

CATASTROPHES THROMBOTIQUES EN SALLE DE CATHETERISME :

Comment je m'en sors en pratique ?

Marion CHATOT, Besançon

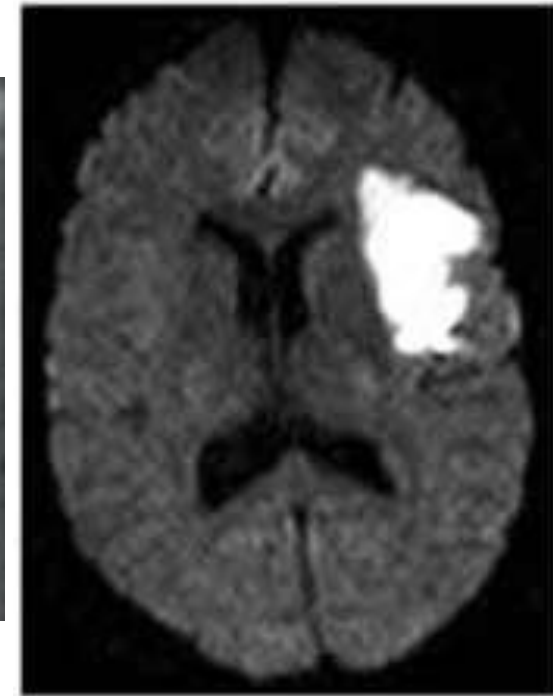
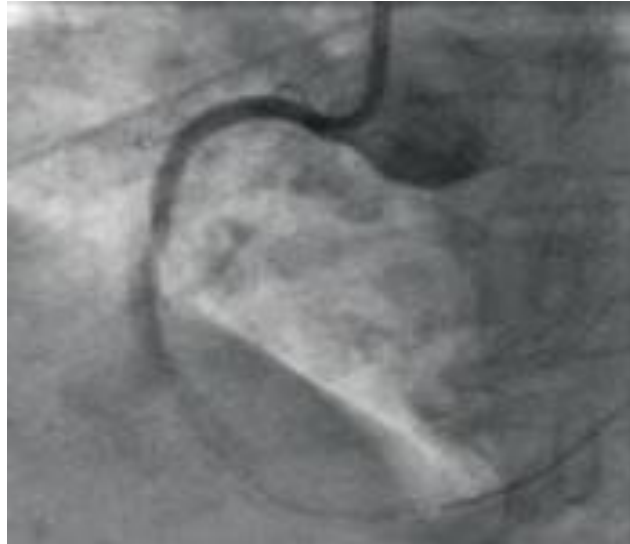
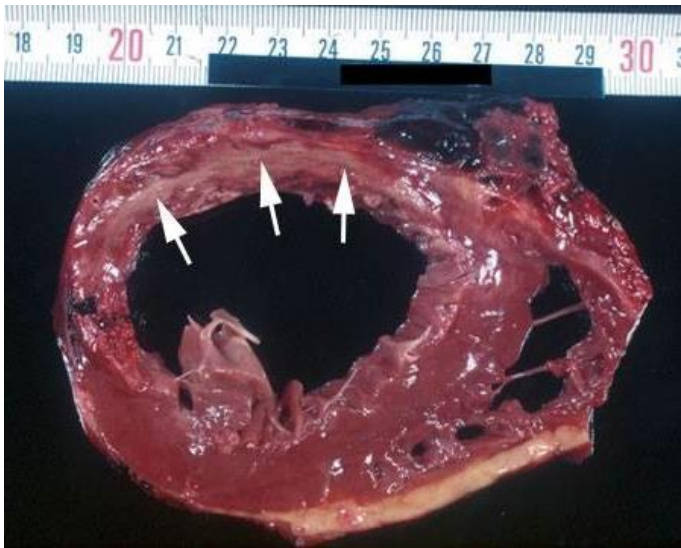
DÉCLARATION DE LIENS D'INTÉRÊT AVEC LA PRÉSENTATION

Intervenant : Marion CHATOT, Besançon

Je n'ai pas de lien d'intérêt à déclarer

CATASTROPHES THROMBOTIQUES EN SALLE DE CATH

- Impact de la charge thrombotique en cardiologie interventionnelle :
 - Taille de la nécrose myocardique / No reflow
 - Complications emboliques systémiques
 - Mortalité

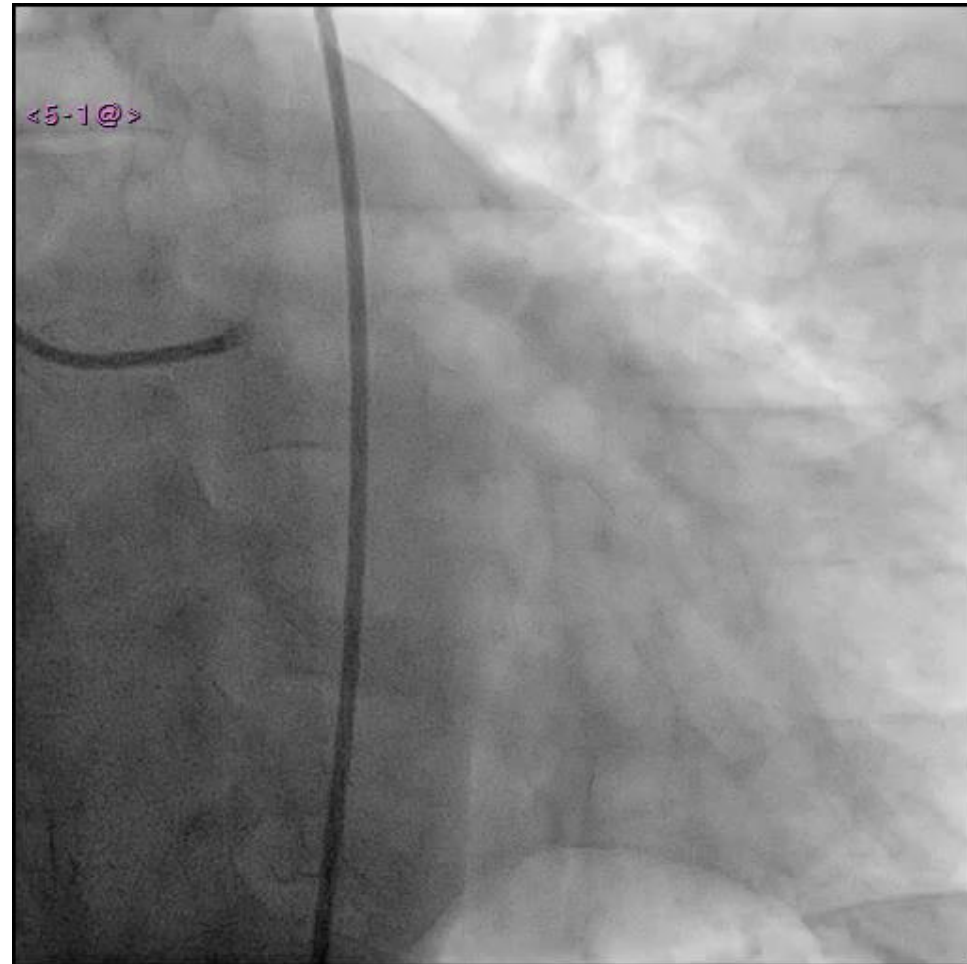


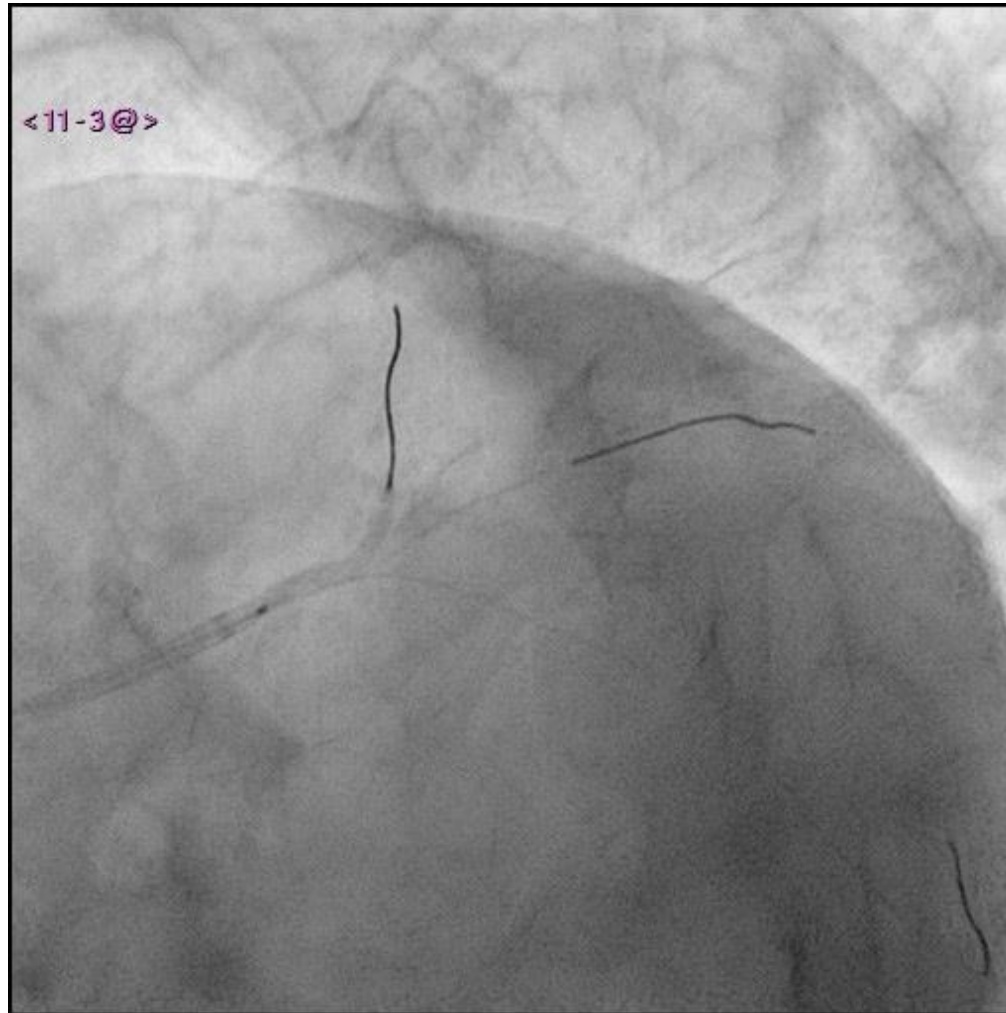
Cas 1

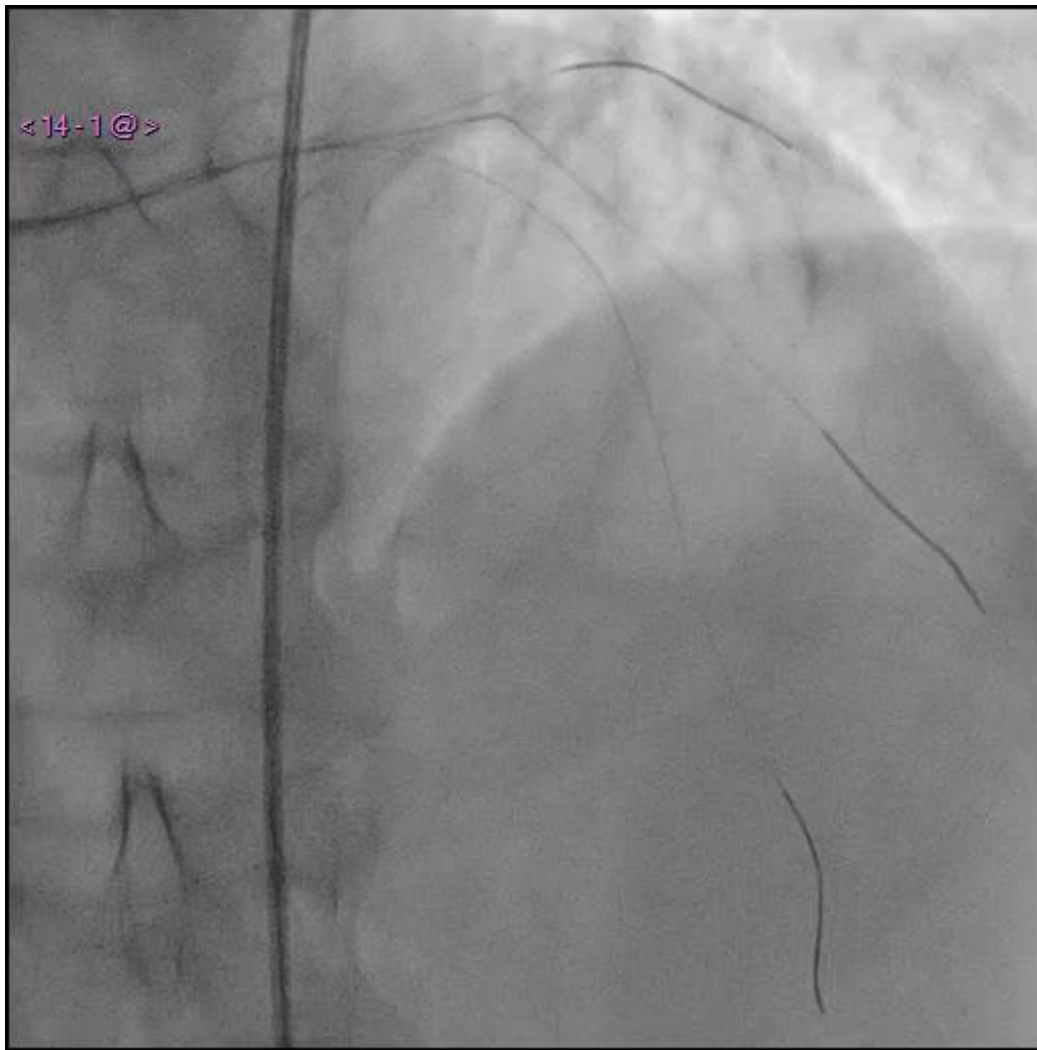
- ✦ Mr S. 50 ans
 - ✦ Tabac, HTA, Surpoids
 - ✦ Epilepsie post traumatique, HSD chronique

