26-27-28 JANVIER 2022 HIGH TECH MARSEILLE

CLERMONT-FERRAND
CENTRE HOSPITALIER UNIVERSITAIRE

Stenting des lésions longues
aspects pratiques

Pascal Motreff, 27 janvier 2022

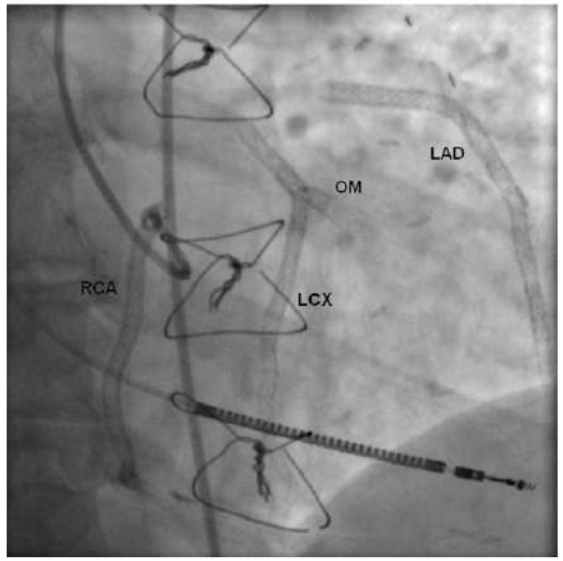
Conflits d'intérêts : consulting Abbott, Medtronic, Terumo

IMAGES IN CARDIOLOGY

A Heart With 67 Stents

Rami N. Khouzam, MD, Rajvir Dahiya, MD, Richard Schwartz, MD

Mineola, New York



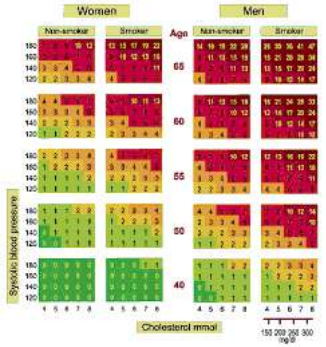
From Winthrop University Hospital, Mineola, New York.
Manuscript received January 29, 2010; accepted February 16, 2010.

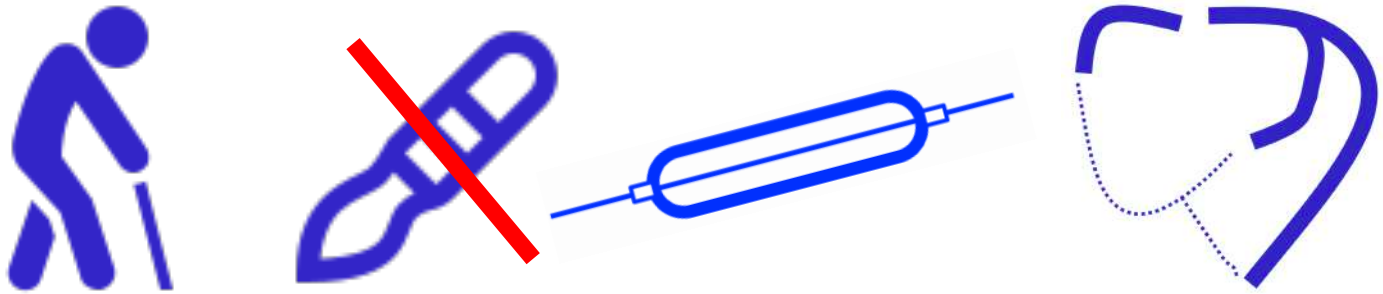
A 56-year-old male with coronary artery disease presented with angina, nonspecific electrocardiographic changes, and elevated troponins. Coronary angiography revealed total occlusion of a stent in the circumflex artery, where another was deployed—his 67th stent. The patient had 28 catheterizations over 10 years, with stents placed in his native coronary arteries as well as in 3 bypass grafts. All stents were placed to relieve his angina, refractory to maximal medical treatment and transmyocardial laser revascularization. Stents can be a great tool to help revascularization and relieve symptoms; unfortunately, they are prone to thrombosis and restenosis. If they fail while medical management is maximized unsuccessfully, alternative tools are lacking. This case raises many questions: "How much is too much?" "Are there guidelines?" and "What else can be offered for symptom relief?" More studies are needed to evaluate impact on quality of life versus risks in this multistent population. LAD = left anterior descending coronary artery; LCX = left circumflex coronary artery; OM = obtuse marginal branch of the circumflex coronary artery; RCA = right coronary artery.

J Am Coll Cardiol 2010

Stenting des lésions longues

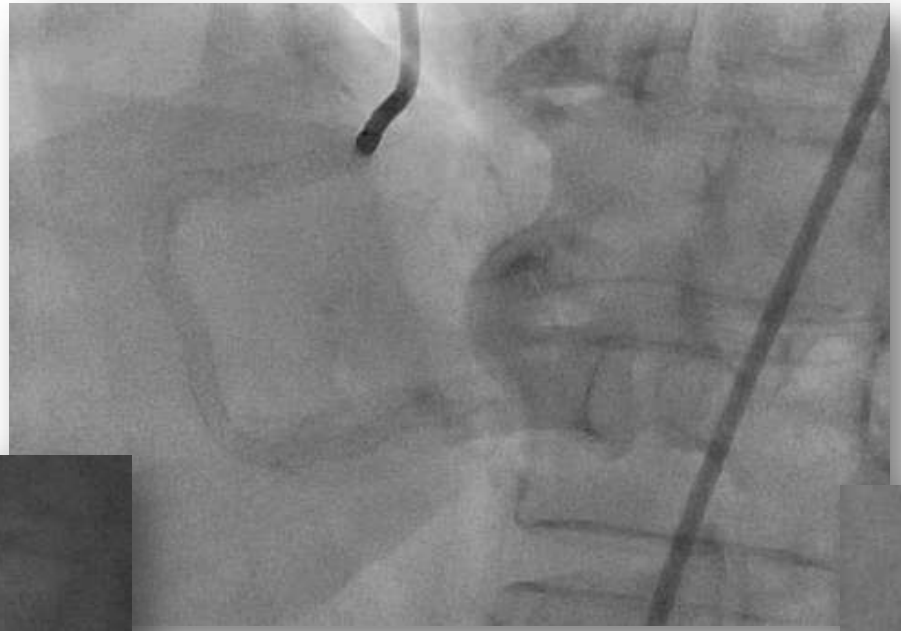
De plus en plus…

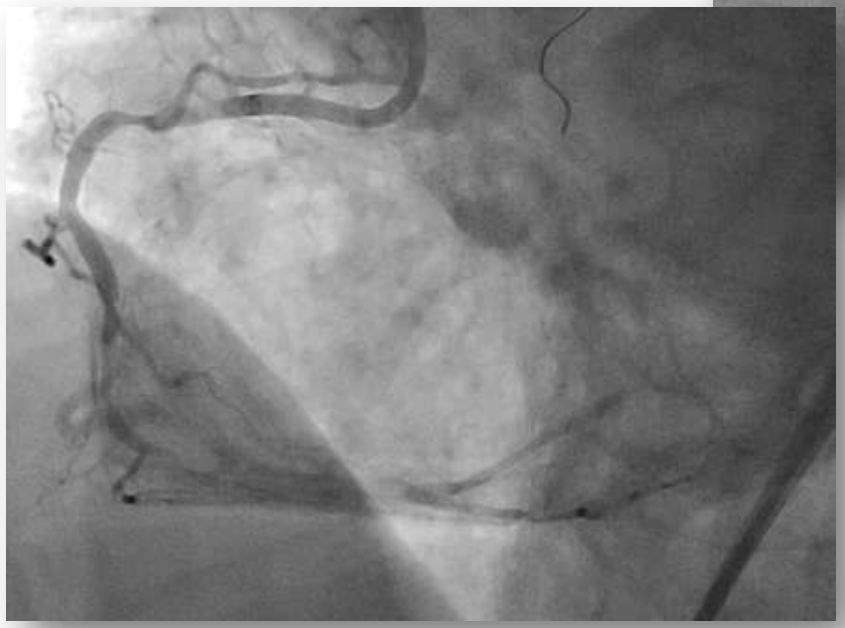




- Augmentation des FRCV
- Vieillissement de la population
- Mauvais candidats ou récusés de la chirurgie
- Confiance en la technique et aux nouveaux outils de la PCI
- Nouvelles indications : CTO

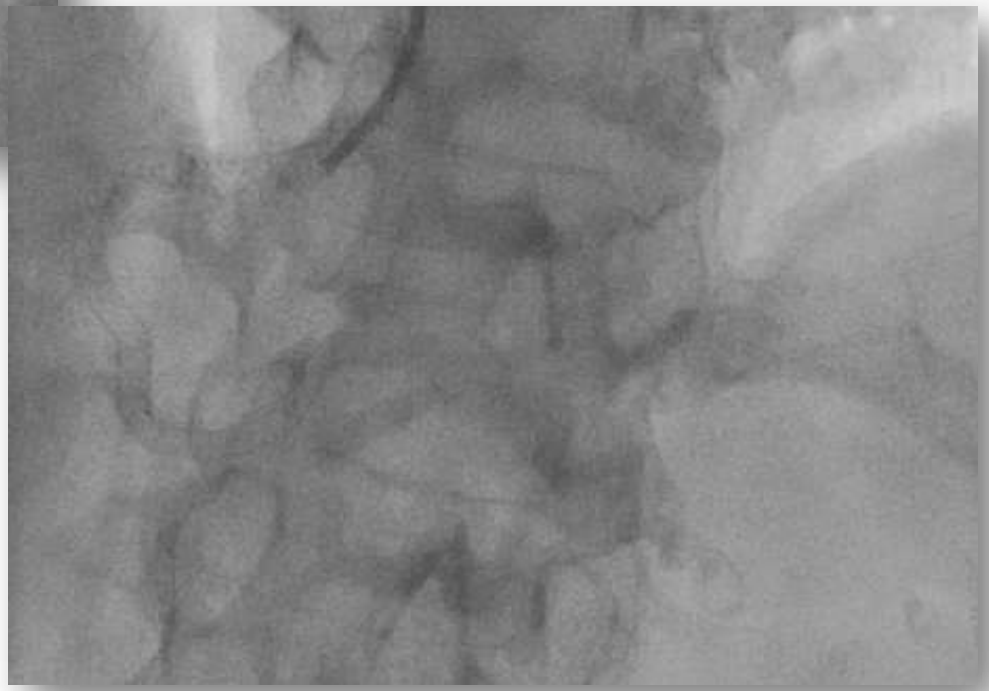
Mme F., 78 ans, angor serré, bon VG, CTO CD





Synergy 2.5 x 38mm
Synergy 3.0 x 38mm
Synergy 3.0 x 20mm

3 ans plus tard…



Stenting des lésions longues

Préparer la procédure

- Procédure complexe : **à planifier (non ad hoc)**
- Préparer patient (DAPT)
- Anticiper techniques, matériel…
- Exigence en terme de résultat (risque thrombose, resténose)

QUESTION TIME !

slido

OU

www.slido.com

Code : #745235

Stenting des lésions longues

Les 4 points fondamentaux

- Support
- Préparation de la lésion
- Stenting
- Optimisation du résultat

Stenting des lésions longues

Le support

- Cathéter 6 voire 7F
- EBU à gauche, Amplatz ou 3DRC à droite
- Guide extra support
- **Extension de cathéter +++**

Stenting des lésions longues

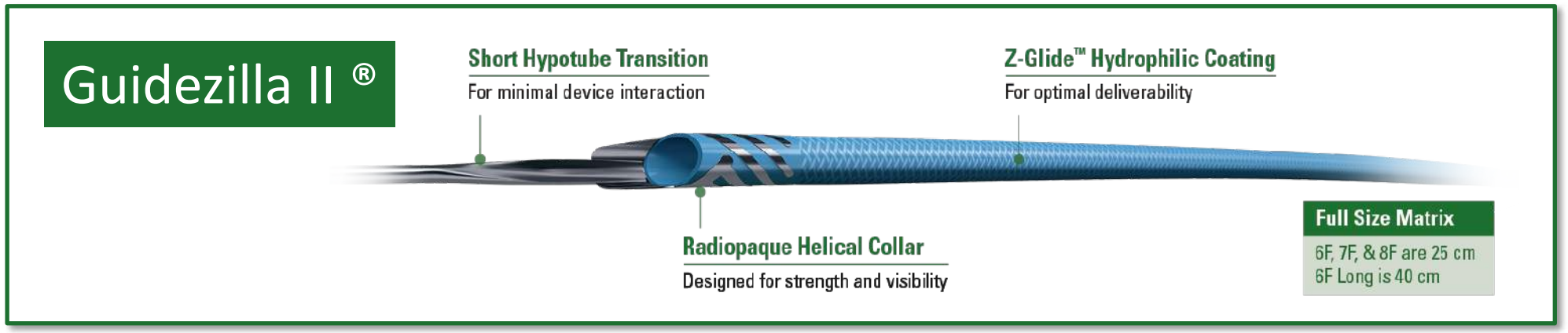
Le support

Progrès majeur pour :

- Anatomies hostiles (tortuosités ,calcifications)
- Angioplasties complexes, CTO
- Revascularisation post-TAVI

Prudence : pas de kissing, effet venturi, stent damage, balloon kinking, dissection hydraulique…

GuideZilla II, GuideLiner, Telescope, Guideon…

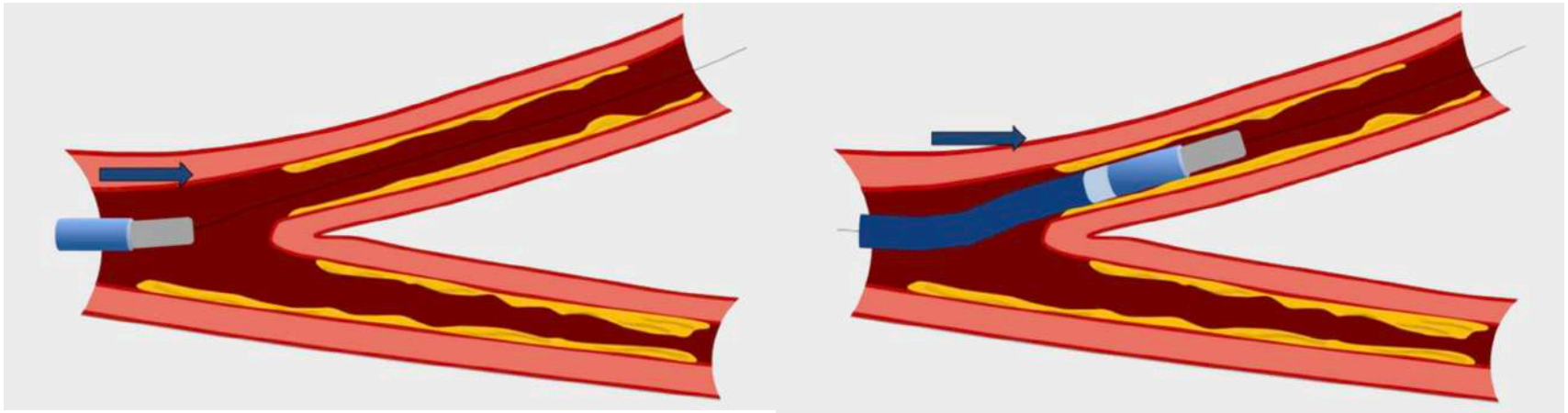


Stenting des lésions longues

Le support

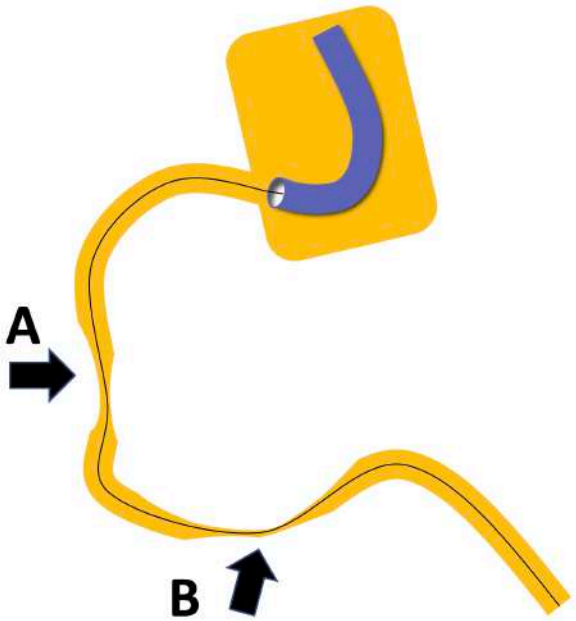
Extension de cathéter en pratique

- Balloon surfing technique (BST)

