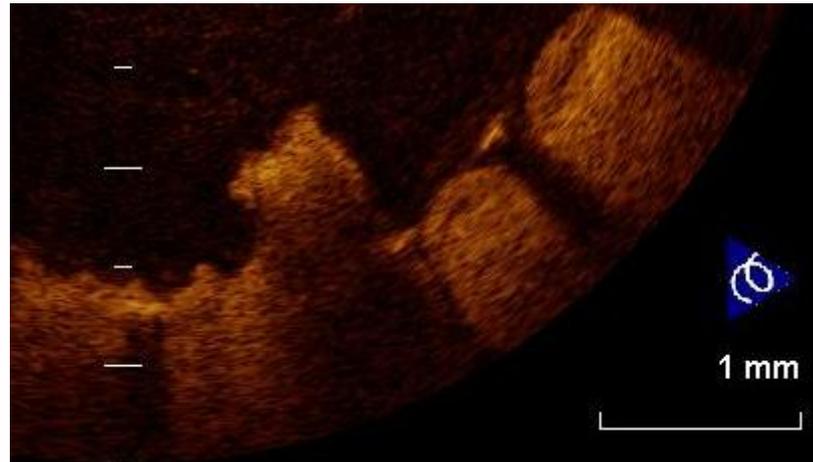


Characterization of Plaque Prolapse Following Carotid Artery Stenting by OCT



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Disclosure Statement of Financial Interest

I, Bernhard Reimers DO NOT have a financial interest/arrangement or affiliation with one or more organizations that could be perceived as a real or apparent conflict of interest in the context of the subject of this presentation.



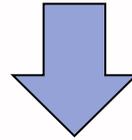
Definition

Plaque prolapse is defined as tissue extrusion through the stent struts post- procedure.

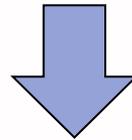
**Brack MJ, et al. Int J Cardiol.
1994;44(1):93- 95**



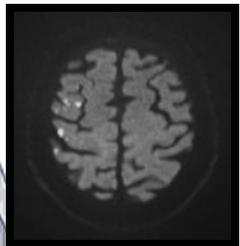
Consequences of plaque prolapse



Possible distal embolization



Heart: From enzyme rise to **heart attack**



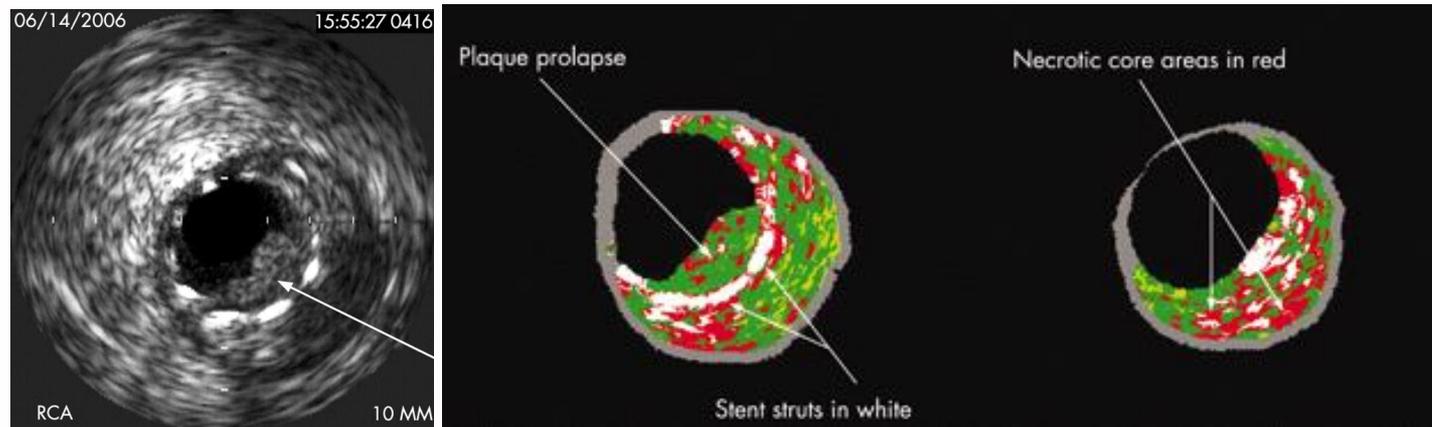
Brain: From ischemic lesions to **stroke**



Relation between plaque components and plaque prolapse after DES implantation: virtual histology –intravascular ultrasound

Hong YJ et al. *Circ J* 2010;74:1142

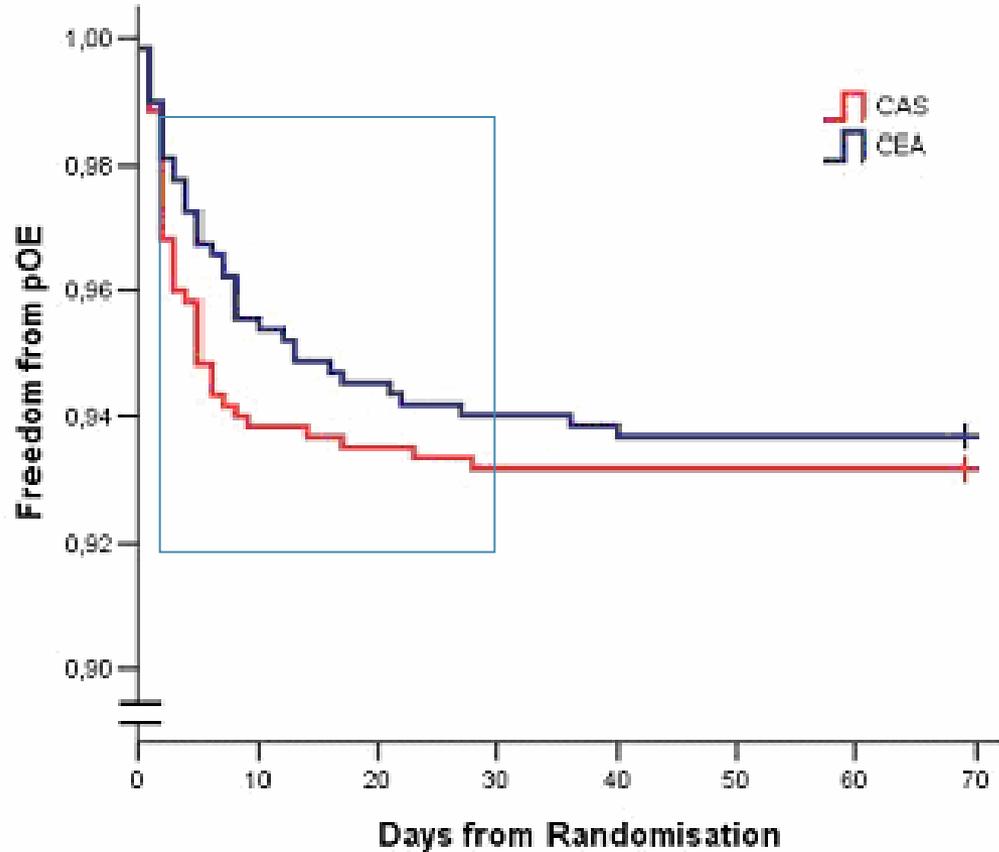
Necrotic core and **fibrotic** components were associated with development of PP; and both components in prolapsed plaque were associated with **cardiac enzyme elevation** after DES implantation.



