

European Bifurcation Club

Atheroma on the carena or not ?

"No ! carena is not always free of disease ! is it important or not?"

Alfonso Medina, Pedro Martín, Javier Suárez de Lezo

European Bifurcation Club

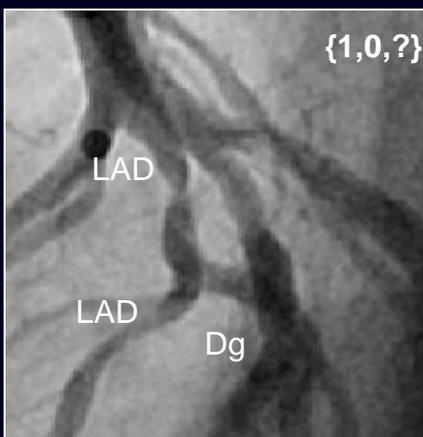
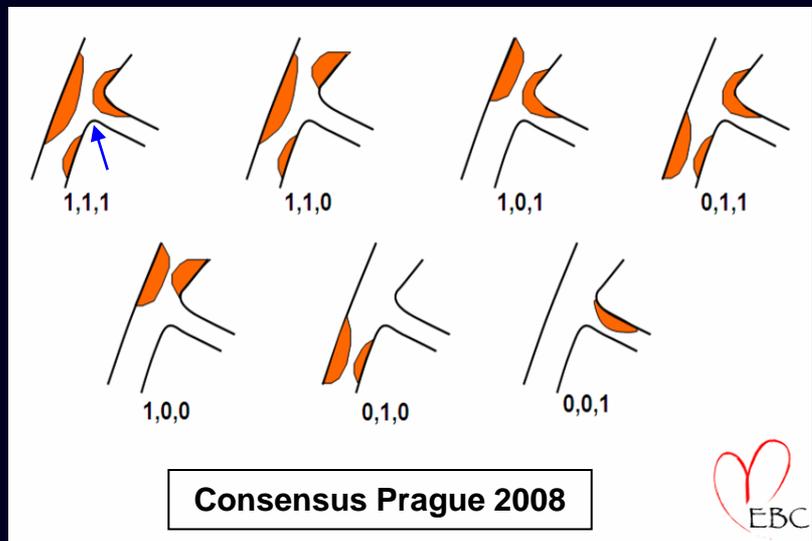
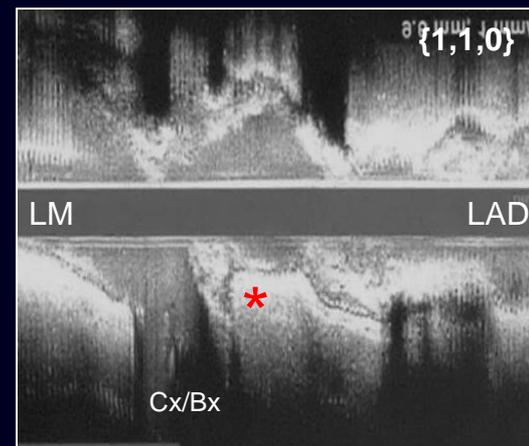
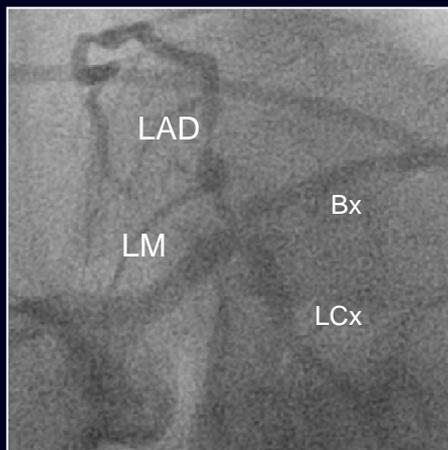
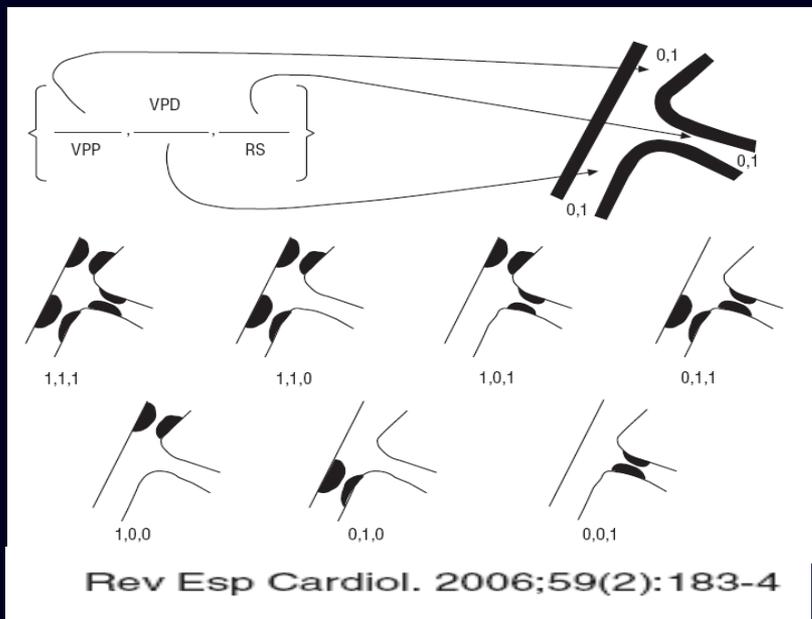