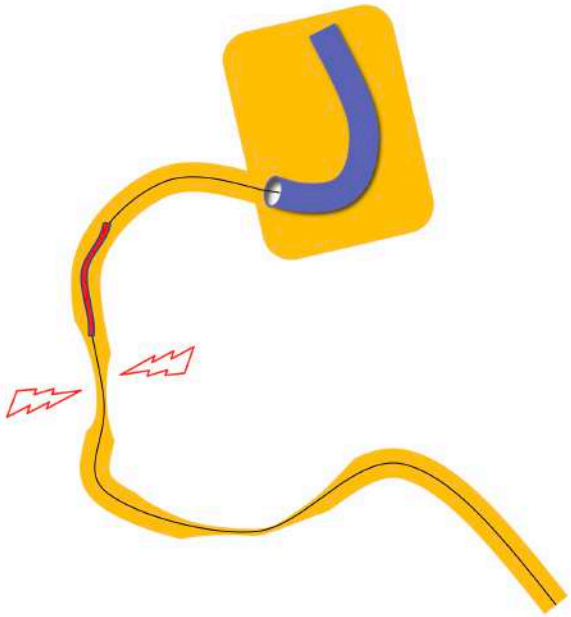


- Balloon assisted tracking technique (BTT)

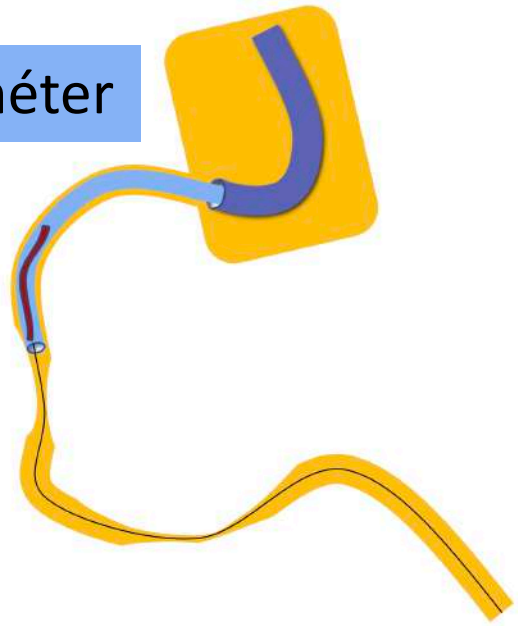
Lésions longues et complexes



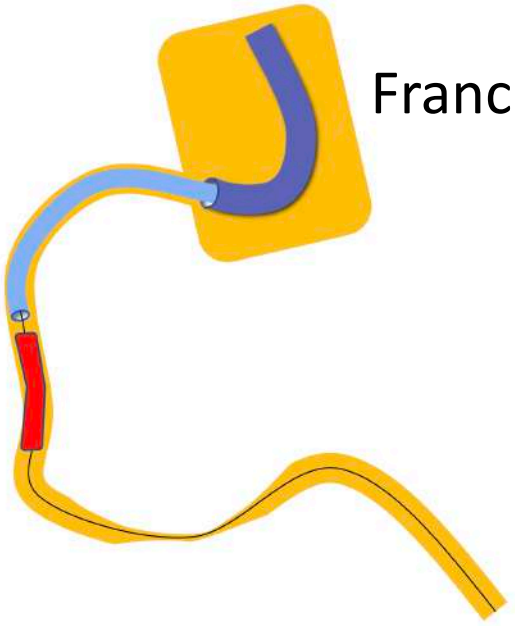
Non franchissement du ballon



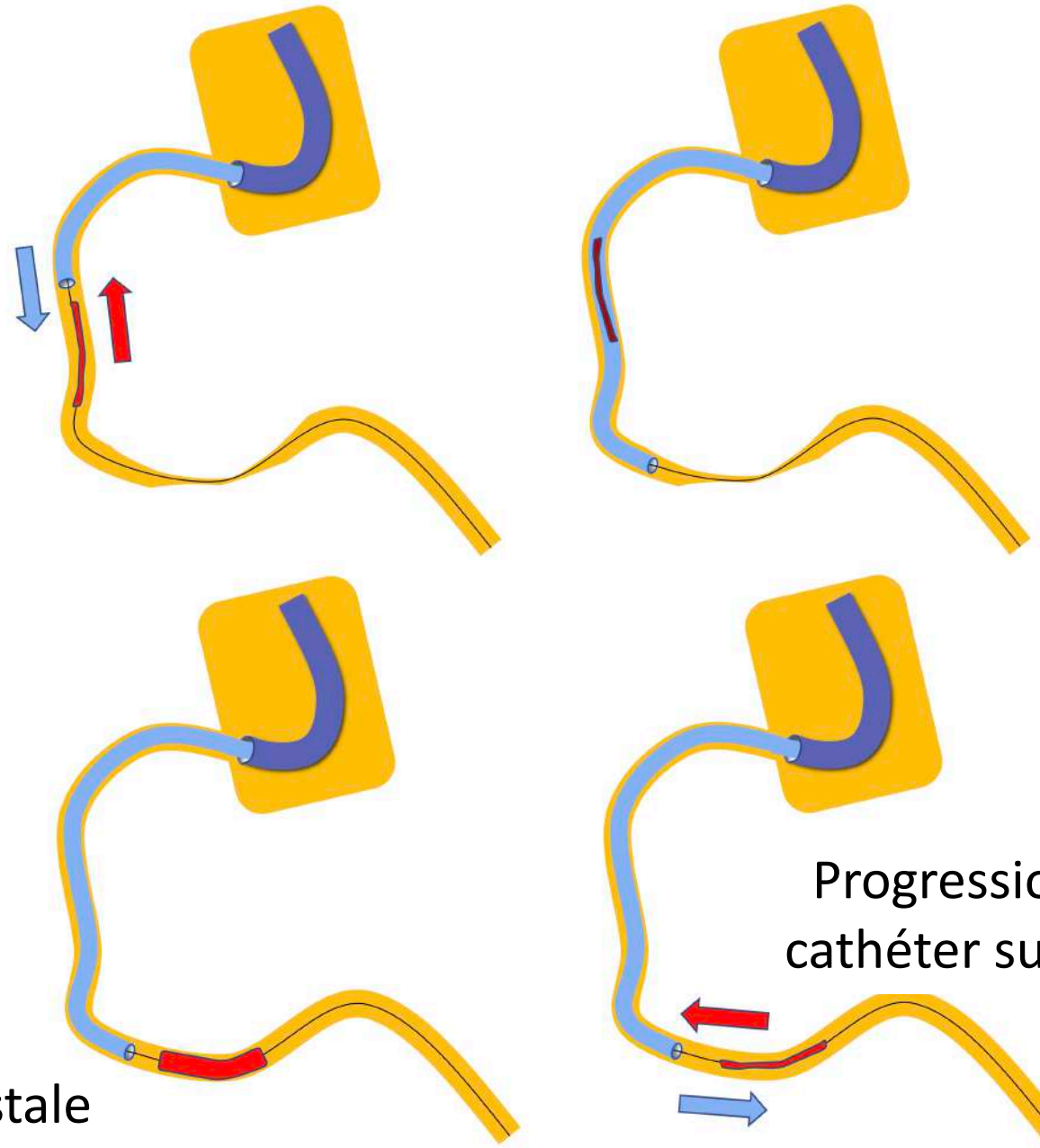
Extension de cathéter



Franchissement du ballon



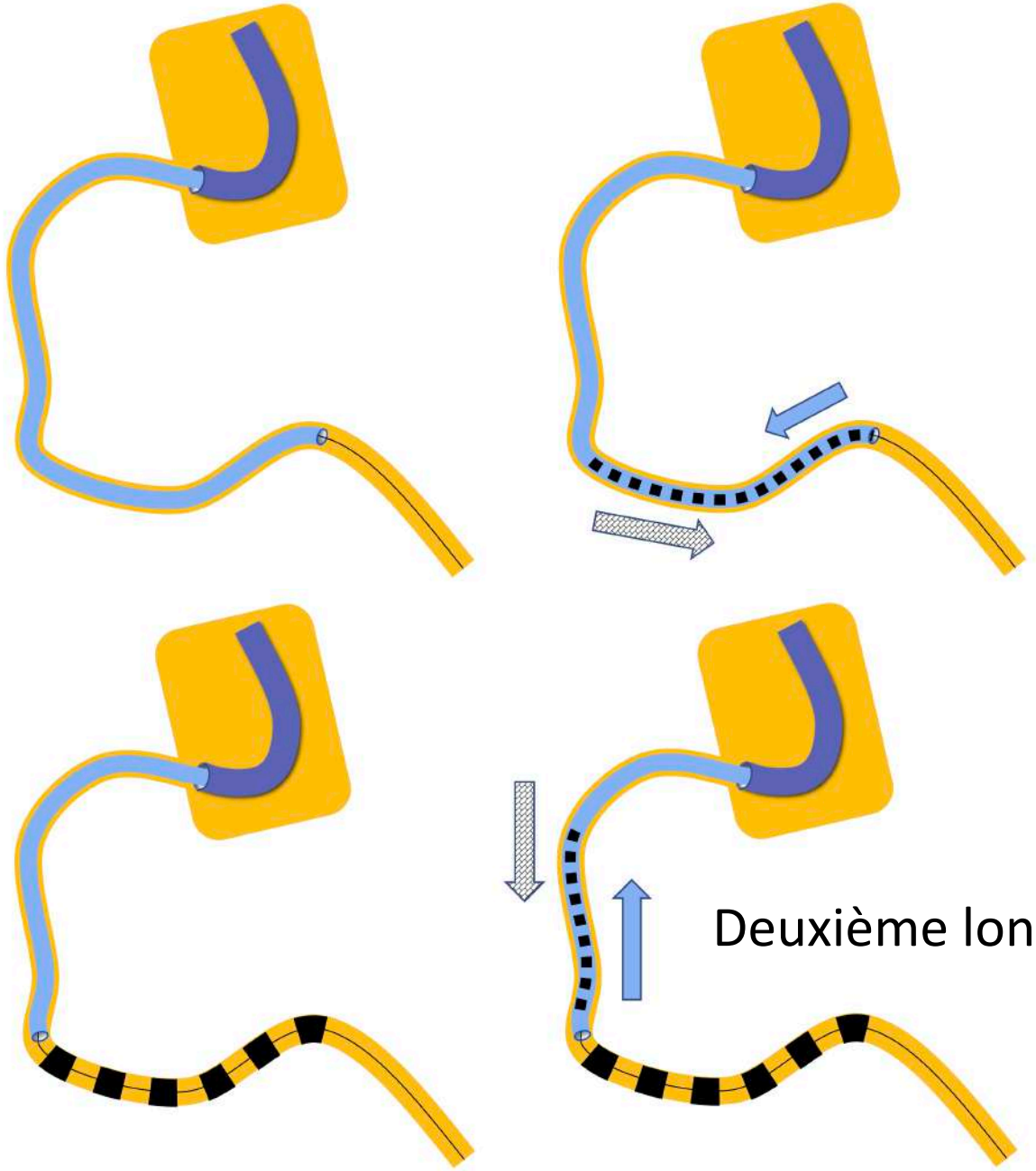
Progression de l'extension de cathéter sur déflation du ballon