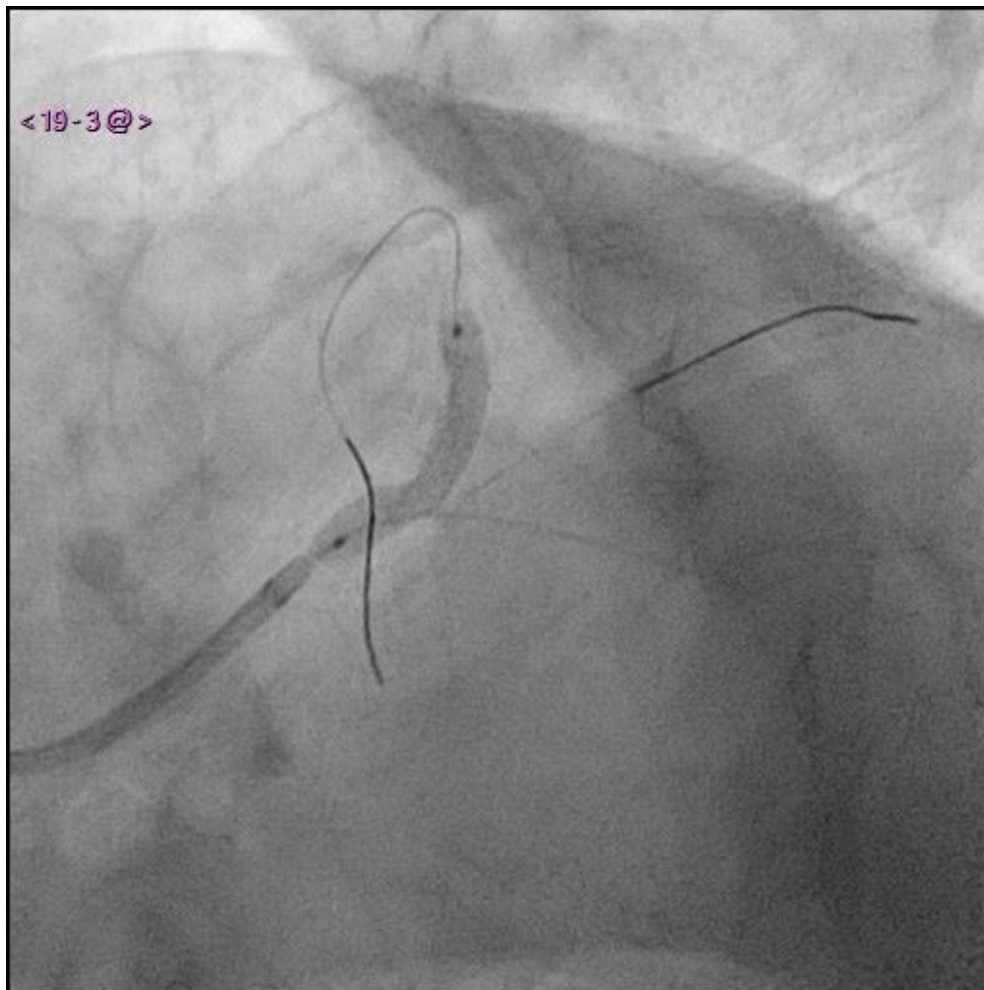
 - ✦ STEMI antérieur hors délai
 - ✦ OAP initial, FEVG 20 %
 - ✦ Thrombus apical VG

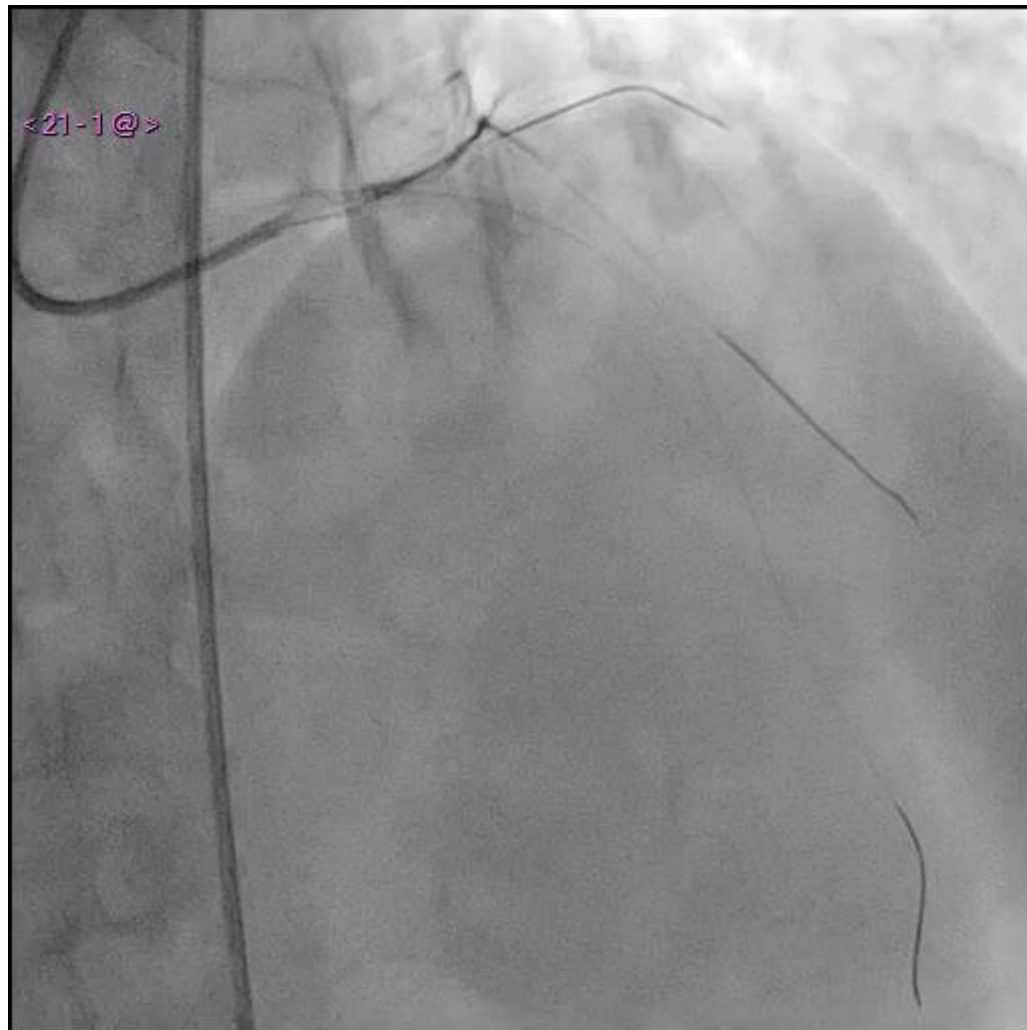
 - ✦ Hémodynamique stable à l'admission
 - ✦ Sous O2, diurétiques,
 - ✦ ASA + Ticagrelor + HNF en bolus



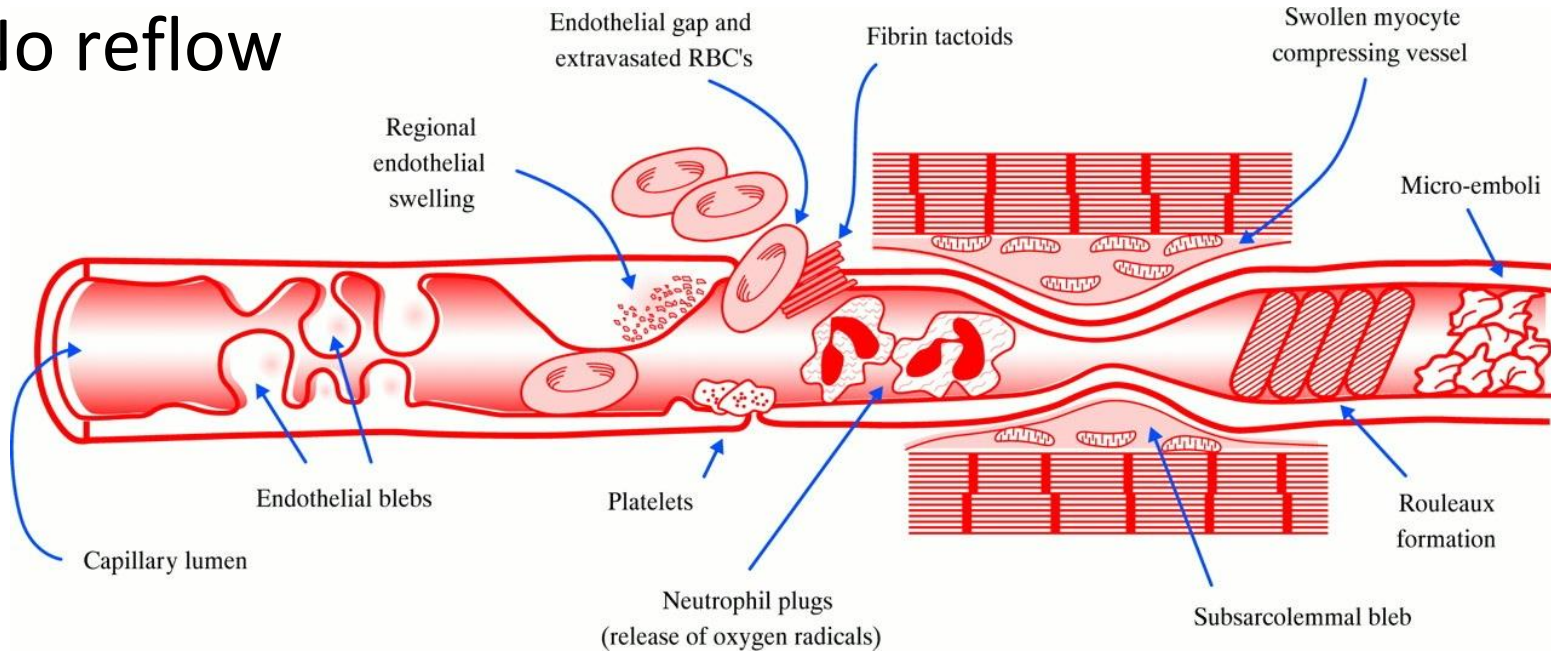








No reflow



- Lésions ischémie-reperfusion en rapport avec la désobstruction
- Réaction inflammatoire systémique, infiltrat de neutrophiles
- Phénomène spastique
- Augmentation de la perméabilité vasculaire : œdème tissulaire, compression extra-vasculaire, diminution de la lumière des micro-vaisseaux
- Micro-embols distaux

No reflow

Facteur de risque

- Diabète type 2

CENTRAL ILLUSTRATION: PCI Flowchart for Coronary No-Reflow

Coronary No-Reflow

Primary percutaneous coronary intervention for myocardial reperfusion in ST-elevation myocardial infarction: procedural aspects (strategy and technique)

Recommendations	Class ^a	Level ^b
Strategy		
Routine revascularization of non-IRA lesions should be considered in patients with multivessel disease before hospital discharge. ^{211–214}	IIa	A
CABG should be considered in patients with ongoing ischaemia and large areas of jeopardized myocardium if PCI of the IRA cannot be performed.	IIa	C
In cardiogenic shock, routine revascularization of non-IRA lesions is not recommended during primary PCI. ¹⁹⁰	III	B
Technique		
Routine use of thrombus aspiration is not recommended. ^{223–226,228}	III	A

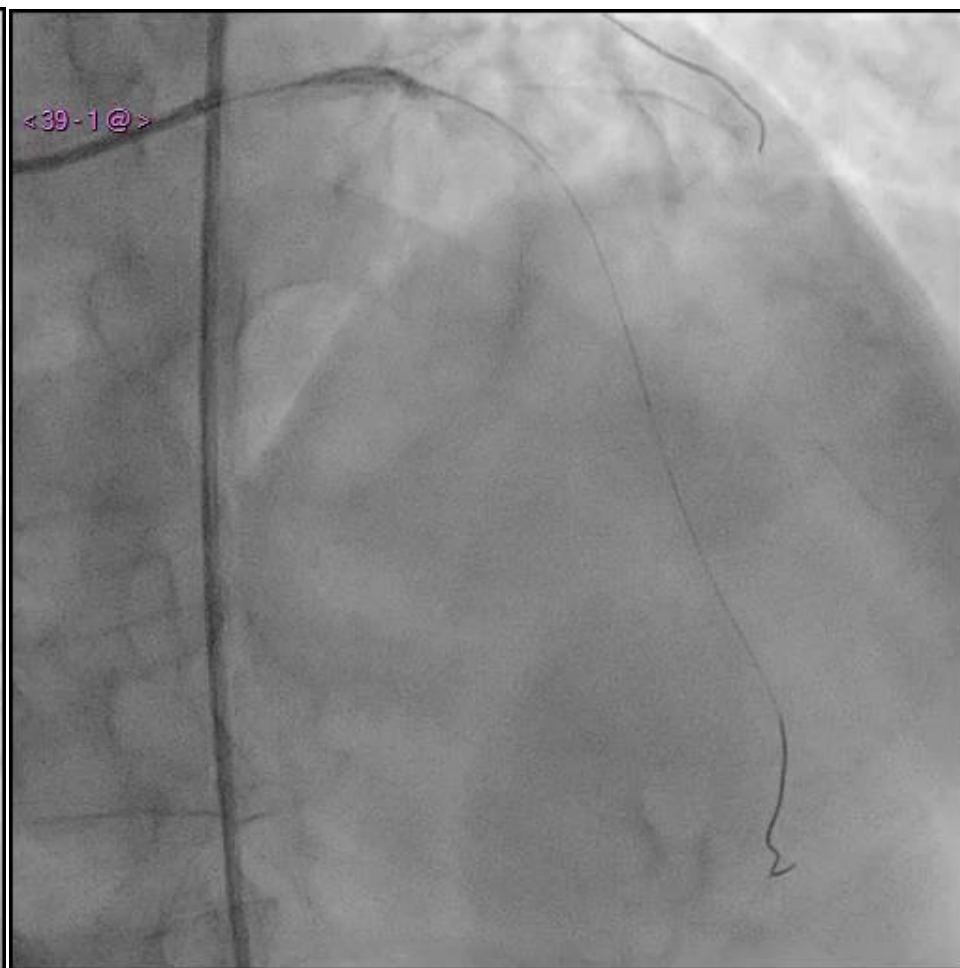
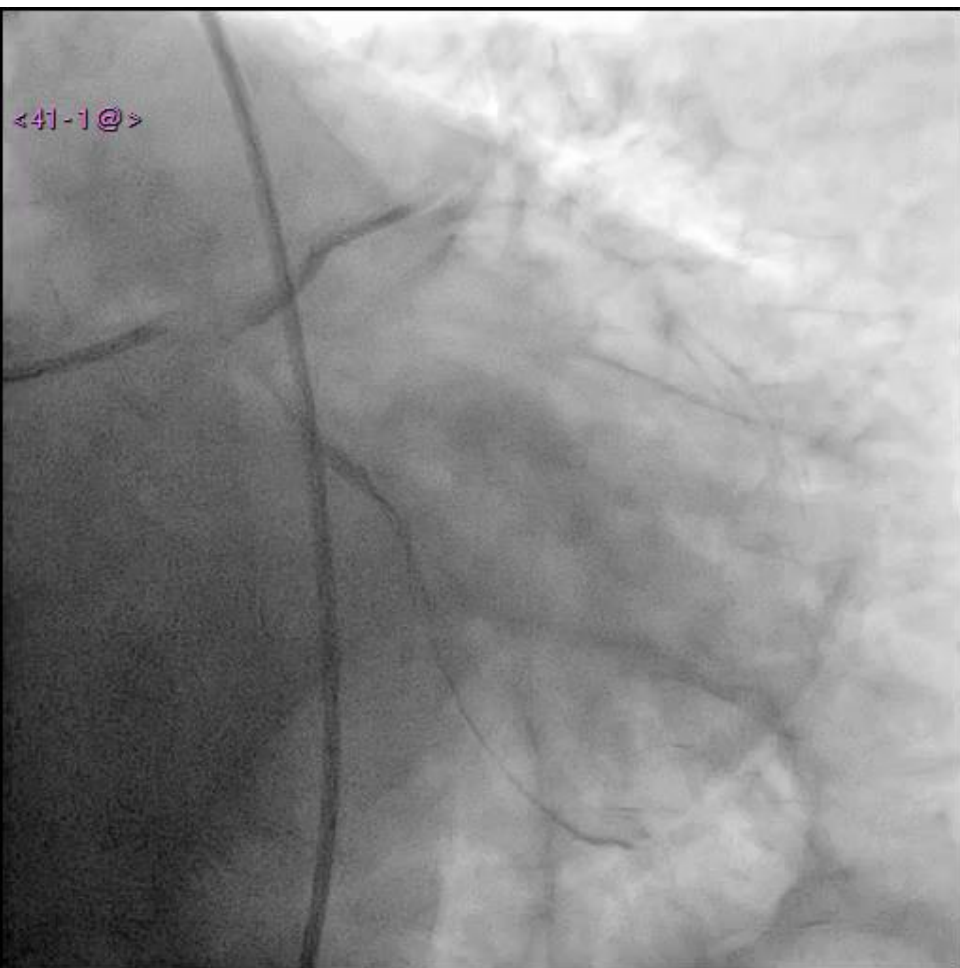
© ESC 2018