I do not have any potential conflict of interest

Is the carina free of plaque in coronary bifurcation lesions?

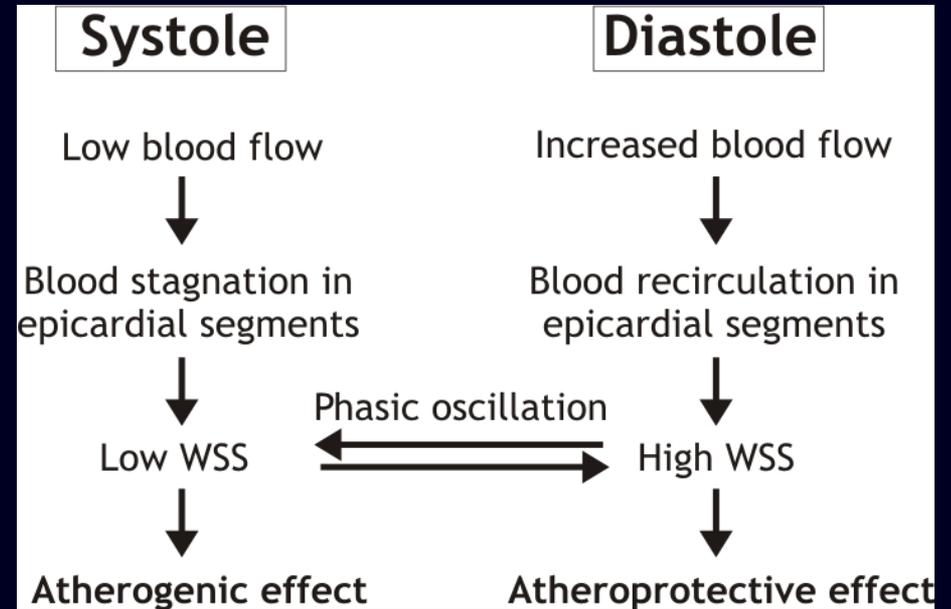
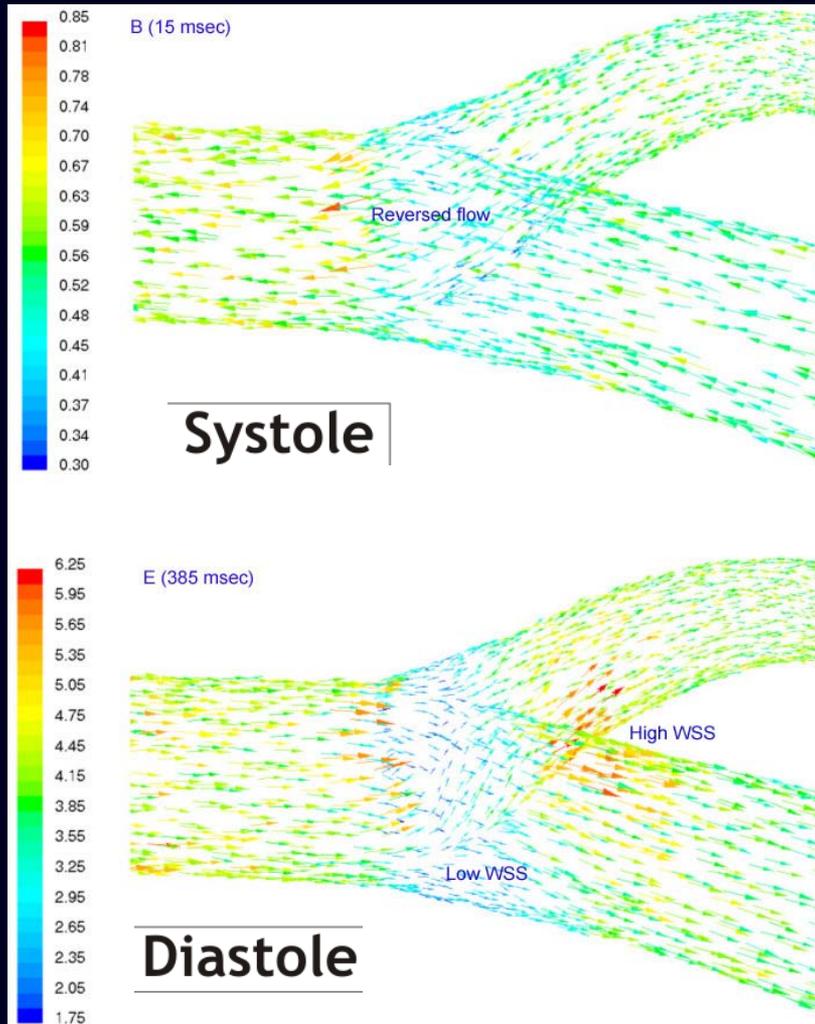
The study prospectively analyzes ultrasound longitudinal axis scans in a series of **195 patients** with coronary bifurcation lesions, in an attempt to assess the frequency of atheroma involvement at the carina ...