Angioplastie distale

Progression de l'extension de cathéter sur déflation du ballon

Long stent dans extension de cathéter



Déploiement du long stent après retrait de l'extension

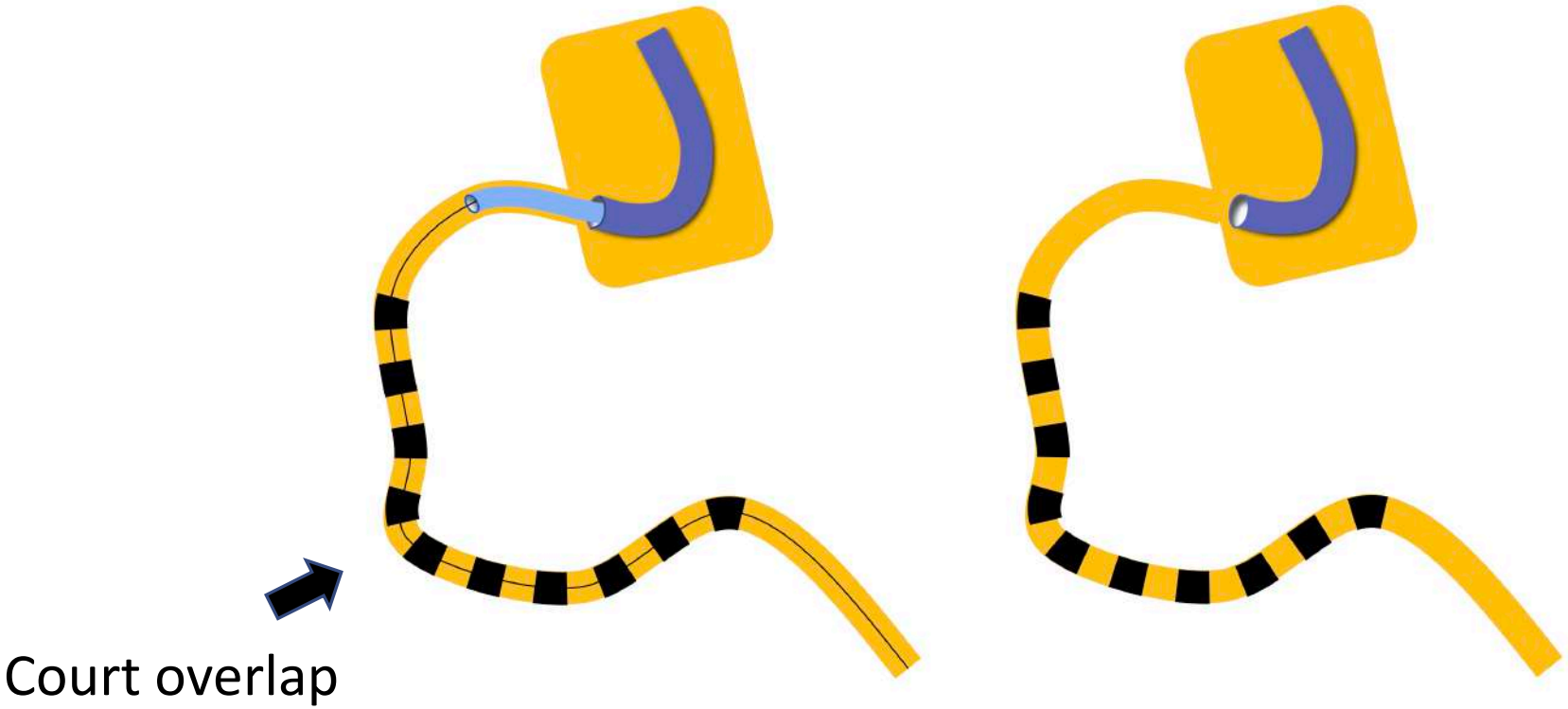
Deuxième long stent dans l'extension

Stenting des lésions longues

Le support

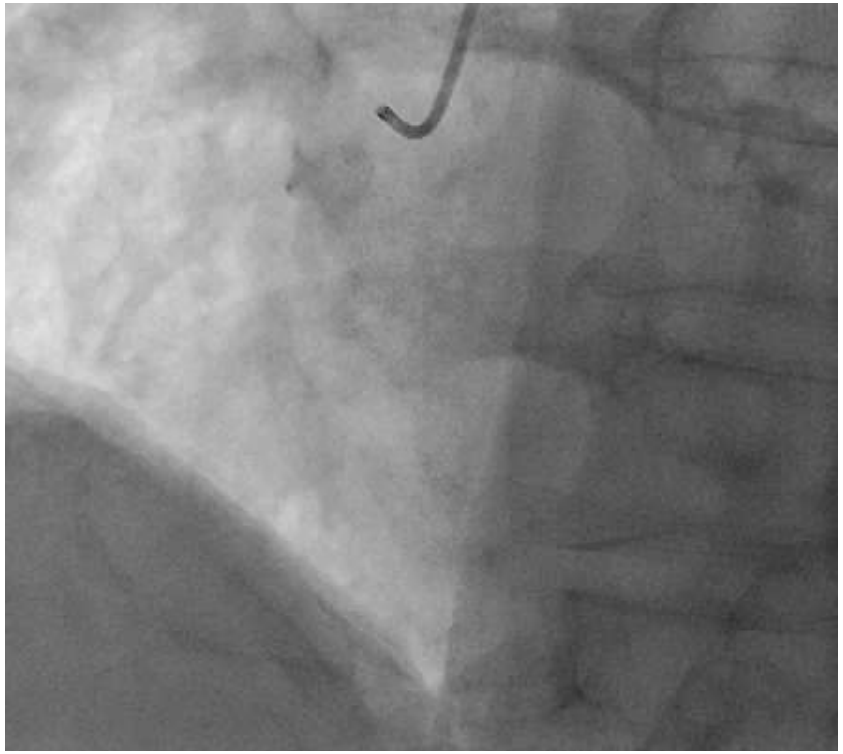
- **Balloon assisted tracking technique (BTT)**

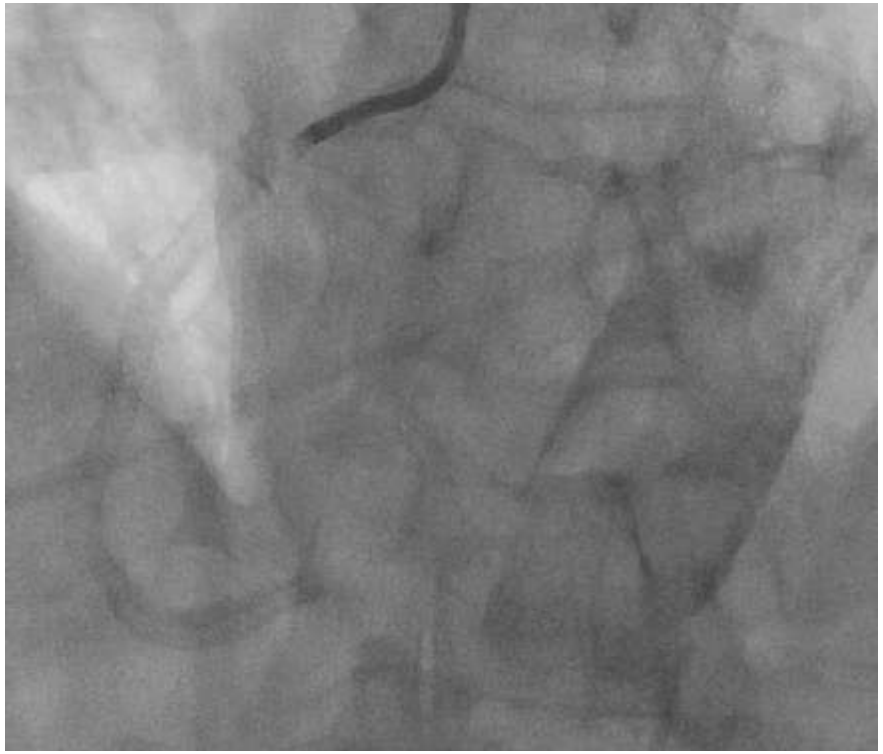
Déploiement du 2ème long stent après retrait de l'extension



Court overlap

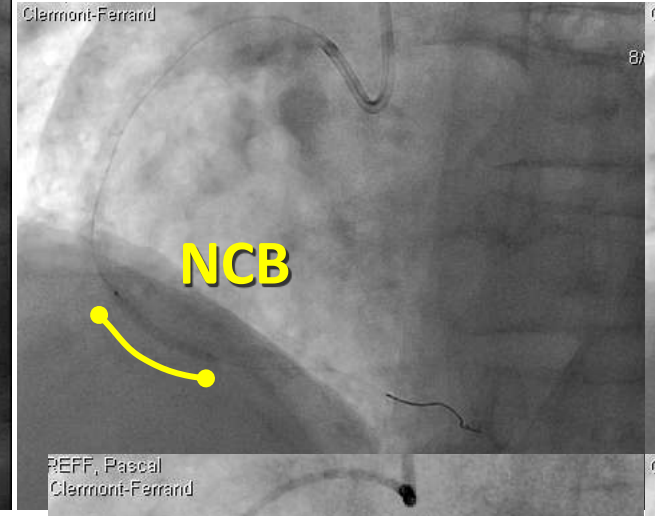
Mme G., 79 ans, angor d'effort, scintigraphie positive en inférieur

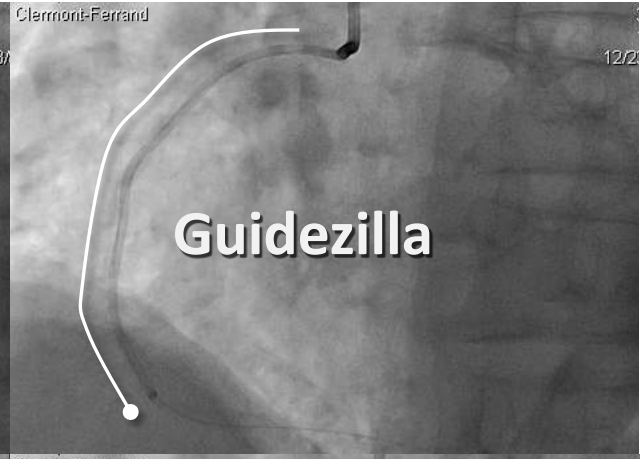


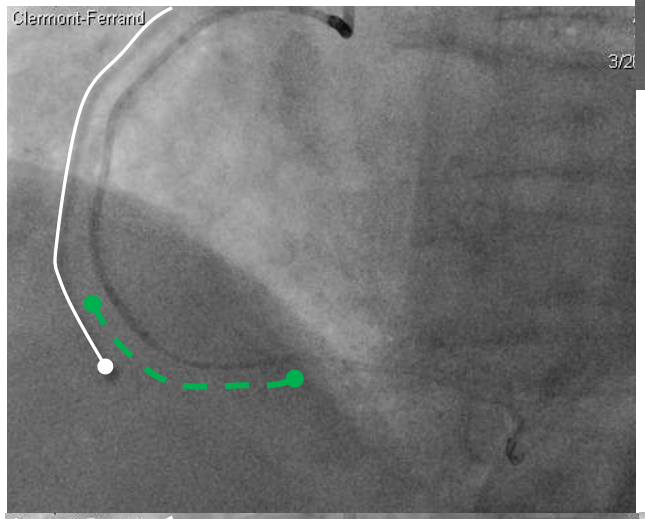


26-27-28 JANVIER 2022 HIGH TECH MARSEILLE

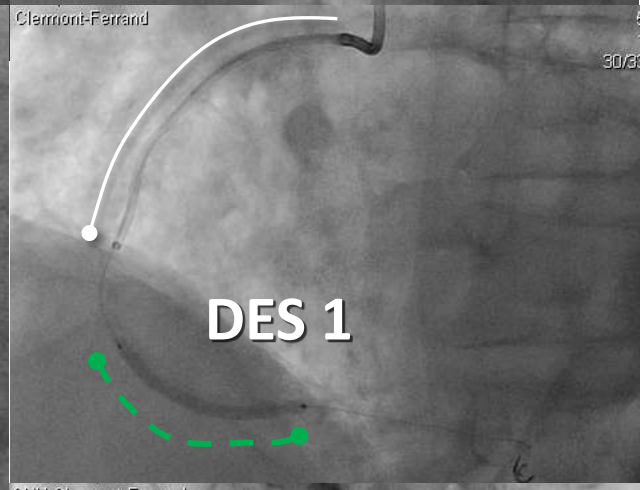
Mr G.,

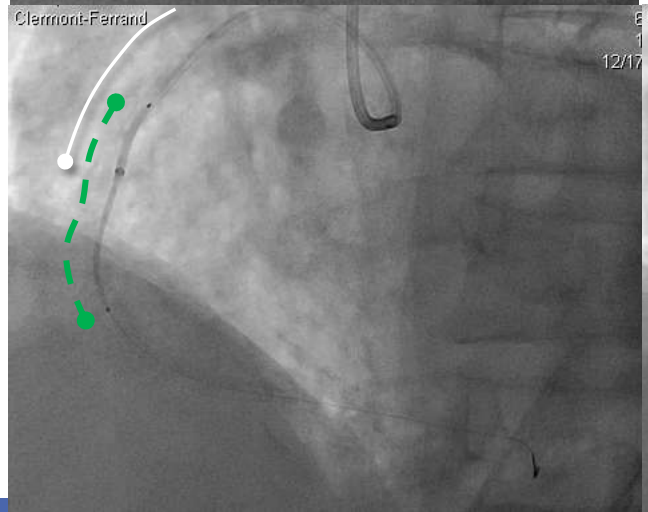


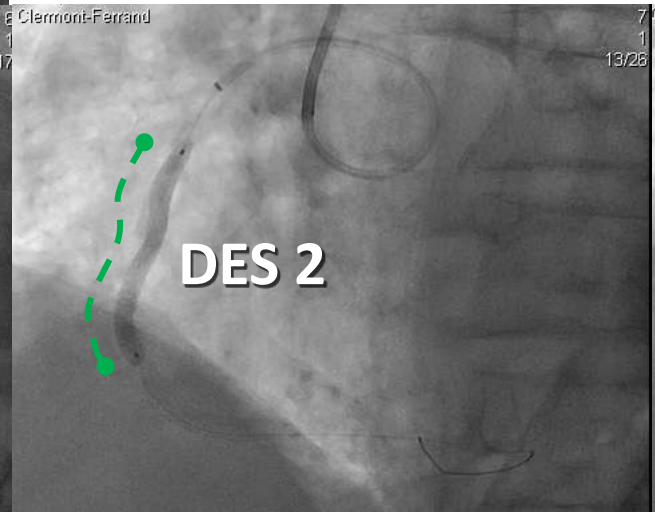


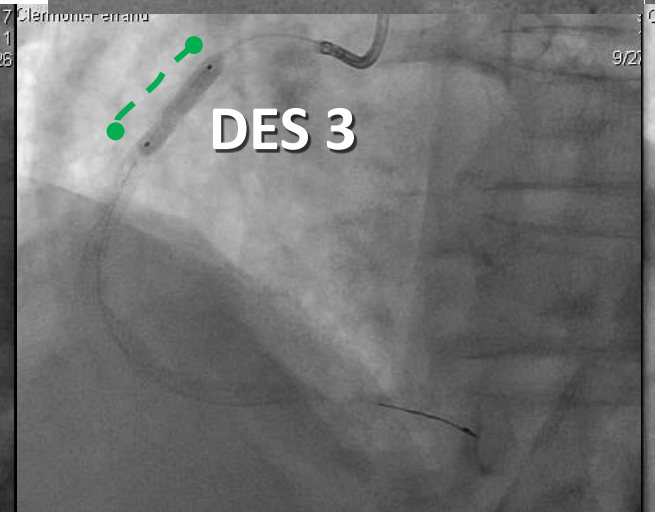


Synergy® 2.5 x 38mm
Synergy® 3.0 x 38mm
Synergy® 3.0 x 20mm









Stenting des lésions longues

Préparer la lésion

Lésions longues = souvent résistantes et calcifiées

- **Outils simples :** pas de direct stenting, prédilatation au

- ✓ NCB
- ✓ cutting/scoring balloon
- ✓ ballon très haute pression (OPN)

Stenting des lésions longues

Préparer la lésion

Lésions longues = souvent résistantes et calcifiées

- **Outils simples :** pas de direct stenting, prédilatation au

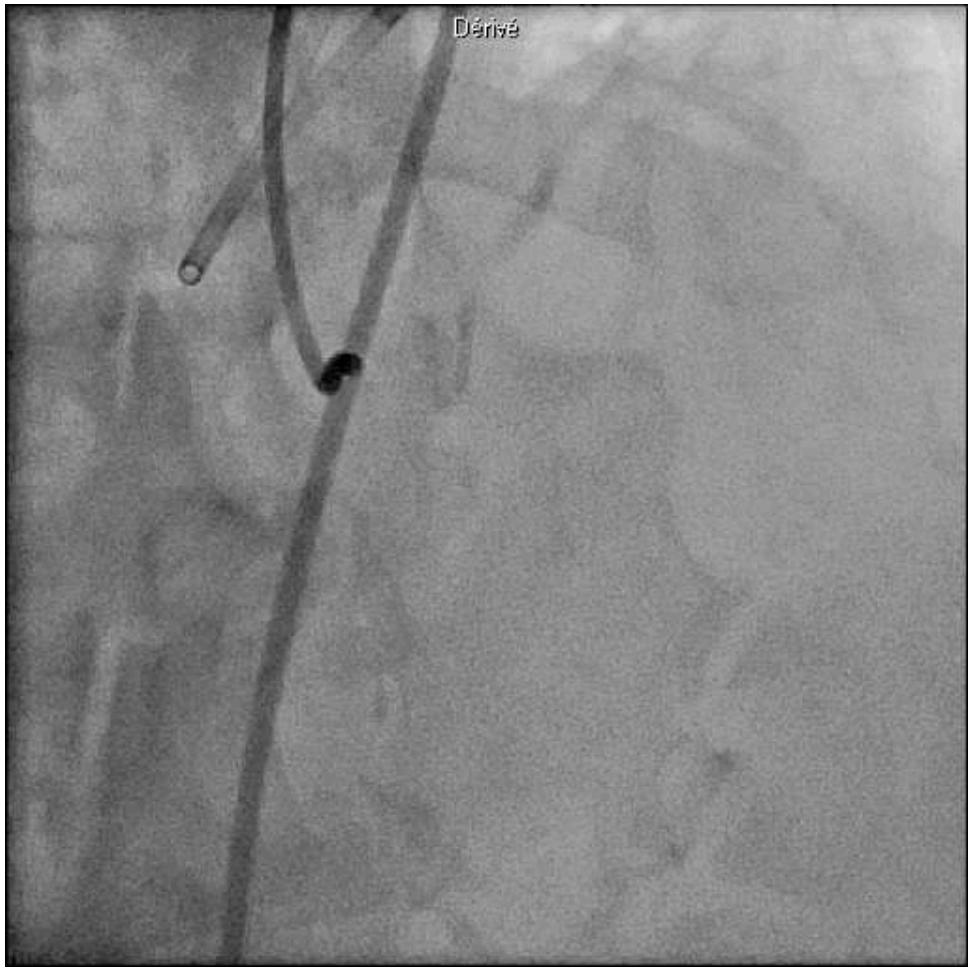
  - ✓ NCB
  - ✓ cutting/scoring balloon
  - ✓ ballon très haute pression (OPN)

