L'INSTITUT MUTUALISTE MONTSOURIS

GHMF

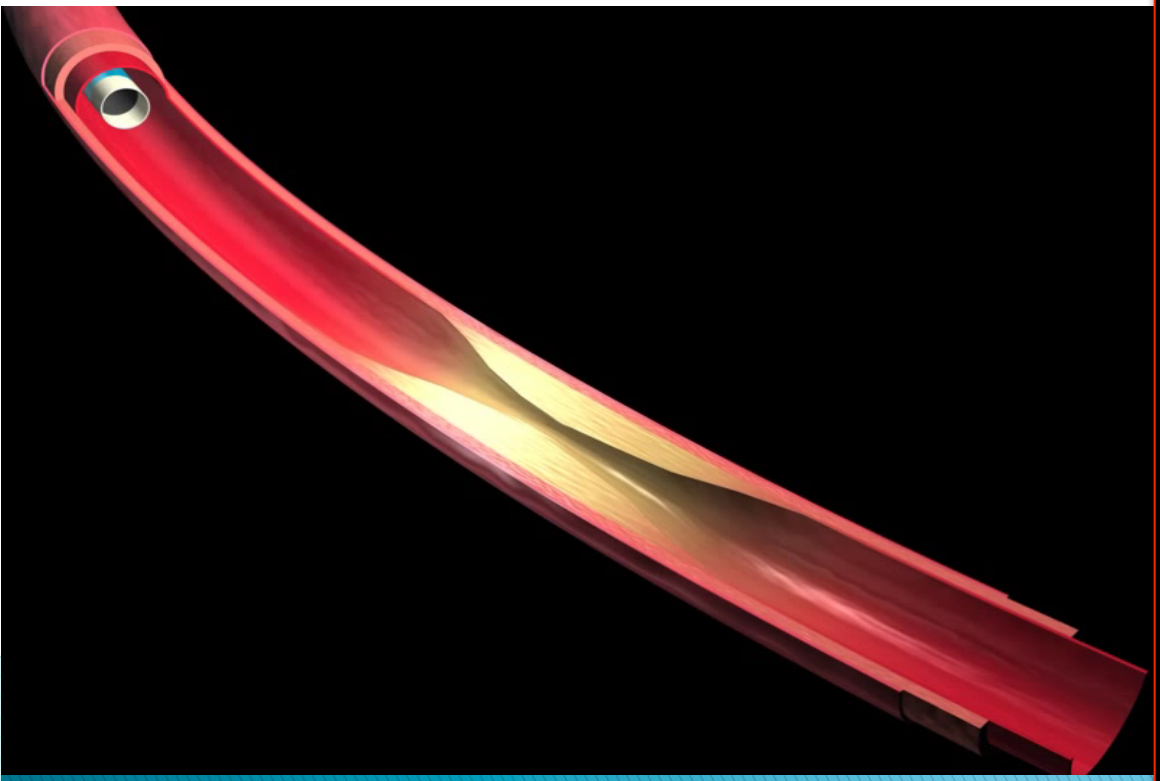
FrOG

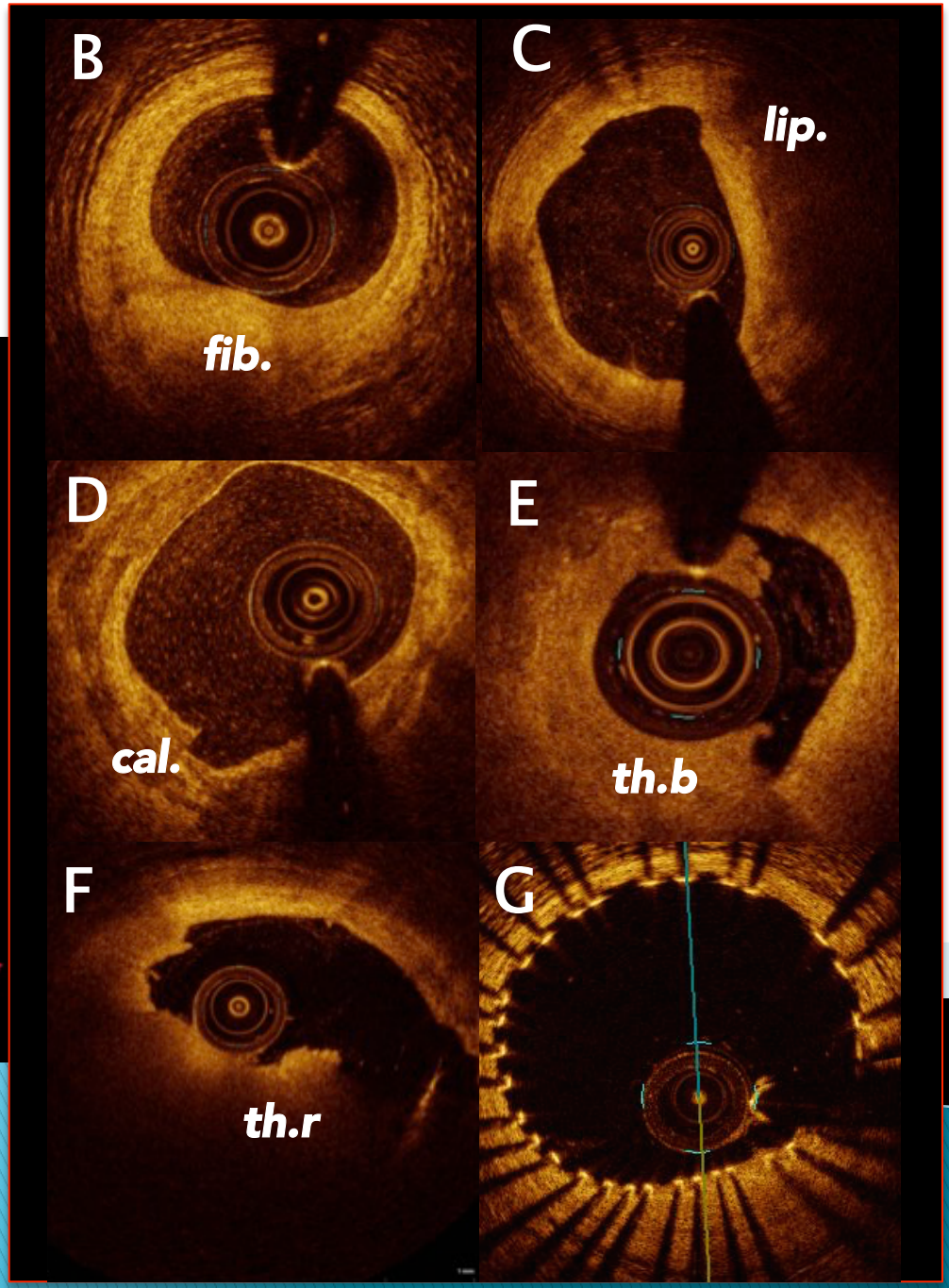
French Optical coronary imaging Group

L'OCT en 2016

Christophe Caussin, Nicolas Amabile

APPAC 2016




B
fib.
C
lip.
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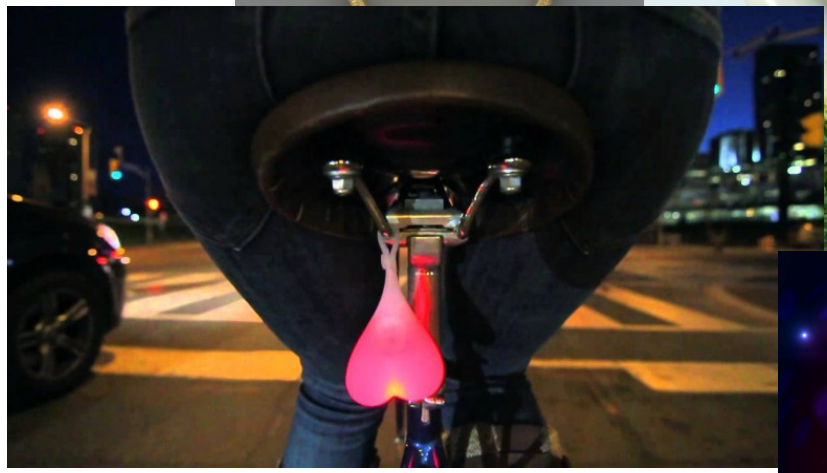
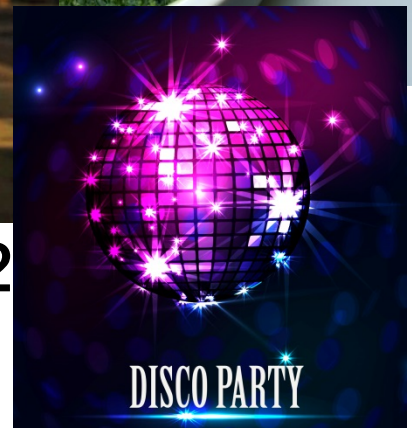
E
th.b
F
th.r
G