**Plaque at the carina
63/195 (32%)**



(*) carina

Wall shear stress

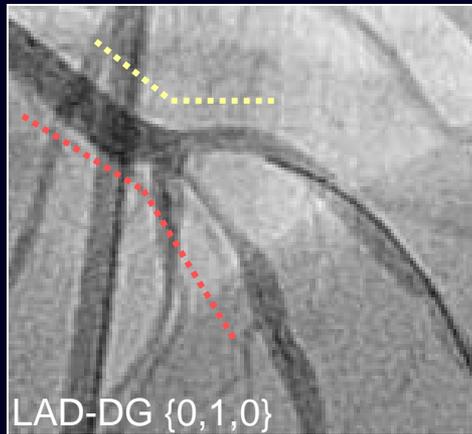


Spatial and phasic oscillation of non-Newtonian wall shear stress in human left coronary artery bifurcation: an insight to atherogenesis. Soulis JV et al. Coron Artery Dis. 2006 May;17 (4):351-8.

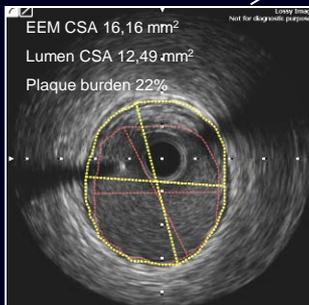
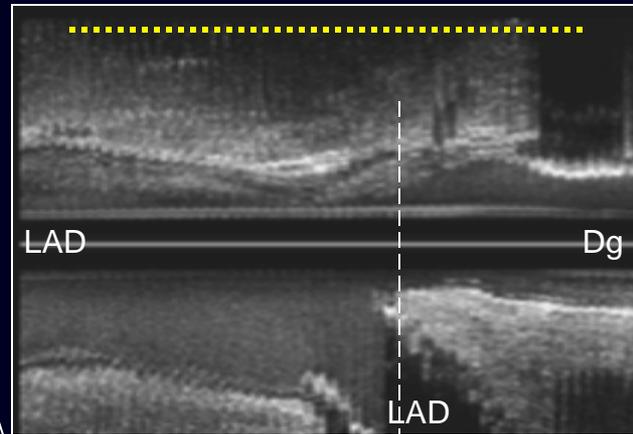
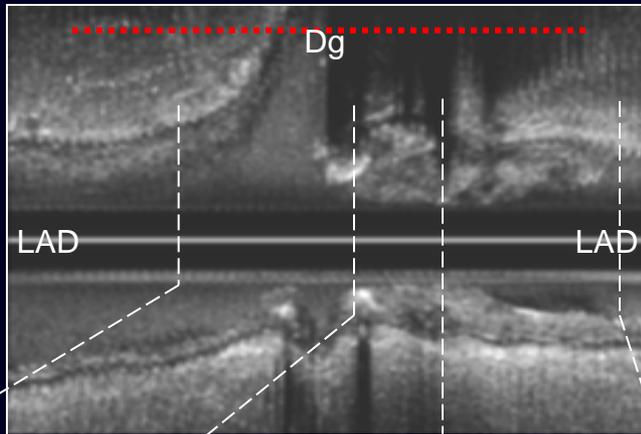
ULTRASONOGRAPHIC STUDY

..... Pull back MB 0.5 mm/s

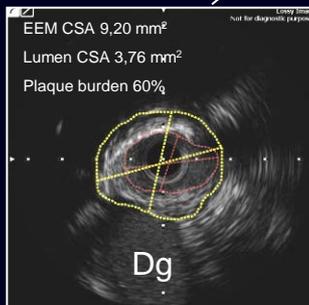
..... Pull back SB 0.5 mm/s



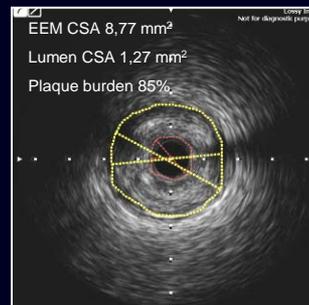
Longitudinal axis



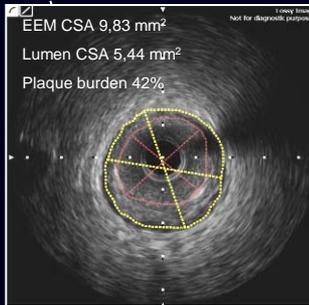