Katsuomi et al. J Am Coll Cardiol. 2017;70(12):1611–1620. doi:10.1016/j.jacc.2017.07.051
development of the no-reflow phenomenon after primary percutaneous coronary intervention in acute myocardial infarction

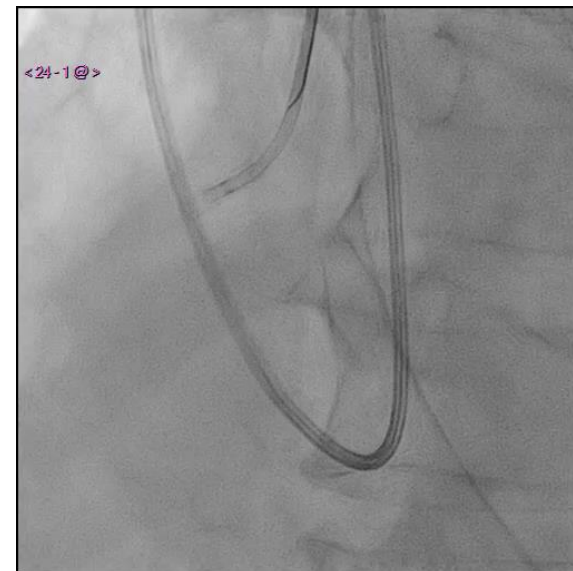
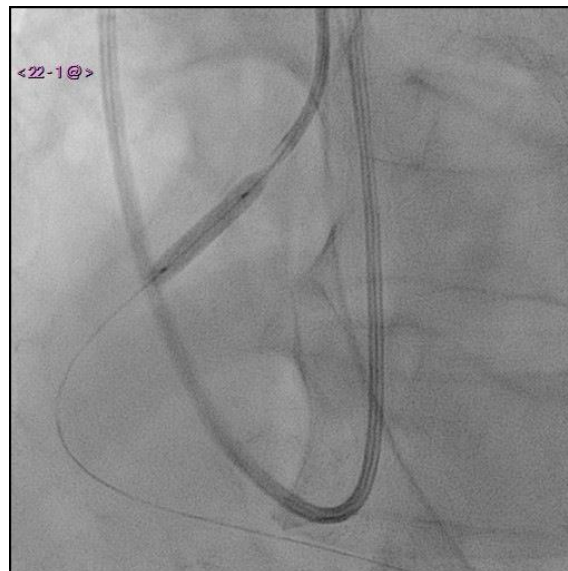
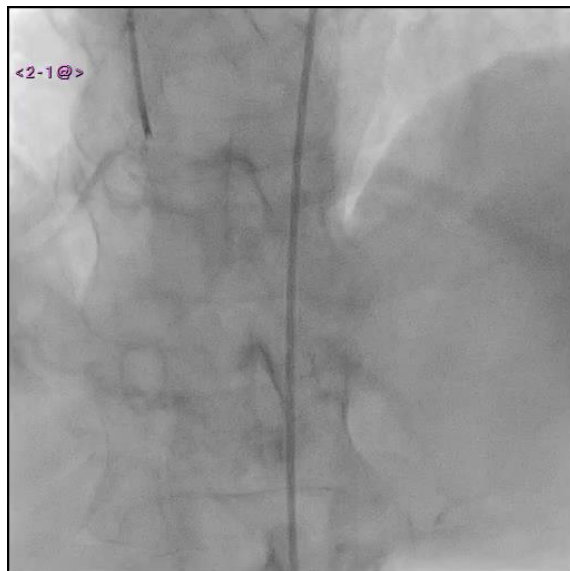
3. Nicardipine³⁴
4. Verapamil⁴⁹

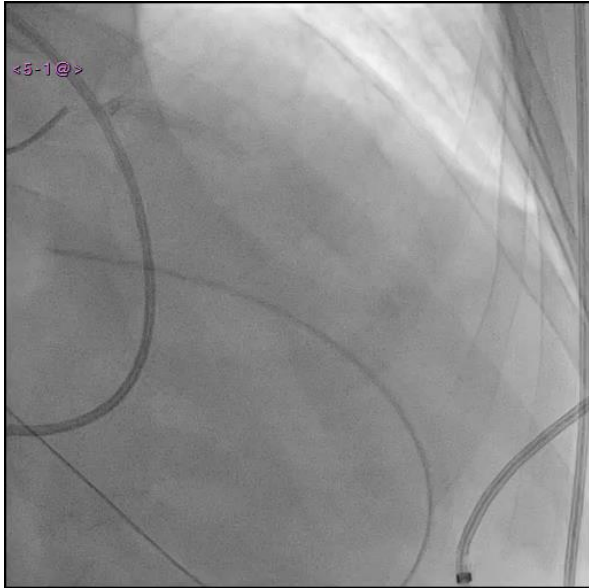
Rezkalla, S.H. et al. J Am Coll Cardiol Intv. 2017;10(3):215–23.

- Ballons ++, DES IVA proximale, Kissing
- Dobutamine + NAD
- HNF 50 + 20 mg
- Agrastat bolus + IVSE
- CPIA (CI Impella / Thrombus apical VG)



Contrôle à 48 h : angioplastie de la CD





Cas 1

- Thromboaspiration ?
- ADP ?
- ECMO avant revascularisation ?

Mortalité des occlusions aiguës thrombotiques du
TCCG = entre 60 et 80 %

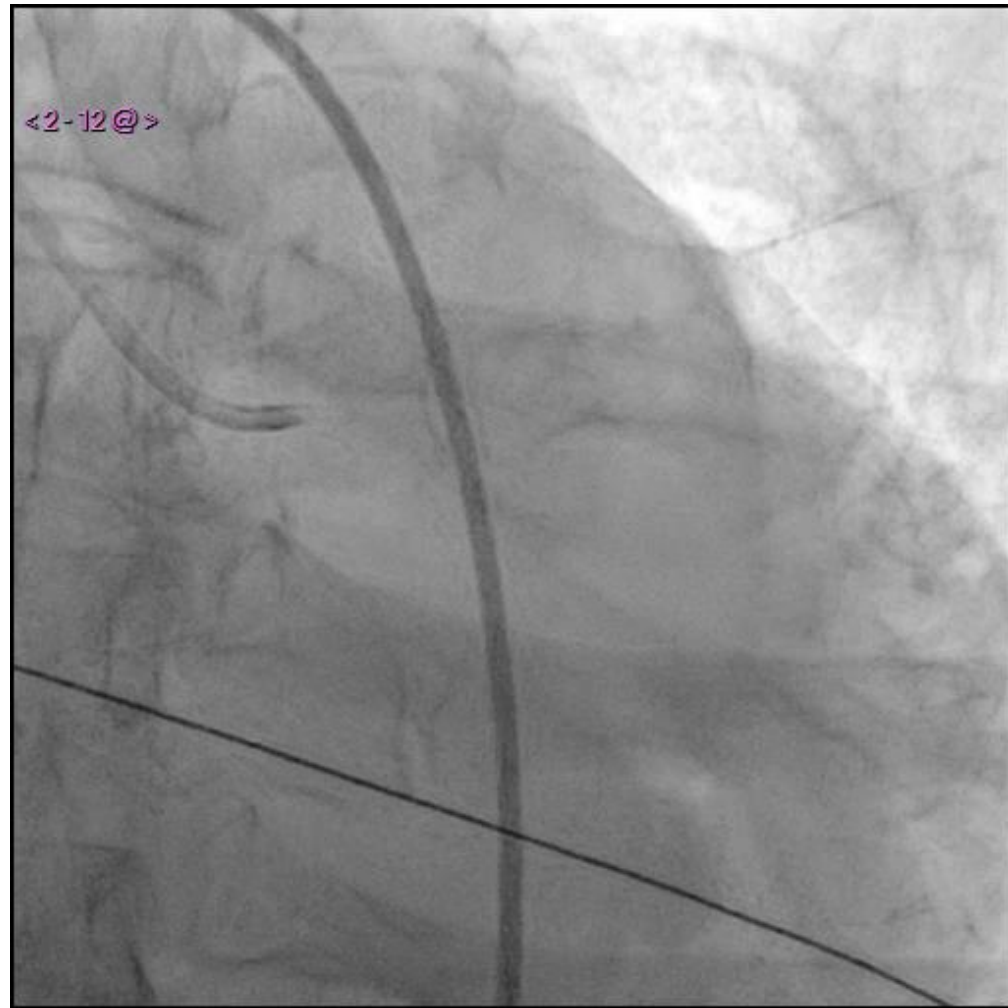
De Luca G., Suryapranata H., and Thomas K.. 2003. Outcome in patients treated with primary angioplasty for acute myocardial infarction due to left main coronary artery occlusion. Am. J. Cardiol. 91:235–238

Cas 2

- Mr E. 59 ans
- HTA, surpoids
- ACR initial NF=0 min LF=5 min
- Récupéré par adrénaline
- IOT et ventilation mécanique
- Hémodynamique correcte
- ECG : sus ST antérieur

Transfert Cathlab direct

H + 1



A reçu par le SMUR :

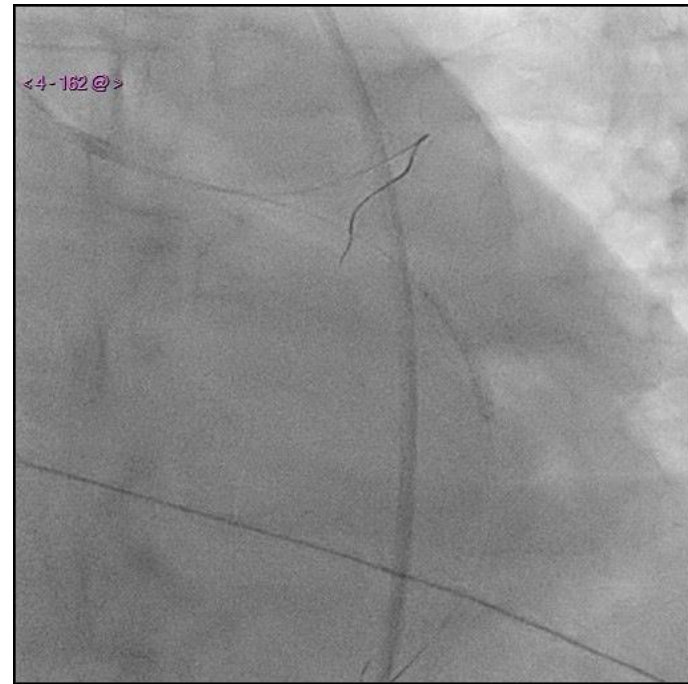
- HNF 5000 UI IV
- Aspirine IVD 125 mg

En salle de cathétérisme :

- Cangrelor en dose poids :
bolus 13,5 ml
IVSE 108 ml/h
- HNF complément de dose de 5500 UI
justifié par un ACT à 116 sec