BMJ Case Reports 2009; Tsui, Lau

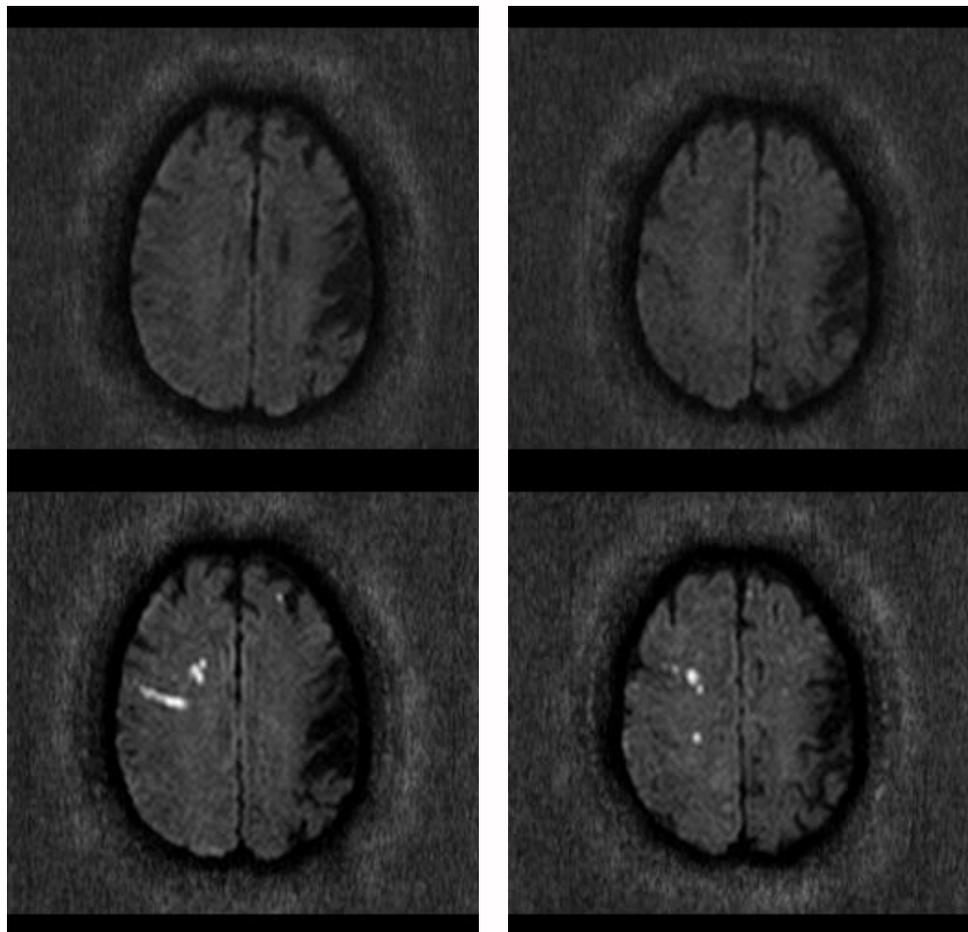
SPACE

CEA & CAS have additional complications within 30 days



CAS	599	562	560	558	558	558	558	558
CEA	584	558	552	549	548	547	547	547

DW MRI before and 5 days after CAS



Cause of plaque prolapse



Cheese grater effect of stents:

- during deployment,
- during postdilatation (most TCD hits),
- during 30-days post procedure

Cheese grating is not always good



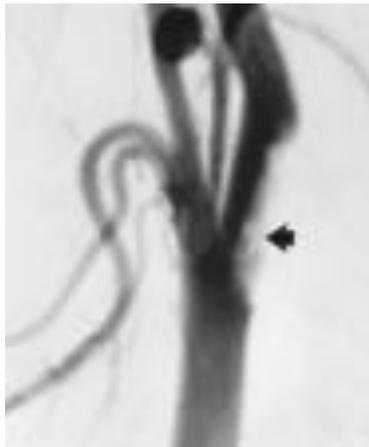
Increased plaque prolapse
from coronary experience:

- thrombotic lesion
- lipid core
- thin cap over necrotic core

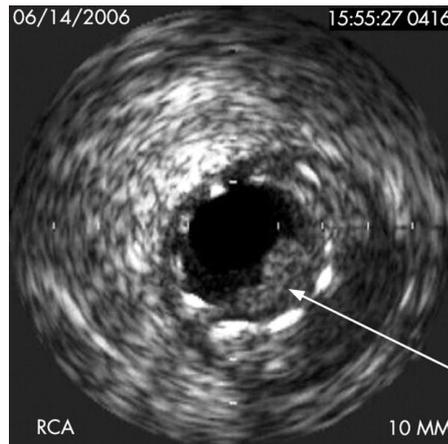
Hung et al; Circ 2010

Differences between soft and hard cheeses—plaques

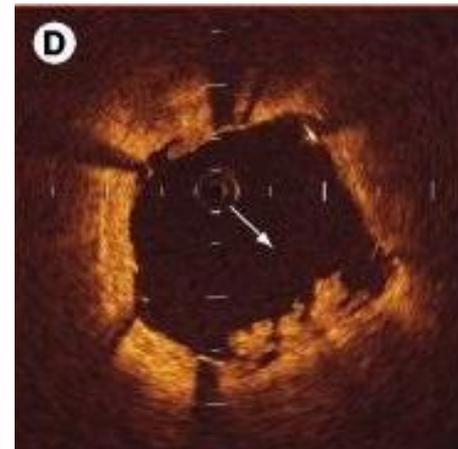
Detection of plaque prolapse



Angiography



IVUS



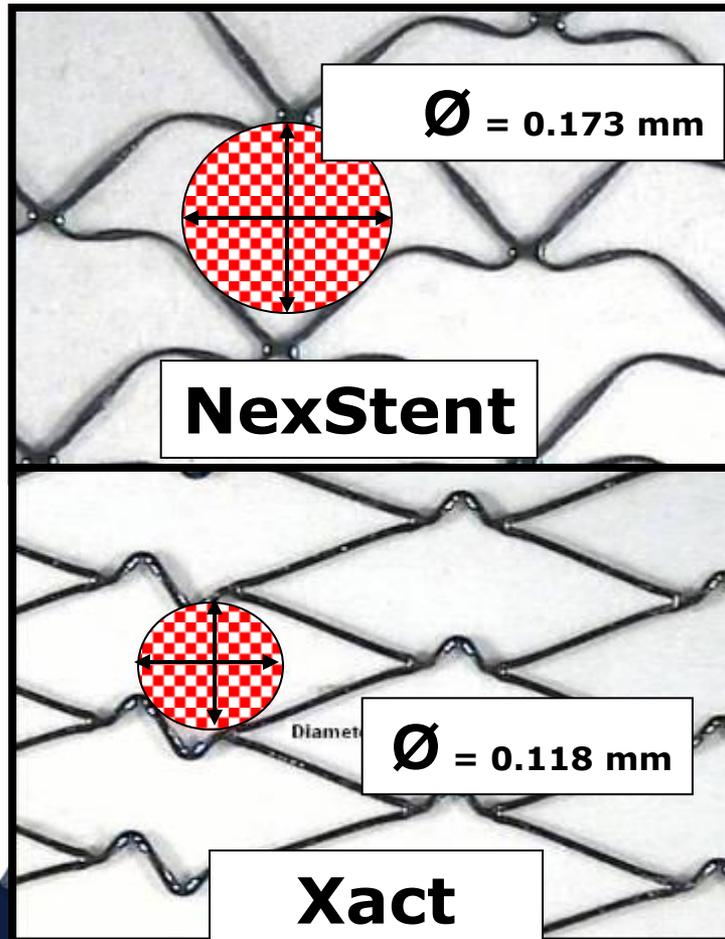
OCT

In coronary arteries

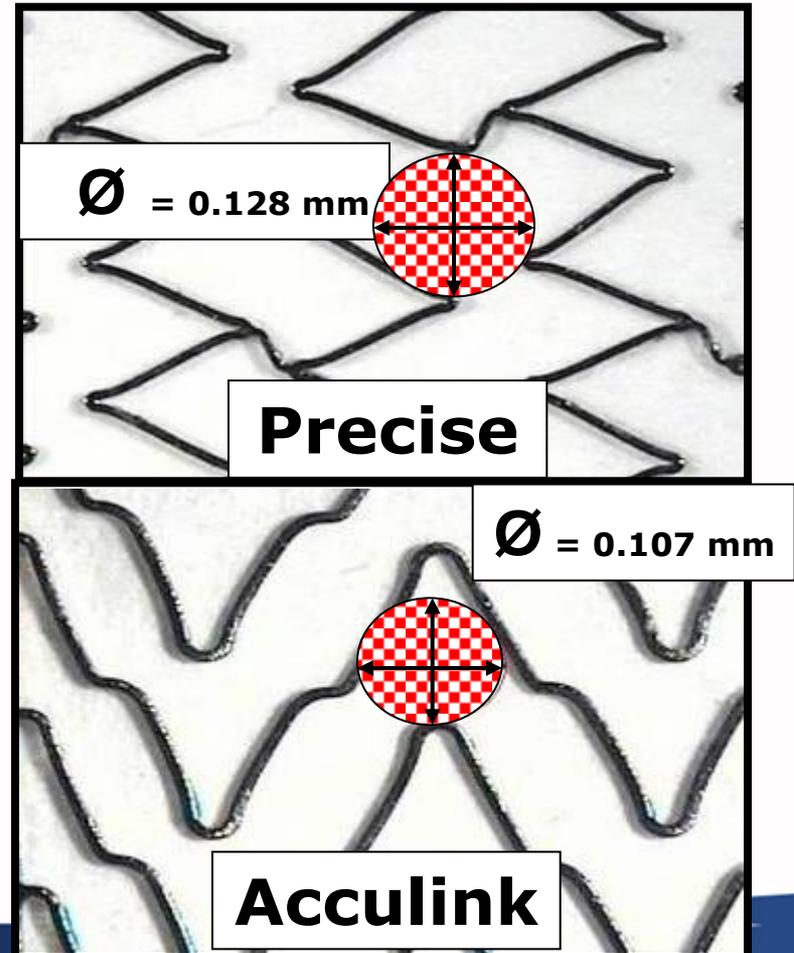


The concept of plaque scaffolding of stents

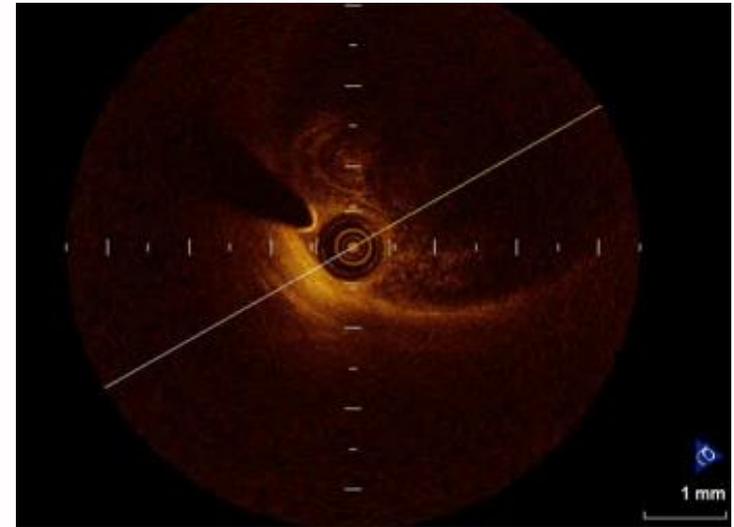
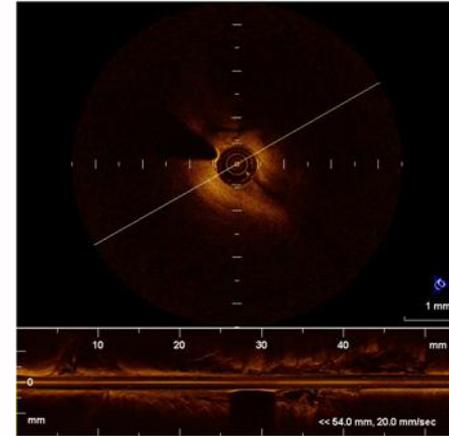
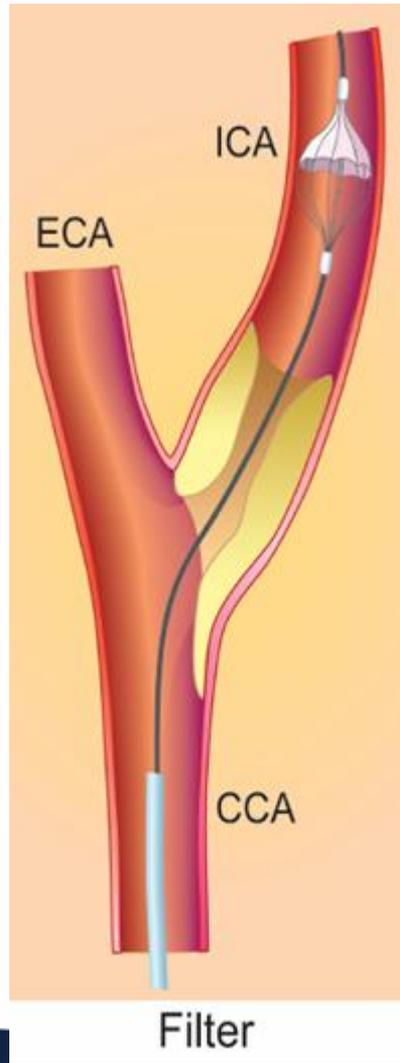
Closed-cell stents



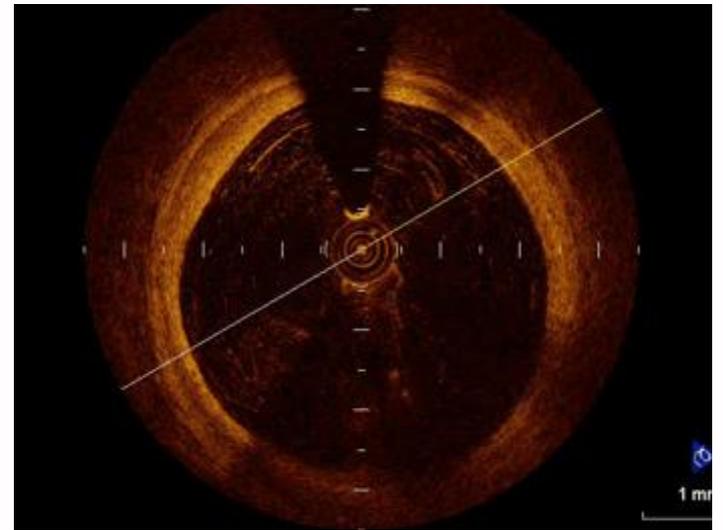
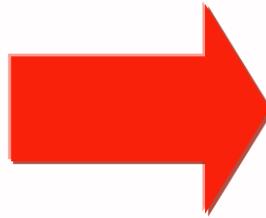
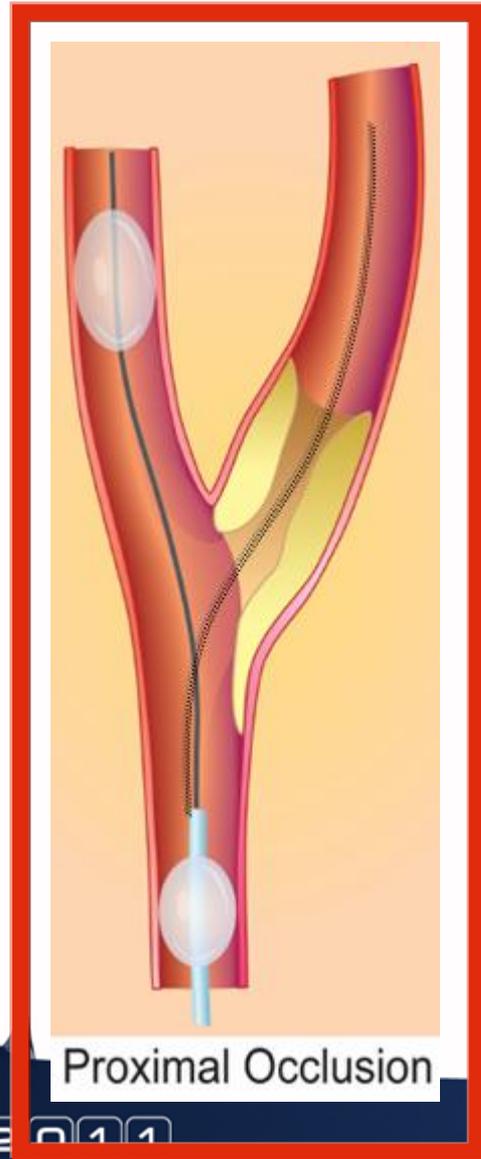
Open-cell stents