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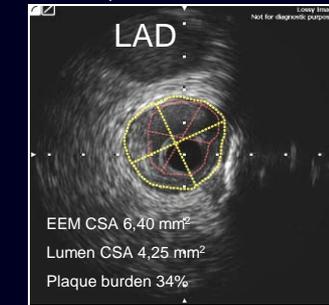
CARINA



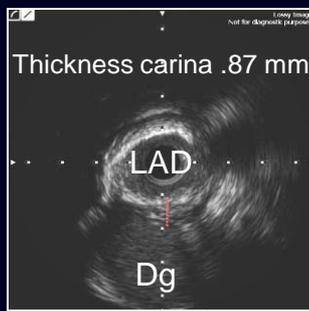
MINIMAL LUMEN AREA



DISTAL REFERENCE



CARINA



Distance MLA-carina

Plaque length

MB Lumen CSA (proximal and distal)

MB Plaque burden (proximal and distal)

IVUS angle, presence of plaque at the carina

Bifurcation angle

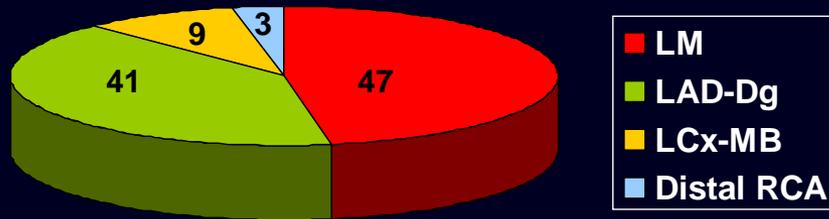
Clinical data n=185 p

Age, years	61 10
Male gender.....	145 (74)
Hypertension	119 (61)
Diabetes mellitus	56 (29)
Hypercholesterolemia	91 (48)
Current smoking	81 (42)
Unstable	121 (62)
Multivessel disease	96 (49)
Left ventricular EF	55 9