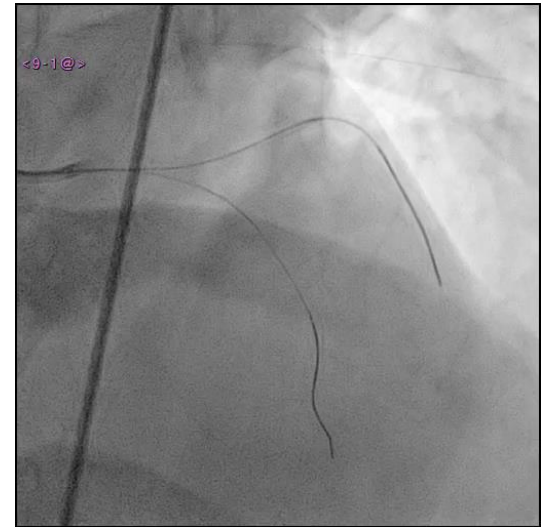
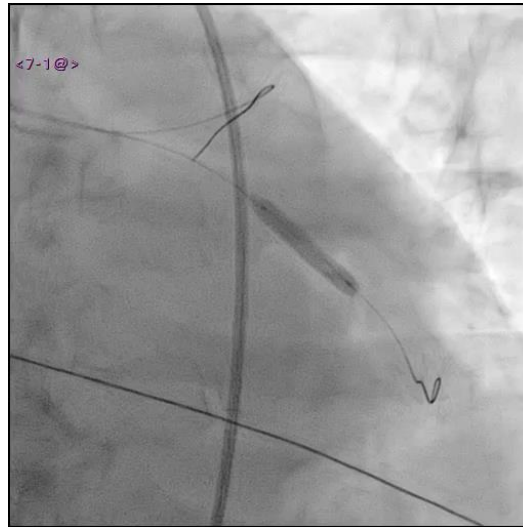
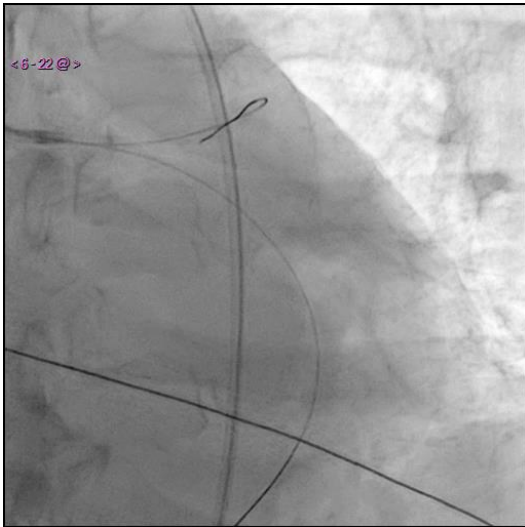
Fait par l'IDE sur VVP

Mise en place de 2 guides Sion Blue IVA et Cx

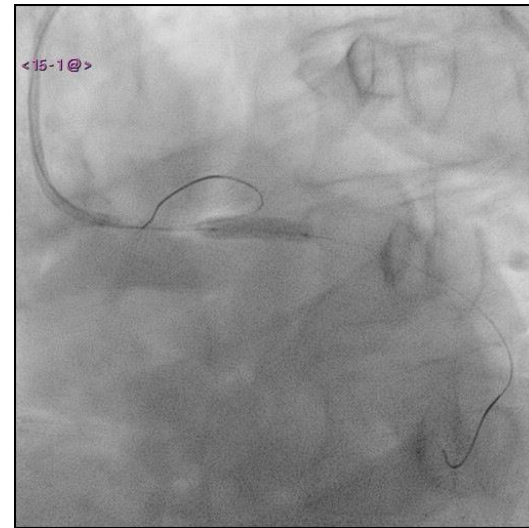
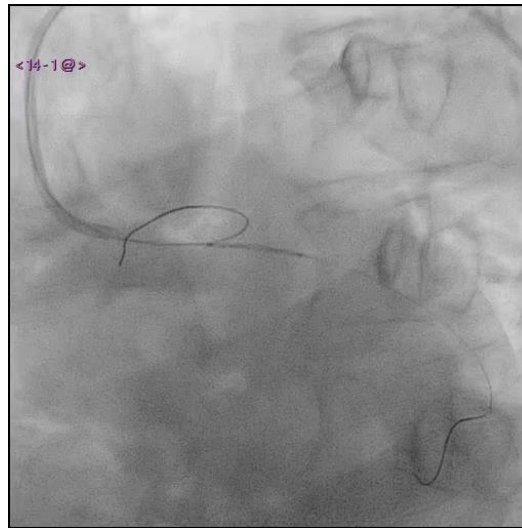


Ballon compliant 2,5*20 mm





DES Cx 3,0*20 mm



DES 4,0*18 mm

<16-1@>



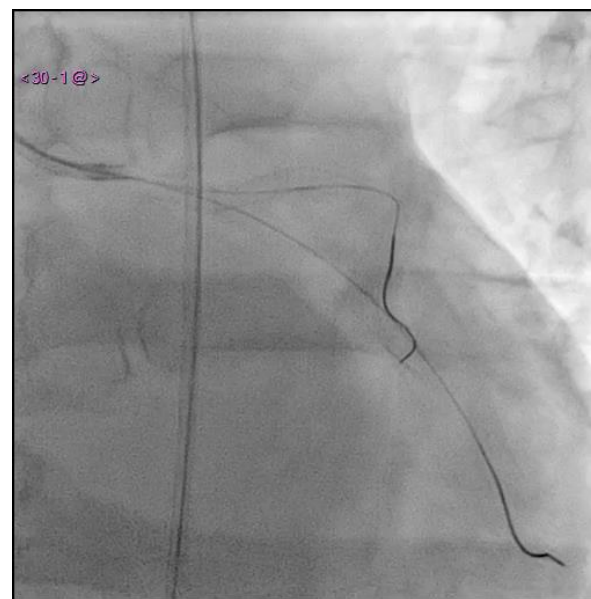
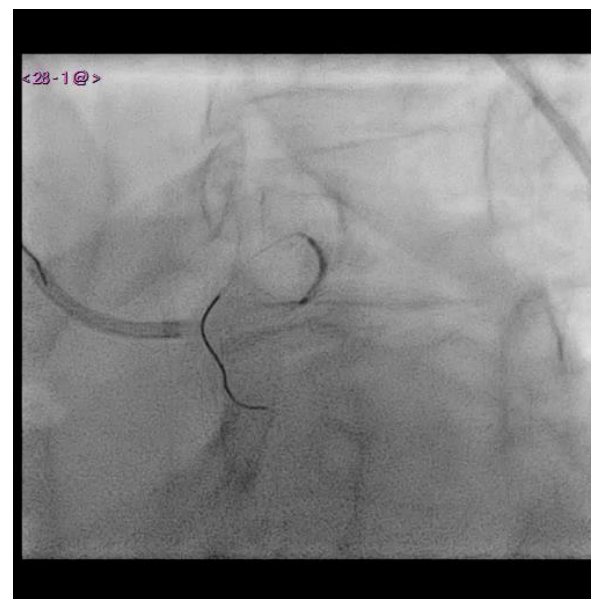
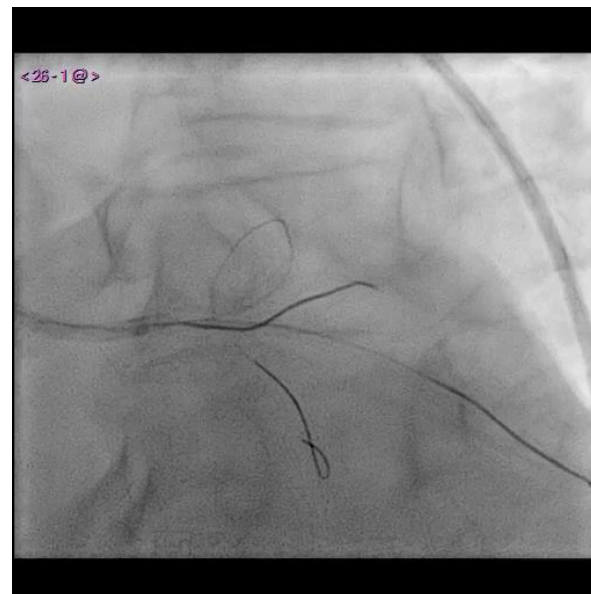
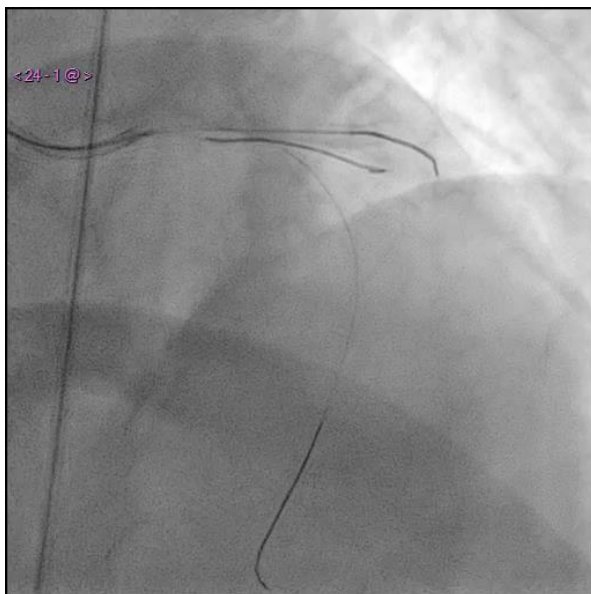
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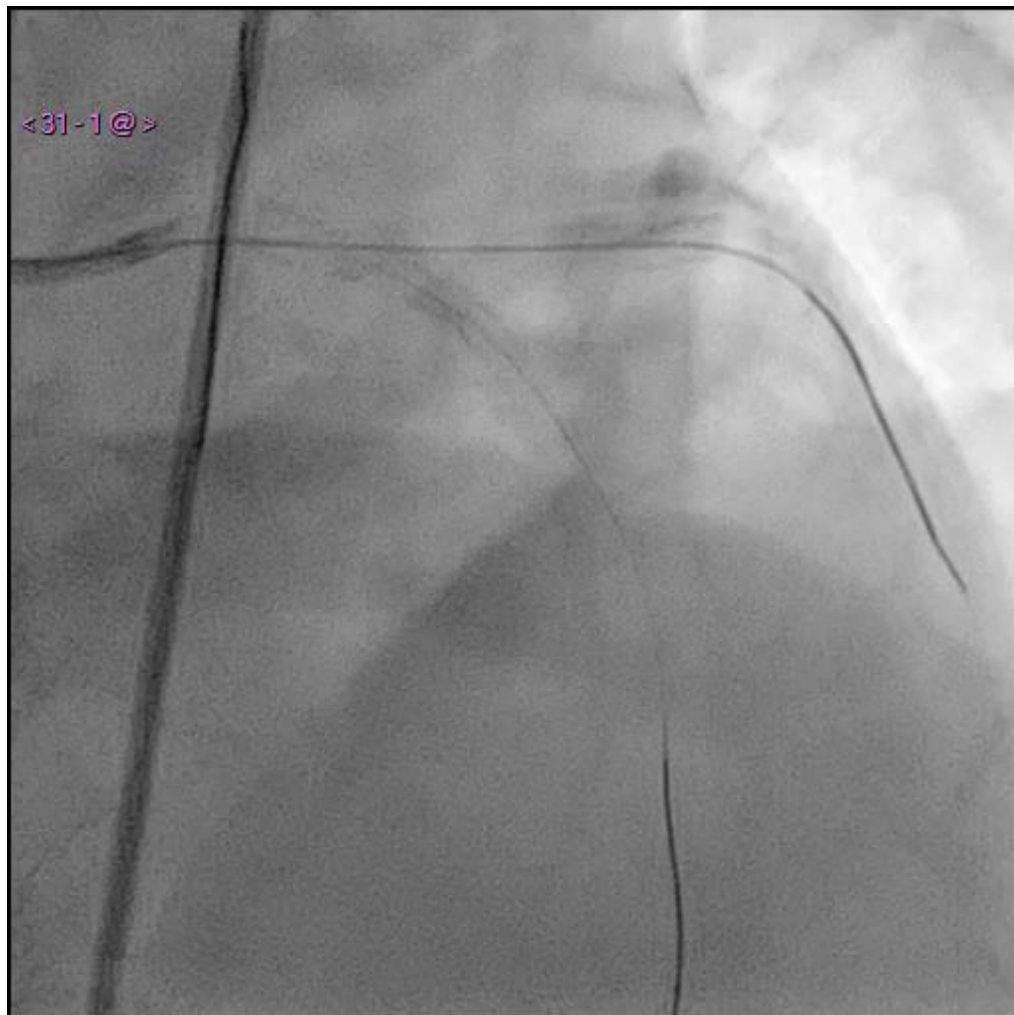
<21-7@>



ballon 2,0*20mm compliant



DES 3,0*24 mm



A 30 minutes de procédure
Vérification de l'ACT
—> 180 sec !!

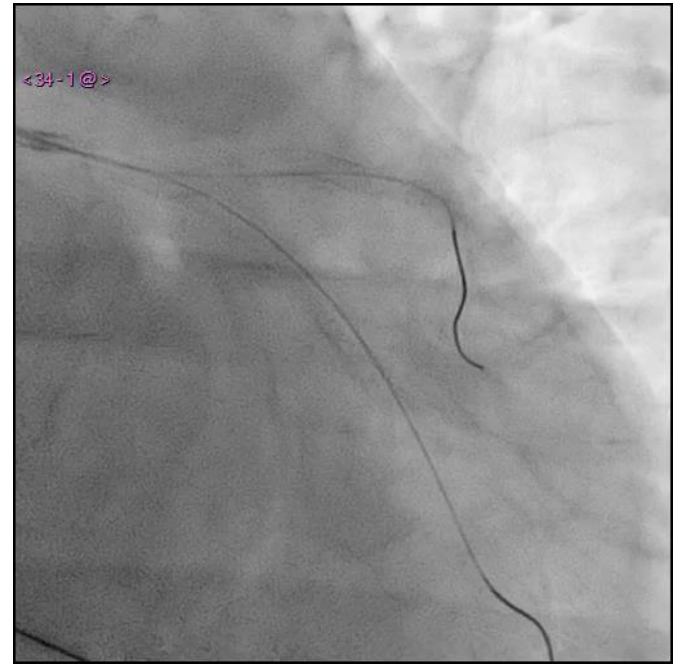
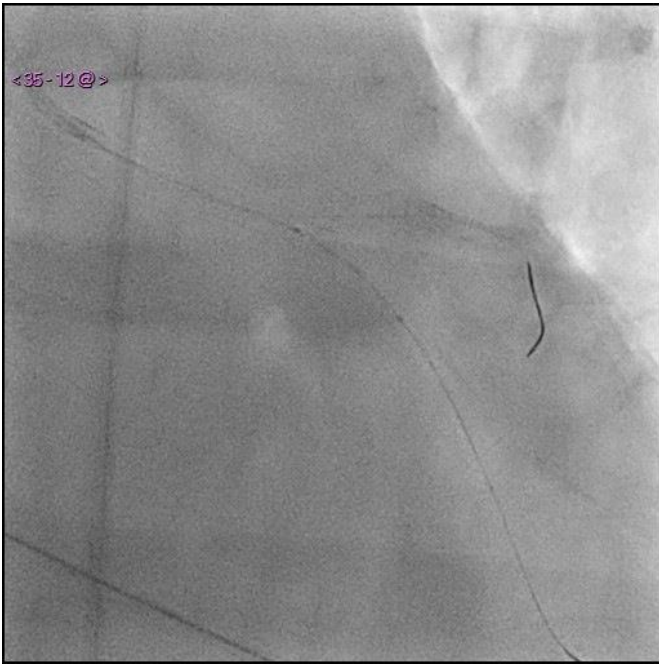
Décision bolus HNF 3000 UI
et Agrastat en bail out
en dose poids :