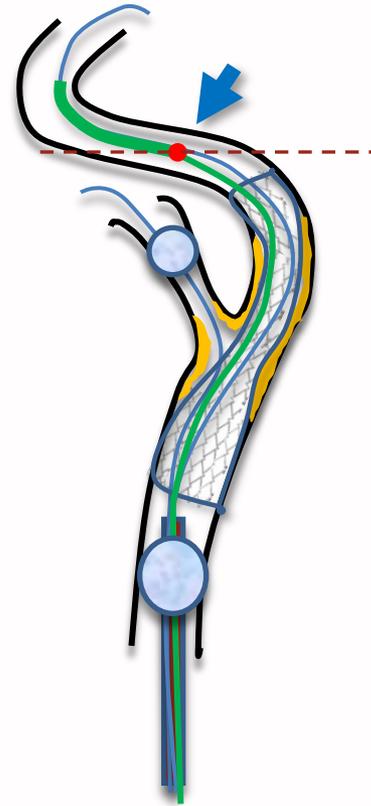
Emboli Protection Strategies and OCT acquisition



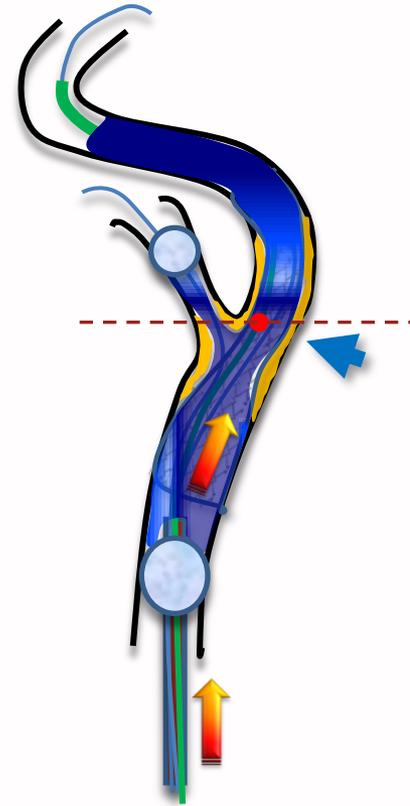
Emboli Protection Strategies and OCT acquisition



1 Positioning of OCT catheter distal to stent



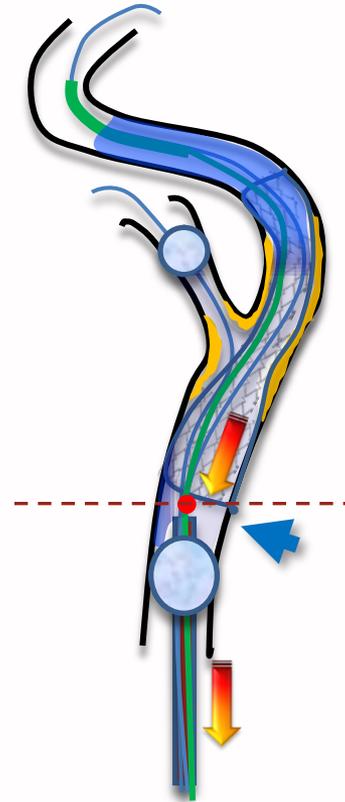
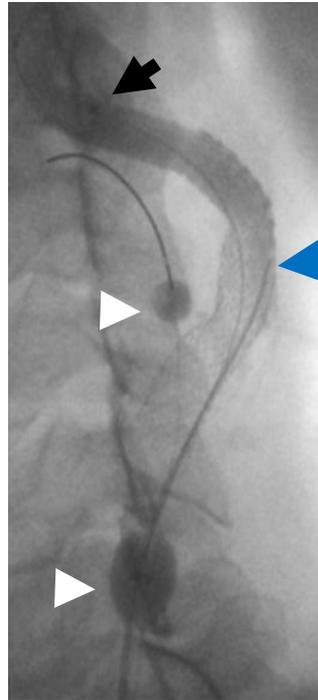
2 Careful hand injection of 20cc dye (Ultravist 320)