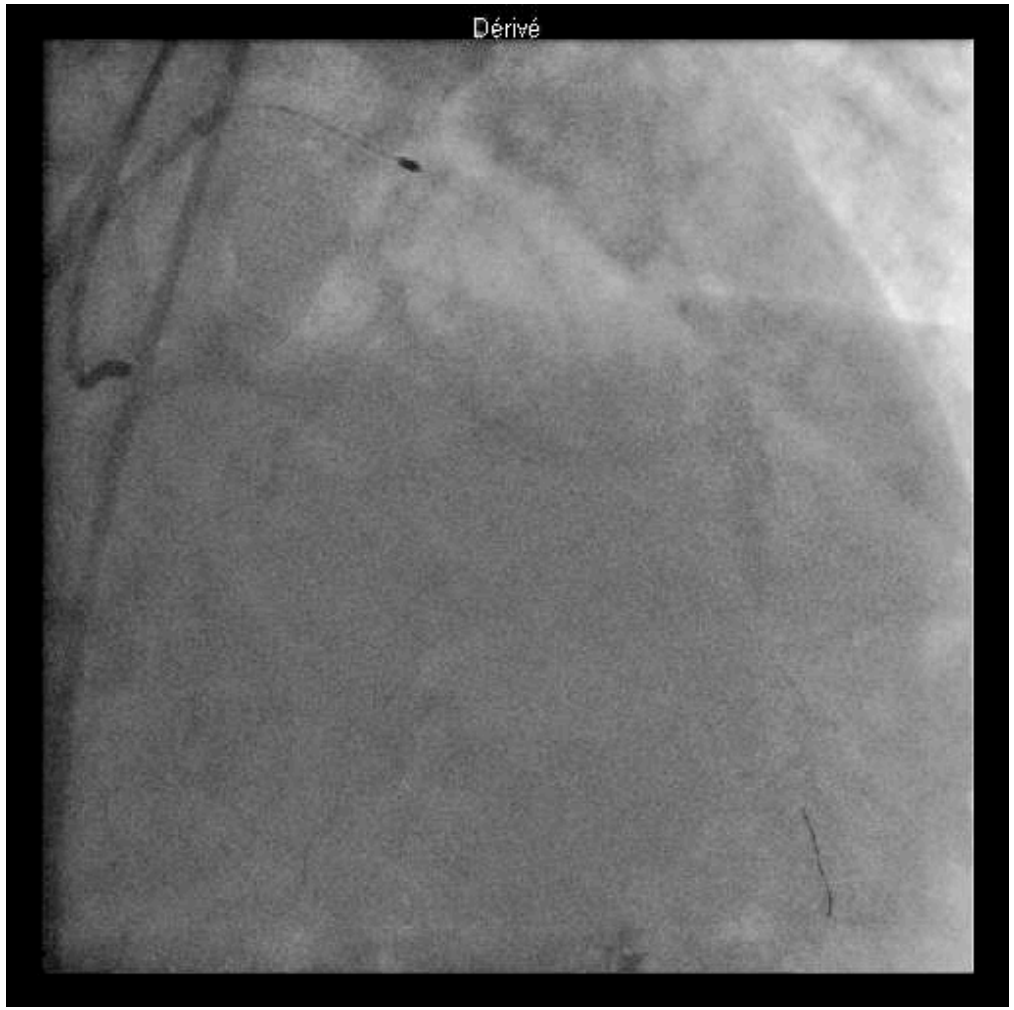
- **Athérectomie rotationnelle**
- Athérectomie orbitale
- Lithoplastie (Shockwave®)

L'évoquer, c'est l'utiliser

26-27-28 JANVIER 2022 HIGH TECH MARSEILLE

Mme C., 68 ans, angor d'effort, viabilité antérieure, CTO de l'IVA





Rotablator, fraise 1.5mm

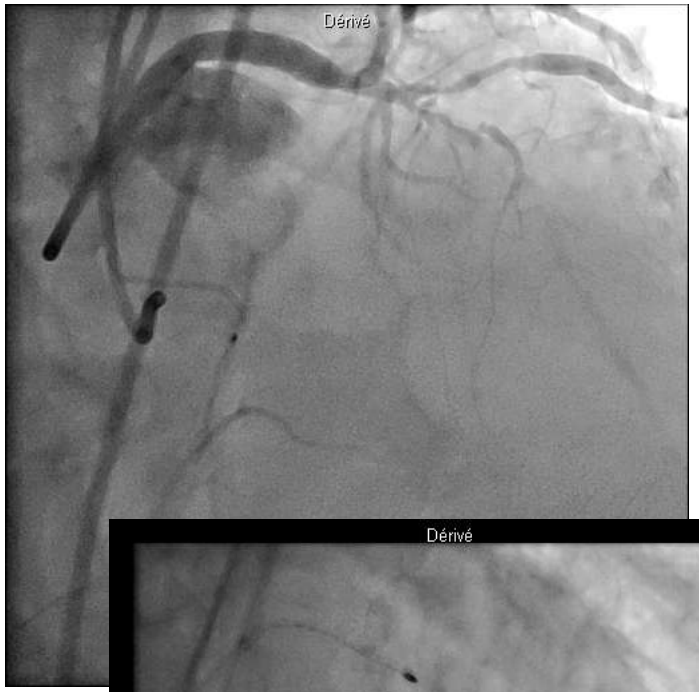
26-27-28 JANVIER 2022 HIGH TECH MARSEILLE

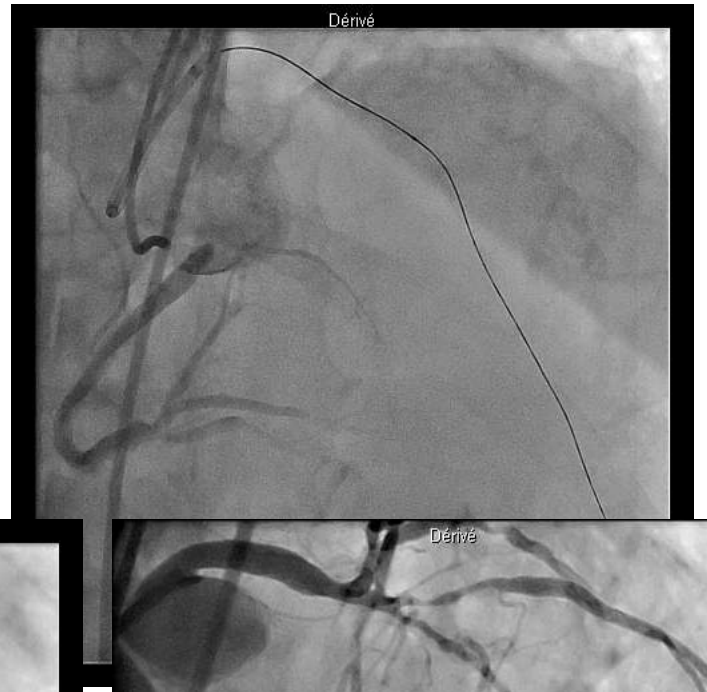
Mme C., 68 ans, angor d'effort, viabilité antérieure, CTO de l'IVA

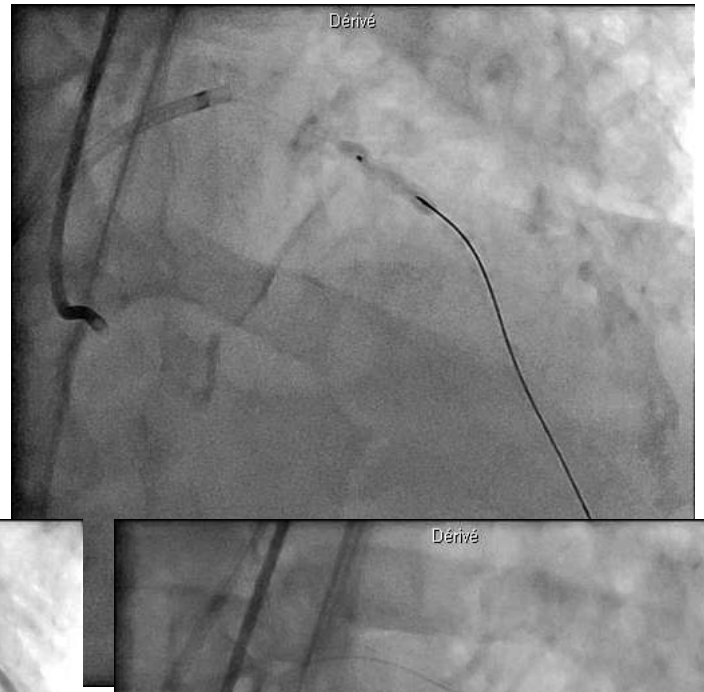
Prédilatation NCB

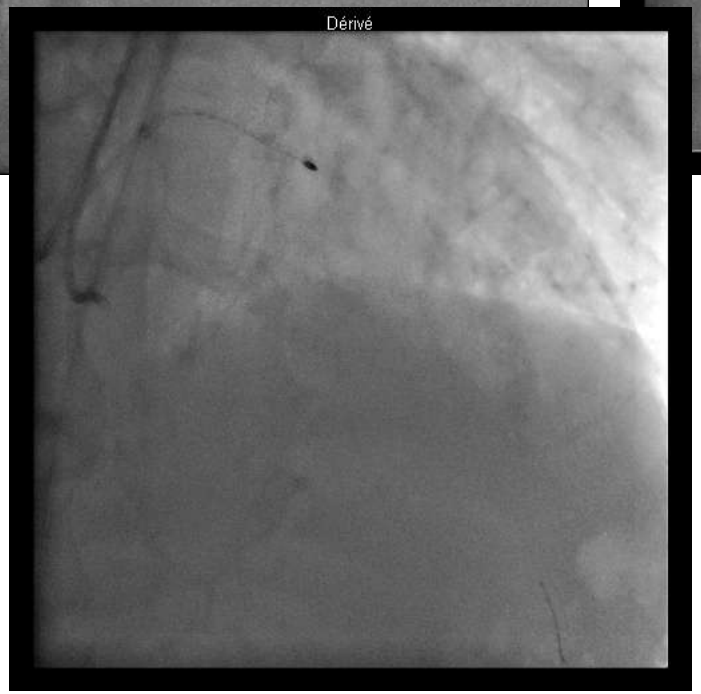
26-27-28 JANVIER 2022 HIGH TECH MARSEILLE

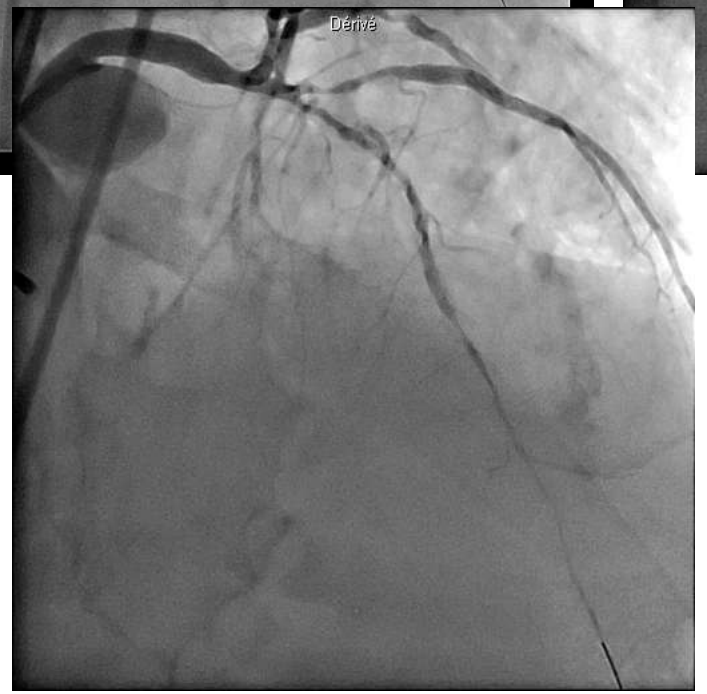
NCB, Rotablator et NCB

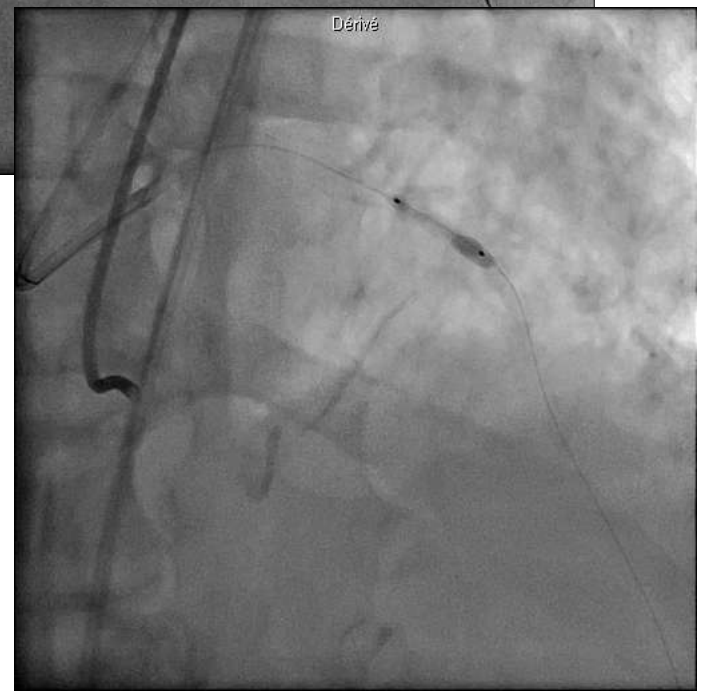






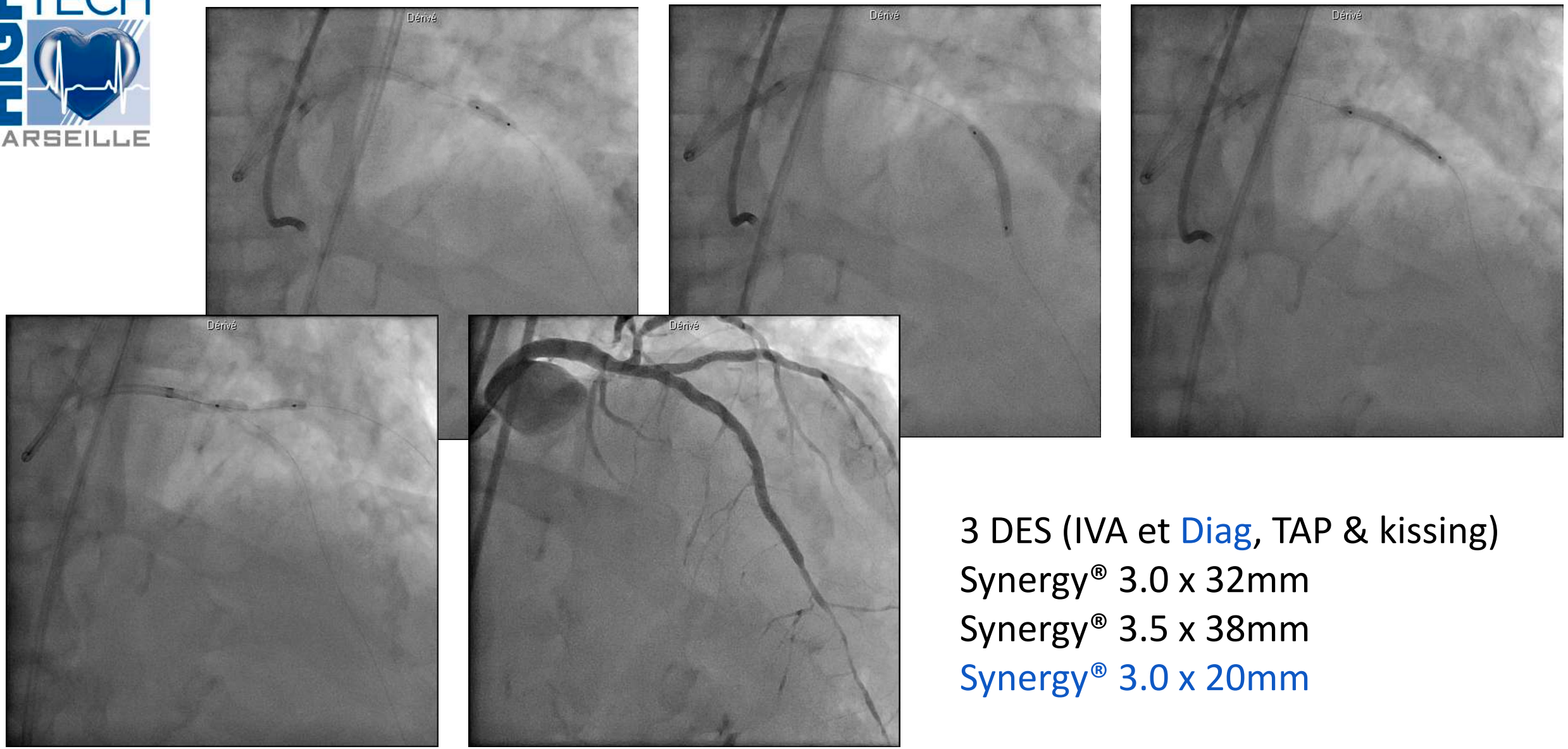






26-27-28 JANVIER 2022 HIGH TECH MARSEILLE

Rupture OPN 3.5 x 10 mm (40 atm)

