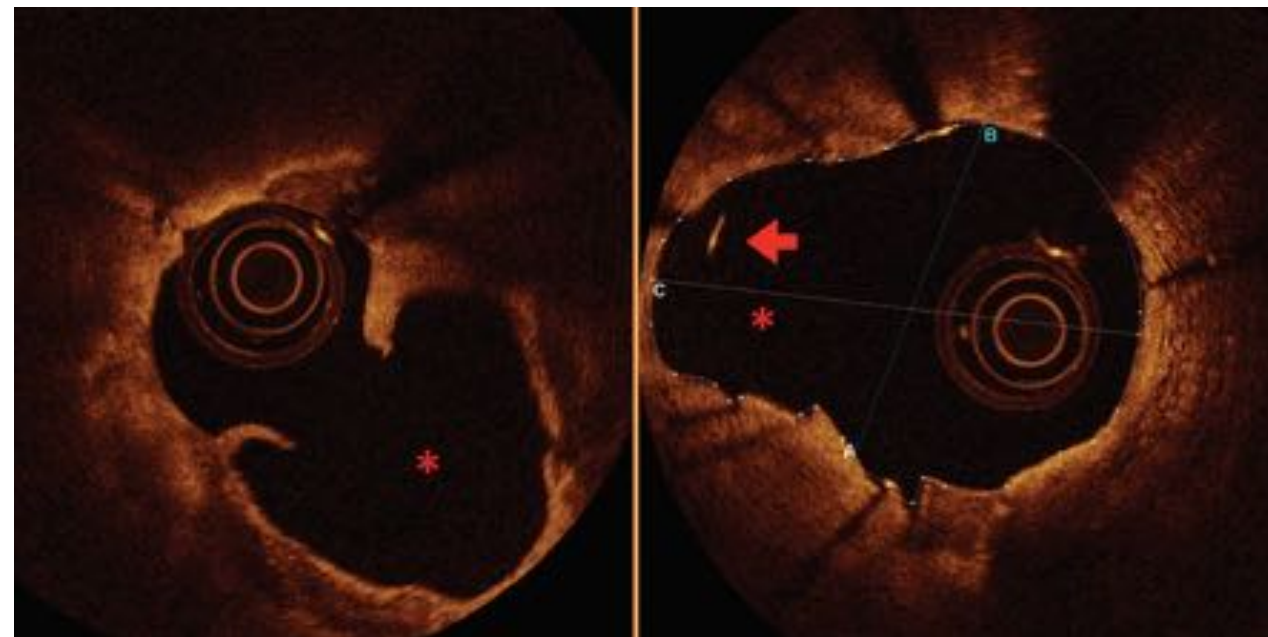
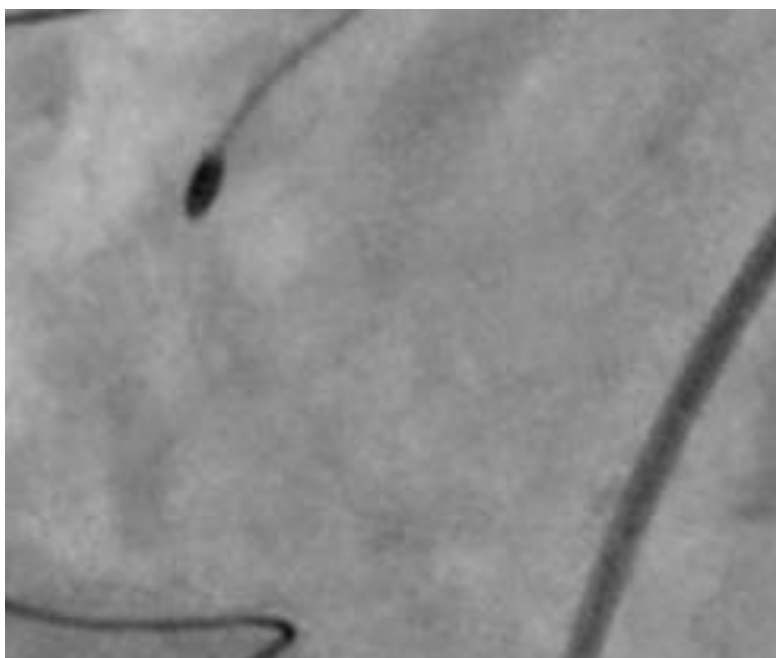
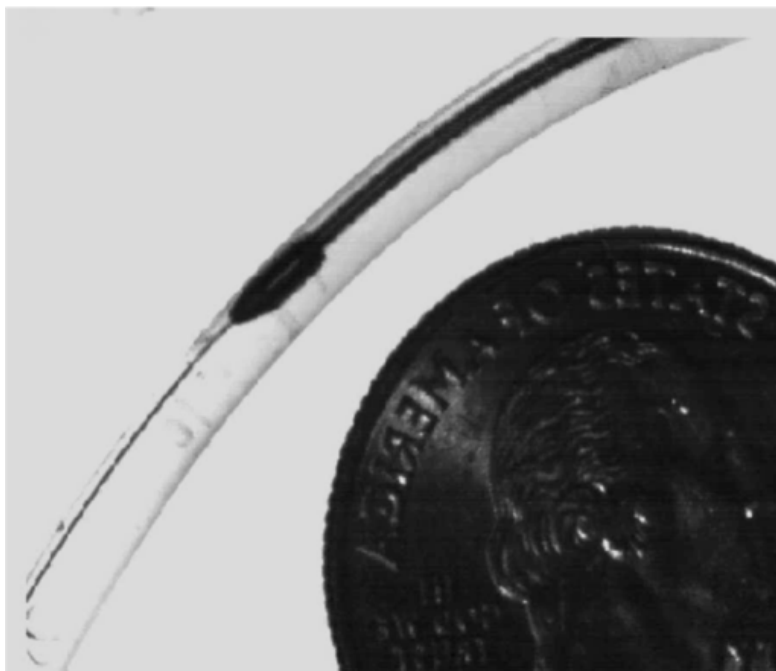
Angioplastie CD : Prédilatation au ballon NC de 4 mm