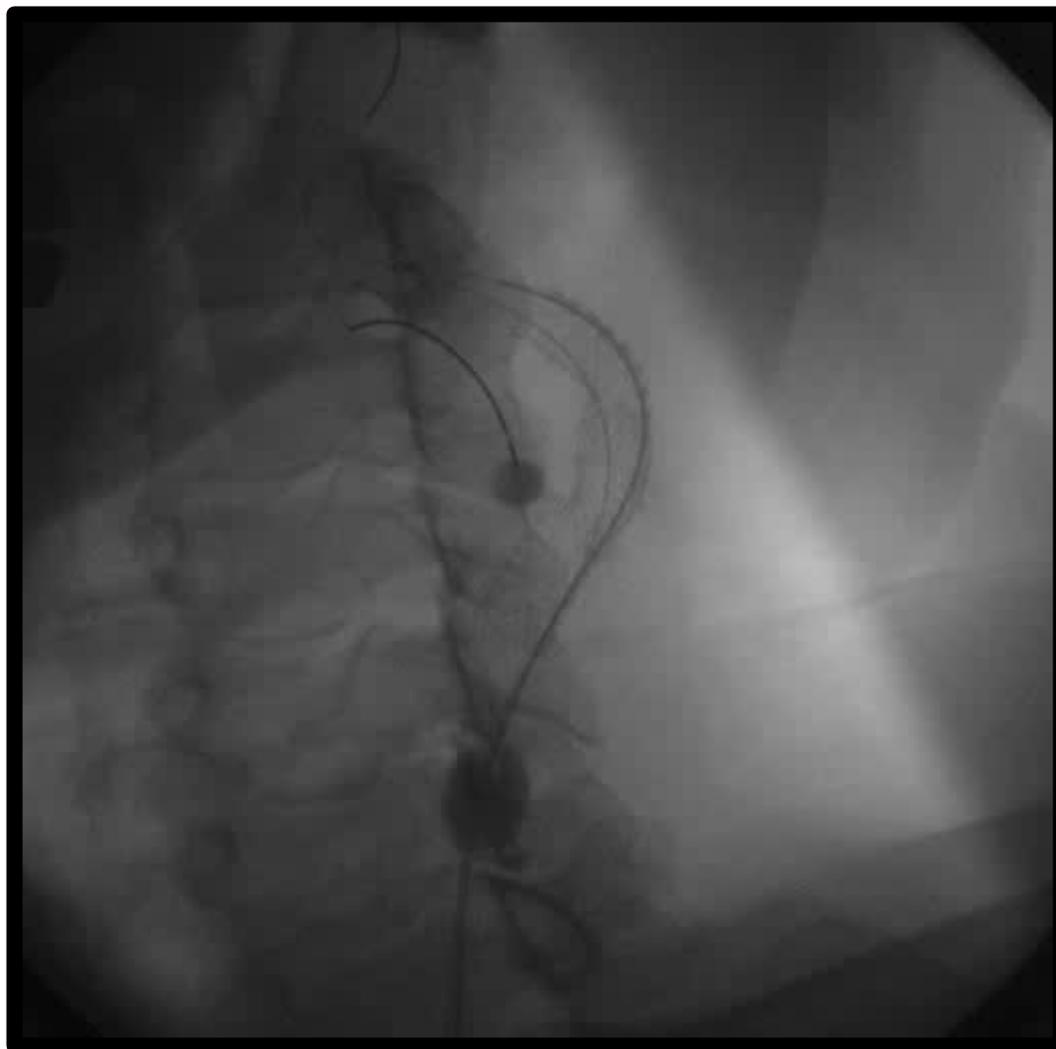


3 When images ok: pull-back of OCT system



4 Hand re-aspiration of dye



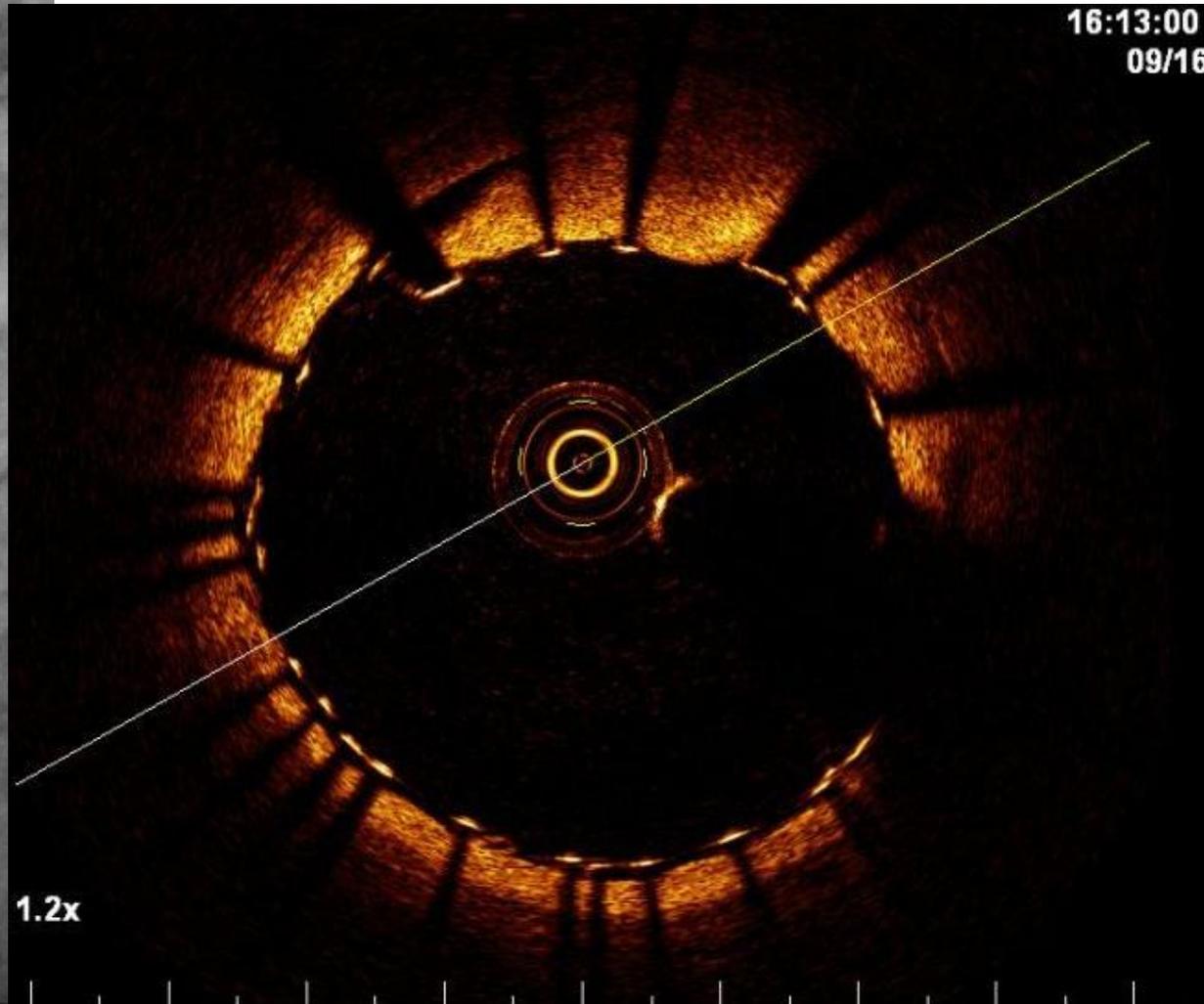
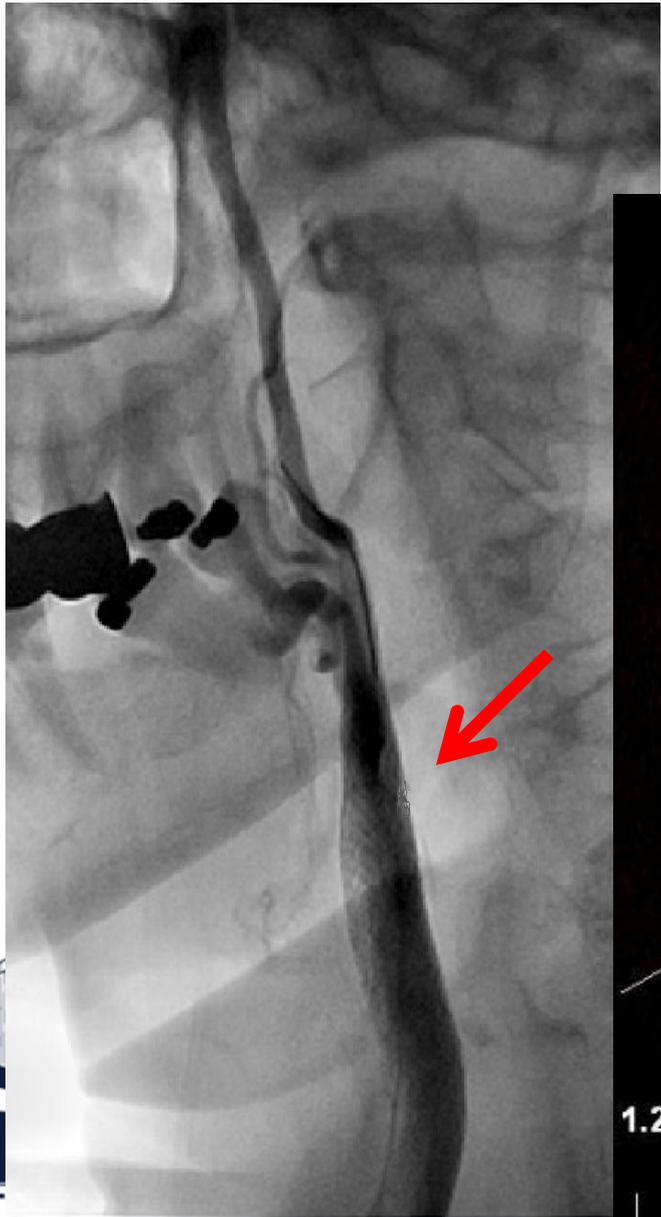