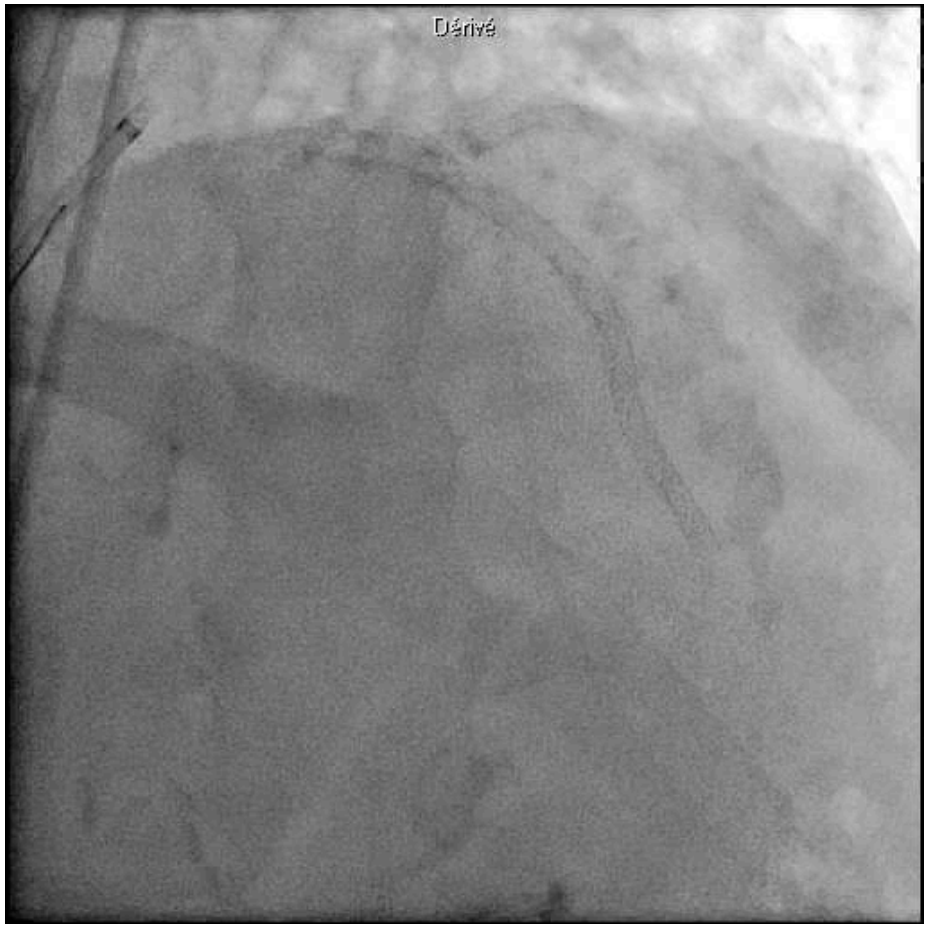


3 DES (IVA et Diag, TAP & kissing)
Synergy® 3.0 x 32mm
Synergy® 3.5 x 38mm
Synergy® 3.0 x 20mm

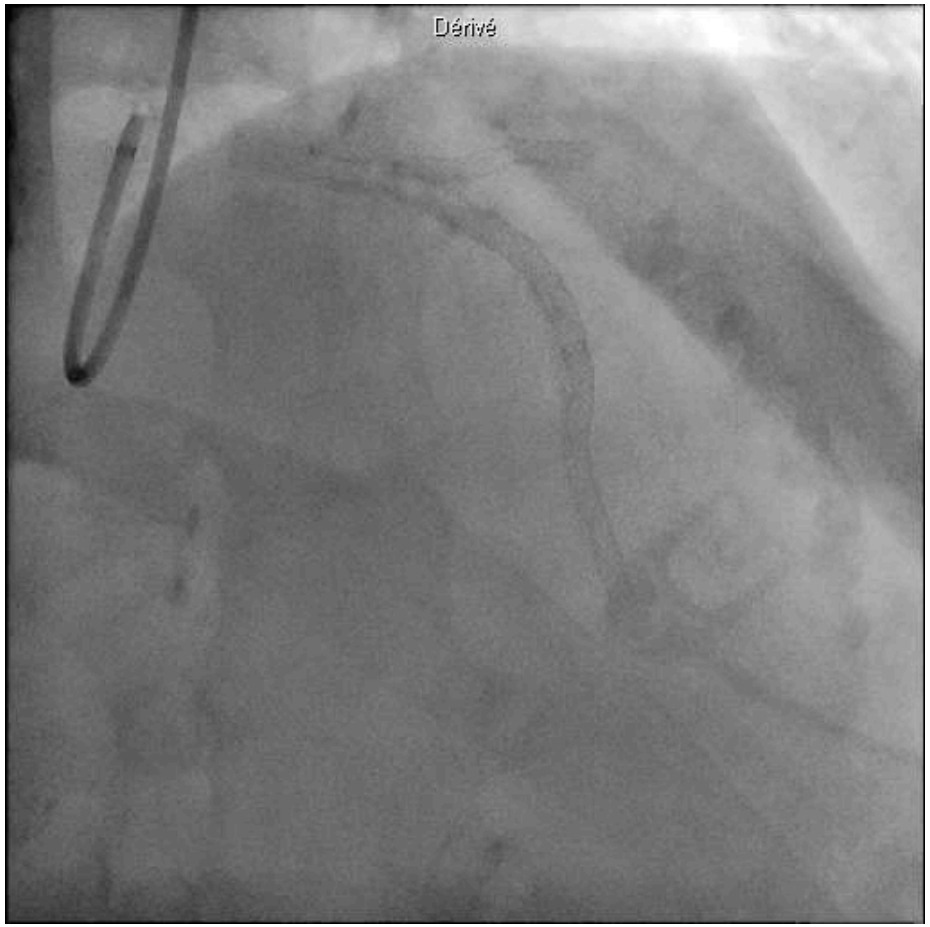
26-27-28 JANVIER 2022 HIGH TECH MARSEILLE

Mme C., 68 ans

Résultat final



Résultat à 1 mois



Stenting des lésions longues

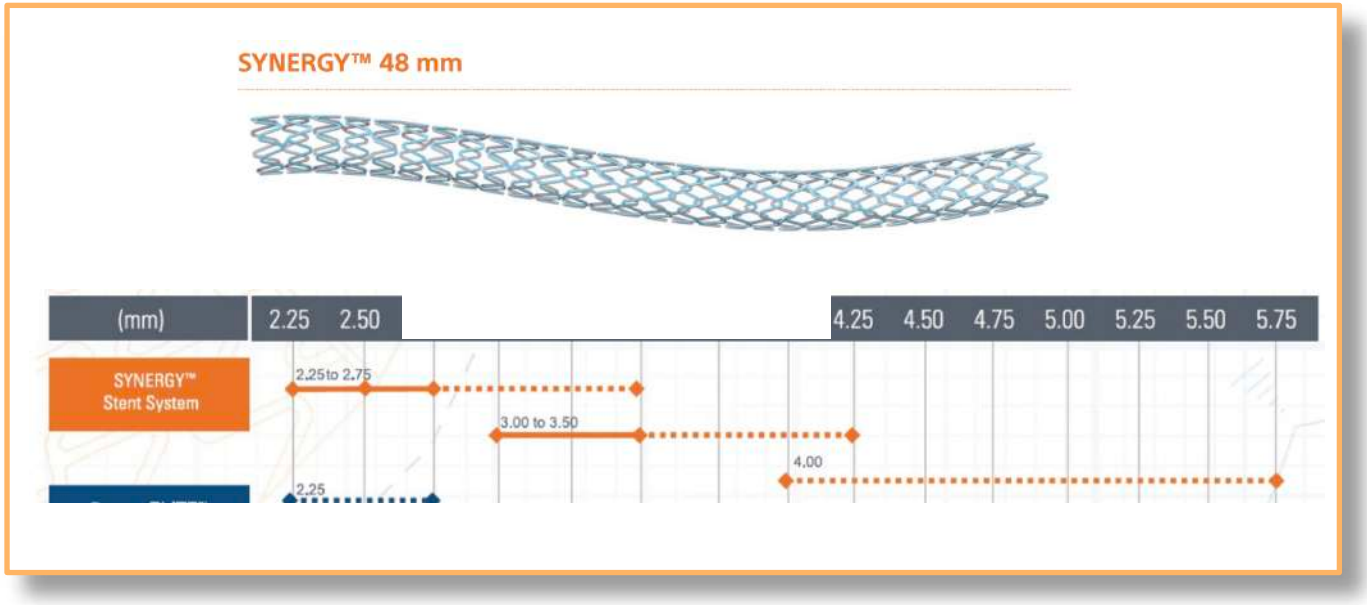
Stenting

Cahier des charges du matériel

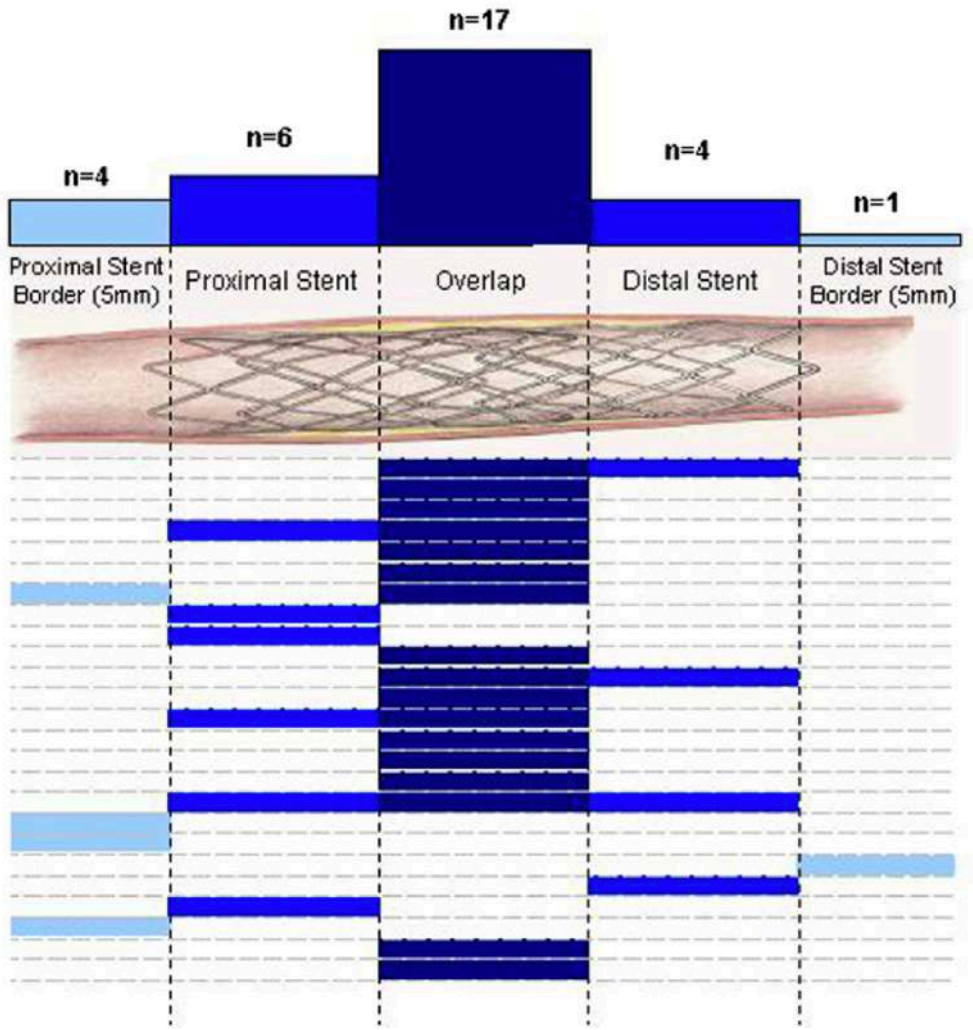
- **Grandes longueurs** *(Synergy®, Xience Skypoint®, Supraflex Cruz®)*
- Capacité de franchissement
- Diamètre adaptable

Particularités techniques

- **Soigner l'overlap**
- Proximal ou distal d'abord?
- **Post dilatation étagées**



Stenting des lésions longues



CLINICAL RESEARCH

Impact of Stent Overlap on Angiographic and Long-Term Clinical Outcome in Patients Undergoing Drug-Eluting Stent Implantation

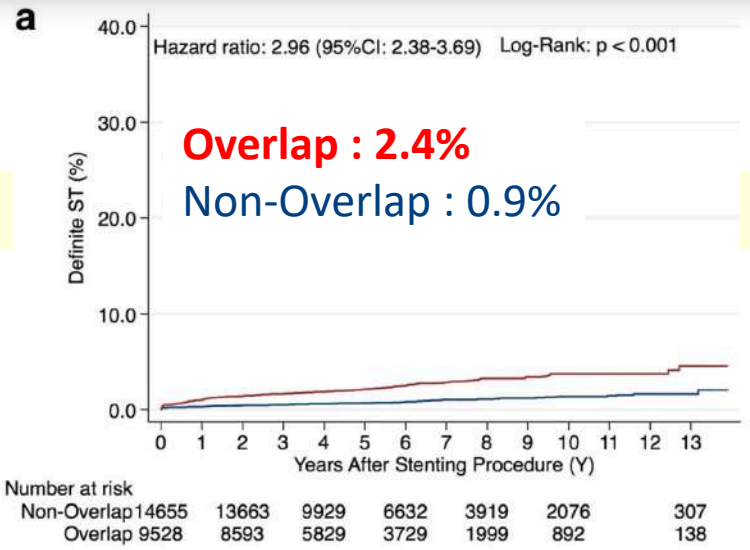
Conclusions

DES overlap occurs in a considerable proportion of patients undergoing percutaneous coronary intervention in routine clinical practice. The most common reasons for DES overlap are excessive lesion length and incomplete lesion coverage. DES overlap does not seem to be associated with an increased risk of periprocedural MI, but is associated with impaired clinical and angiographic outcomes during long-term follow-up.