Pascal Motreff, Président du GACI, 15 janvier 2

- OCT et thrombose de stent
- OCT et gestion du SCA
- OCT et Complex PCI

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ESC guidelines: Clinical value of OCT

Windecker. EHJ 2014

Recommendations for the clinical value of intracoronary diagnostic techniques

Recommendations	Class[a]	Level[b]	Ref.[c]
FFR to identify haemodynamically relevant coronary lesion(s) in stable patients when evidence of ischaemia is not available.	I	A	50,51,713
FFR-guided PCI in patients with multivessel disease.	IIa	B	54
IVUS in selected patients to optimize stent implantation.	IIa	B	702,703,706
IVUS to assess severity and optimize treatment of unprotected left main lesions.	IIa	B	705
IVUS or OCT to assess mechanisms of stent failure.	IIa	C	
OCT in selected patients to optimize stent implantation.	IIb	C	

Windecker et al. EHJ 2014

Mechanisms of stent thrombosis analysed by optical coherence tomography: insights from the national PESTO French registry

Geraud Souteyrand[1,2†*], Nicolas Amabile[3†], Lionel Mangin[4], Xavier Chabin[1,2], Nicolas Meneveau[5], Guillaume Cayla[6], Gerald Vanzetto[7], Pierre Barnay[8], Charlotte Trouillet[9], Gilles Rioufol[10], Gregoire Rangé[11], Emmanuel Teiger[12], Regis Delaunay[13], Olivier Dubreuil[14], Thibault Lhermusier[15], Aurélien Mulliez[16], Sebastien Levesque[17], Loic Belle[4], Christophe Caussin[3] and Pascal Motreff[1,2], on the Behalf of the PESTO Investigators

Souteyrand et al. , EHJ 2016

Interventional Cardiology

Mechanisms of Very Late Drug-Eluting Stent Thrombosis Assessed by Optical Coherence Tomography

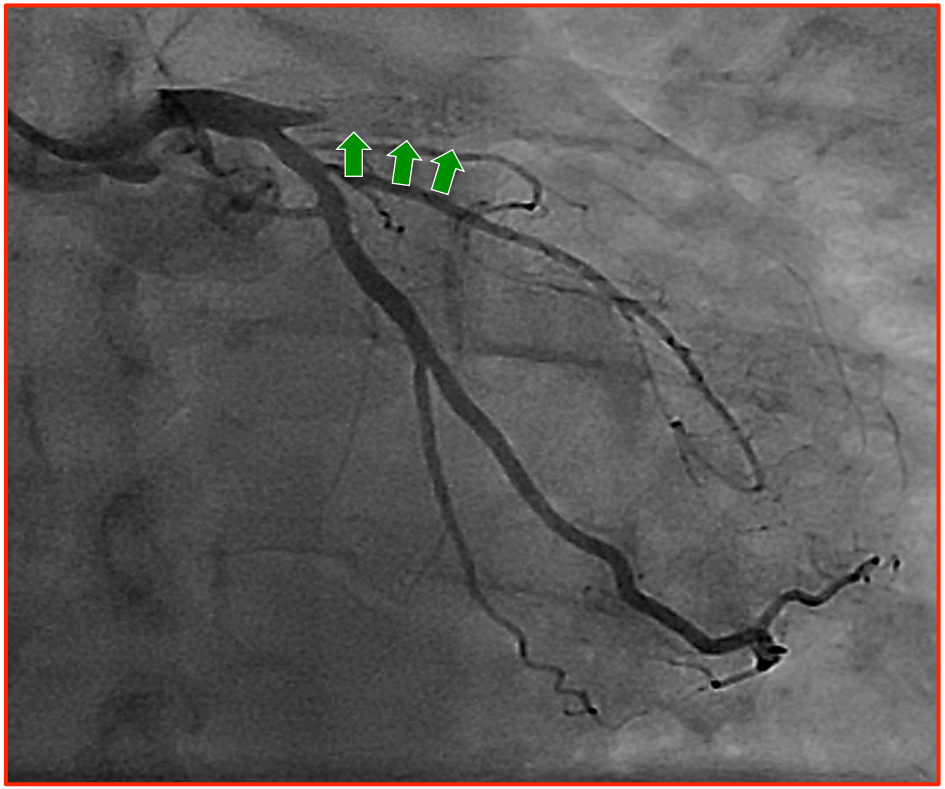
Masanori Taniwaki, MD; Maria D. Radu, MD, PhD; Serge Zaugg, MSc; Nicolas Amabile, MD, PhD; Hector M. Garcia-Garcia, MD, PhD; Kyohei Yamaji, MD, PhD; Erik Jørgensen, MD, DMSc; Henning Kelbæk, MD, DMSc; Thomas Pilgrim, MD; Christophe Caussin, MD; Thomas Zanchin, MD; Aurelie Veugeois, MD; Ulrik Abildgaard, MD, DMSc; Peter Jüni, MD; Stephane Cook, MD; Konstantinos C. Koskinas, MD, MSC; Stephan Windecker, MD; Lorenz Räber, MD, PhD

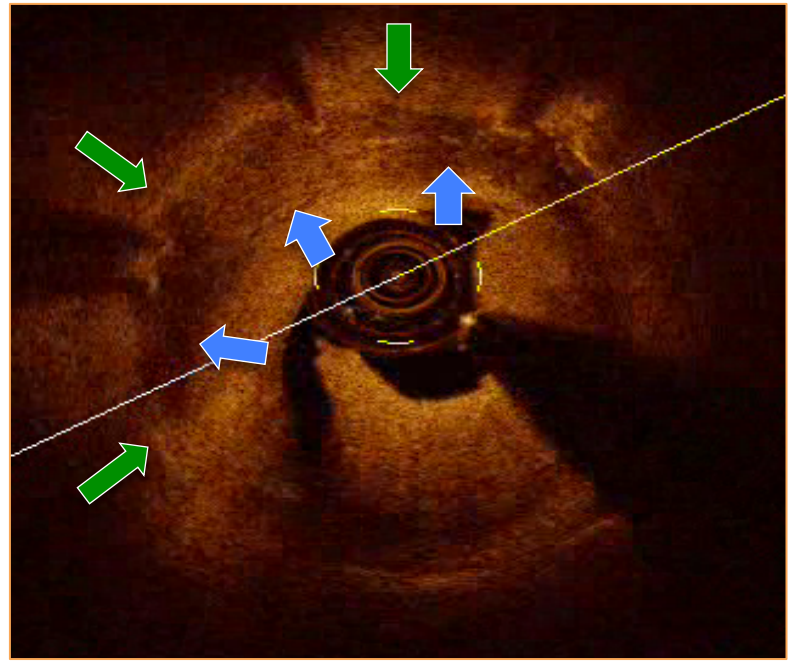
Tanikawi et al. , Circulation 2016

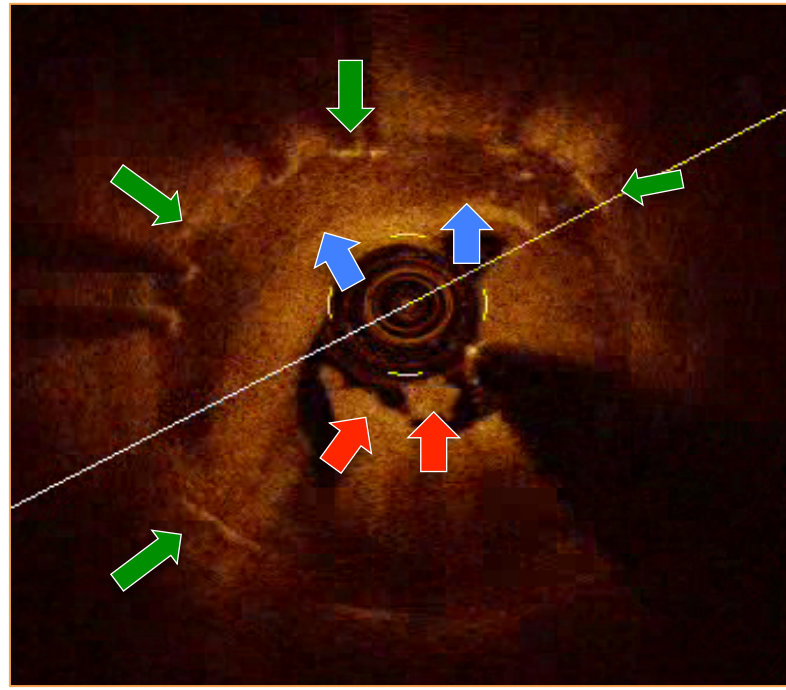
Optical Coherence Tomography Findings in Patients Presenting with Definite Coronary Stent Thrombosis