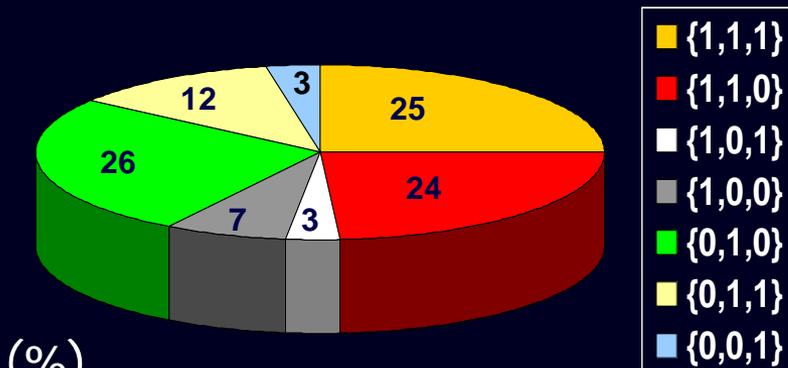
ANGIOGRAPHIC DATA

Bifurcation coronary lesions (n=195) LM and distal

(%)



Location of the bifurcation



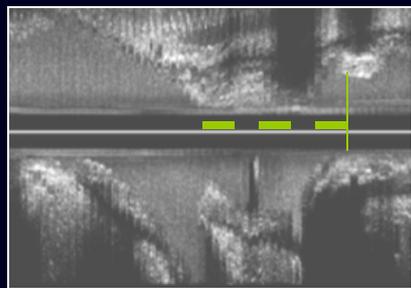
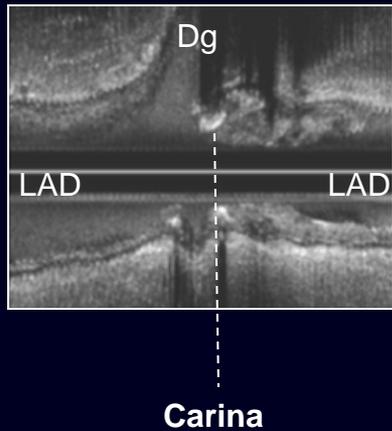
(%)