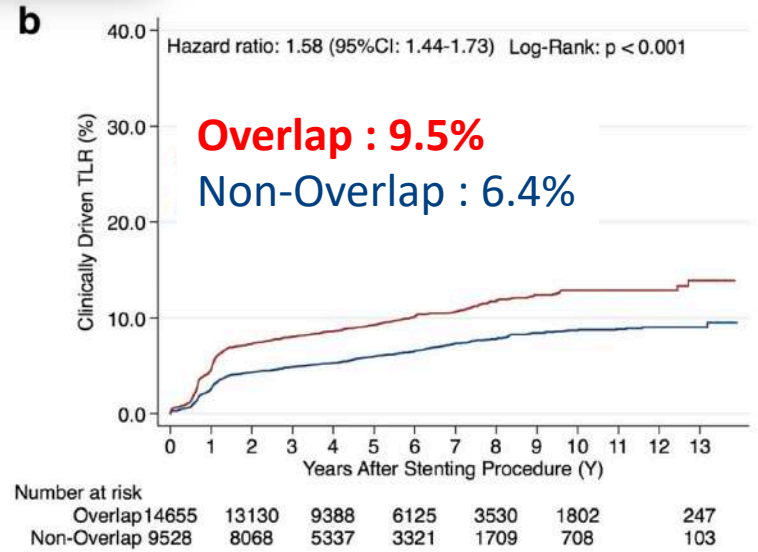
Räber L, J Am Coll Cardiol 2010

Overlapping Drug-Eluting Stent Is Associated with Increased Definite Stent Thrombosis and Revascularization: Results from 15,561 Patients in the AUTHENTIC Study

Definite ST (%)



TLR (%)



Results With a median of 1932 (IQR = 1194–2929) days, clinical follow-up was available in 7484 patients in the overlap group and in 8077 patients in the non-overlap group. The rates of definite ST were 3.1% in the overlap group and 1.2% in the non-overlap group (HR: 2.67 (95% CI: 2.11–3.38), $p < 0.001$). Of the 24,183 treated lesions, the incidences of definite ST were 2.4% in the overlap group and 0.9% in the non-overlap group (HR: 2.96 (95% CI: 2.38–3.69), $p < 0.001$). Stent overlap was associated with a higher rate of target lesion revascularization (TLR) (9.4%) compared with stent non-overlap (6.4%, $p < 0.001$). The length of overlapping stent ≥ 2.93 mm strongly correlated with definite ST.

Conclusion The present study shows that overlapping DES increases definite ST and revascularization in patients during long-term follow-up. In addition, the longer overlapping zone was associated with worse clinical outcomes.

overlapping stent ≥ 2.93 mm

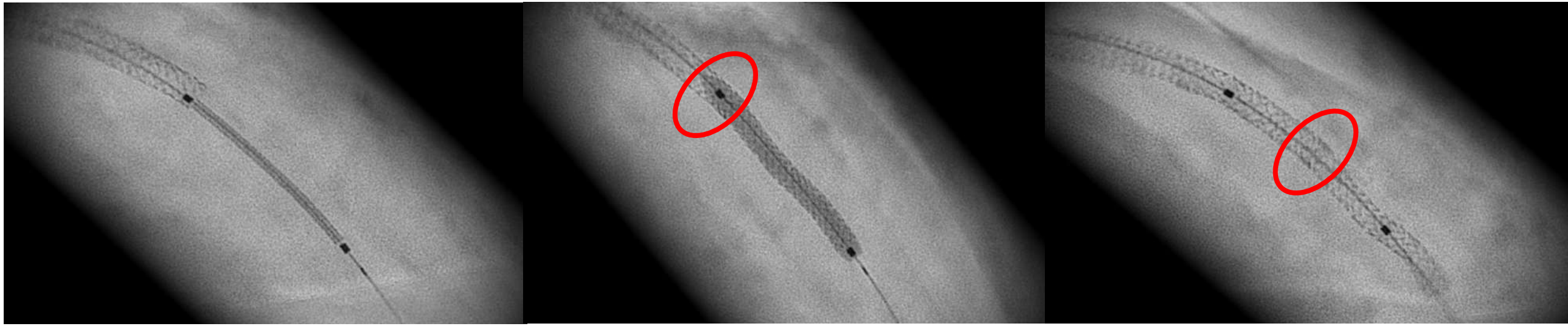
Chen X, Cardiovascular Drugs and Therapy 2021

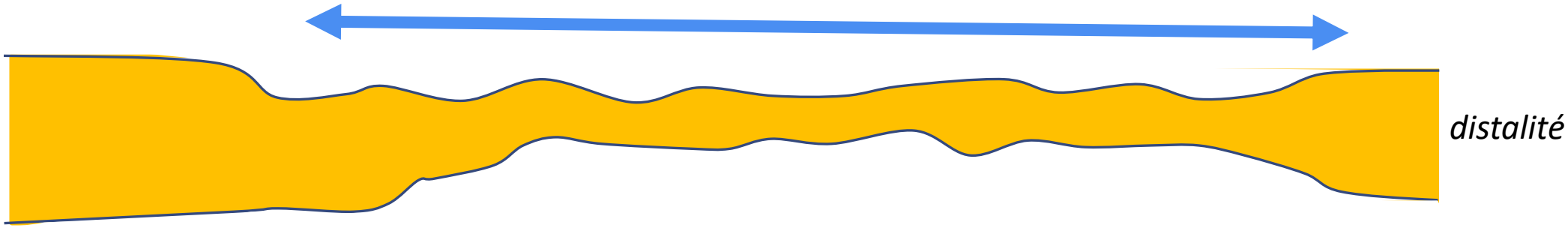
Stenting des lésions longues

Stenting

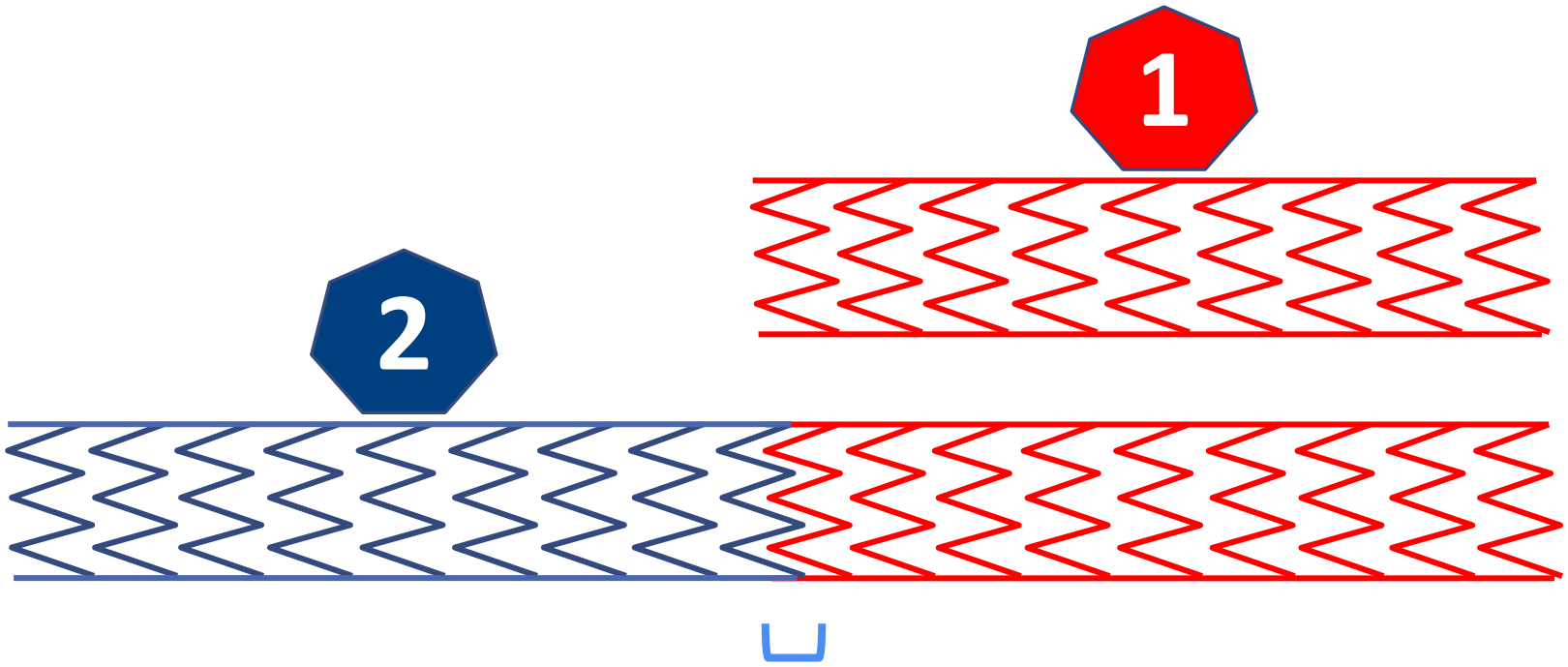
Overlap

- « talon d'achille »
- Plus court possible
- Positionnement précis guidé par rehaussement
- Post-dilatation
- **Limité par stents longs +++ (48 > 3x16mm)**