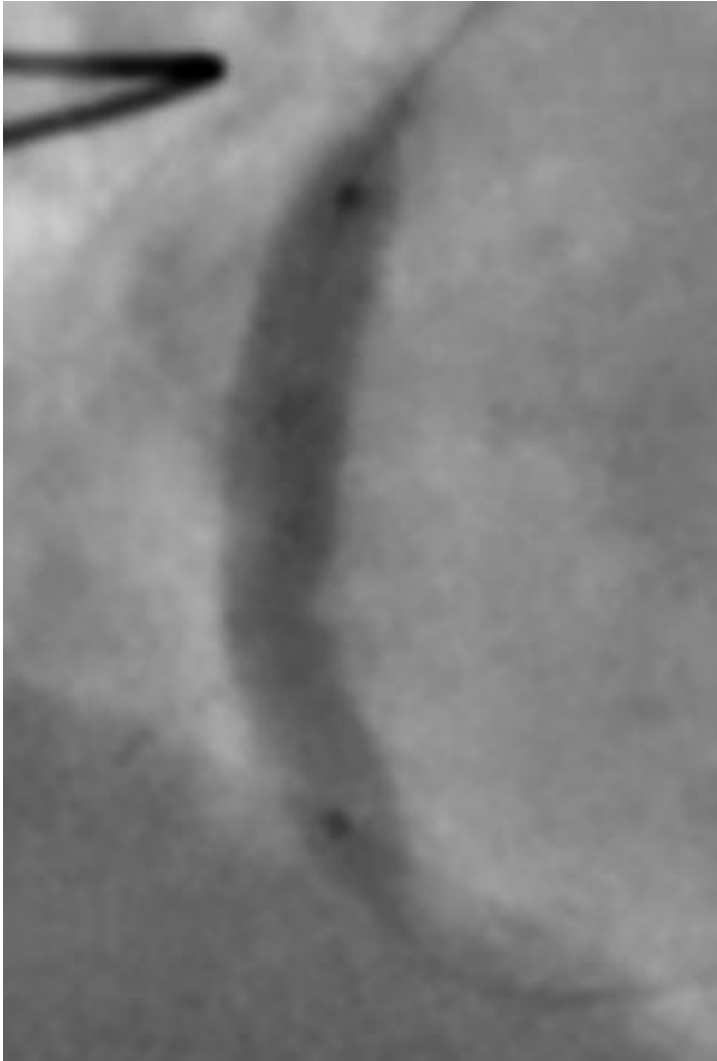
Genu inferius



Rota : Biais du guide



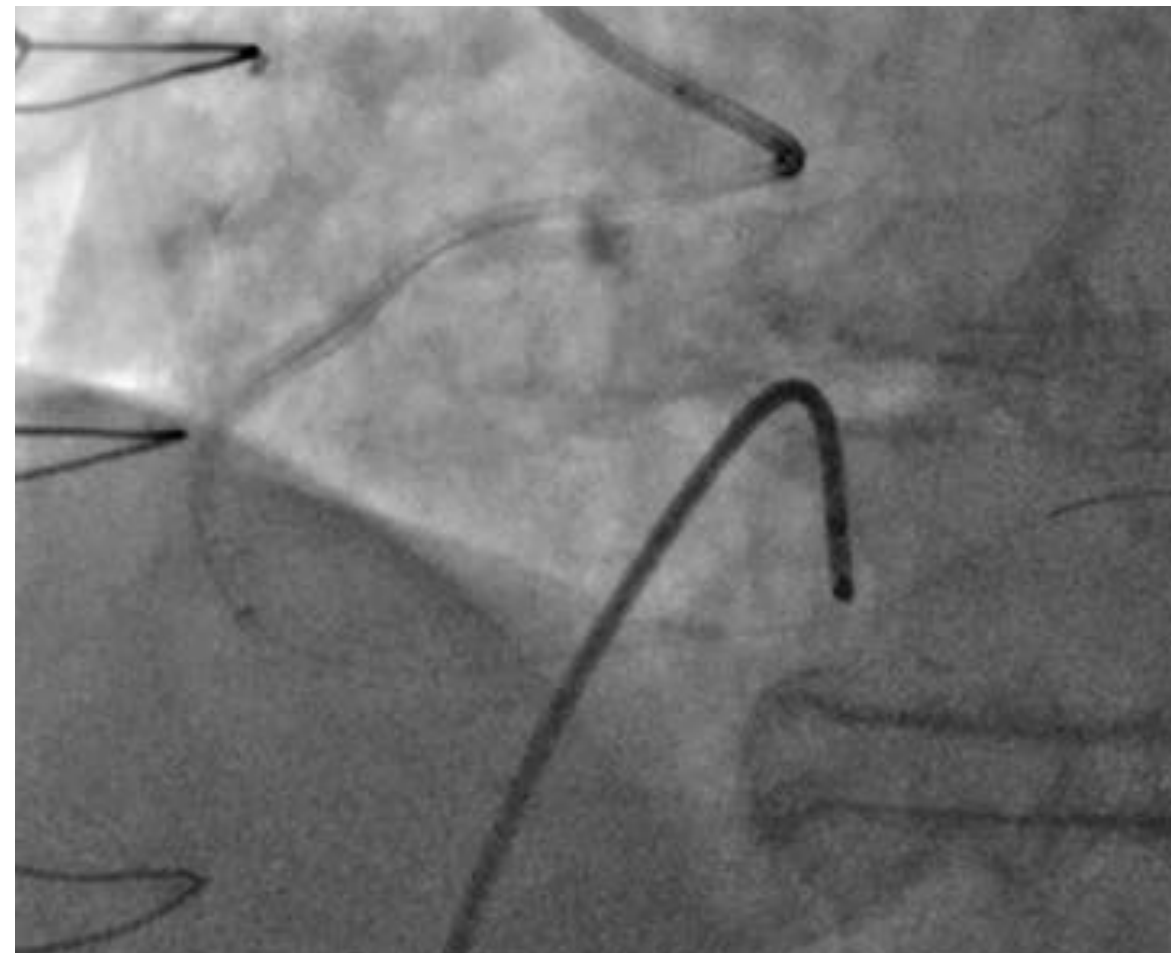