bolus 46 ml

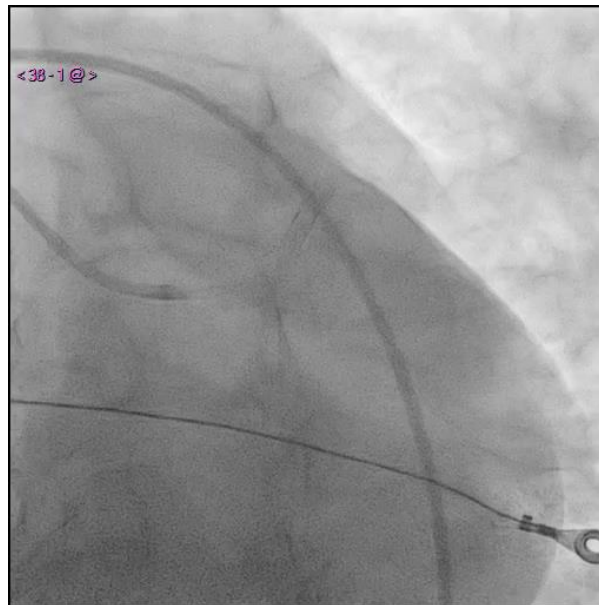
IVSE 16 ml/h



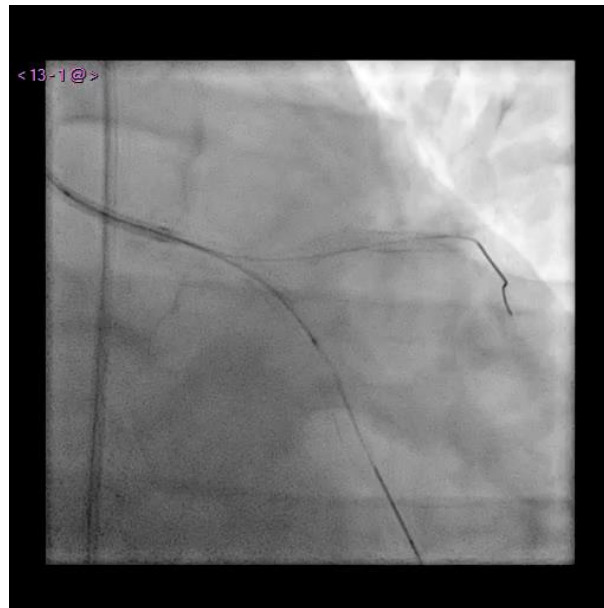
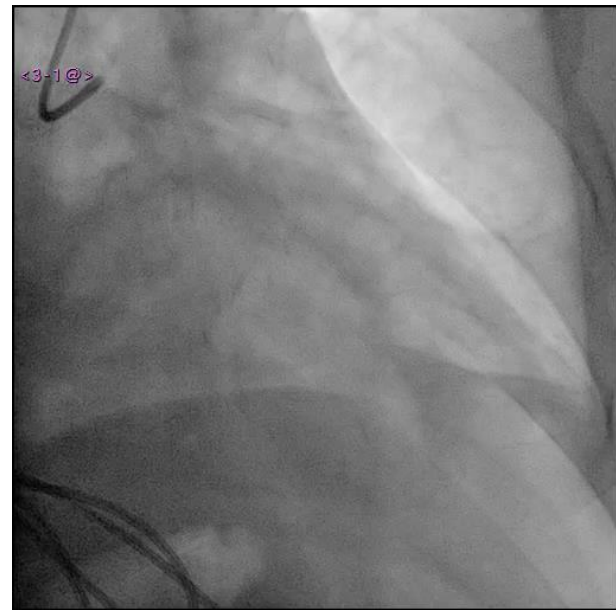
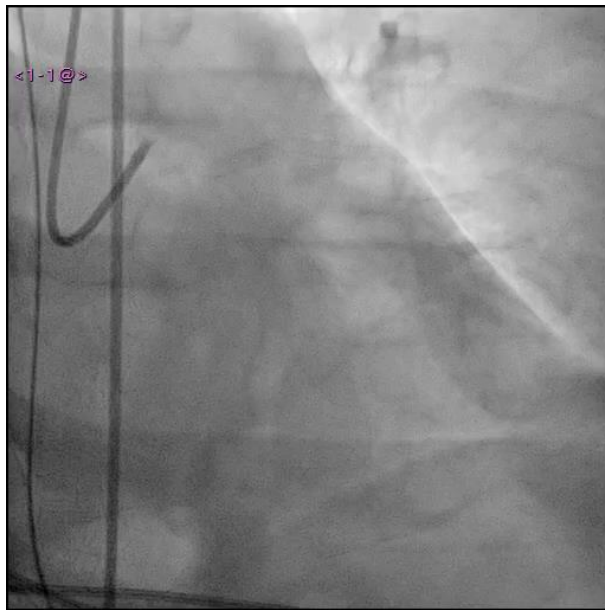
VVP non raccordée au patient ...



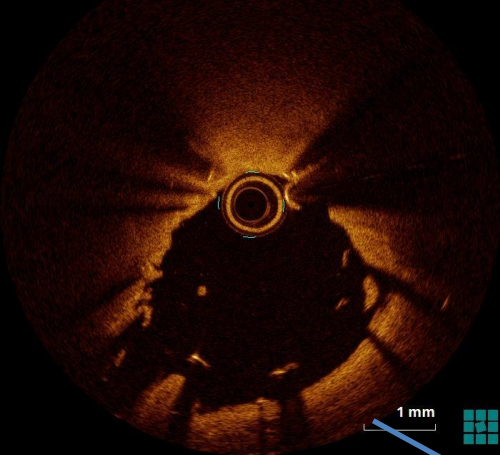
Ballon 2,5mm Cx



- Patient hospitalisé en réanimation pendant 24 h
- Sortie en USIC sans séquelle neurologique
- FEVG 60 %
- Sous Kardégic 75mg/j et Brilique 90mg x2/j
- Contrôle coronarographique et OCT en fin d'hospitalisation

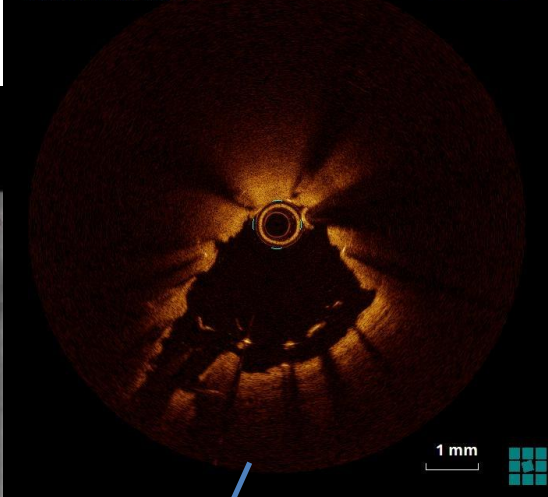


A Area: 7.98mm²
Mean Diameter: 3.18mm
Min: 2.92mm Max: 3.46mm

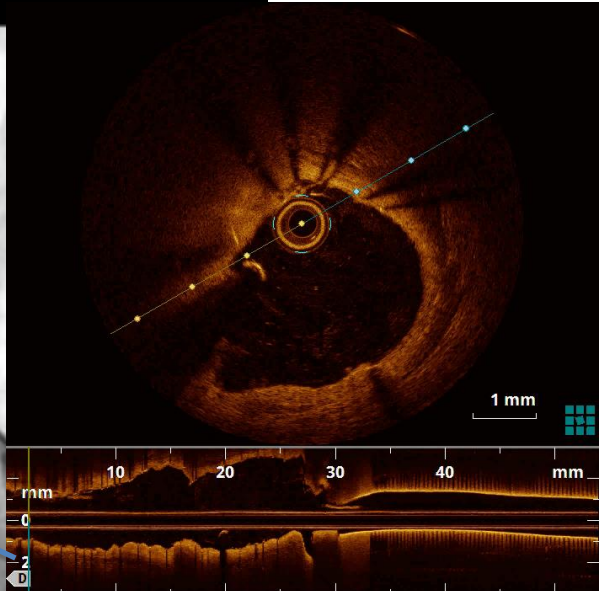


9/21/2018 2:39:02 PM
0150 (16 mm)

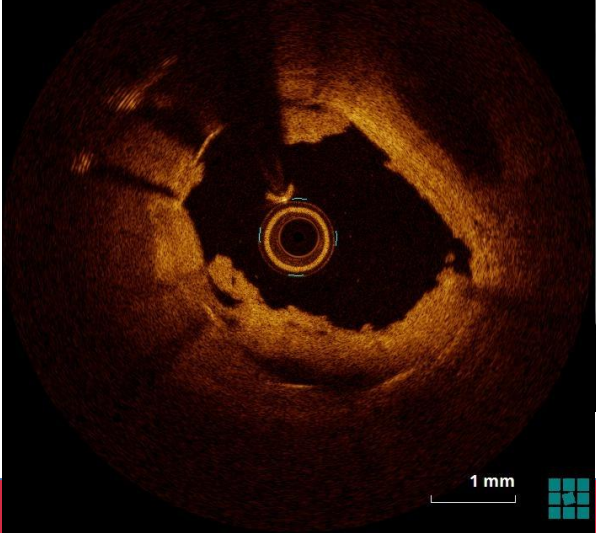
A Area: 7.86mm²
Mean Diameter: 3.15mm
Min: 2.88mm Max: 3.64mm



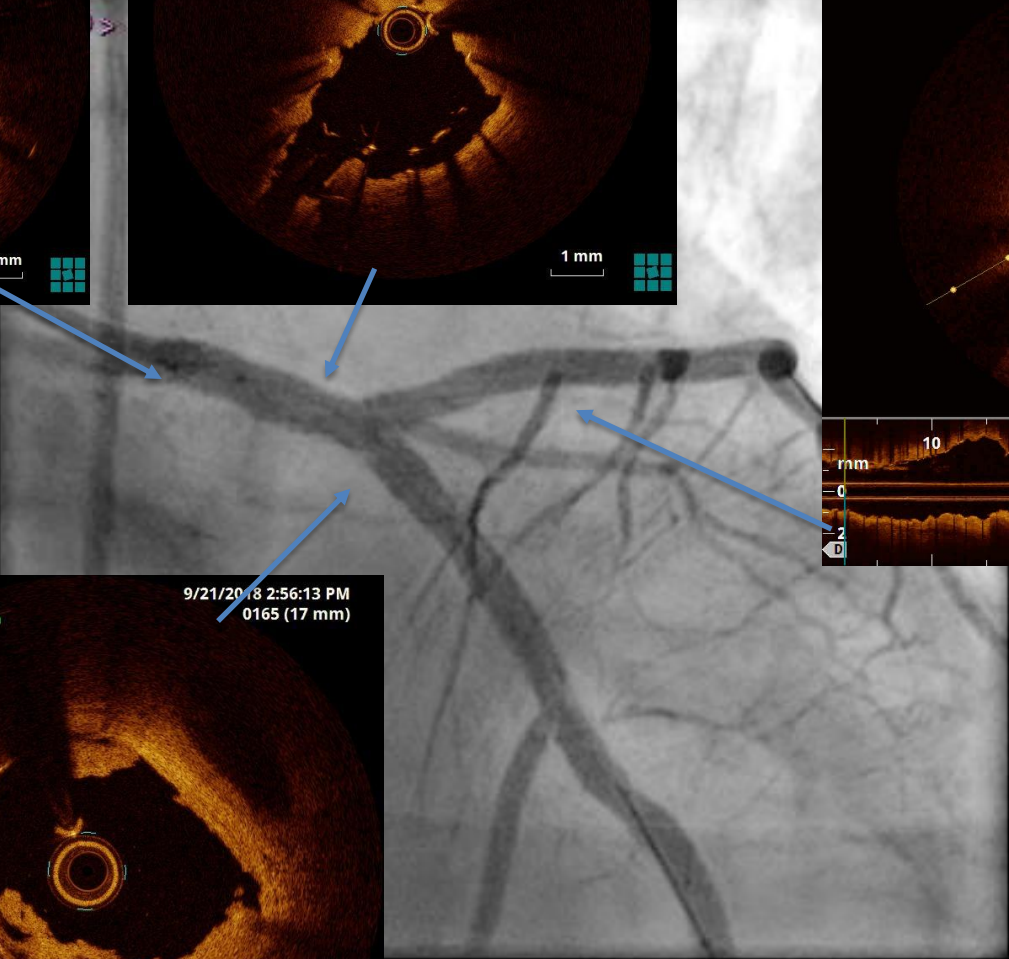
9/21/2018 2:39:02 PM
0148 (15 mm)