Results from the PREvention of Stent Thrombosis by an Interdisciplinary Global European effort (PRESTIGE) OCT study

Guagliumi et al. , TCT 2015

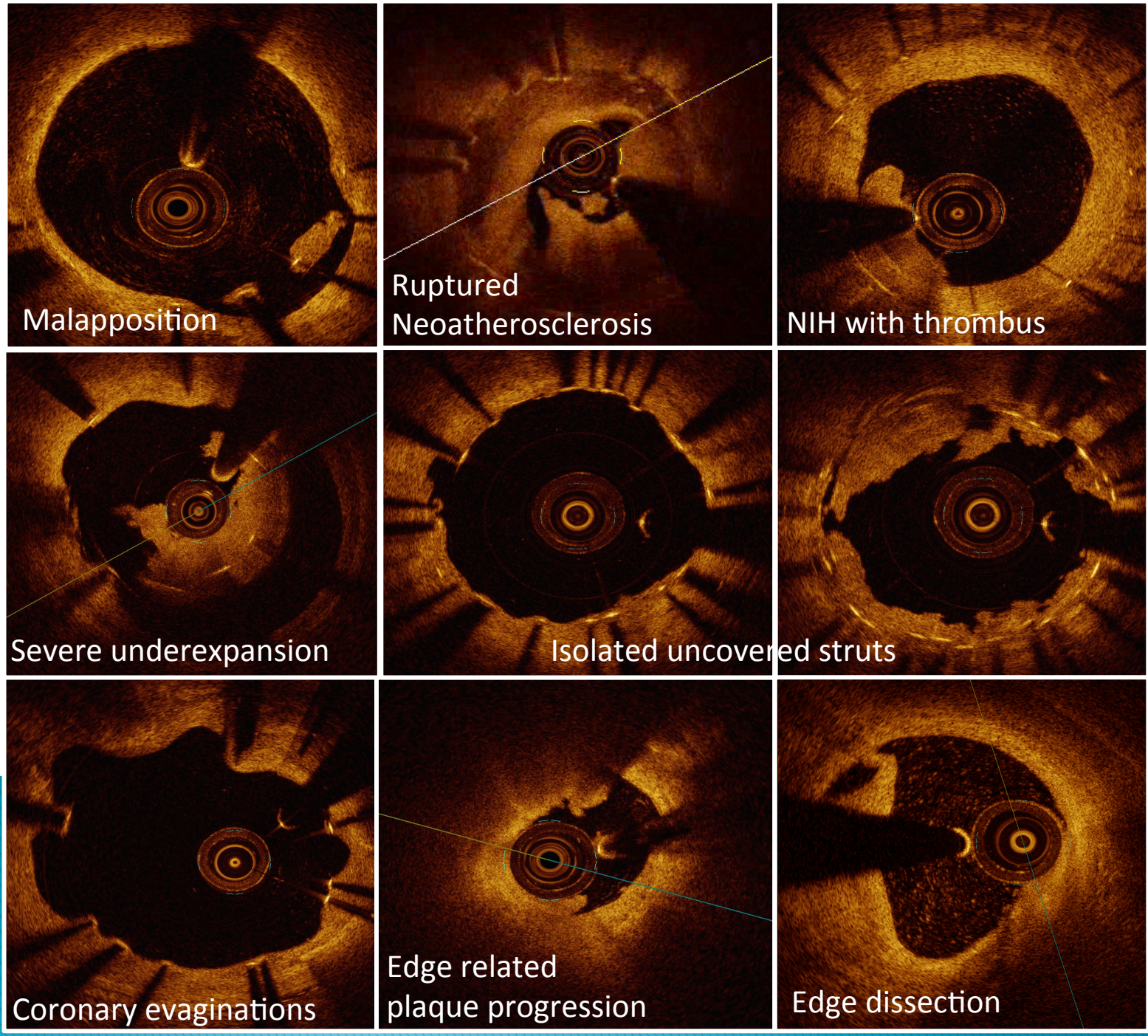






Thrombose trés tardive (6 ans) de stent actif par rupture de néoathérome intra-stent sous clopidogrel

TE
RIS

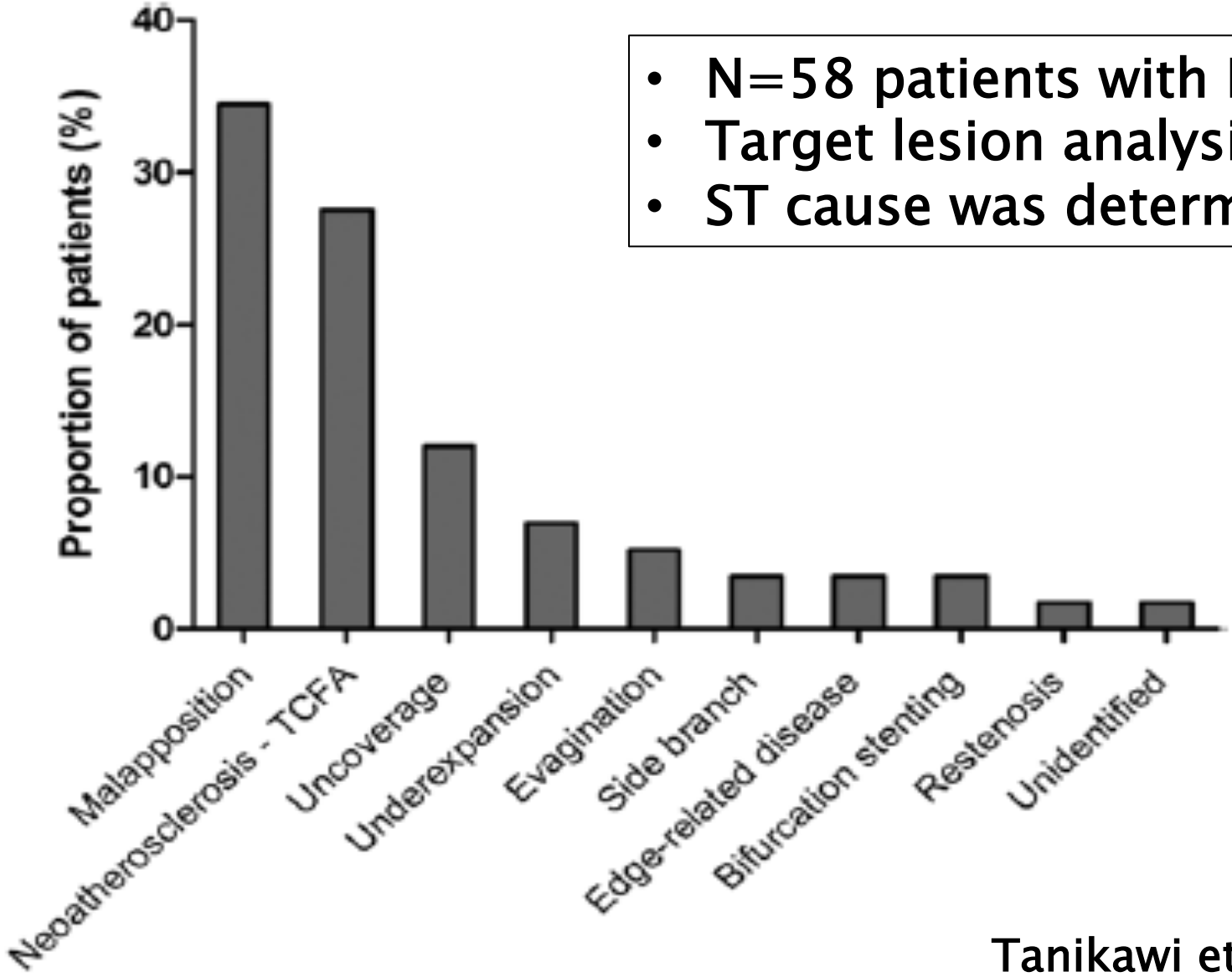

Malapposition
Ruptured
Neoatherosclerosis
NIH with thrombus
Severe underexpansion
Isolated uncovered struts
Coronary evaginations
Edge related
plaque progression
Edge dissection

Mechanisms of stent thrombosis according to clinical presentation

	Global (n=120)	Acute+ Subacute ST (n=23)	Late+ Very Late ST (n=97)	p
Malapposition (%)	34	48	32	0.12
Ruptured NA (%)	23	0	28	0.004
Underexpansion (%)	11	26	7	0.02
Coronary Evagination (%)	8	0	10	0.11
ER disease progression (%)	8	4	8	0.45
Isolated uncovered struts (%)	8	0	10	0.11
Neointimal hyperplasia (%)	4	0	5	0.34
Edge dissection (%)	1	4	0	0.19
No cause identified (%)	3	18	0	0.001