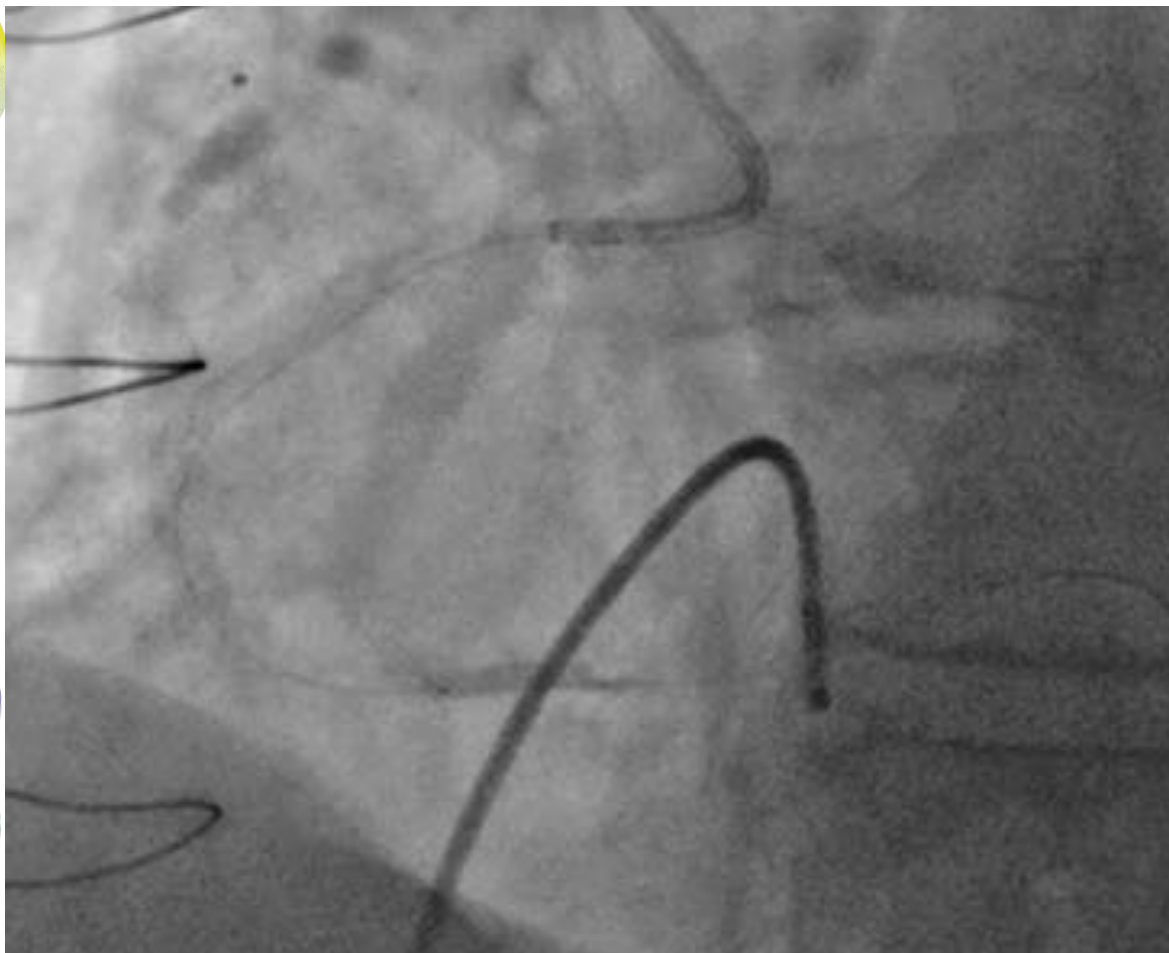
Lésion résiduelle Genu inferius : Question to the floor