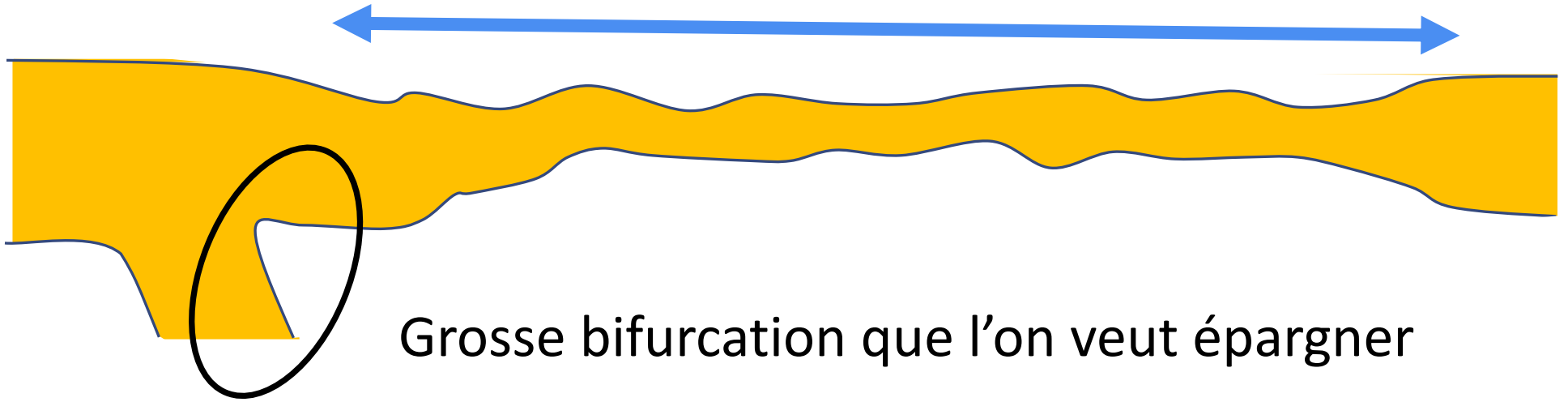




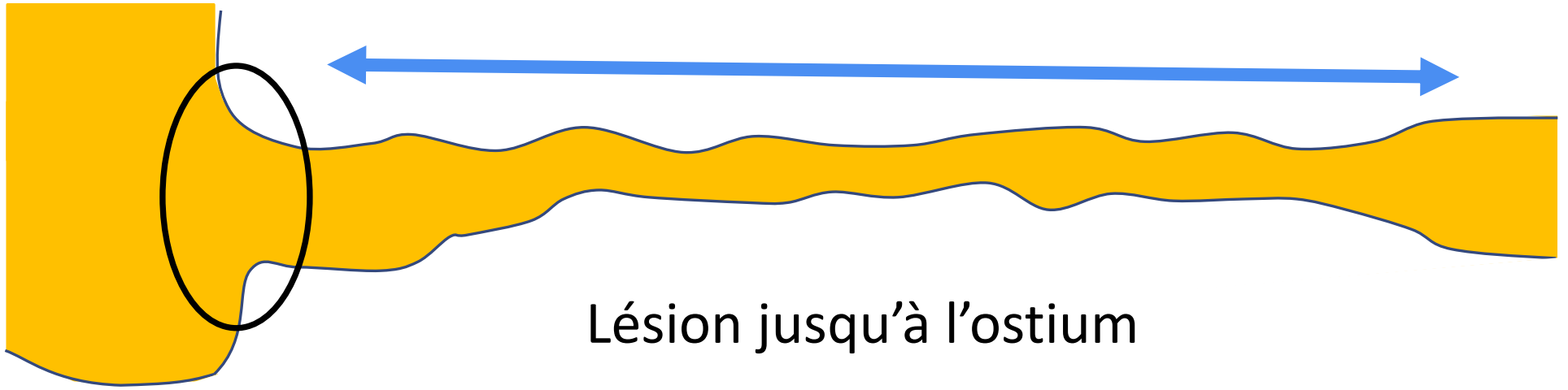
Distal puis proximal



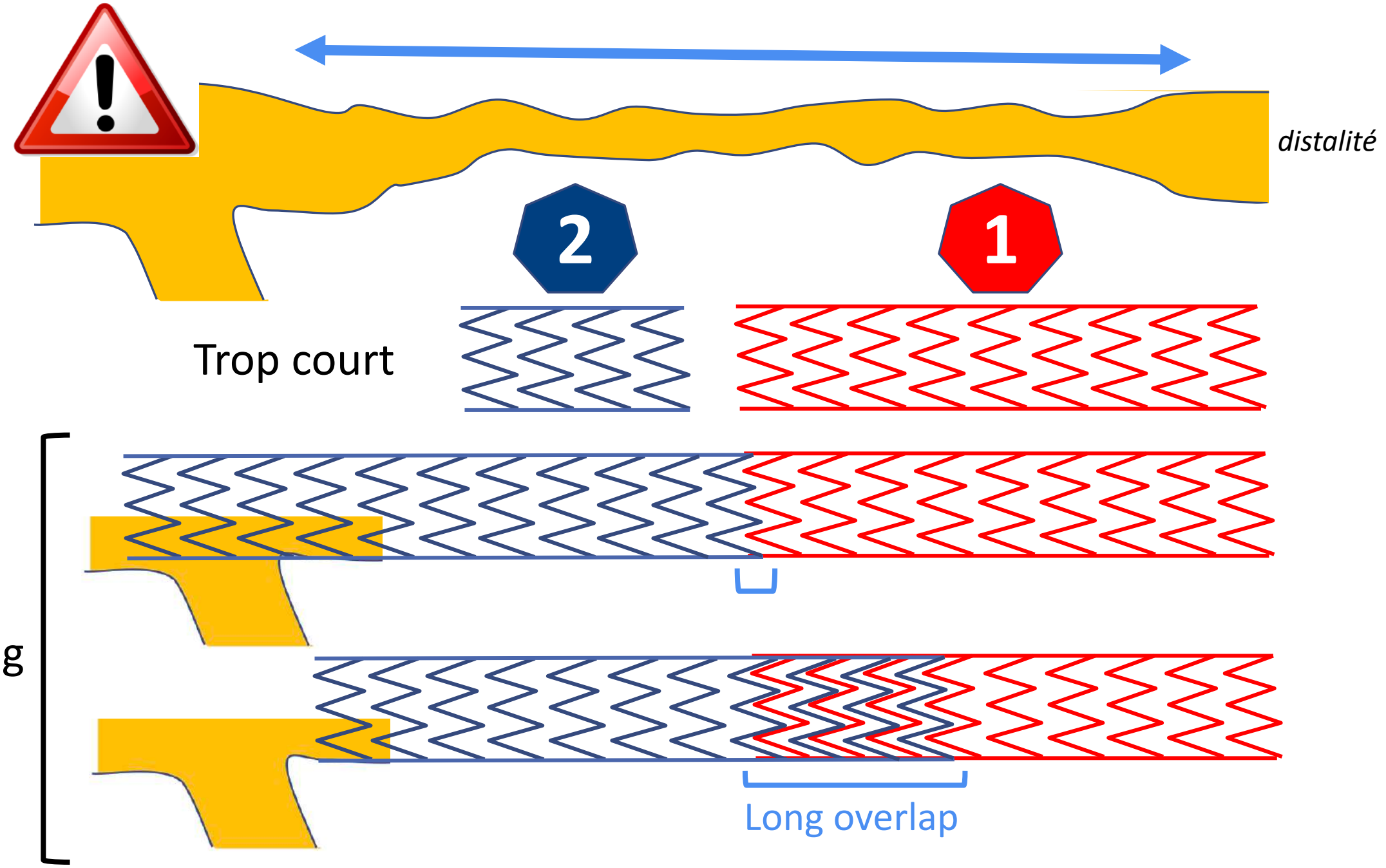
Court overlap

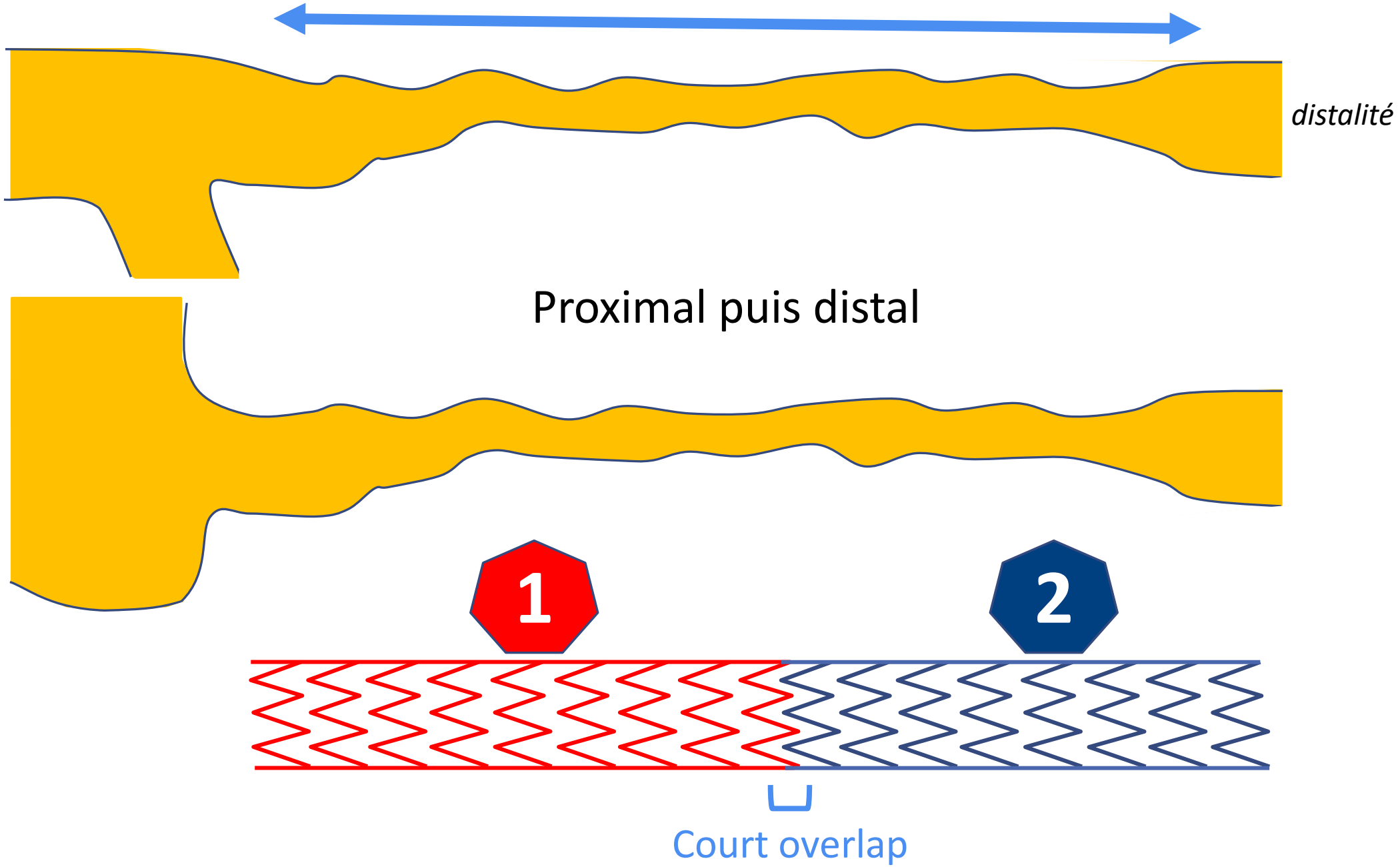


Grosse bifurcation que l'on veut épargner



Lésion jusqu'à l'ostium


distalité
2
1
Trop court
Trop long
Long overlap


distalité
Proximal puis distal
1
2
Court overlap

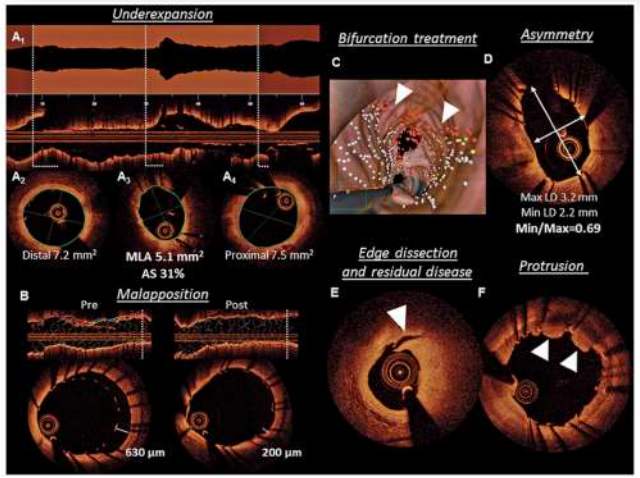
Stenting des lésions longues

Optimisation de l'angioplastie

Rôle de l'imagerie endocoronaire (IVUS ou OCT)

- Evaluation de la lésion
- Guide la procédure
- Jusqu'où stenter ?
- Déploiement et apposition

Clinical use of intracoronary imaging. Part 1: guidance and optimization of coronary interventions. An expert consensus document of the European Association of Percutaneous Cardiovascular Interventions

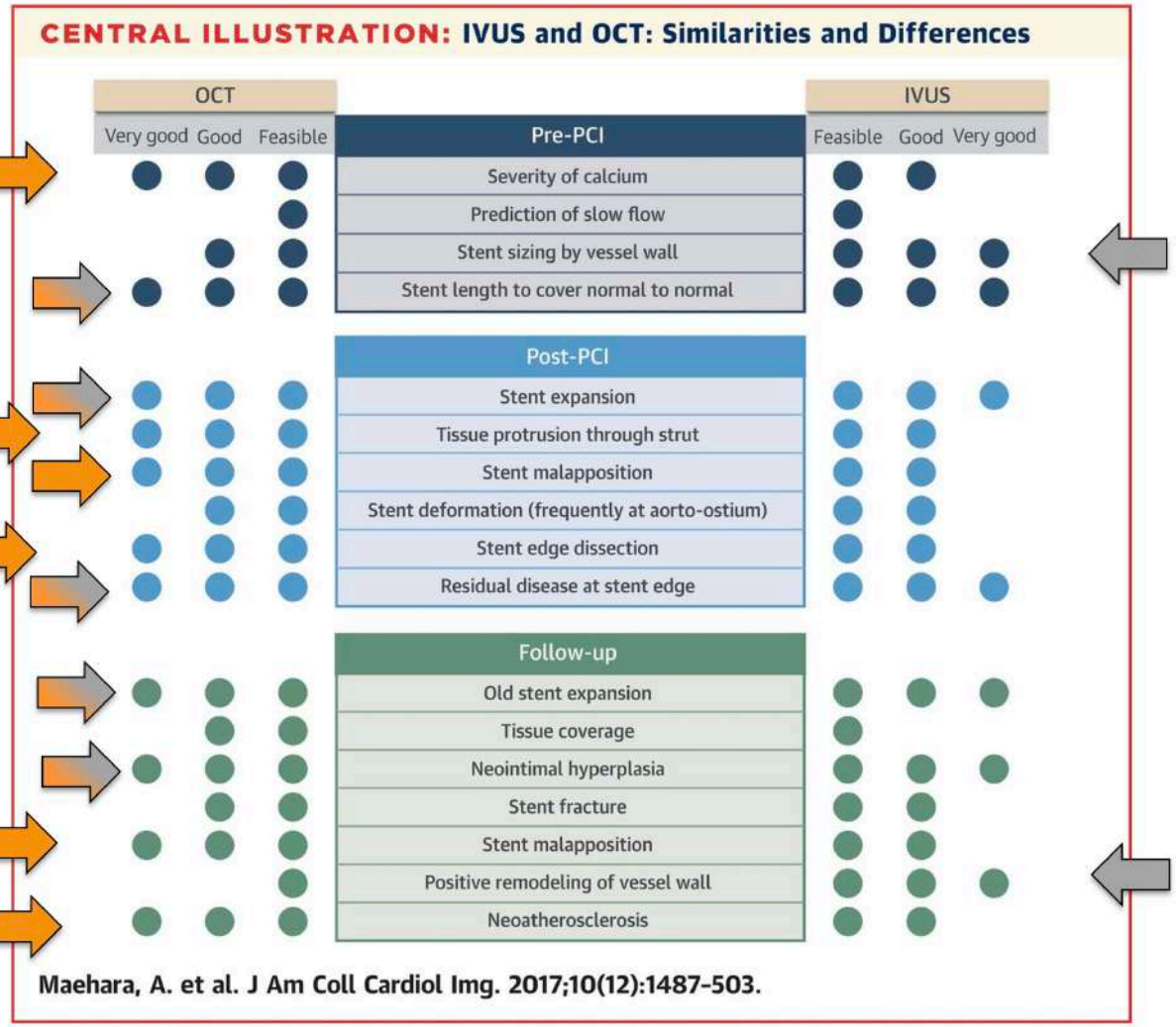


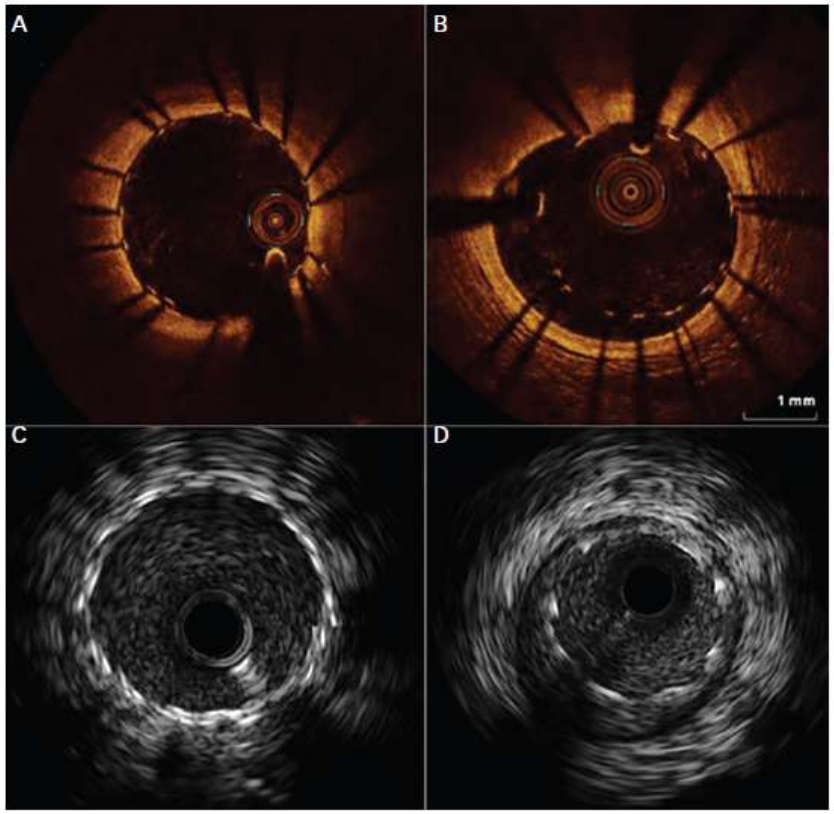
Räber L.
Eurointervention 2018

Lésion longue = différents calibres, calcifications

Stenting des lésions longues

Optimisation de l'angioplastie

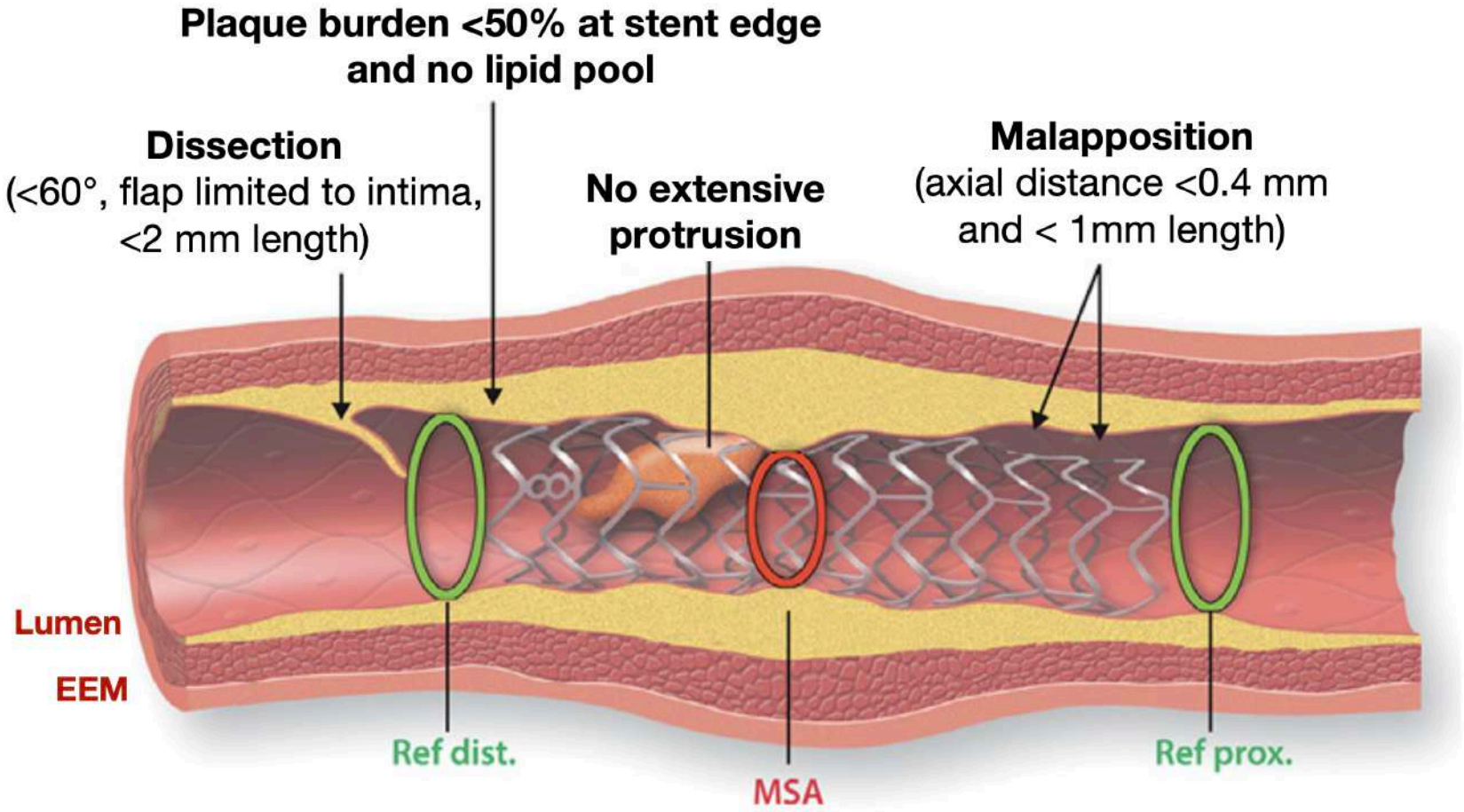




Maehara A, JACC Cardiovasc Imaging 2017

Stenting des lésions longues

Optimisation de l'angioplastie



MSA > 5.5mm² (IVUS) and > 4.5 mm² (OCT)
MSA / **average reference lumen** > **80%**

Räber L.
Eurointervention 2018

Stenting des lésions longues

Optimisation de l'angioplastie

En faveur OCT : résolution +++ imagerie fine des mailles

En faveur IVUS : plus utile pour CTO
pas de produit de contraste
pullbacks à répétition
ostium TC et CD
études

Stenting des lésions longues

Optimisation de l'angioplastie

Consistent benefits of IVUS-guidance in complex coronary lesions: It is time to change your PCI practice!