TCT2011

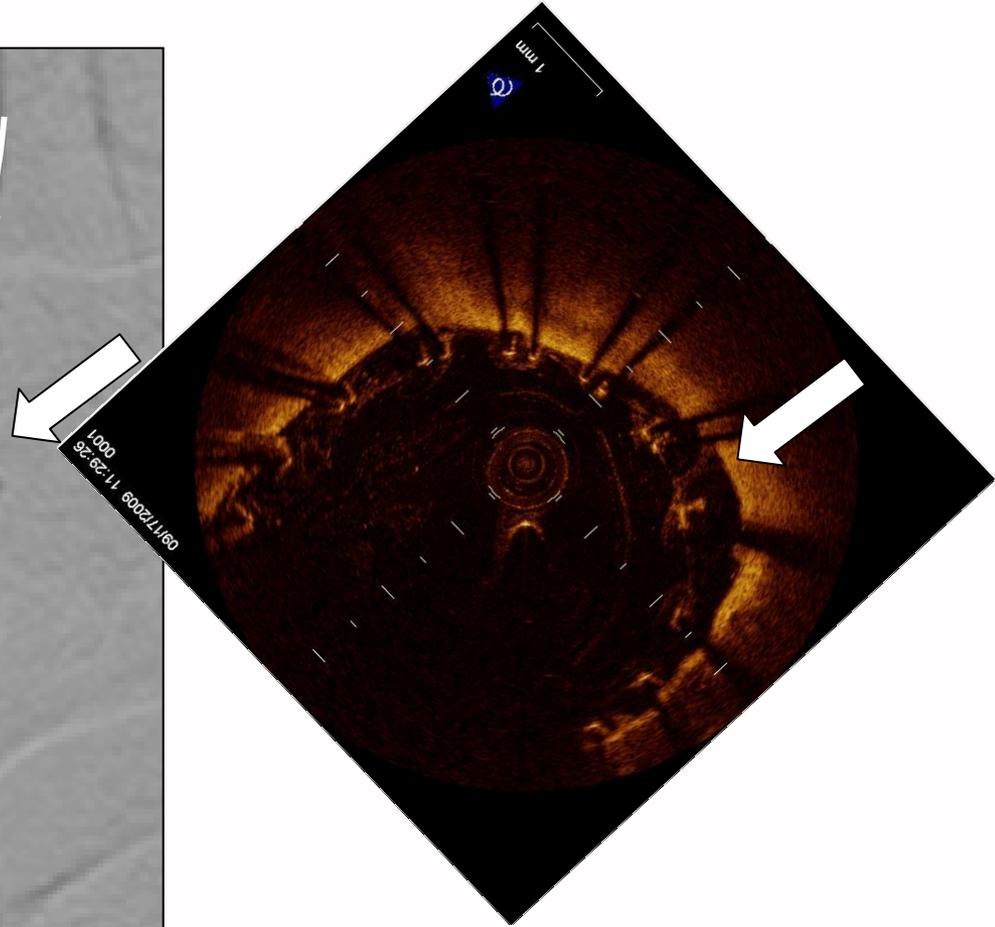
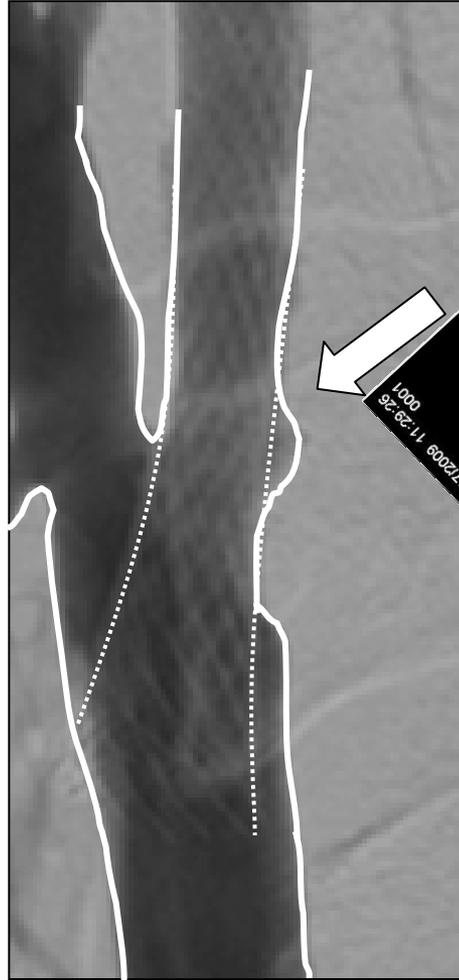
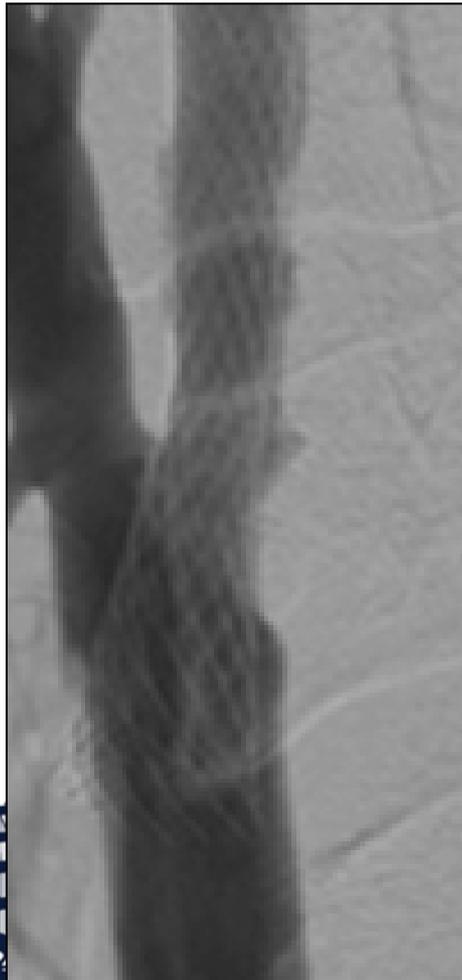

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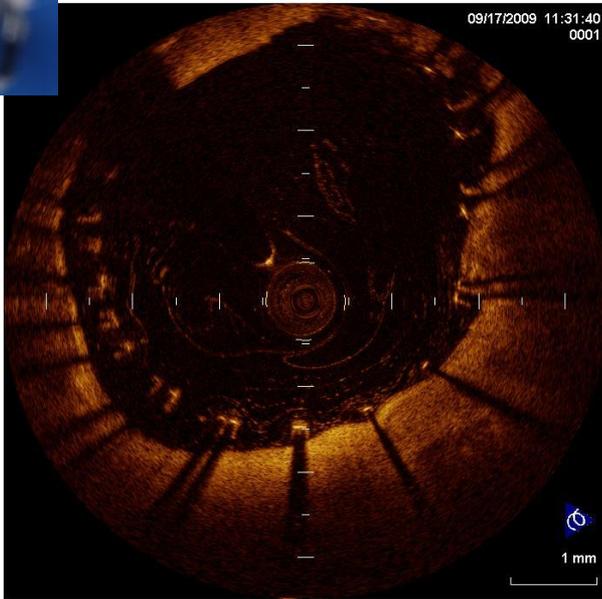
Post stent OCT



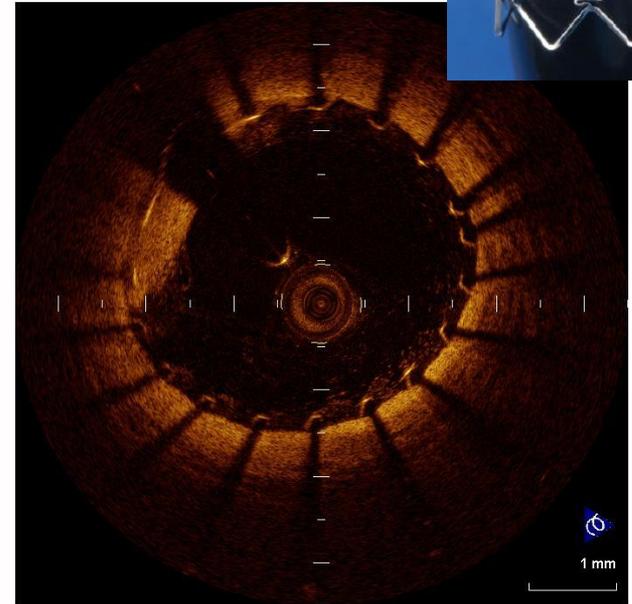
Carotid OCT



TCT2 Small ulcers (no clinical determinant of complications)



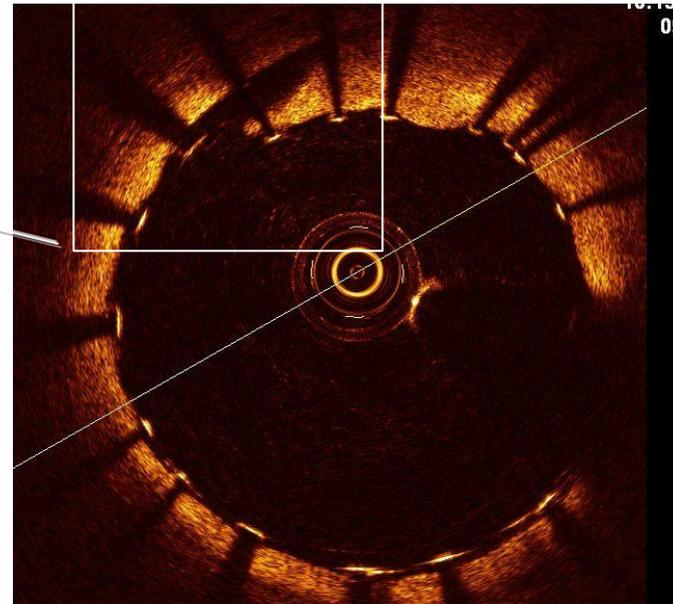
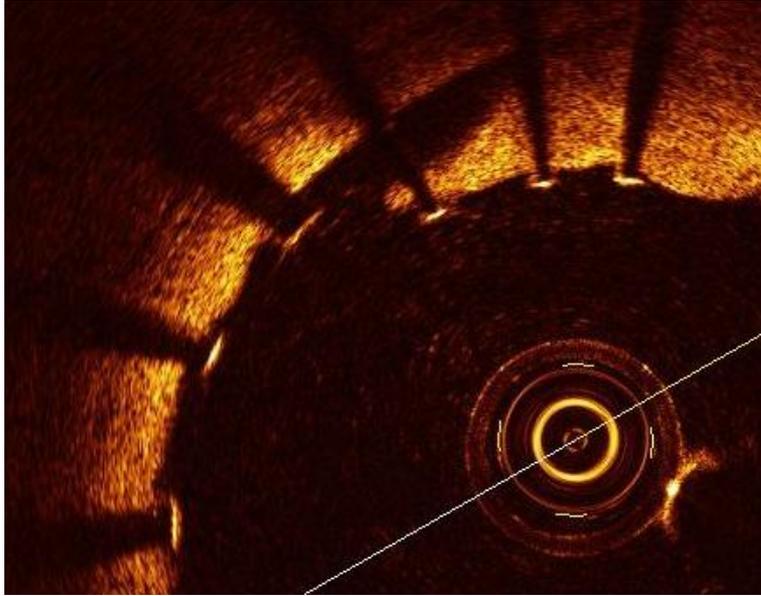
Open cell stent