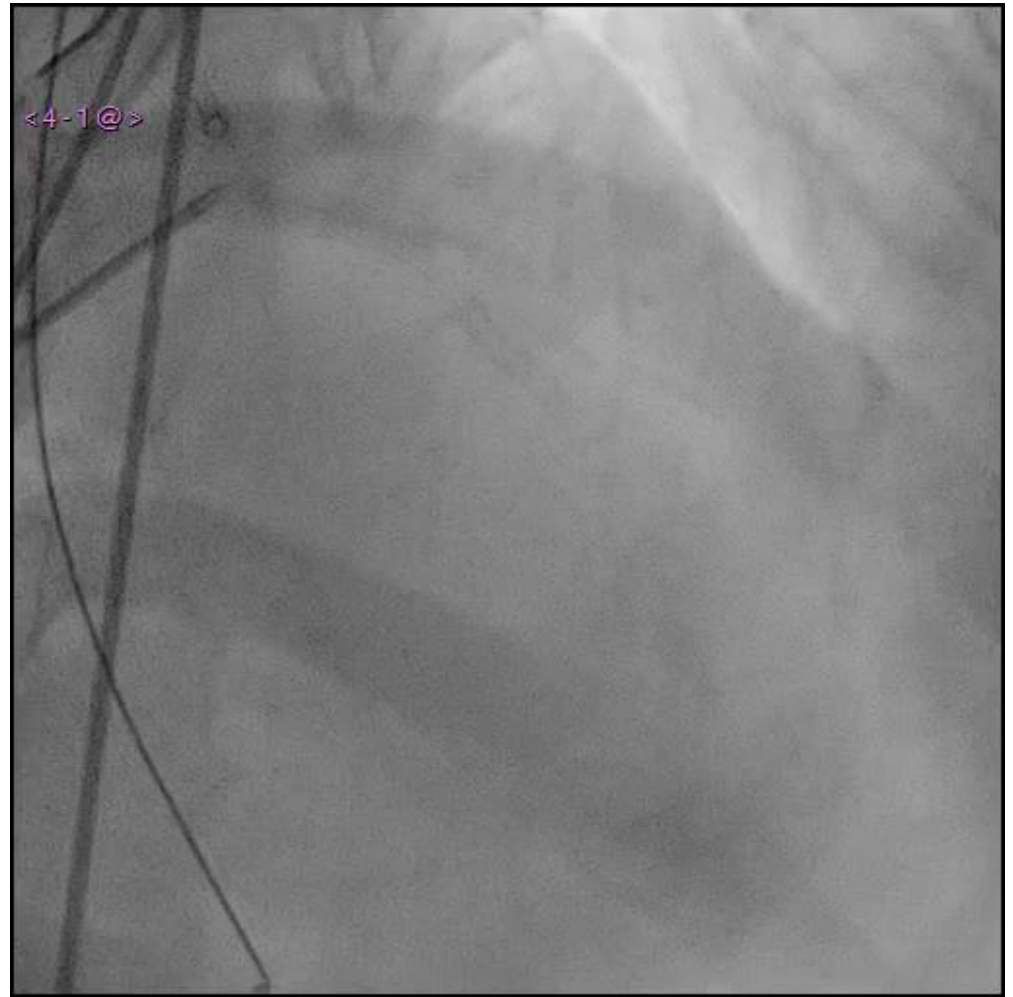
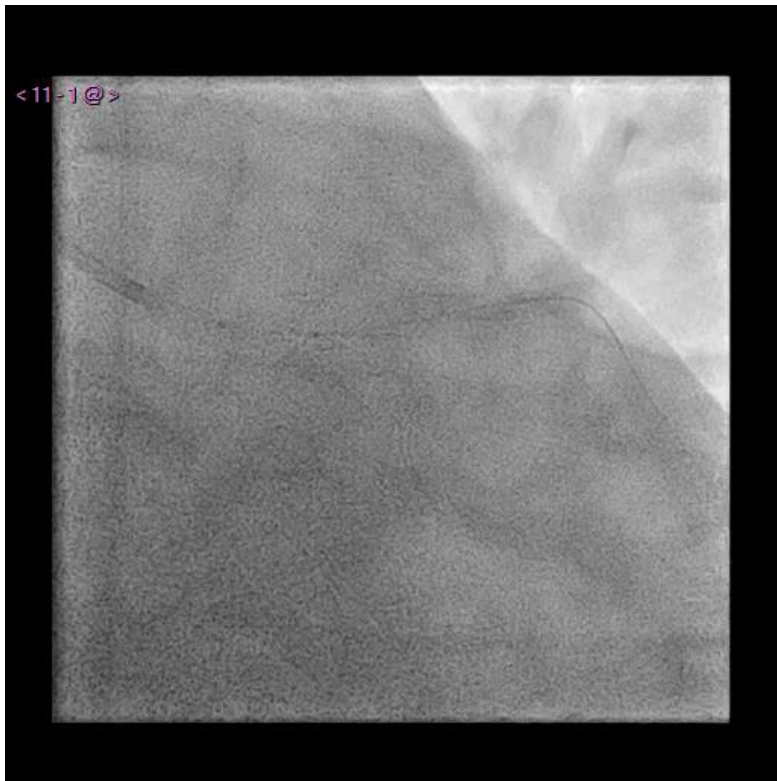


A Area: 5.32mm²
Mean Diameter: 2.57mm
Min: 2.09mm Max: 3.18mm



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0165 (17 mm)





Recommendations for antithrombotic treatment in ST-elevation myocardial infarction patients undergoing percutaneous coronary intervention

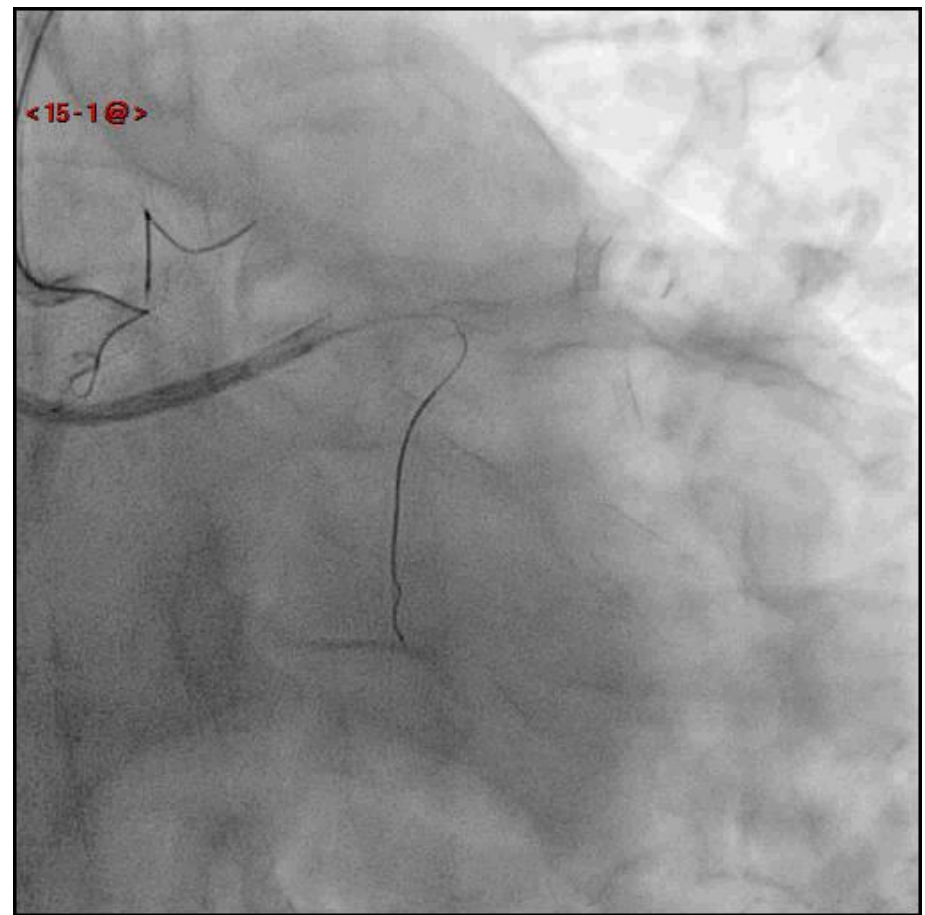
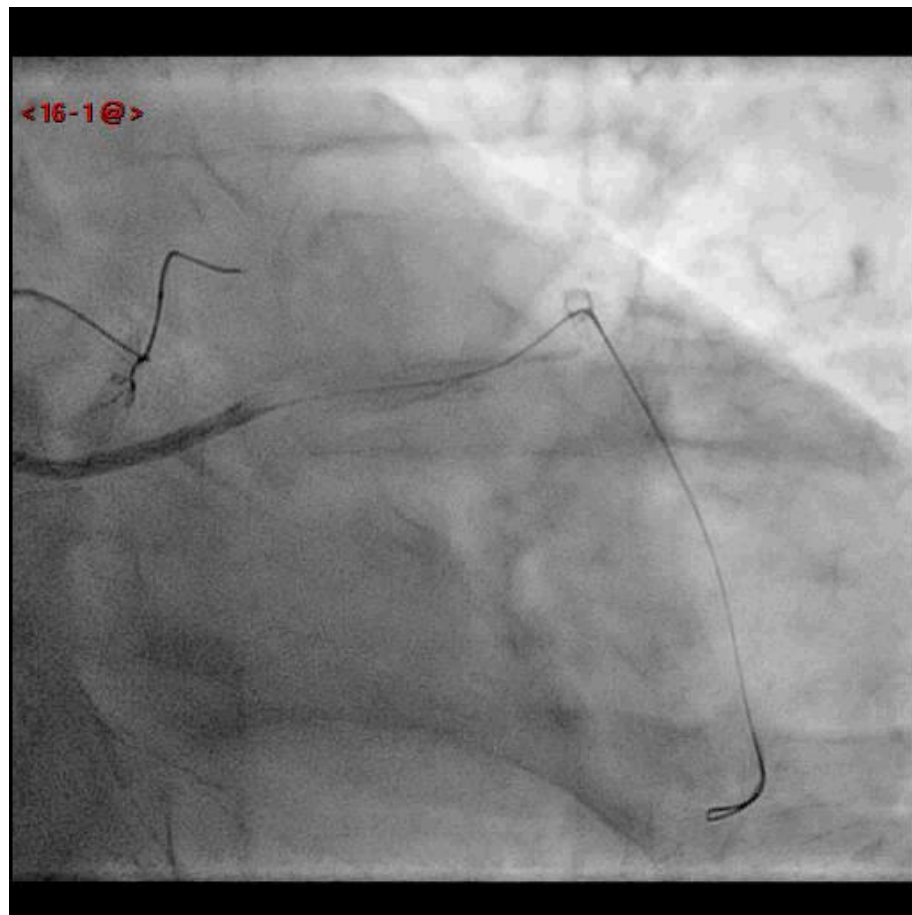
Cas 2

Recommendations	Class ^a	Level ^b
Pre-treatment and antiplatelet therapy		
Aspirin is recommended for all patients without contraindications at an initial oral loading dose of 150–300 mg (or 75–250 mg i.v.), and at a maintenance dose of 75–100 mg daily long-term regardless of treatment strategy. ^{681,683,721}	I	A
A potent P2Y ₁₂ inhibitor (prasugrel or ticagrelor), or clopidogrel if these are not available or are contraindicated, is recommended before (or at latest at the time of) PCI and maintained over 12 months, unless there are contraindications such as excessive risk of bleeding. ^{701,702,724,743}	I	A
GP IIb/IIIa inhibitors should be considered for bail-out if there is evidence of no-reflow or a thrombotic complication.	IIa	C
Cangrelor may be considered in P2Y ₁₂ -inhibitor naïve patients undergoing PCI. ⁶⁷³	IIb	A
GP IIb/IIIa antagonists may be considered in P2Y ₁₂ -inhibitor naïve patients undergoing PCI.	IIb	C

Peri-interventional therapy		
Anticoagulation is recommended for all patients in addition to antiplatelet therapy during PCI. ^{703,726}	I	A
Routine use of UFH is recommended.	I	C
Routine use of enoxaparin should be considered. ⁷³⁷	IIa	B
Routine use of bivalirudin may be considered. ^{708,710,728,744–746}	IIb	A

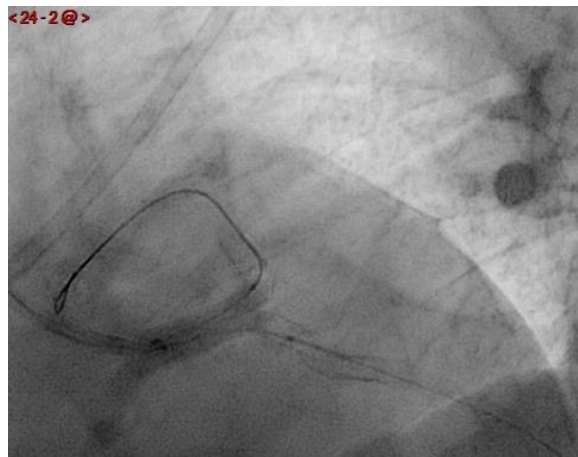
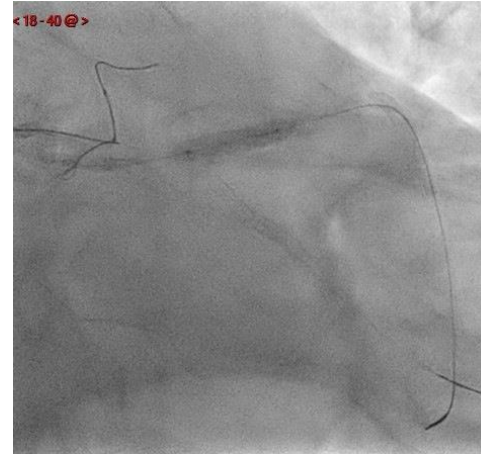
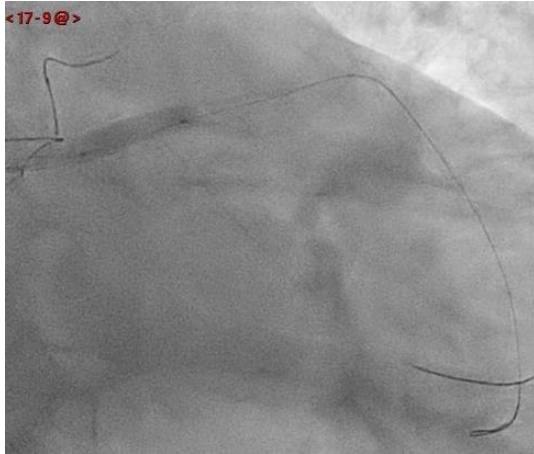
Cas 3 : CTO CD

- ◆ ♂ 61 ans
- ◆ HTA, HCT, tabac sevré
- ◆ Infarctus latéral juillet 2017, compliqué d'ACR.
- ◆ Pris en charge à Milan : angioplastie 1^{ère} latérale, CX (2 DES) et IVA (3 DES). Sous ASA + Ticagrelor.
- ◆ Angor résiduel sur occlusion chronique CD : indication de CTO par voie rétrograde après documentation de l'ischémie (12% scintigraphie)
- ◆ Procédure sous HNF, 100UI/kg avec objectif ACT 350
- ◆ Approche antérograde 30 min puis voie rétrograde.
—> ACT 377