Medina type

True bifurcation (1,1,1 – 1,0,1 – 0,1,1) 40%

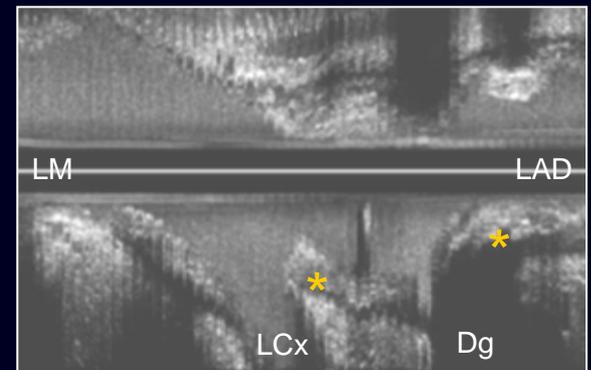
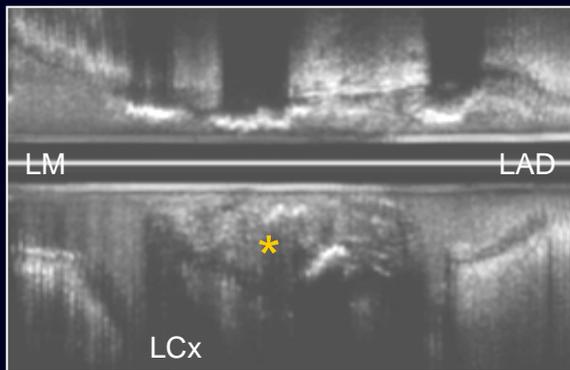
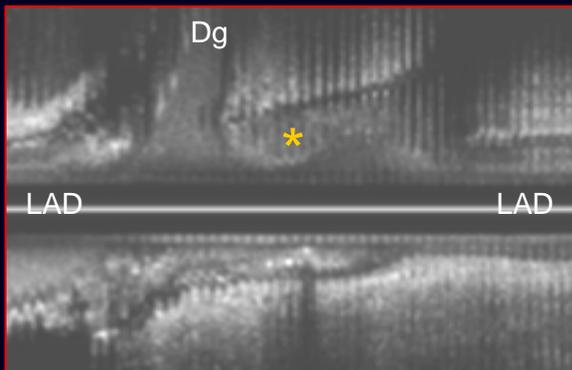
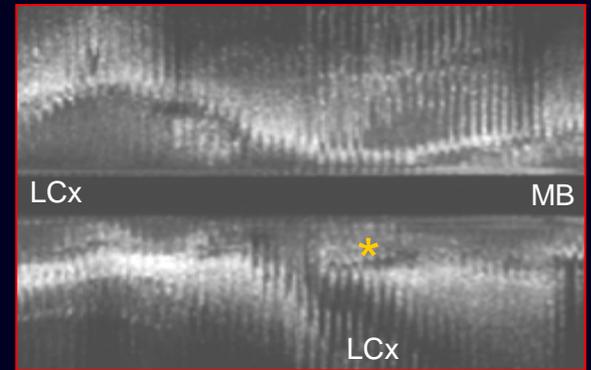
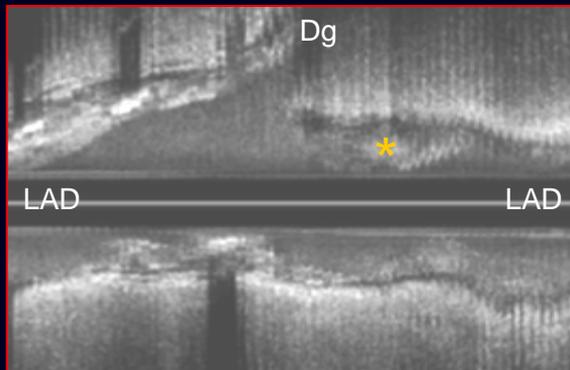
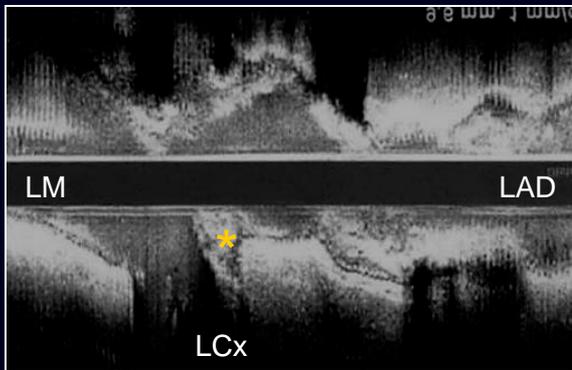
Proximal main branch Ø, mm	3,37	0,49
Distal main branch Ø, mm	2,93	0,32
Side branch Ø, mm	2,72	0,36
MB tapering index	0,87	0,07
Main branch stenosis, %	71	14
Lesion length, mm	16,2	7,4
Bifurcation angle (°)	63	27