Closed cell stent



Carotid OCT

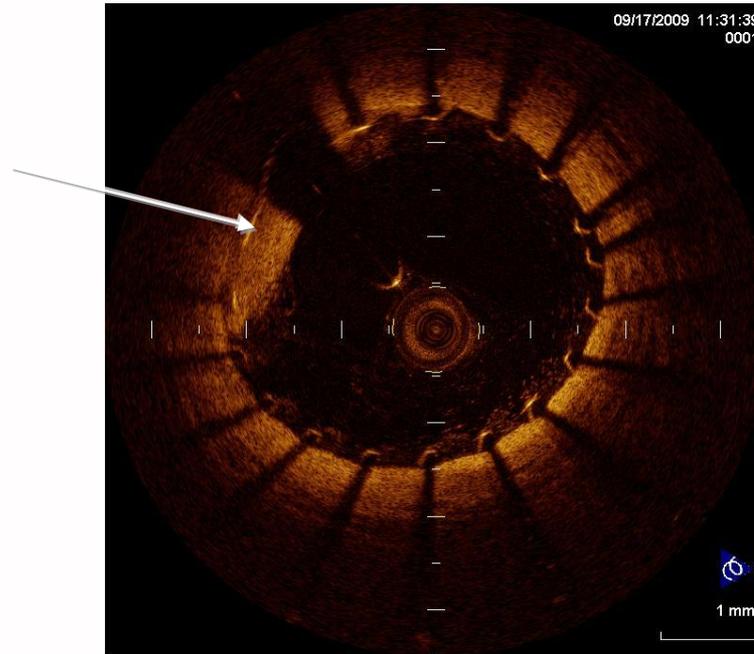


Plaque rupture



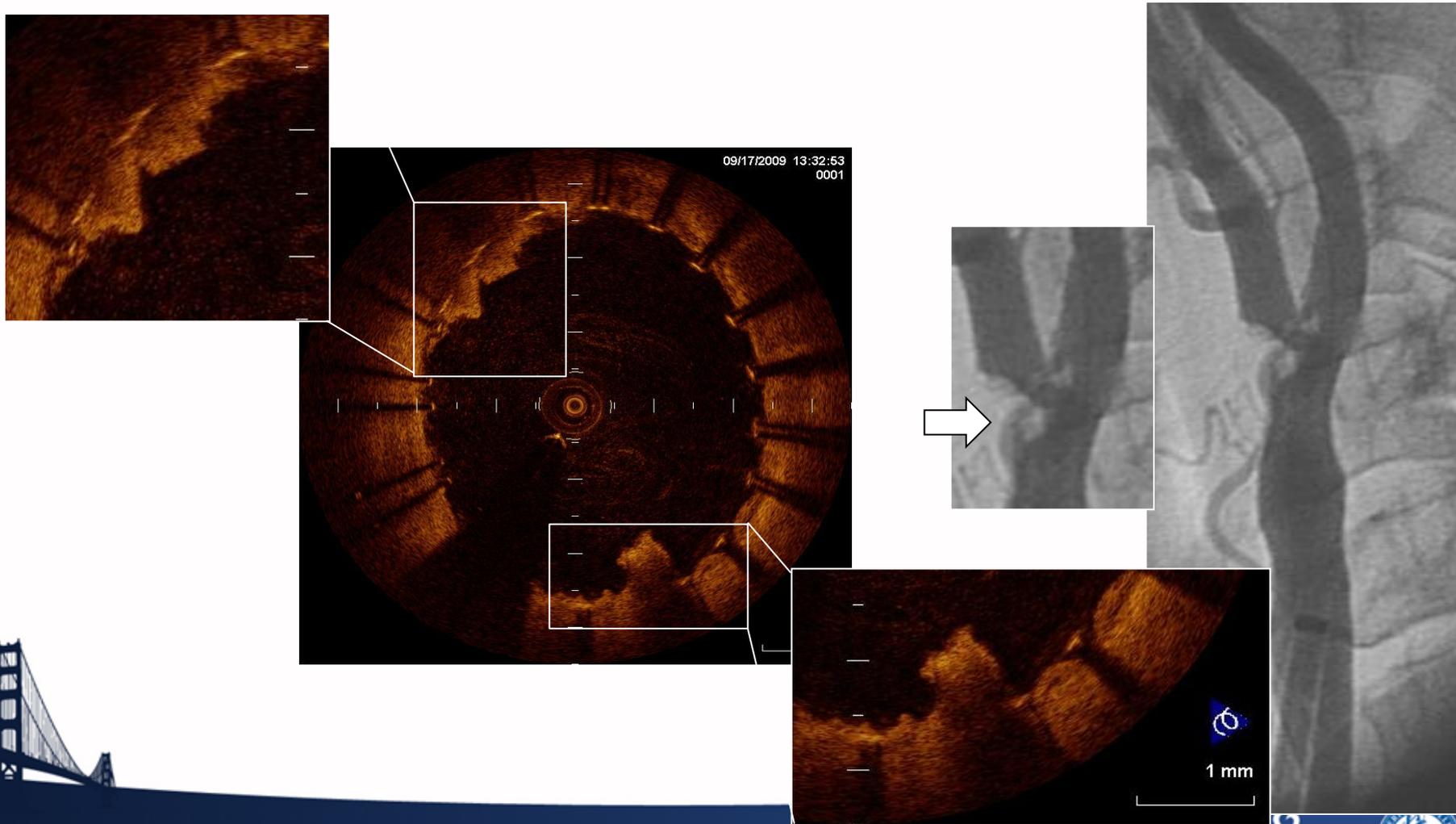
Carotid OCT

Flow artefact

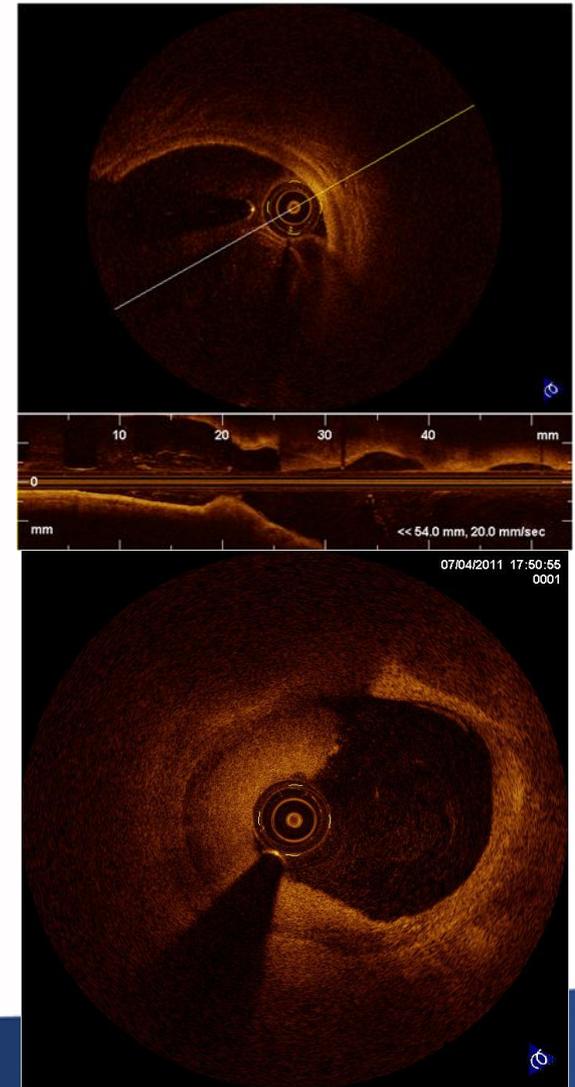


Carotid OCT

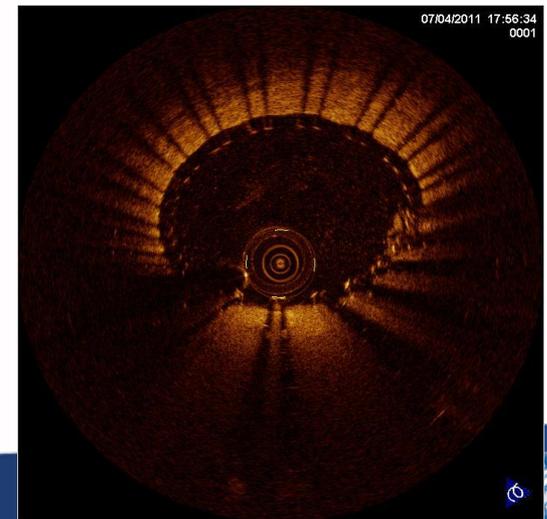
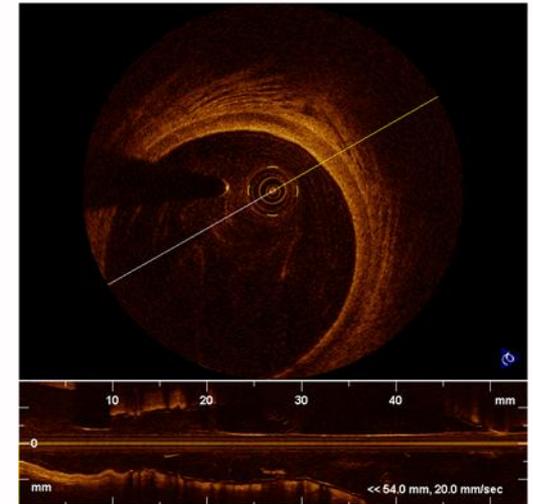
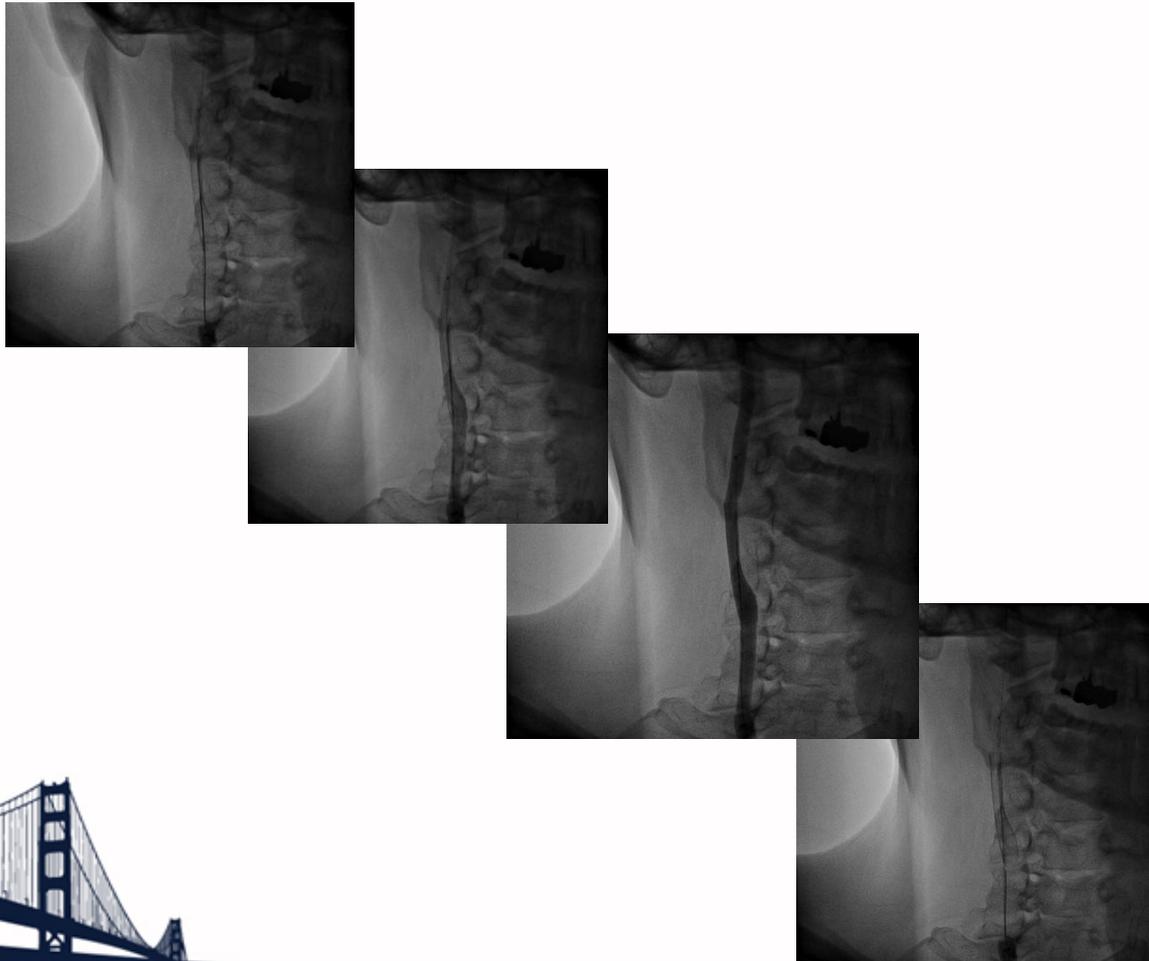
Plaque prolapse: Possible determinants of late complications



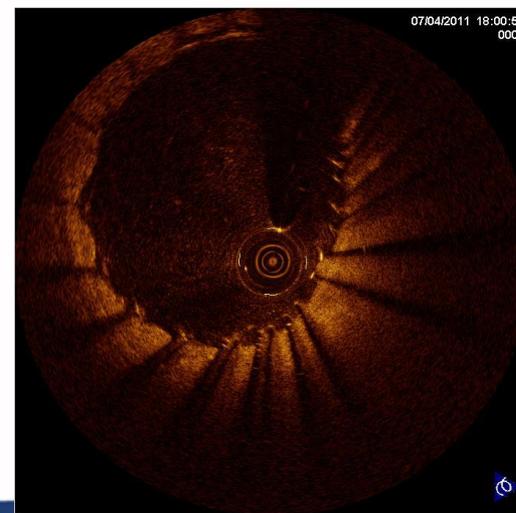
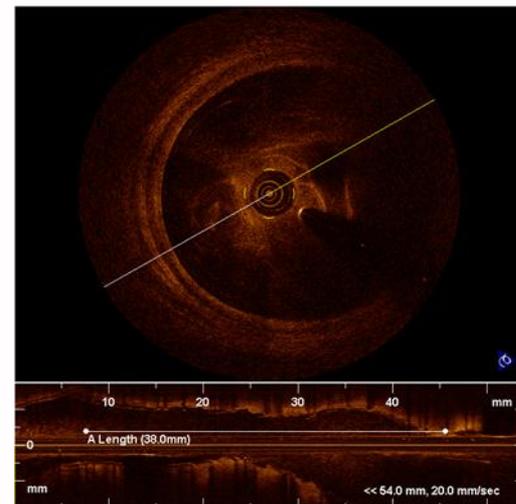
Carotid OCT before CAS



Lesion after stenting



Final result after post-dilatation



Conclusions

OCT after carotid stenting appears feasible and safe.

Using the occlusive technique, better quality images were obtained with the advantage not to increase the contrast load

Carotid OCT allows collection of important information regarding the stent and plaque behaviour not seen with standard angiography

Compared to IVUS less penetration (for plaque characterization), better surface images (for stent evaluation)



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Coronary OCT