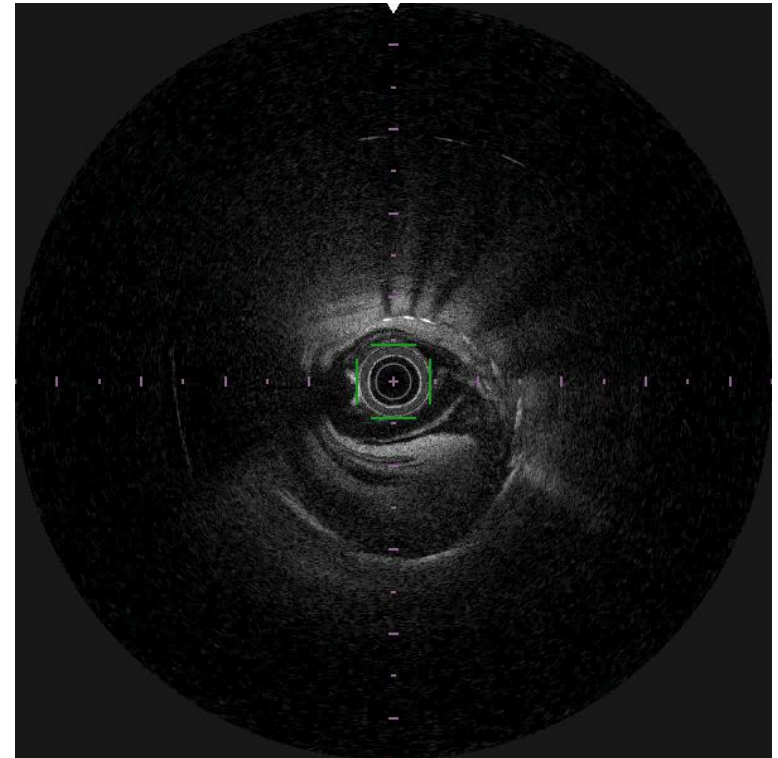
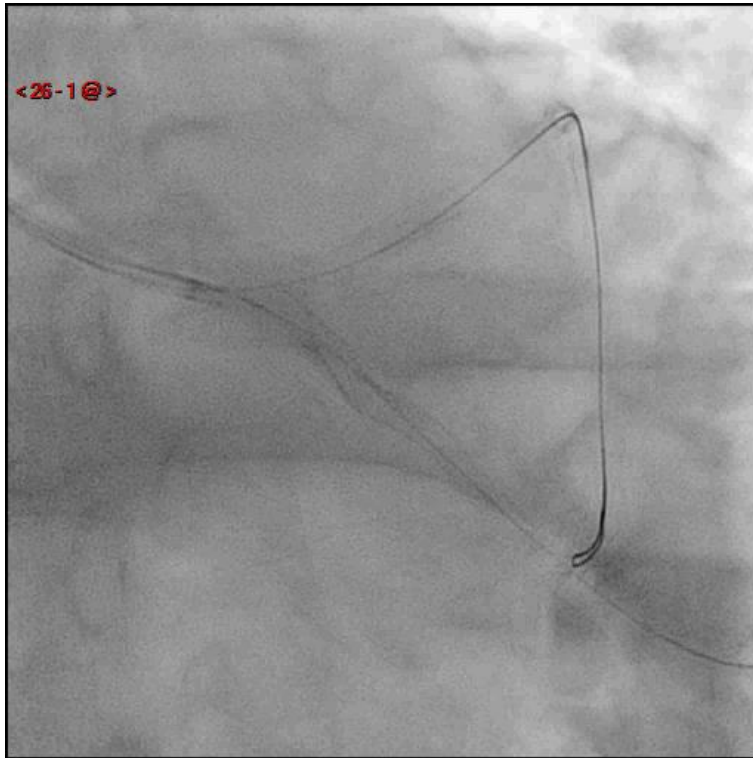


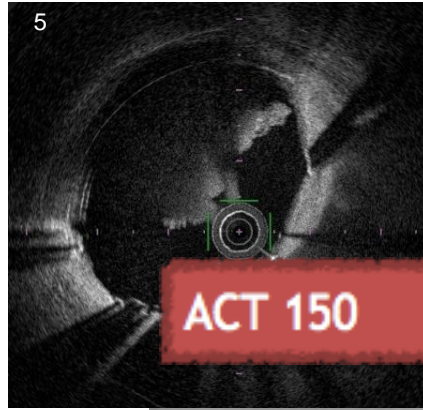
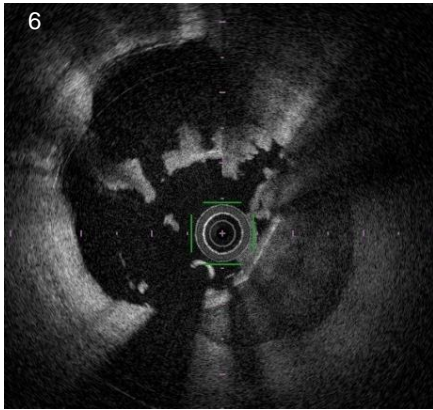
- ◆ Image hétérogène et sténose sub-occlusive du tronc commun mis sur le compte d'une dissection → 1DES TC et 1DES IVA proximale
- ◆ Contrôle OCT de l'IVA

Angioplastie : 1 DES IVA1(3.5 x 15 mm), 1 DES TC (4.0 X 12 mm), 1 DES CX1(3.0 x 22 mm enT stenting puis kissing)

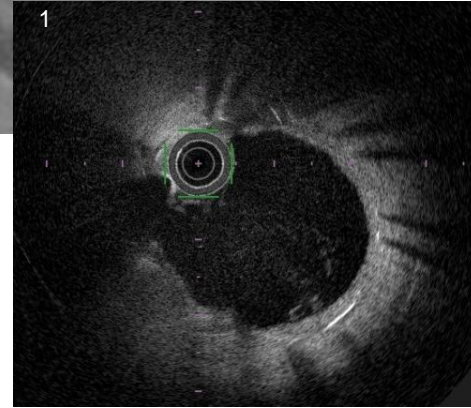
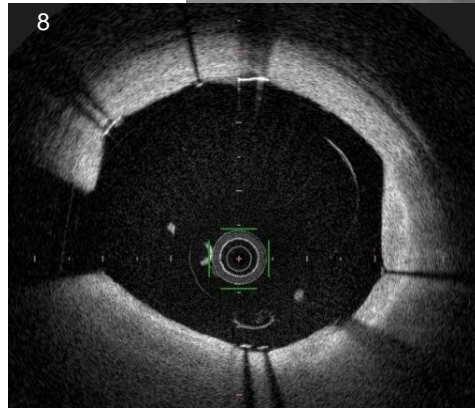
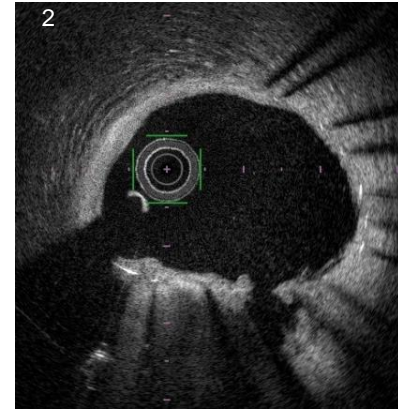
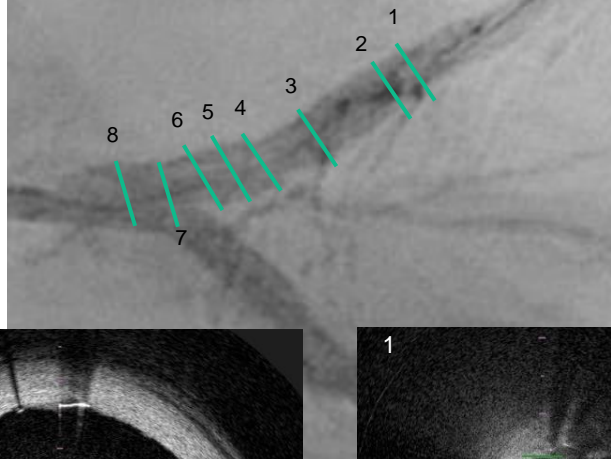
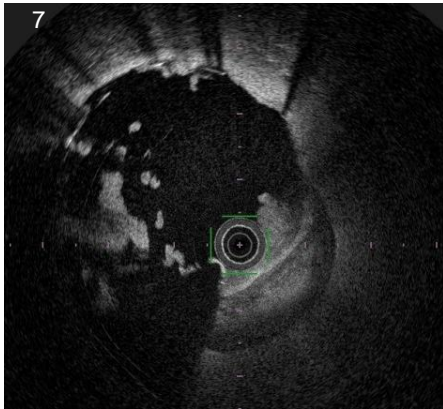
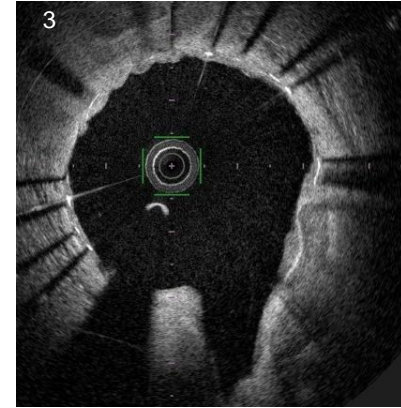
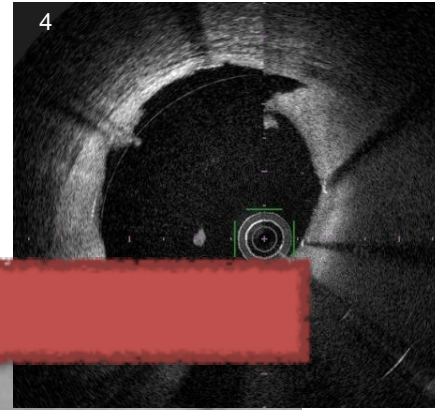


Contrôle angiographie vs OCT





ACT 150



Cas 3 : CTO CD

- Nécessité d'une anticoagulation importante lors d'un double abord coronaire.
- Rigueur dans les contrôles ACT : timing, prélèvement
- Apport de l'imagerie endo-coronaire pour diagnostic positif de thrombus.

Cas 4 : TAVI

Patient de 79 ans

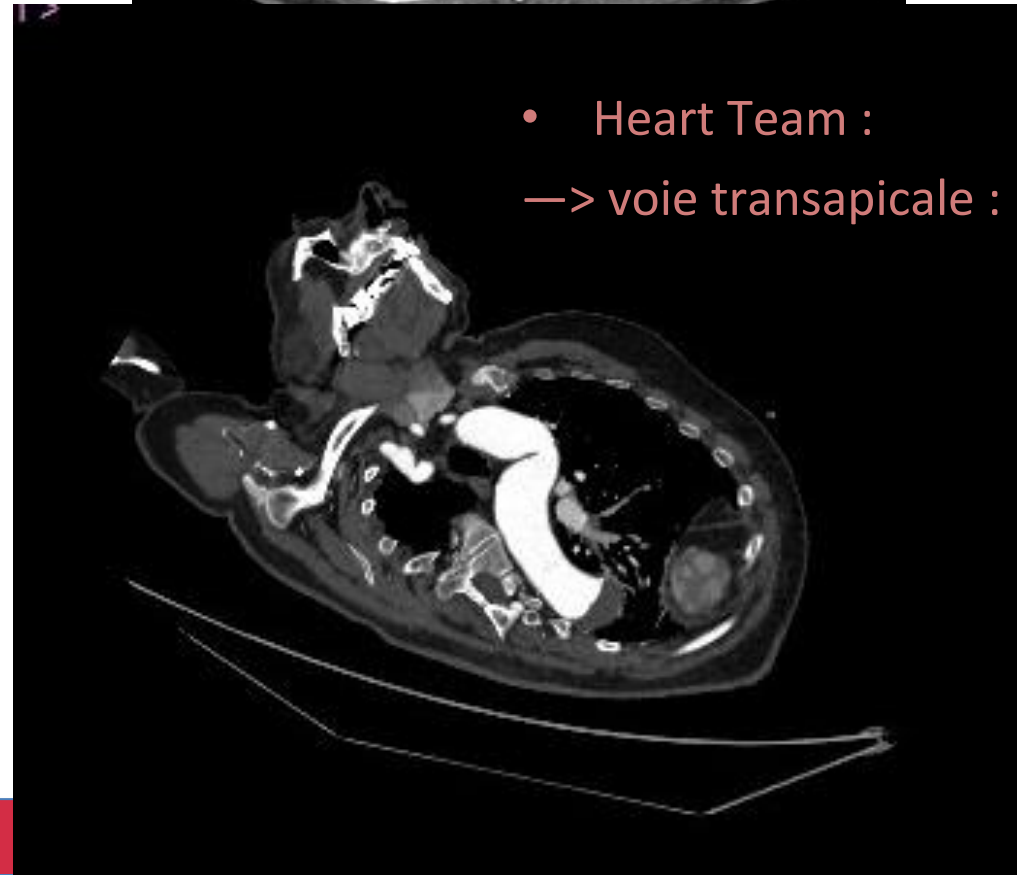
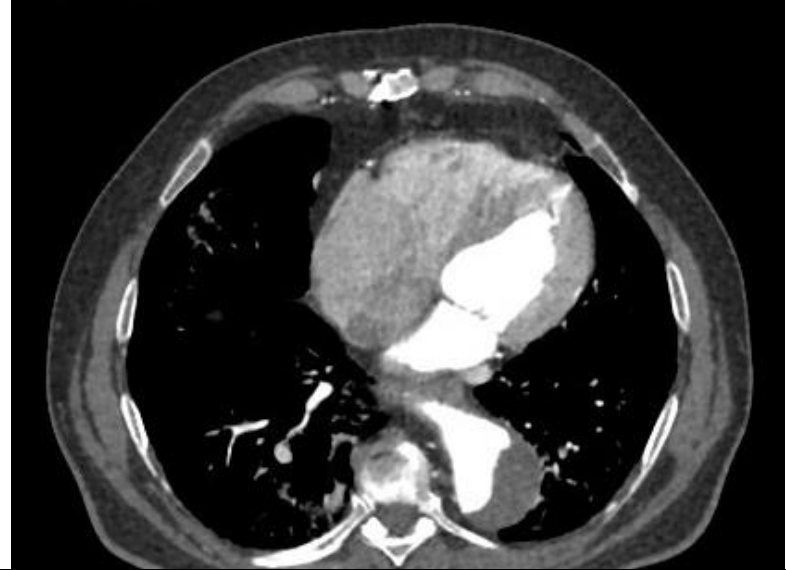
- Bioprothèse aortique MitroFLOW 27 depuis 2013
- Dégénérescence sur le mode sténosage (GM 47 mmHg, IP 0,20)