Souteyrand et al. , EHJ

Bern-Copenhagen-Paris-Fribourg collaborative registry



- N=58 patients with DES very late ST
- Target lesion analysis by OCT
- ST cause was determined in 98%

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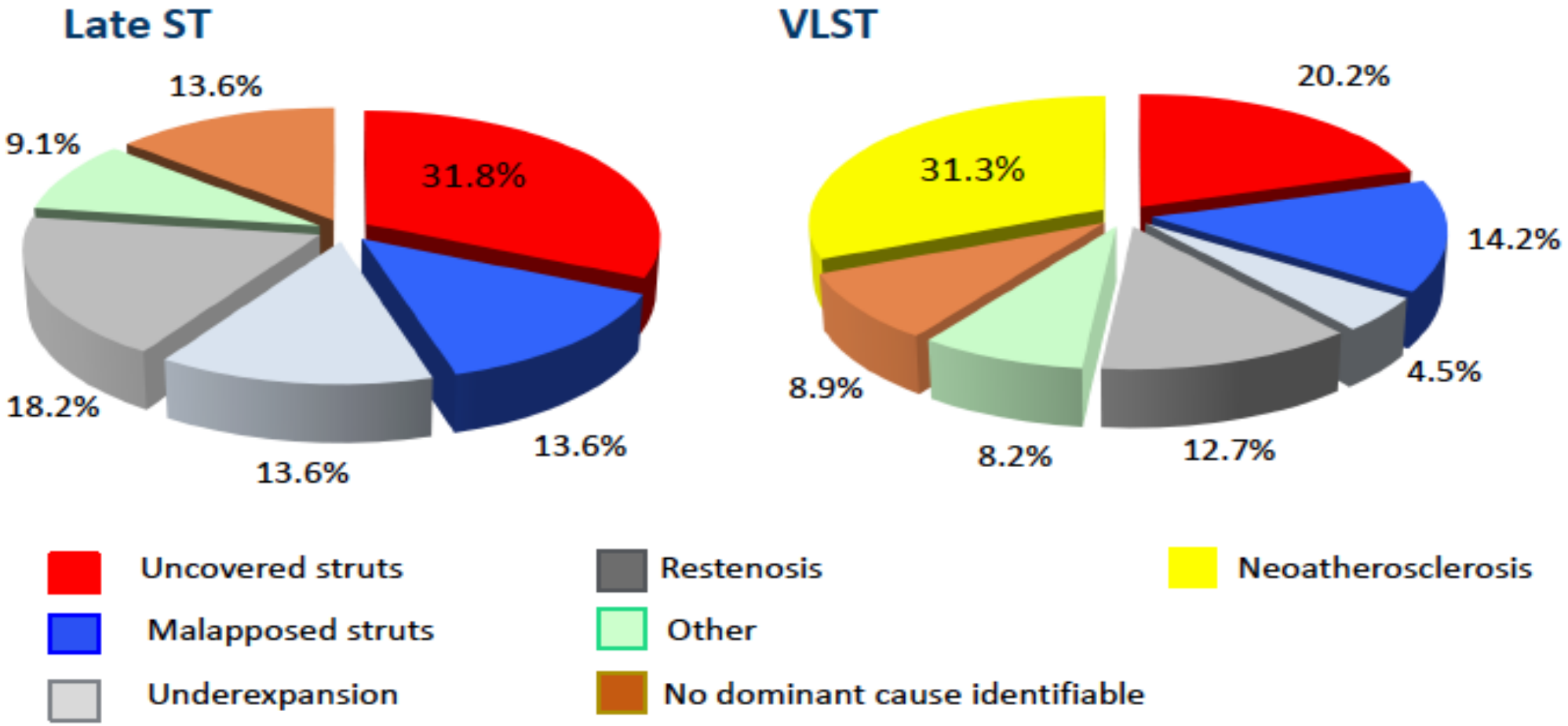
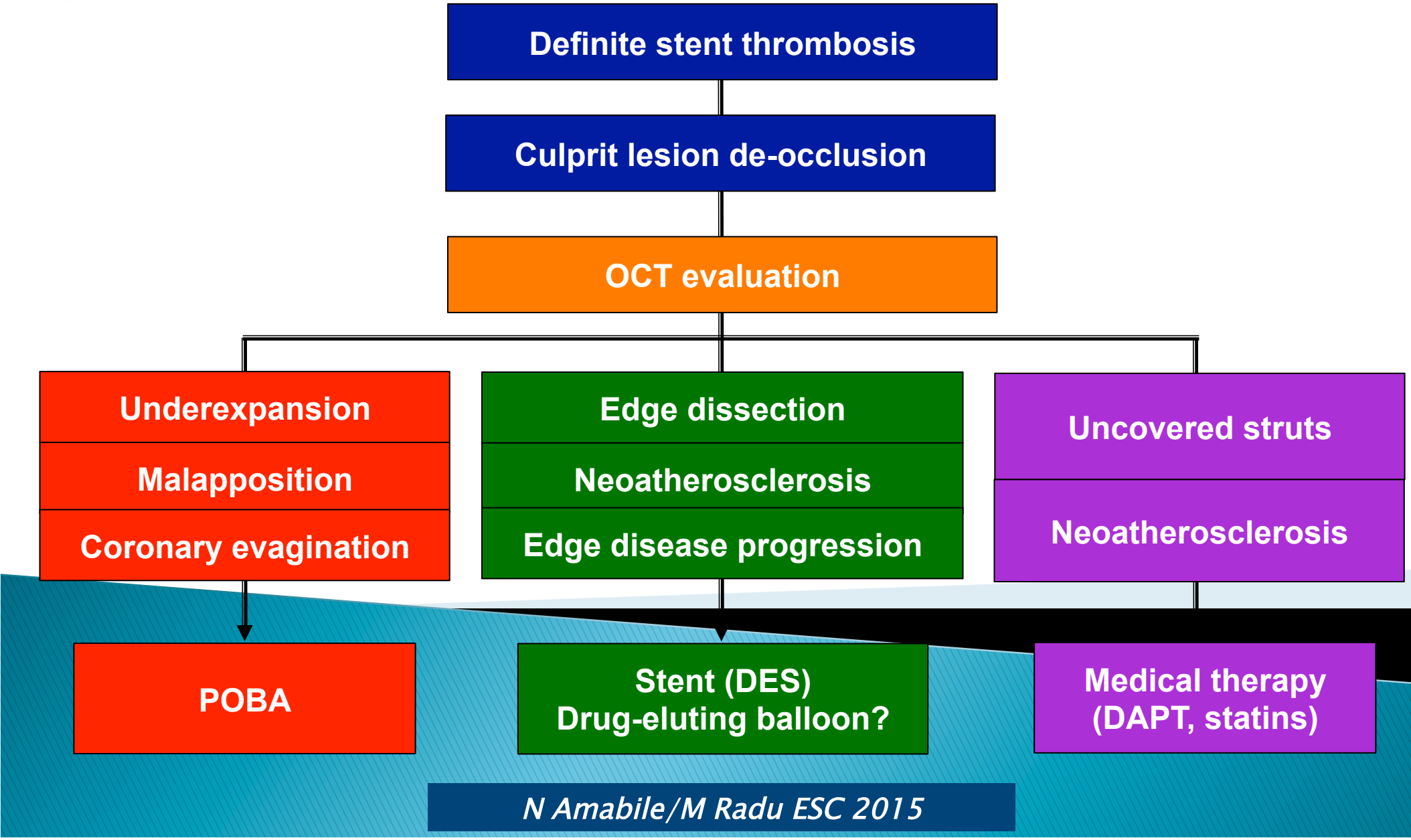
Tanikawi et al. , Circulation 2016