Complément de préparation:

- Rien
- Ballon NC > 4 mm
- Ballon OPN
- Rotablator
 - Fraise > 1,75 mm
- IVL
- Athérectomie orbitale
- Imagerie endocoronaire

Lésion résiduelle Genu inferius : IVL



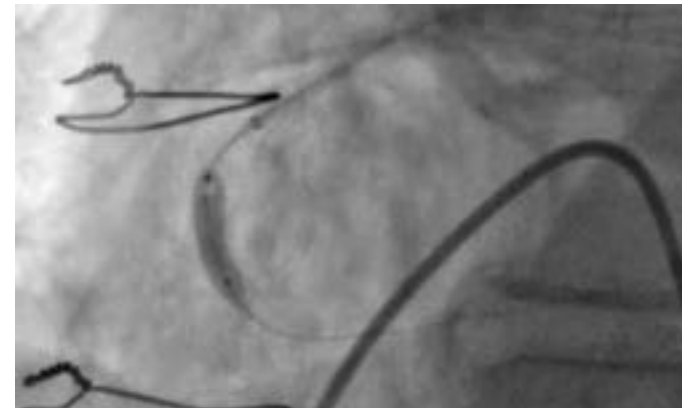
IVL : Ballon de 4 x 12 mm



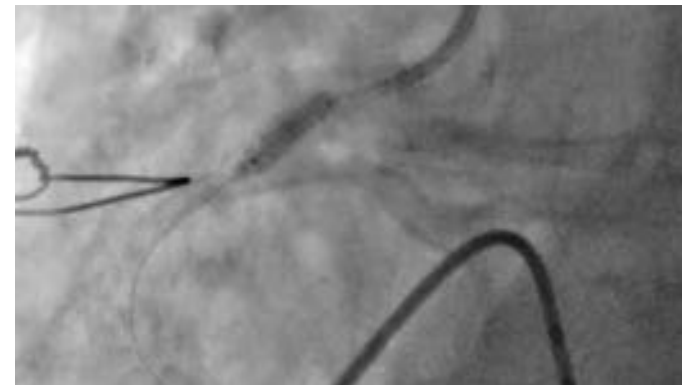
Air = IVL inefficace



10 Burst

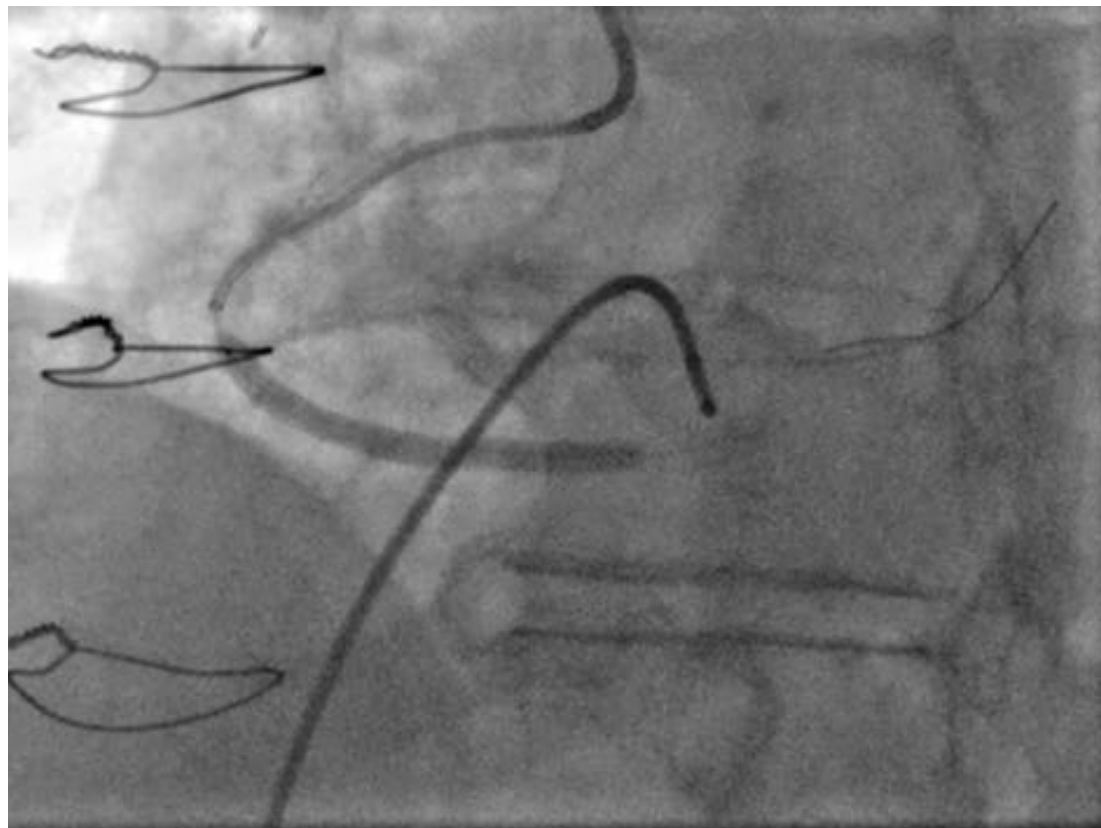


40 Burst

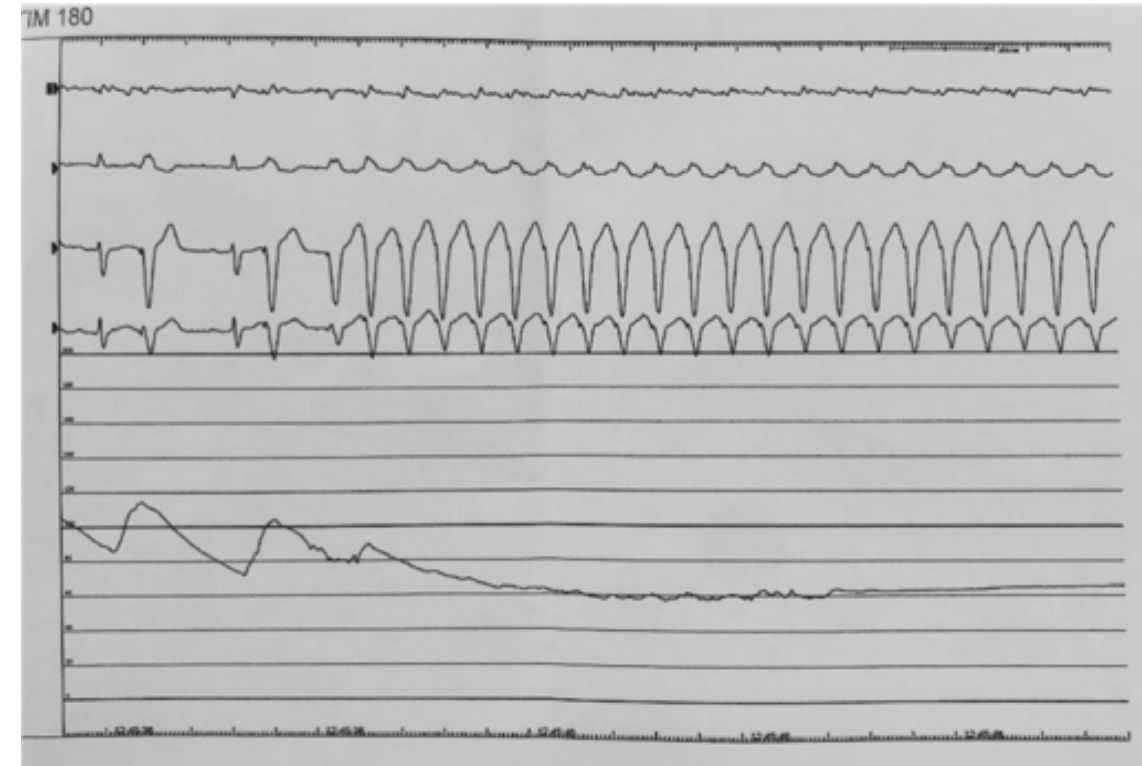
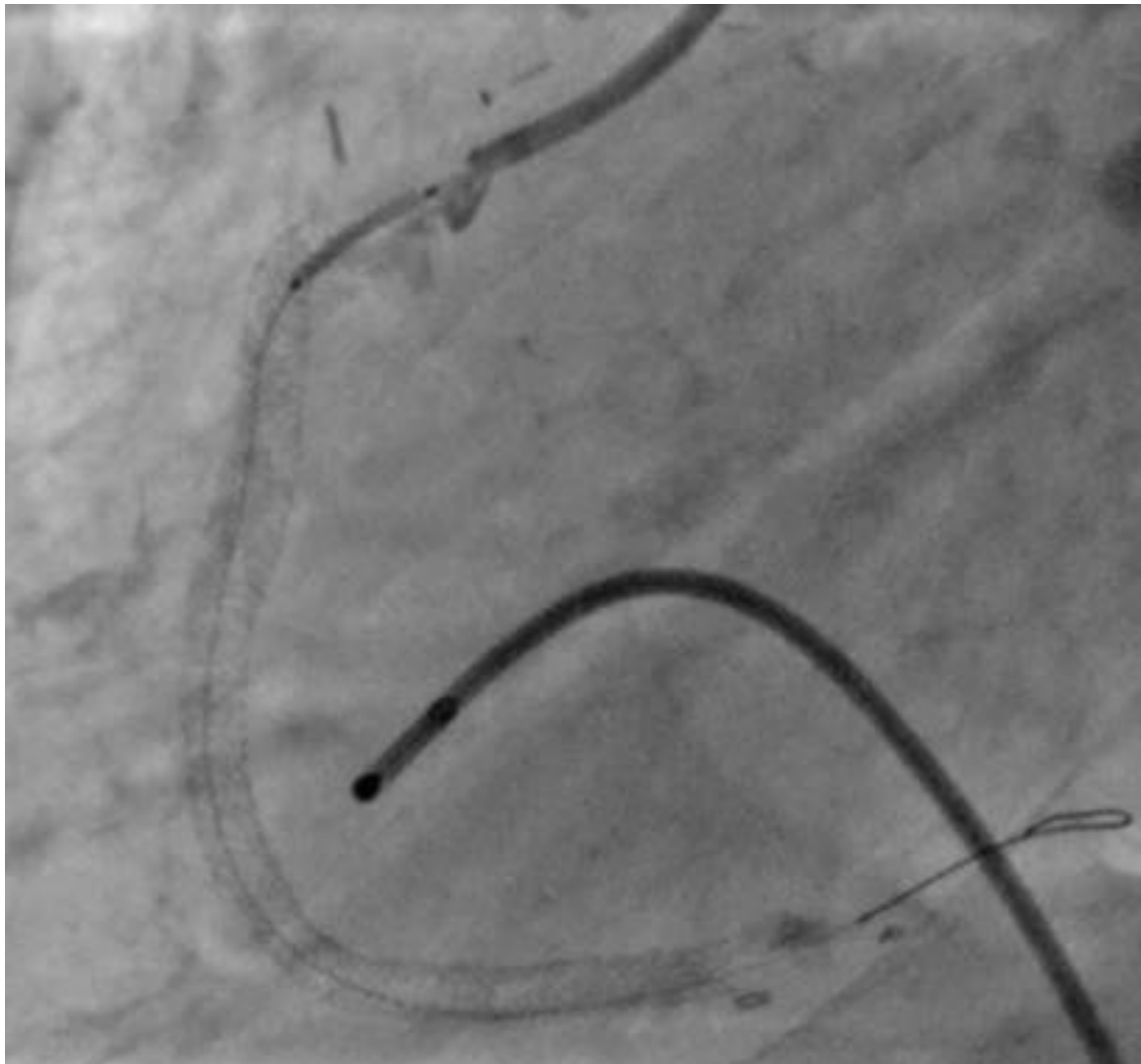