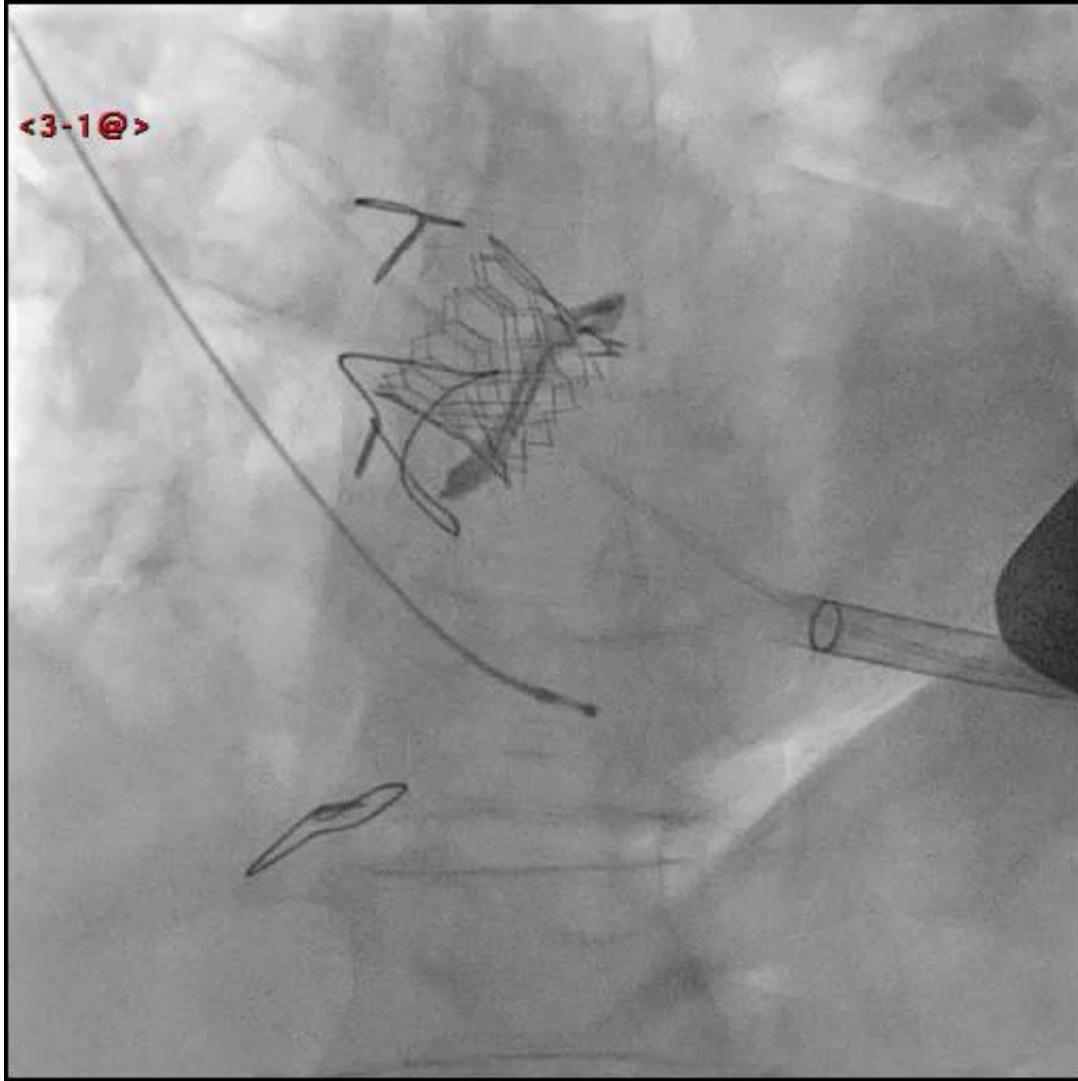
- Dyspnée NYHA III
- Réseau coronaire normal

- ATCD :
 - HTA, HCT, Tabac sevré
 - FA post opératoire (2013) non récidivante, non anticoagulée,
 - BPCO post-tabagique oxygénée,
 - Pseudo-coarctation de l'aorte,
 - Anévrisme aorte ascendante 50 mm

TDM pré TAVI

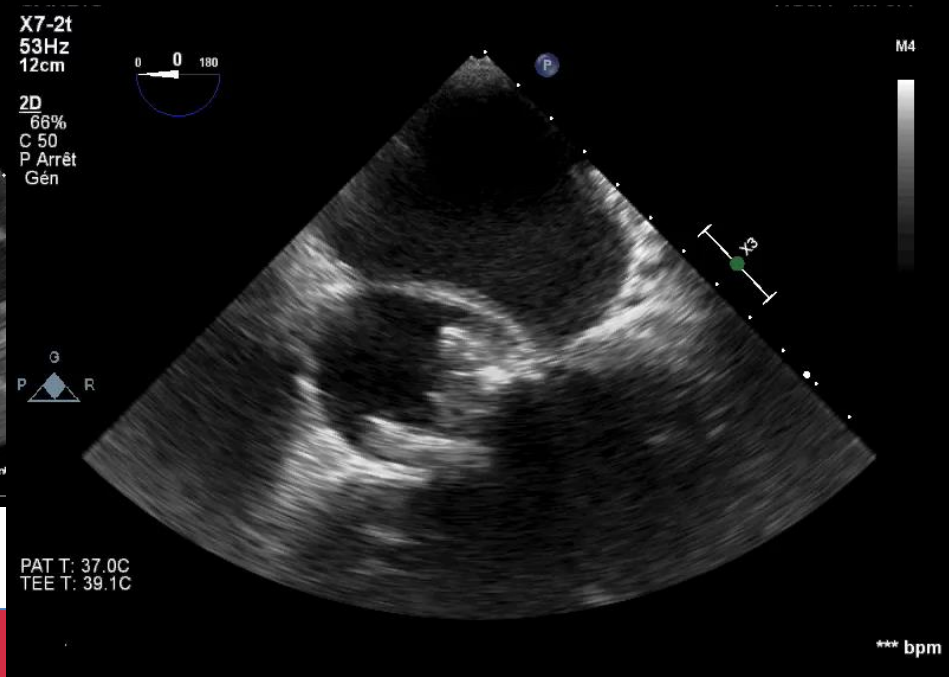
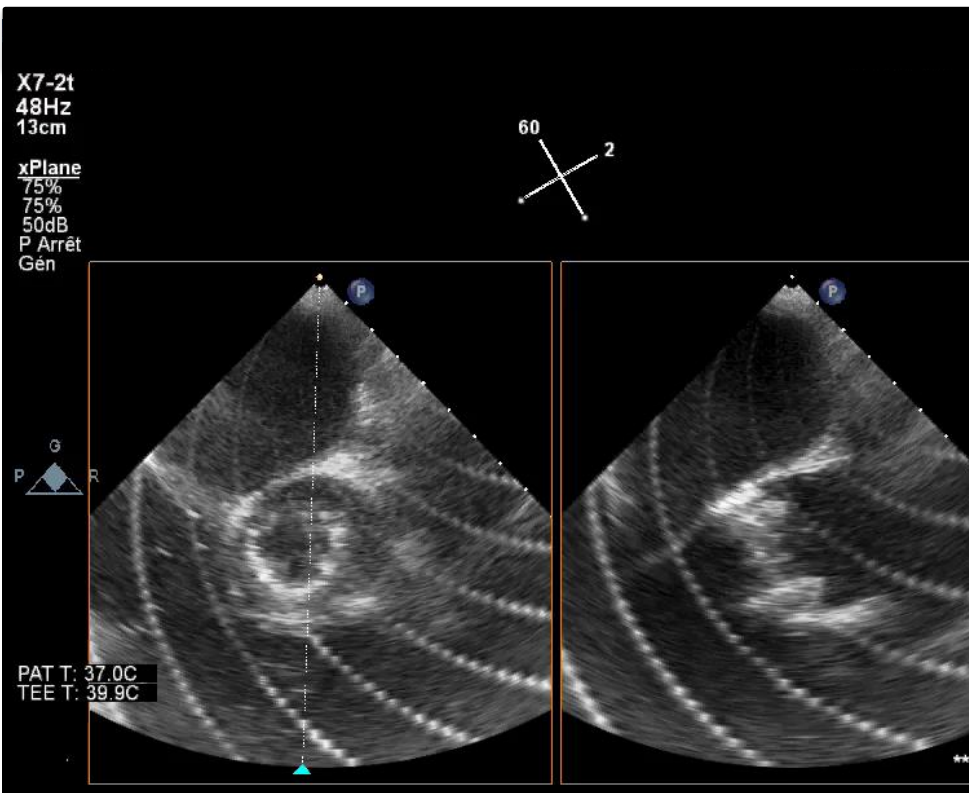
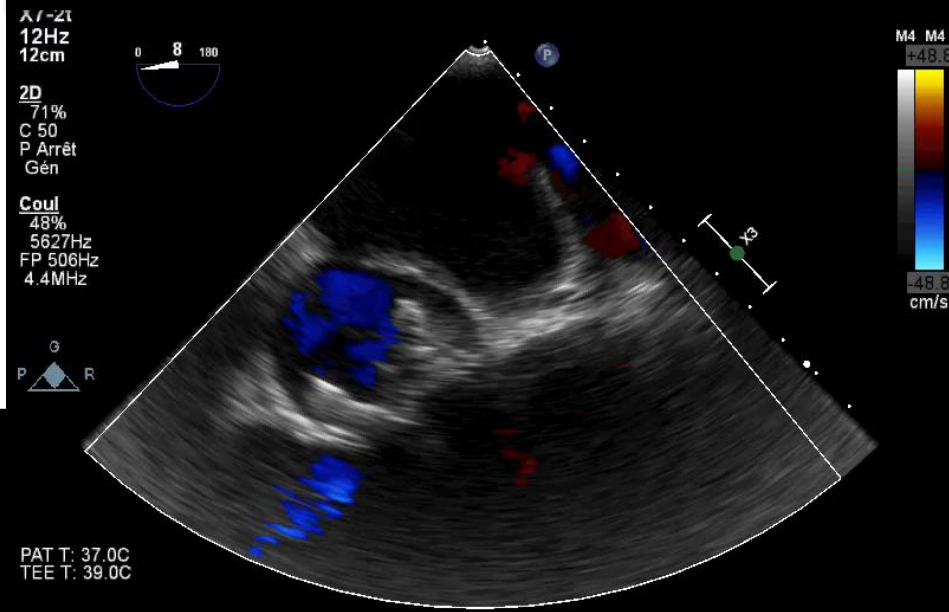
- Kinckking de l'aorte
- Thrombus pariétal aorte descendante

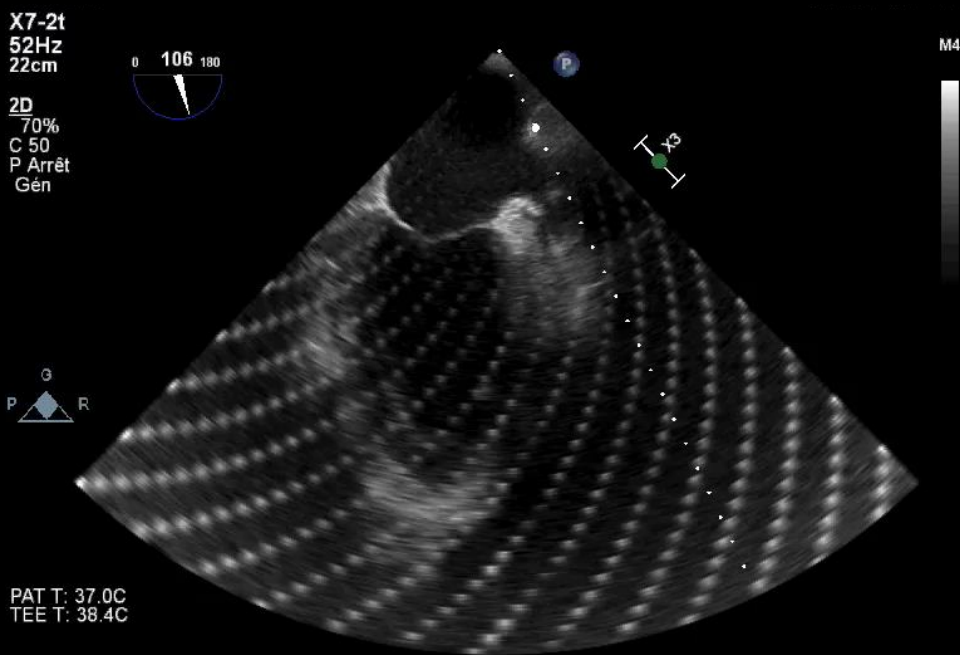




- Edwards S3 de 26 mm
- Procédure sous HNF
- Pas de protamine.
- RAD J6
- Pas de complications
- GM 15 mmHg, FEVG 55 %
- ASA 75 mg+ Clopidogrel 75mg/j
- Traitement AAP initié à 3 jours post-opératoire.
- DAPT 3 mois puis 1 seul AAP.

- Réhospitalisé pour OAP à J2
- FEVG 20 %
- GM transvalvulaire 45 mmHG
- Pas d'inobservance thérapeutique





*** bpm

- ✦ Réanimation : Sevrage CEC à J5
 - ✦ FEVG 40 %, stabilité hémodynamique
 - ✦ Sous HNF et ASA. Test rapide TIH négatif.
 - ✦ Trachotomie à J8
 - ✦ Complications respiratoires
 - ✦ Hématome splénique spontané
 - ✦ Décès à J15
-
- ✦ **Second test TIH immunologique positif...**

Take Home Message

- ✦ Catastrophes thrombotiques : Augmentation de la mortalité ++
- ✦ S'assurer de l'arrivée des traitements anti-thrombotiques jusqu'au patient ++
 - ✦ injection dans la radiale
 - ✦ privilégier IV plutôt que per os si SNG
 - ✦ ACT en salle indispensable, rigueur des prélèvements.
- ✦ Utiliser les moyens de désobstruction coronaire adaptés
 - ✦ Thromboaspiration : pas en routine
 - ✦ Angioplastie au ballon
 - ✦ Direct stenting - procédure mimi.

Take Home Message

- ✦ S'appuyer sur l'imagerie endo-coronaire (OCT>>IVUS)
 - ✦ identifier le thrombus
 - ✦ évaluer la charge thrombotique
 - ✦ aiguiller la prise en charge invasive vs médicale initiale
- ✦ Ne pas méconnaître une TIH lors d'une complication thrombotique inattendue.
- ✦ Connaître les facteurs de risque du No Reflow et les traitements adaptés pour limiter sa survenue.

Merci de votre attention