ETUDE PRESTIGE / N=217 patients avec ST

Dominant Imaging Findings of ST as adjudicated by Expert Group



Suggested treatment algorithm during stent thrombosis



N Amabile/M Radu ESC 2015

- OCT et thrombose de stent
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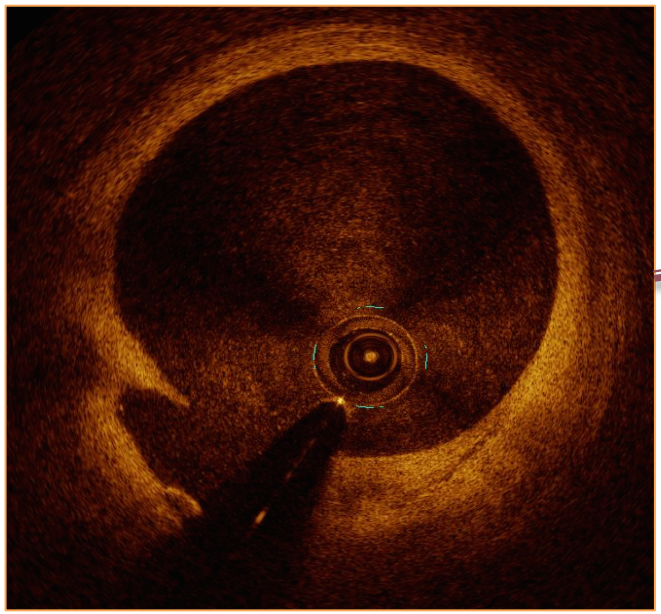
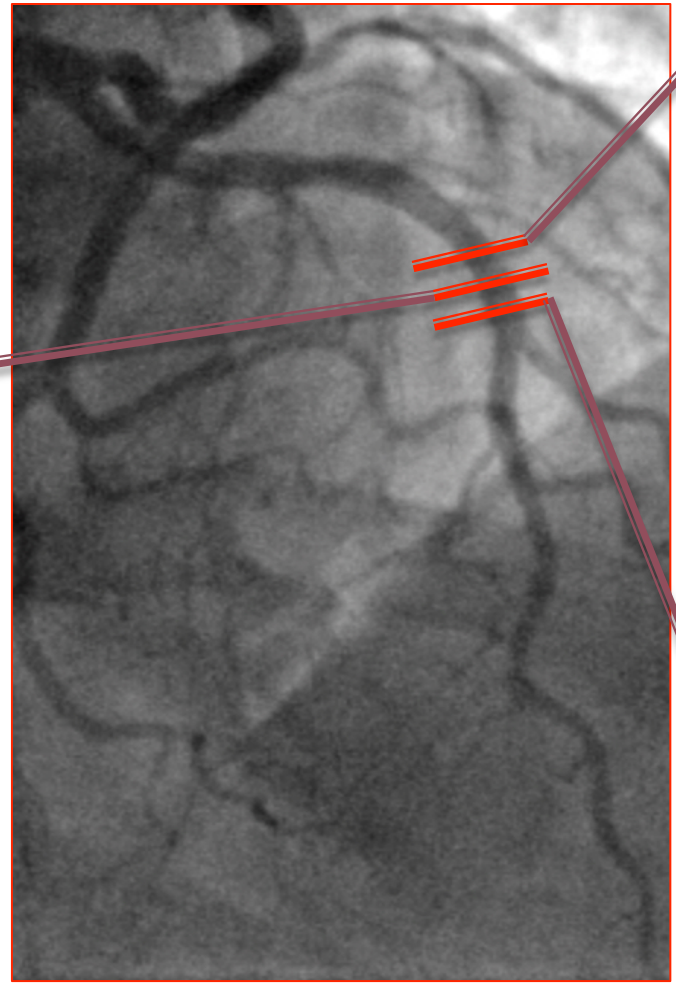
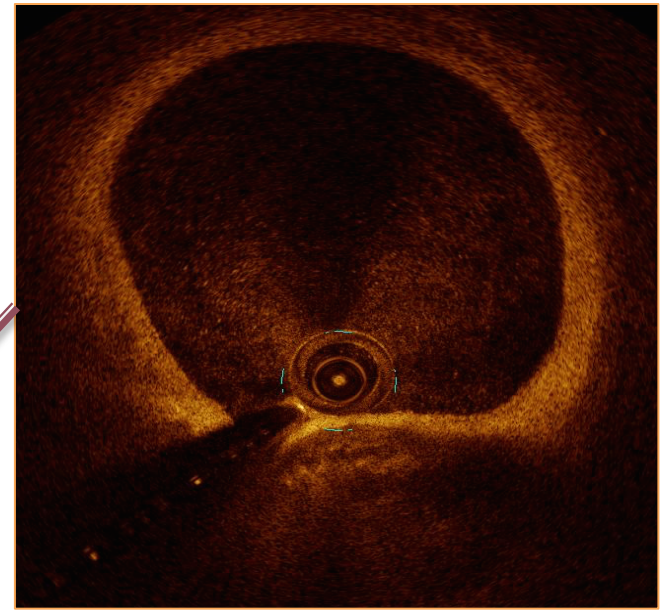
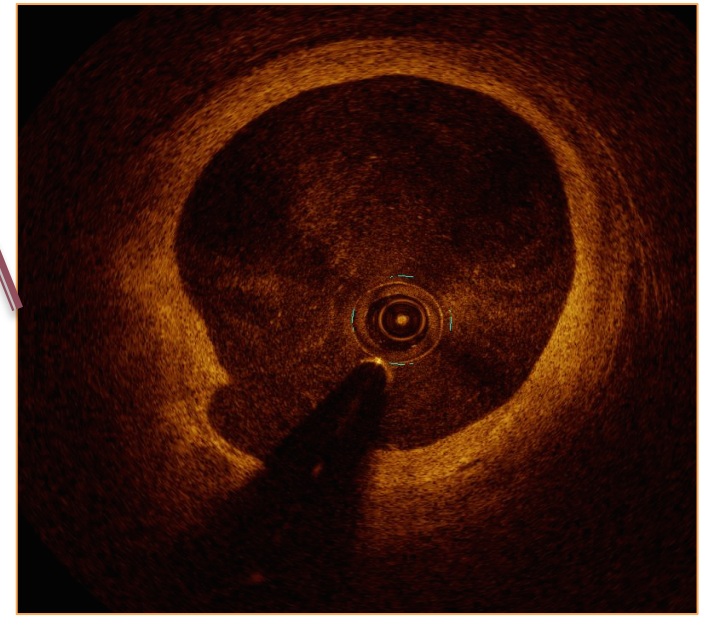
Rupture de plaque avec détersion secondaire