Figure 4a. Forest plot for major adverse cardiac events (MACE)

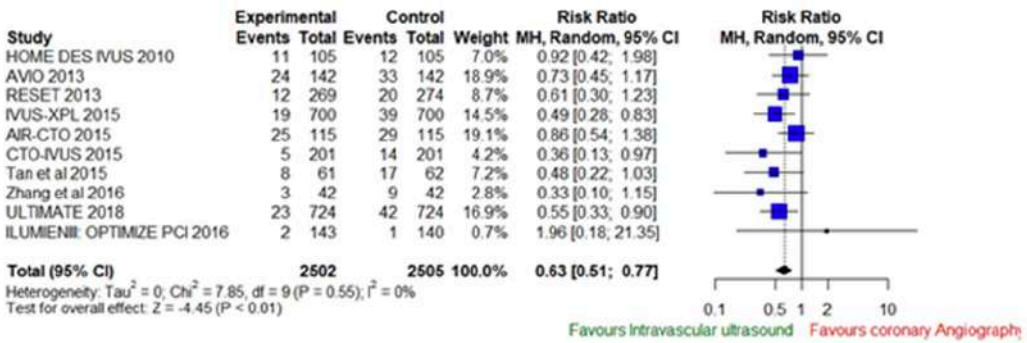
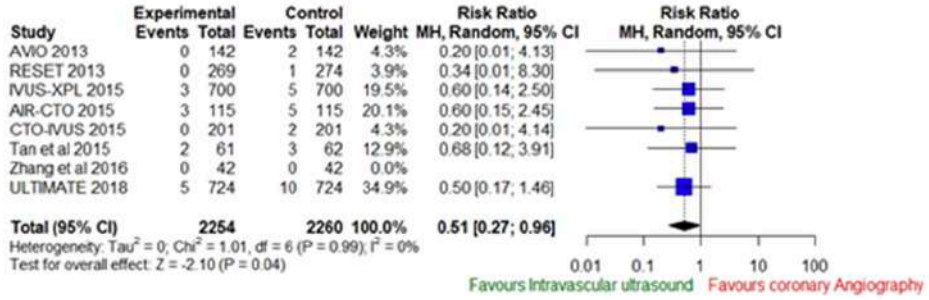
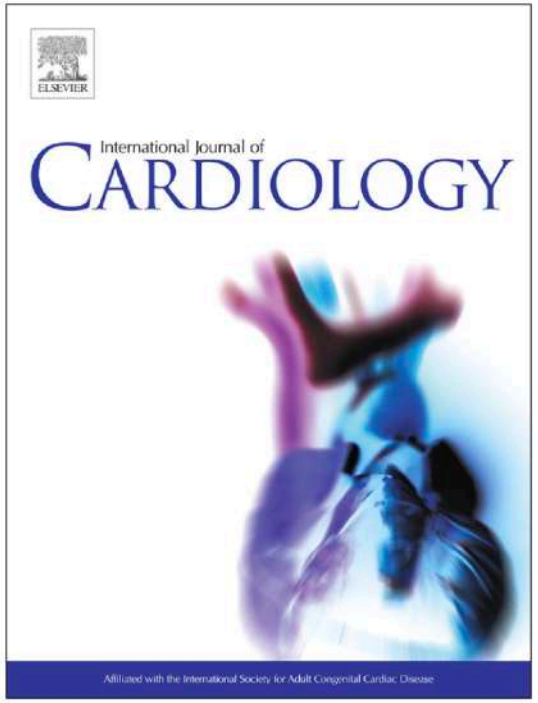


Figure 4b. Forest plot for cardiovascular mortality





Siontis CM, Int Journal Cardiology 2019

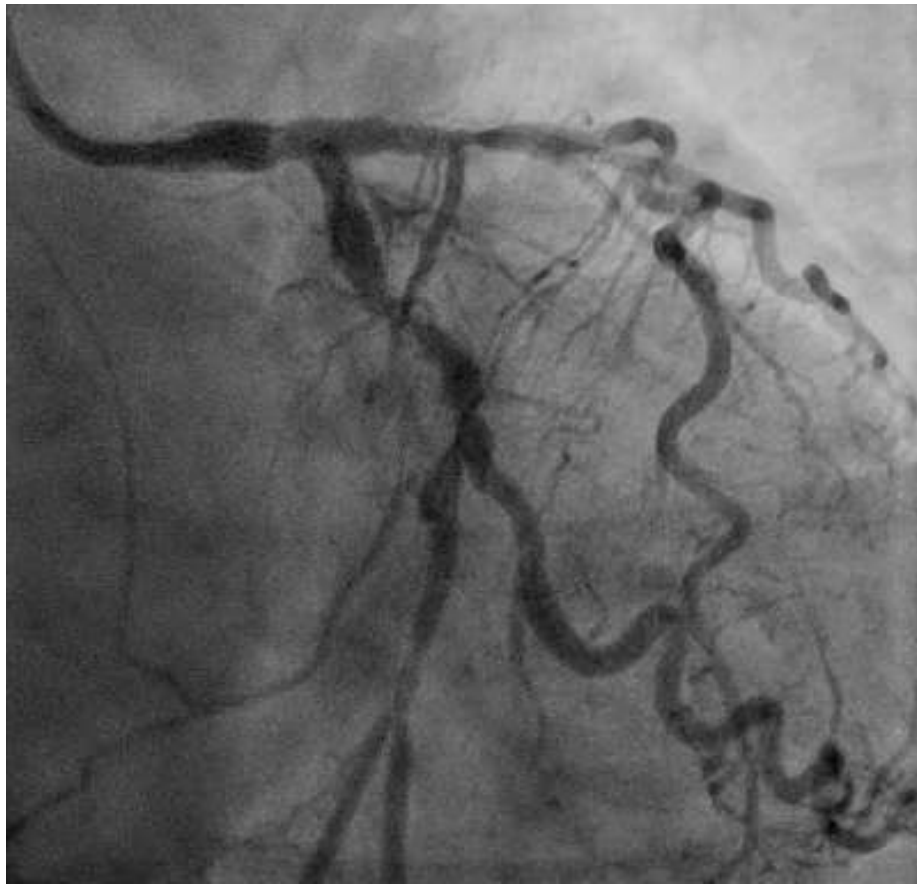
Malik AH, Int Journal Cardiology 2019

Apport de l'imagerie pour les lésions complexes

Mme M. 79 ans

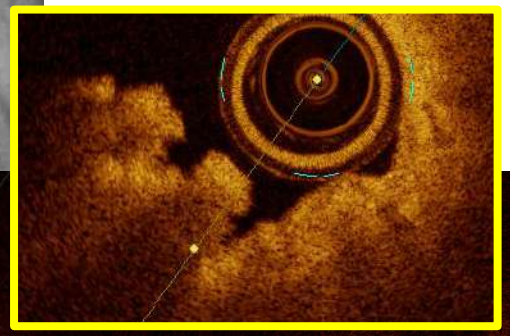
ATCD radiothérapie thoracique

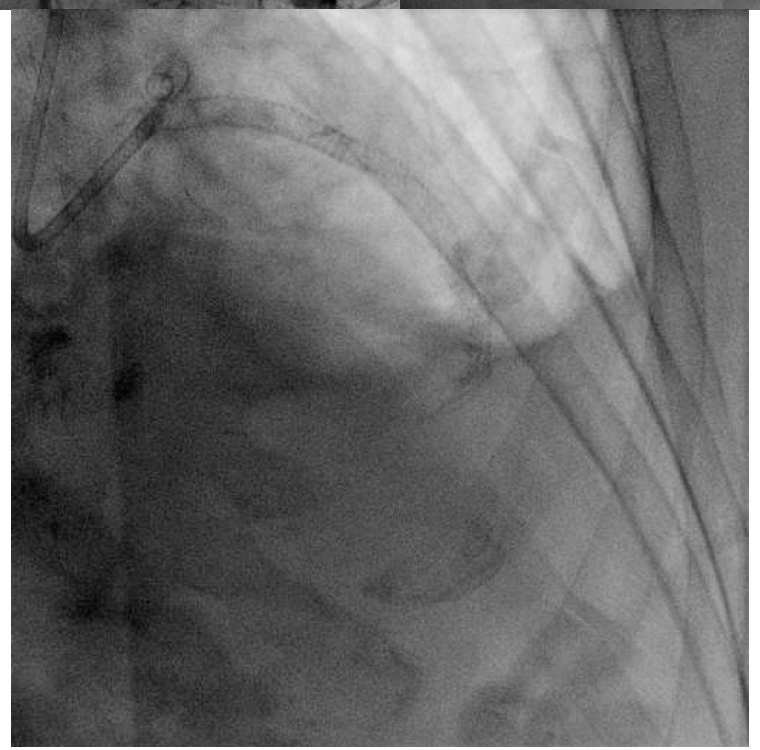
Angor, Coro pré TAVI



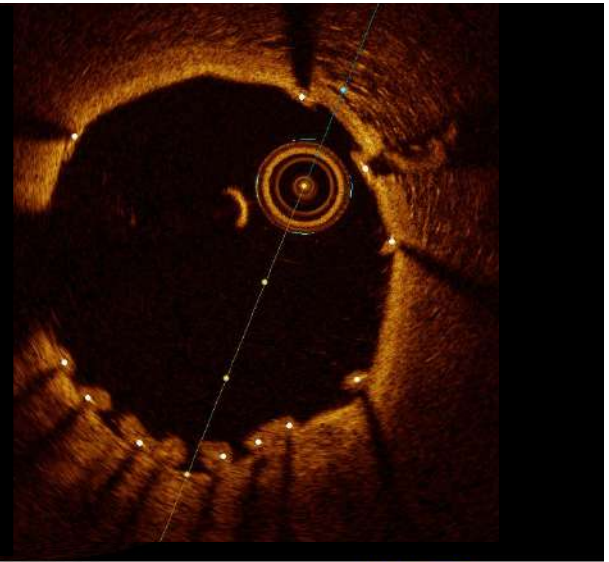
Calcifications superficielles circonférentielles sur long segment IVA proximale

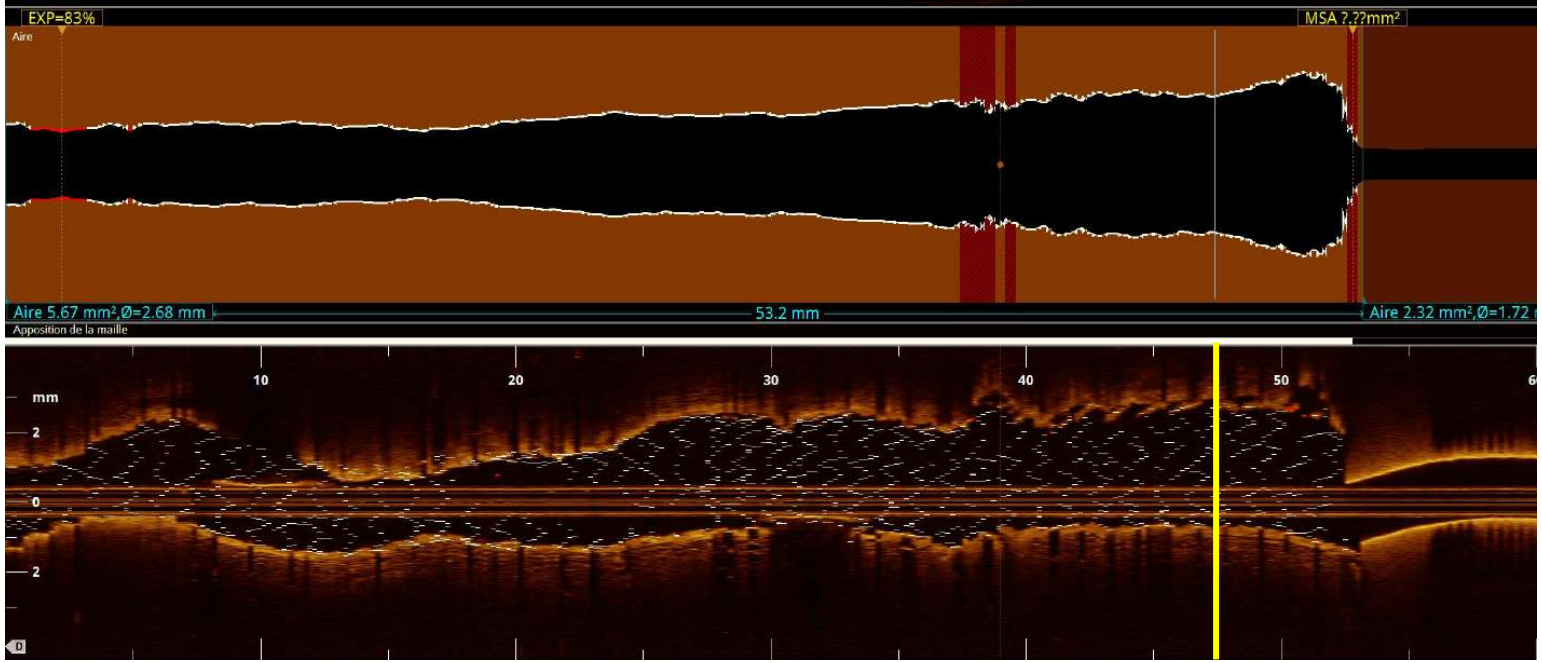
Bourgeon calcifié fin de TC





Rotablator,
Prédilatation NCB,
Stenting TC, Stenting IVA,
REPOT





26-27-28 JANVIER 2022 HIGH TECH MARSEILLE

Stenting des lésions longues

Take Home Message

- De plus en plus fréquentes
- Progrès technique et matériel +++
- Exigences qualitatives
- Bon résultat à long terme