80 Burst

DES : 4x48 mm SYNERGY x 2

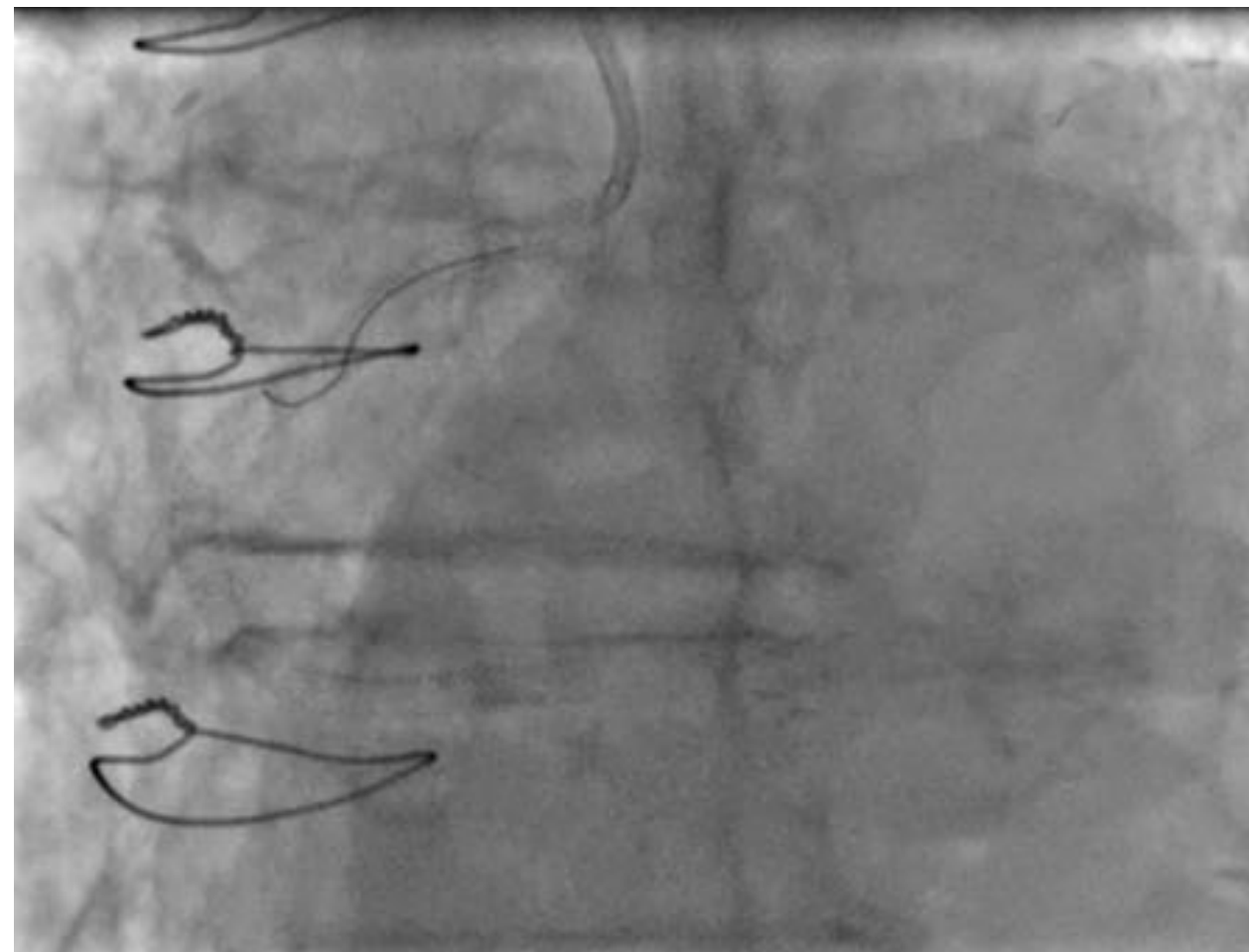