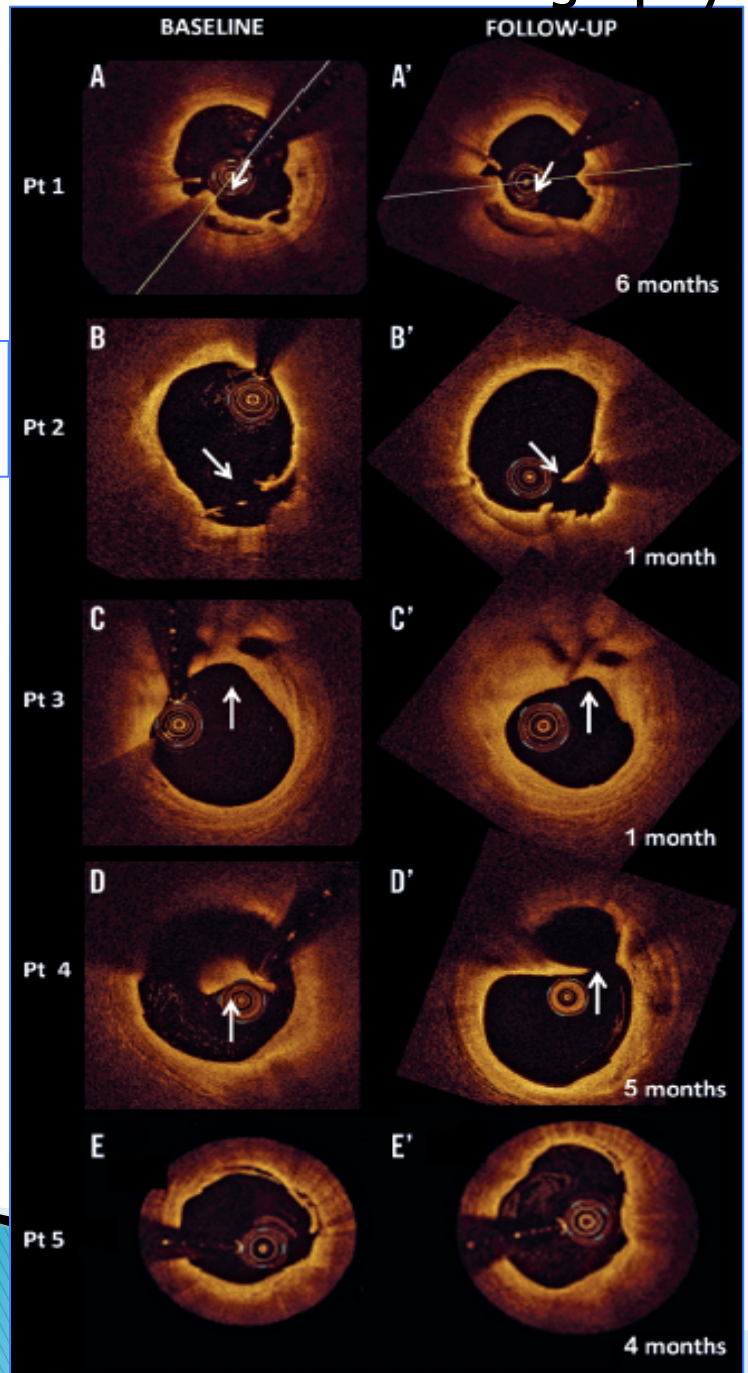




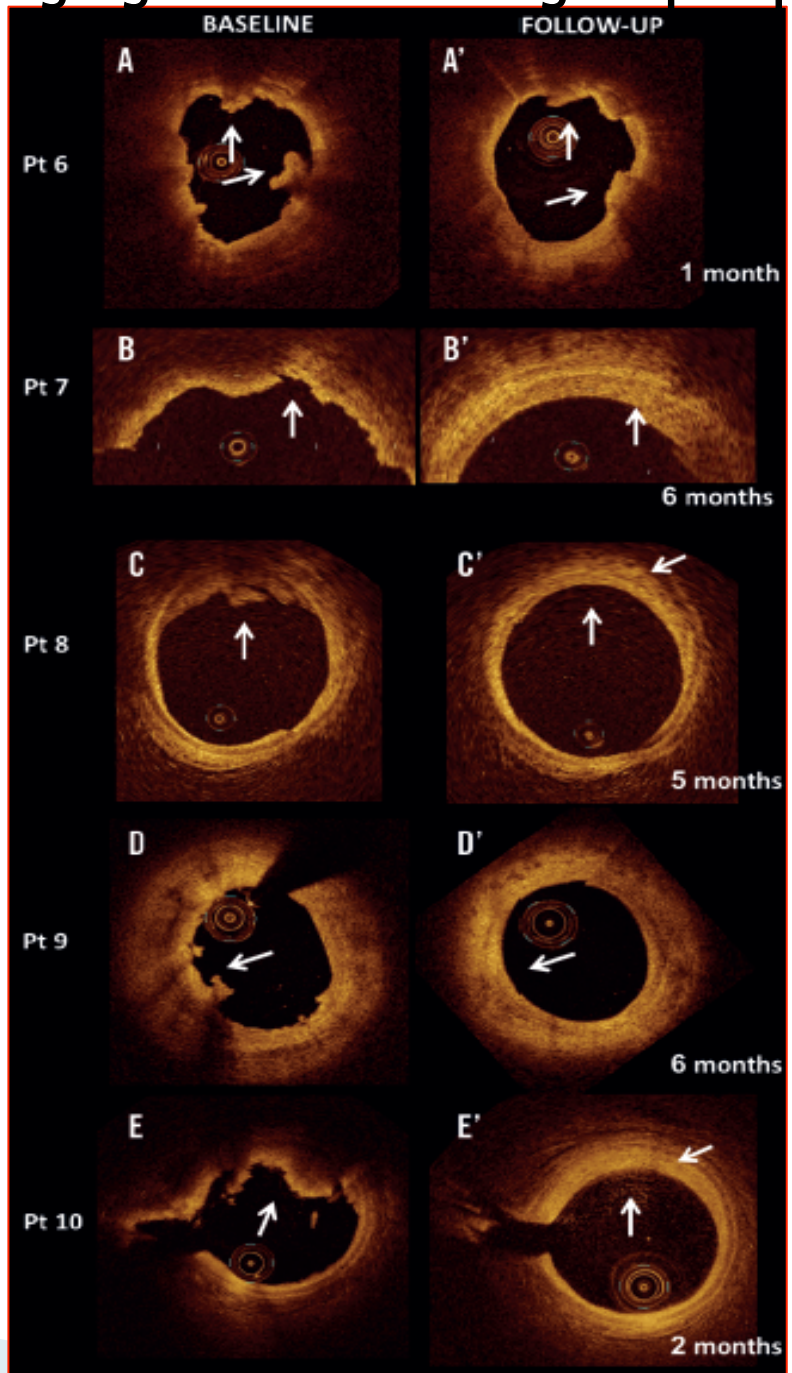


Serial optical coherence tomography imaging of ACS-causing culprit plaques

Ruptured plaque

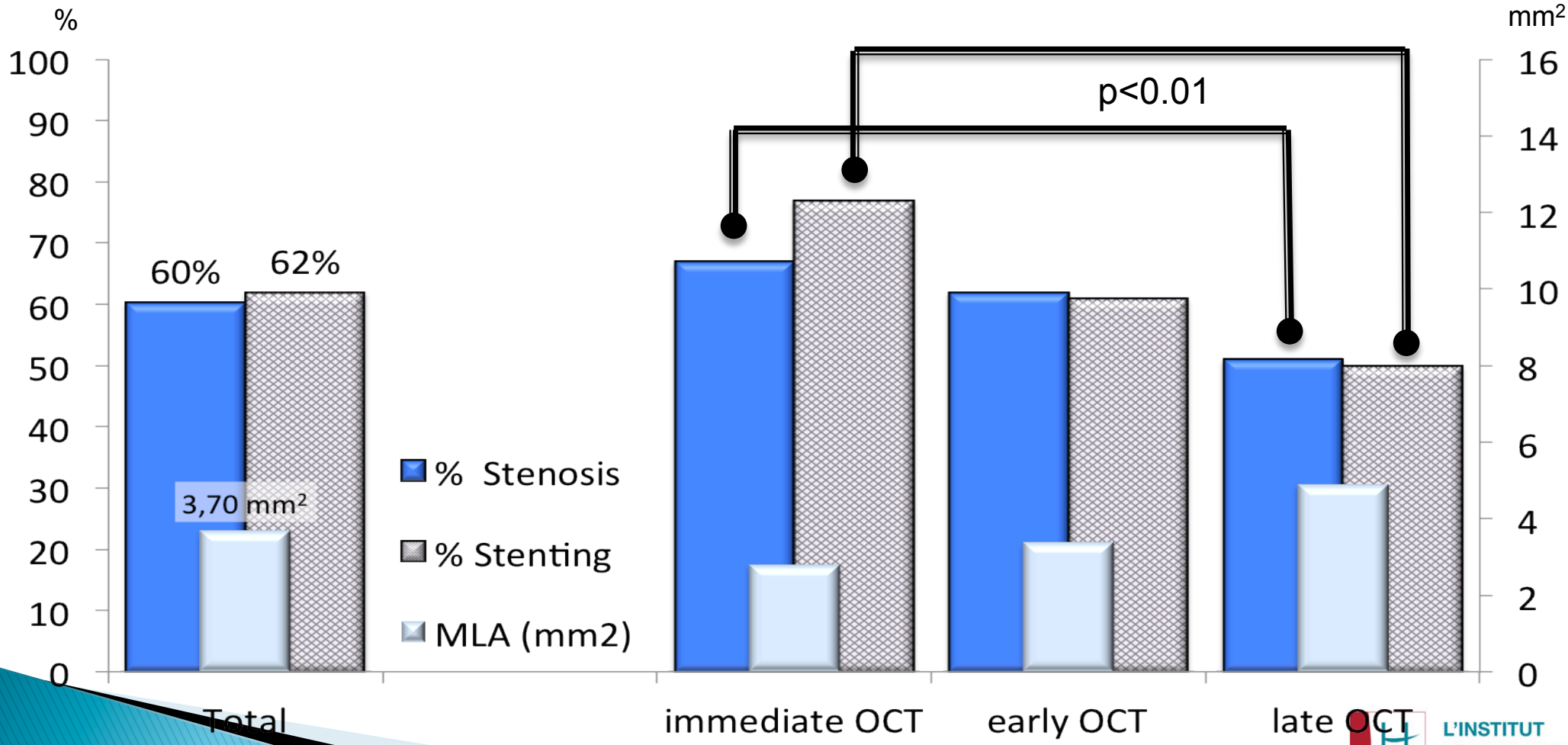


IFC



Culprit lesion assessed by OCT and therapeutic option

Minimal Lumen Area (MLA, mm²), MLA/Reference Area (mean % stenosis)
Stenting option (%) in total population and for each group



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Souteyrand, Amabile et al., Eurointervention 2015

- OCT et thrombose de stent
- OCT et gestion du SCA
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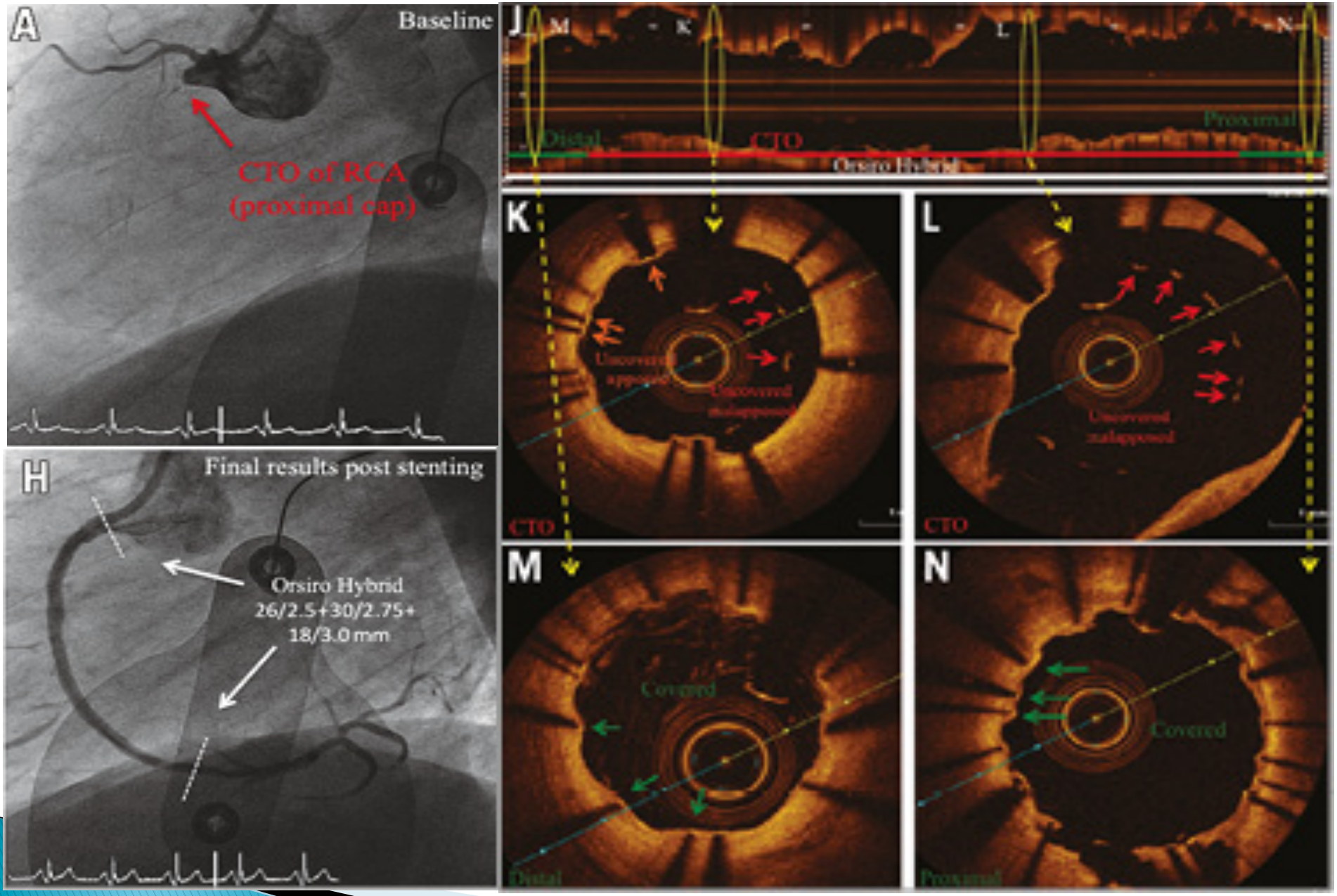

A
Baseline
CTO of RCA
(proximal cap)
H
Final results post stenting
Orsiro Hybrid
26/2.5+30/2.75+
18/3.0 mm
J
M
K
L
N
Distal
CTO
Proximal
Orsiro Hybrid
K
CTO
L
CTO
M
Covered
Distal
N
Covered
Proximal

12 months OCT analysis after revascularisation of chronic total occlusions

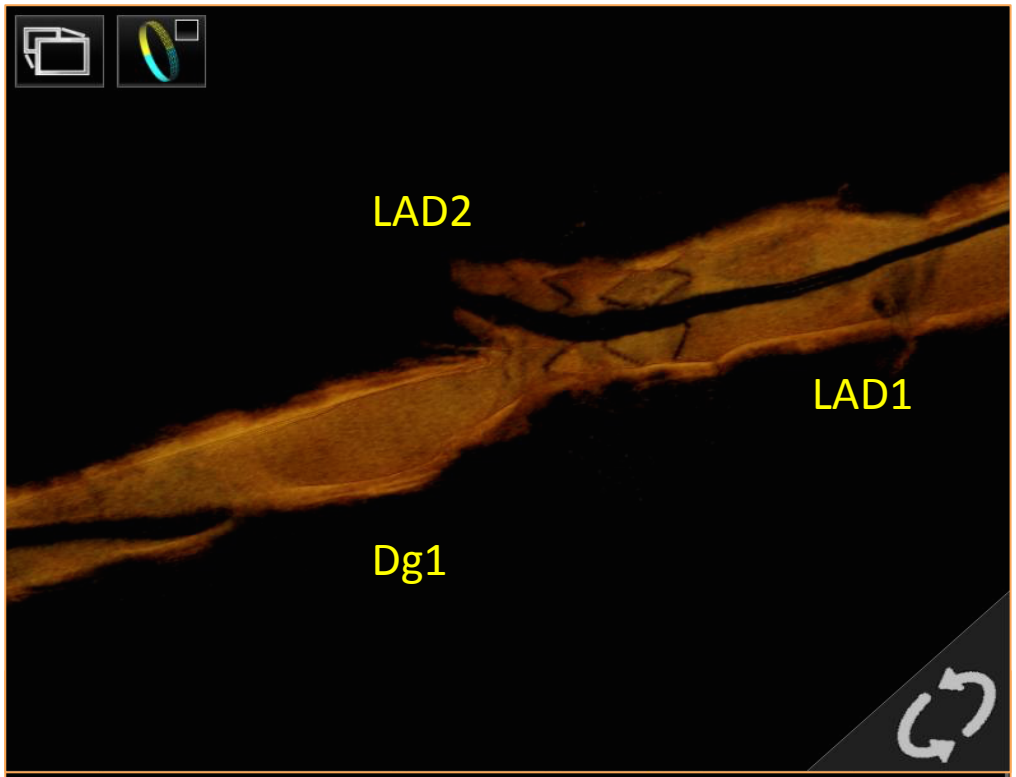
Analysis by OCT	CTO group	Control group	*p*
Lesion level			
Total number of analysed lesions, n	20	28	
Frequency of lesions with uncovered struts, n (%)	20 (100)	28 (100)	1
Frequency of lesions with ≥30% uncovered struts, n (%)	10 (50.0)	1 (3.6)	<0.001 (*)
Frequency of lesions with ≥5% malapposed struts, n (%)	8 (40.0)	2 (7.1)	0.01 (*)
Maximum length of segments with uncovered struts, mm	9.0±7.1	3.8±3.7	0.003 (*)
Maximum length of segments with malapposed struts, mm	5.4±5.9	2.5±2.6	0.019 (*)
Cross-section level			
Total number of analysed cross-sections, n	1,023	1,234	
Number of analysed cross-sections/lesion, n	51.2±22.6	44.1±16.4	0.409
Frequency of cross-sections with uncovered struts, %	56.3±30.4	43.1±19.1	0.026 (*)
Frequency of cross-sections with ≥30% uncovered struts, %	33.6±27.5	15.1±7.9	0.029 (*)
Frequency of cross-sections with ≥5% malapposed struts, %	26.1±21.5	11.0±9.7	0.004 (*)