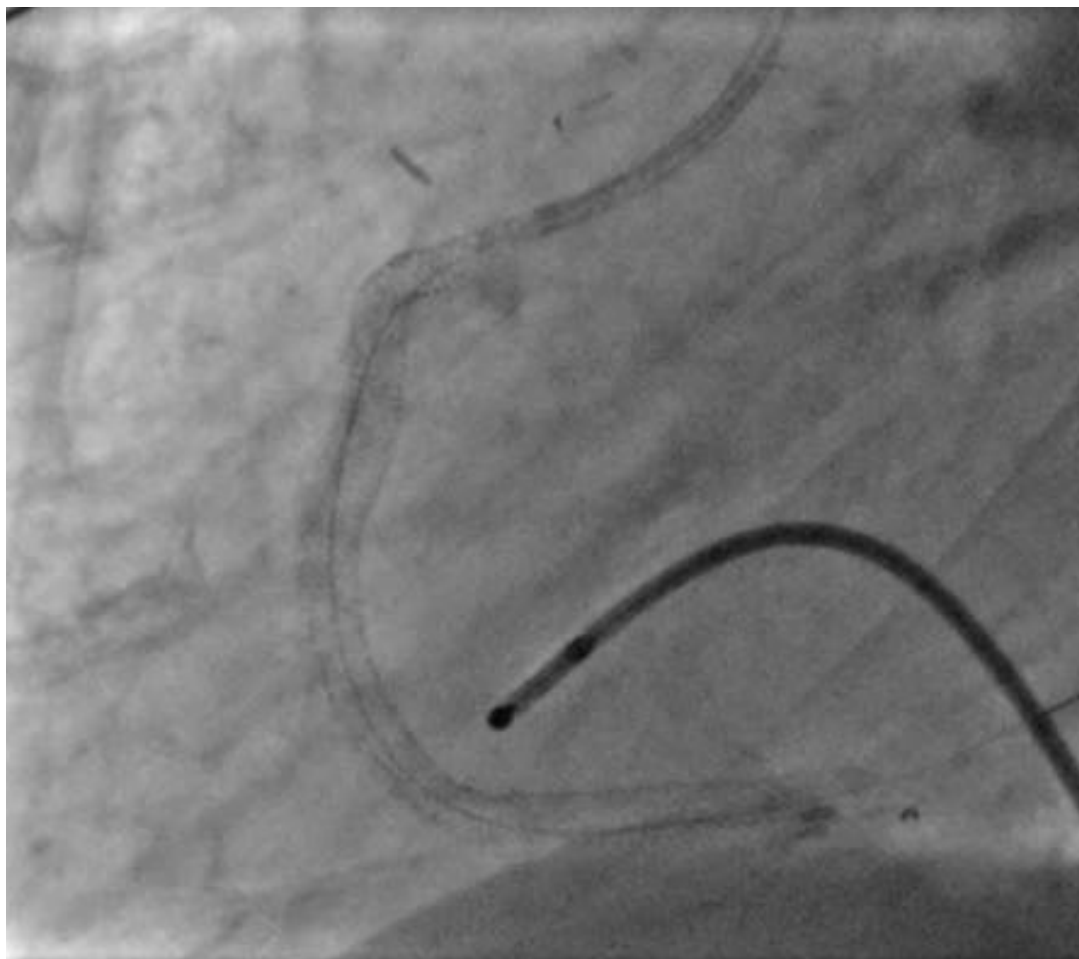