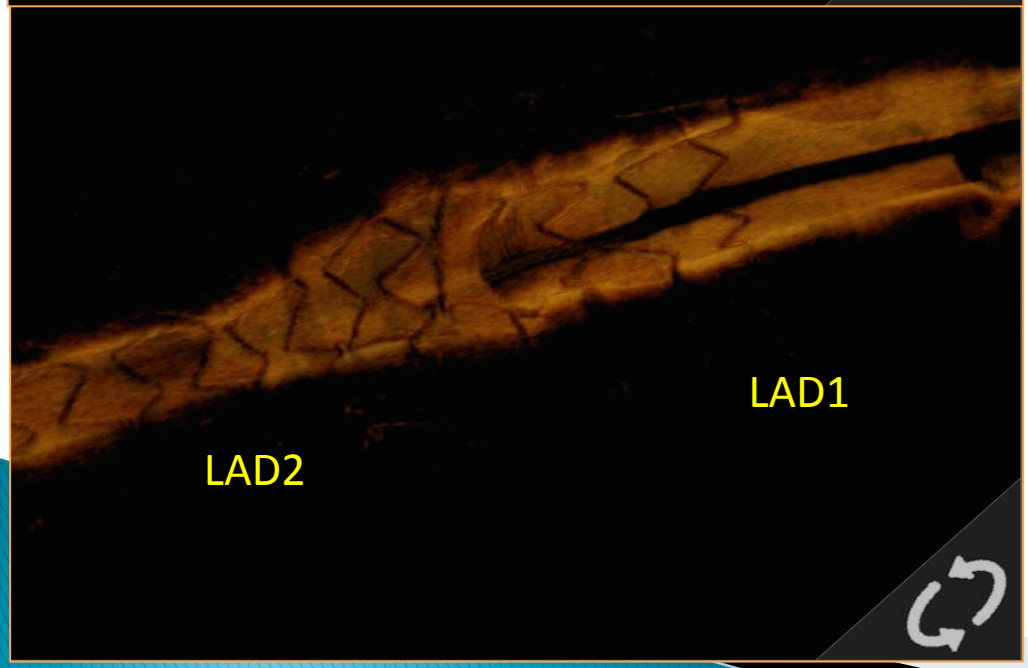
Analysis by OCT	CTO group	Control group	*p*
Strut level			
Total number of analysed struts, n	9,219	10,724	
Number of analysed struts/lesion, n	461±230.2	383±178.3	0.255
Number of analysed struts/cross-section, n	8.9±2.1	9.3±4.1	0.577
Covered struts/patient, %	68.9±21.9	89.6±10.4	<0.001 (*)
Uncovered struts/patient, %	31.1±21.9	10.4±10.4	<0.001 (*)
Apposed uncovered struts/patient, %	20.2±16.2	7.5±8.7	0.001 (*)
Malapposed uncovered struts/patient, %	10.9±10.3	2.9±2.6	<0.001 (*)
Neointimal thickness of covered struts, µm	92.0±61.2	109.3±39.2	0.033 (*)

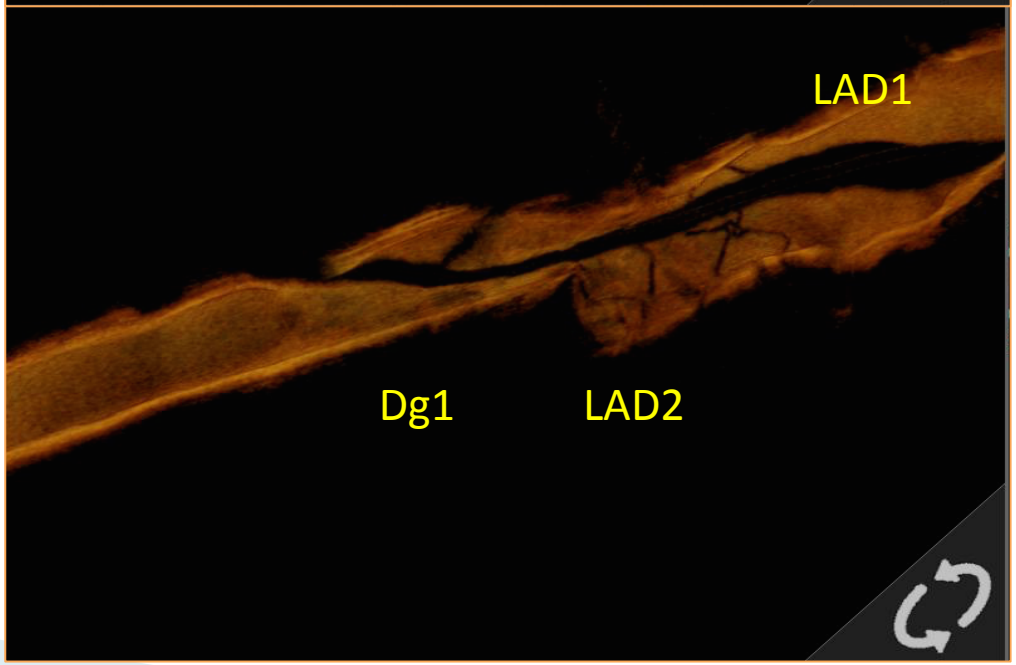
Analysis of DES implanted after CTO-PCI vs. DES implanted in non-CTO lesions (control). Values are mean±SD or n (%) as appropriate. The data are presenting evidence for delayed DES coverage after CTO-PCI compared to control.

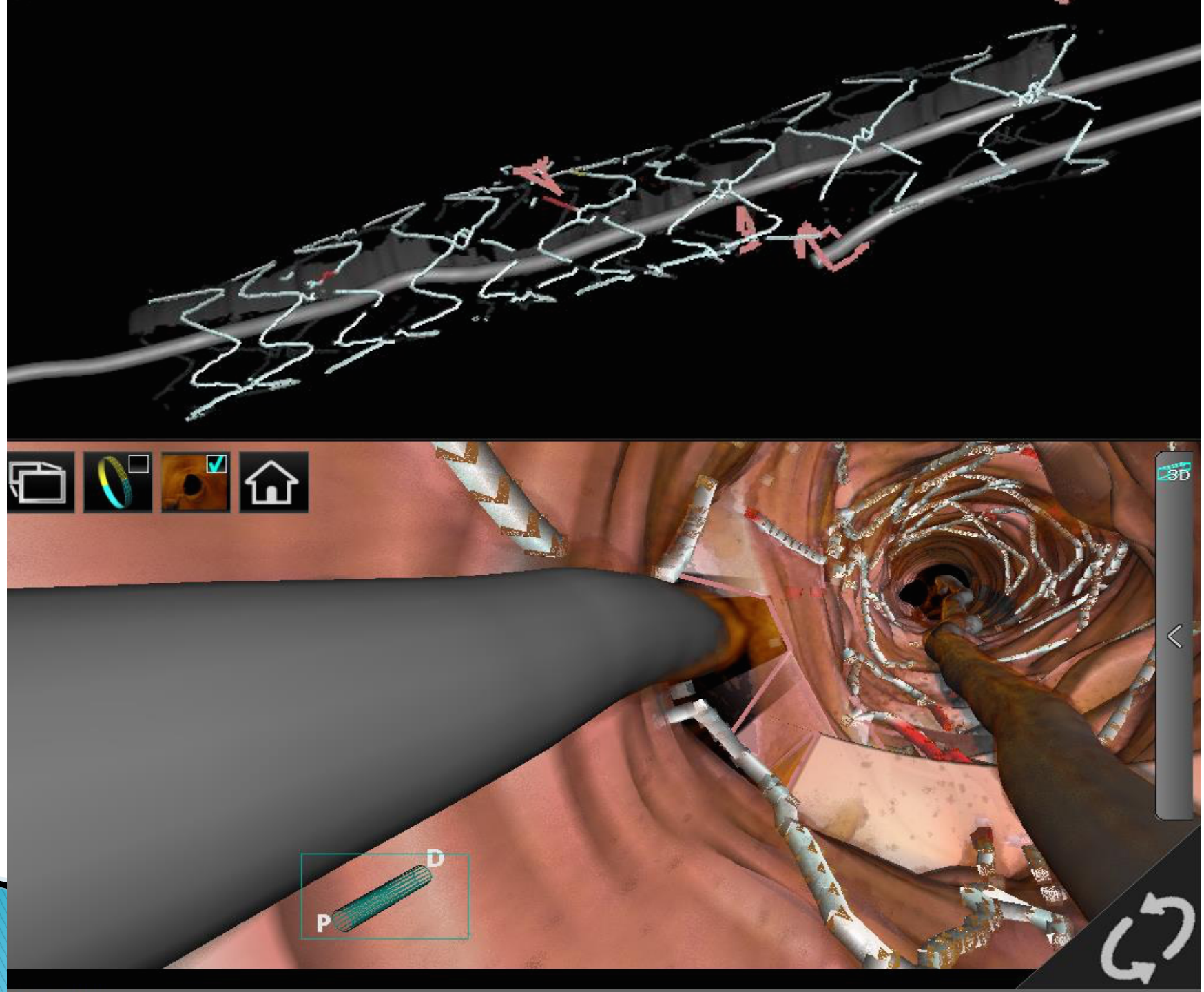
Heeger CH et al., Eurointervention 2016

LAD1
LAD2


LAD2
LAD1
Dg1


LAD1
LAD2


LAD1
Dg1
LAD2


3D
D
P

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Conclusion

- Il y a toujours du neuf dans le domaine de L'OCT ! 461 articles publiés en 2015 !
- Technique d'imagerie actuellement mûre, prête pour aider concrètement au quotidien dans le cath lab.
- L'application de l'OCT dans les indications de stent failure , management SCA, complex PCI

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