Stent CD Ostial – DES 5x12 mm



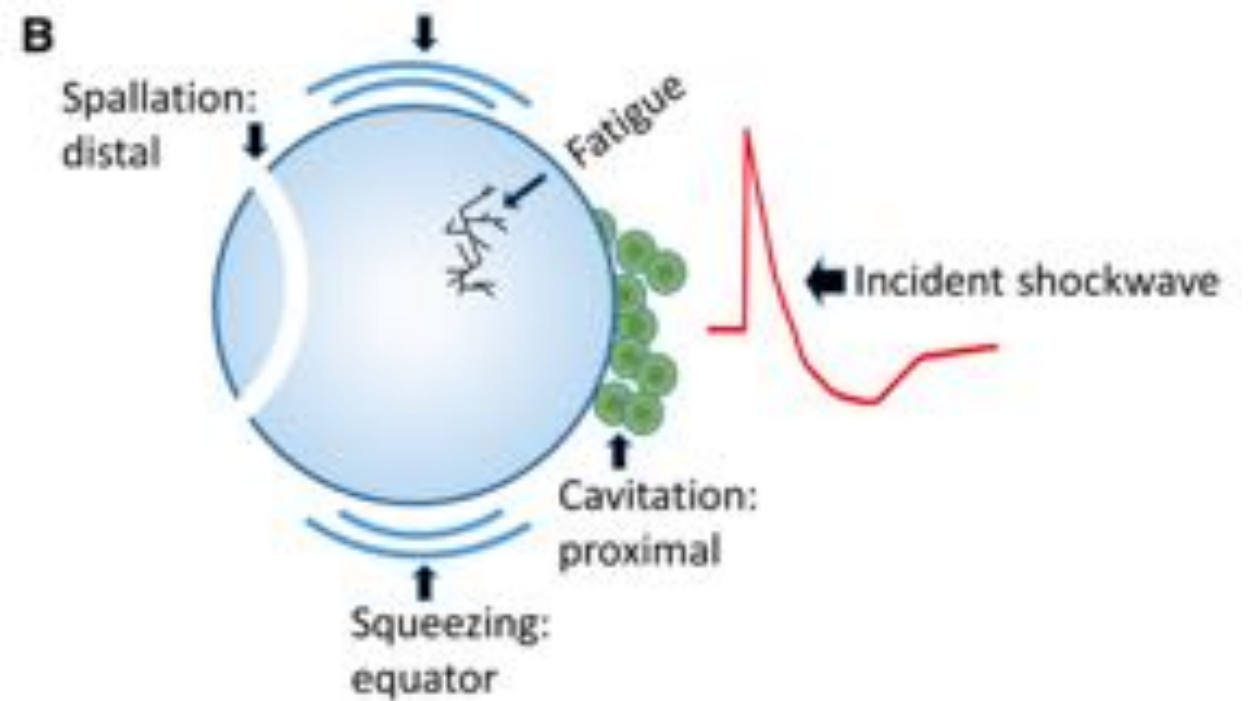
OAG 90°
Stimulation 180/min

Angiographie finale



IVL et Rota : Rotatripsy IVL et lésion excentrique

IVL et lésion excentrique

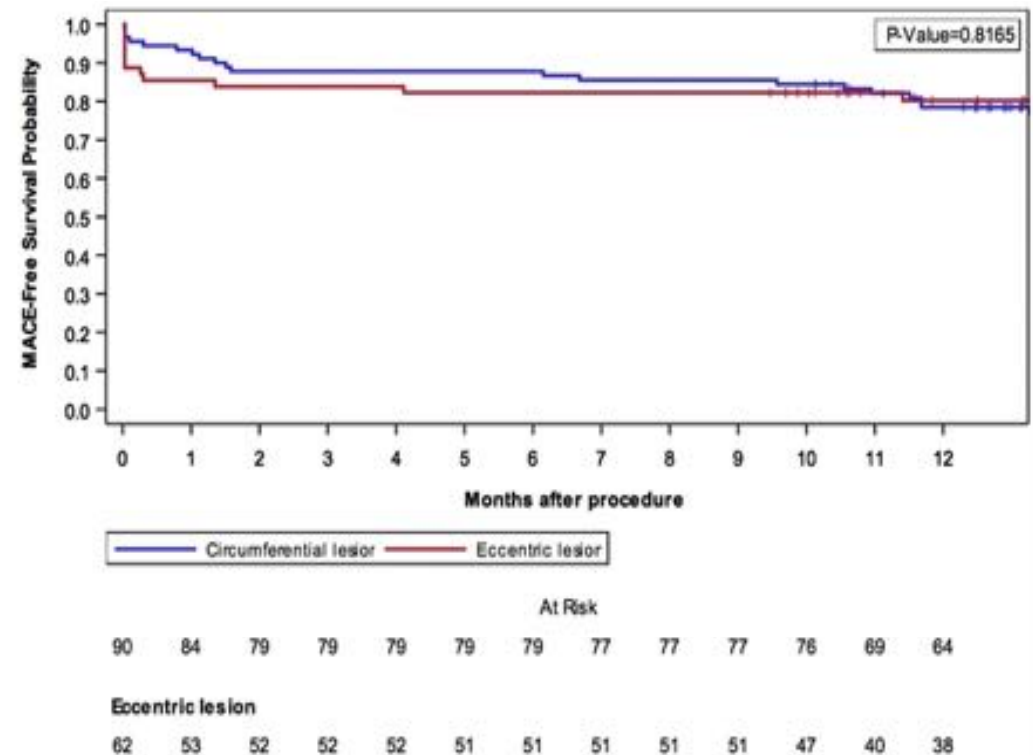


Electrodes à distance de la lésion calcifiée
Perte de la spallation

Plus d'énergie souvent nécessaire

IVL et lésion excentrique

	Concentric lesion n=90	Eccentric Lesion n=62	p
<i>Nombre de ballons IVL</i>			0.762
1	82 (91.1)	53 (93.5)	
2	8 (8.9)	4 (6.5)	
<i>Residual Stenosis post IVL</i>	24.4 (19.9)	22.7 (17.7)	0.810
<i>Succes dispositif</i>	79 (87.8)	58 (93.5)	0.241
<i>Dissection post stent</i>	90 (100)	3 (4.8%)	0.067
<i>Residual Stenosis post Stent</i>	2 (5.3)	4.1 (8,3)	0.065
<i>Succes Procédural</i>	88 (97.8)	58 (93.5)	0.022
		6	



Conclusion

- IVL indispensable pour sauver la mise
- IVL et science : Patients très sélectionnés
 - "Filling the gaps"
Partage d'expérience / Large registre
- "Tips & Tricks" selon situation clinique
 - Amélioration technologique