MAIN BRANCH QUANTITATIVE ULTRASONOGRAPHIC STUDY

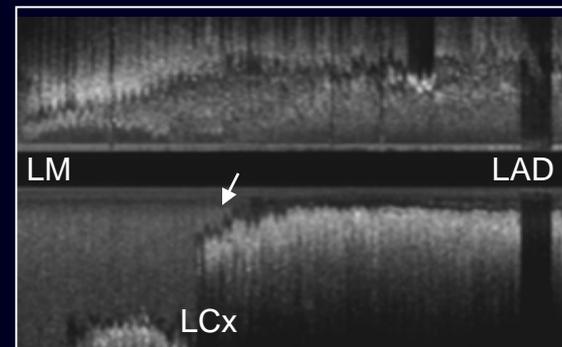
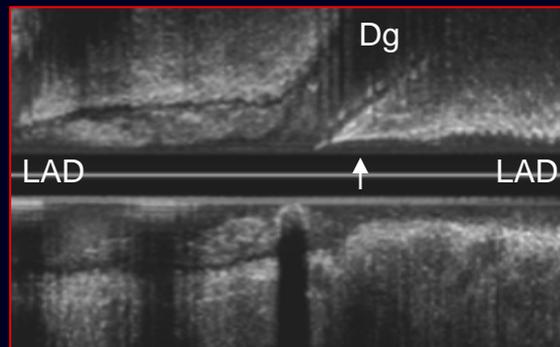
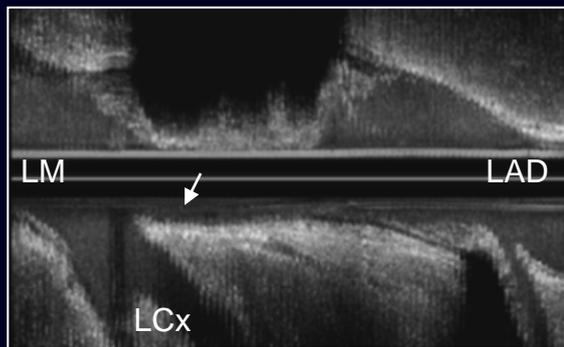
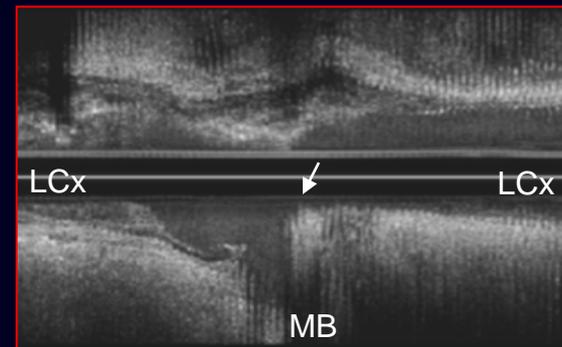
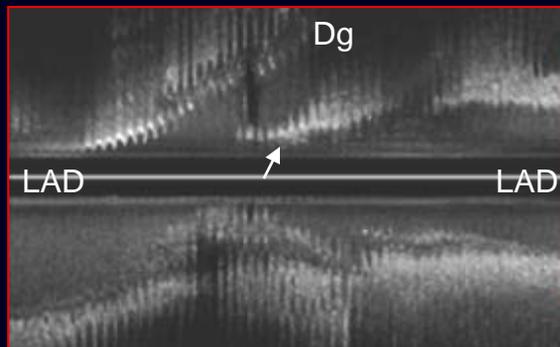
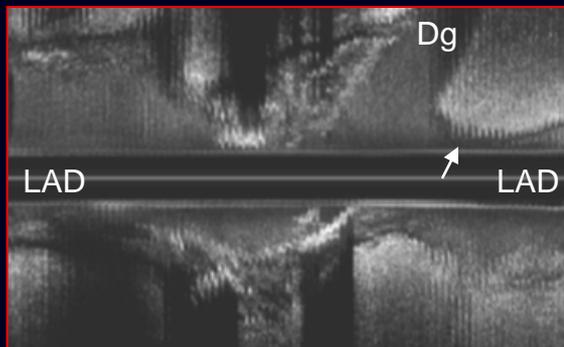


Proximal		
EEM CSA, mm ²	17,33	5,14
Lumen CSA, mm ²	11,99	4,61
Plaque burden, %	31	14
At carinal point		
EEM CSA, mm ²	11,06	4,28
Lumen CSA, mm ²	4,32	2,43
Plaque burden, %	59	17
Plaque thickness-carina (n=63)	0,81	0,36
Distal		
EEM CSA, mm ²	11,22	4,27
Lumen CSA, mm ²	7,86	3,18
Plaque burden, %	28	15
At minimal lumen area		
EEM CSA, mm ²	11,83	3,99
Lumen CSA, mm ²	3,04	1,48
Plaque burden, %	73	12
Distance to carinal point, mm	3,27	3,5

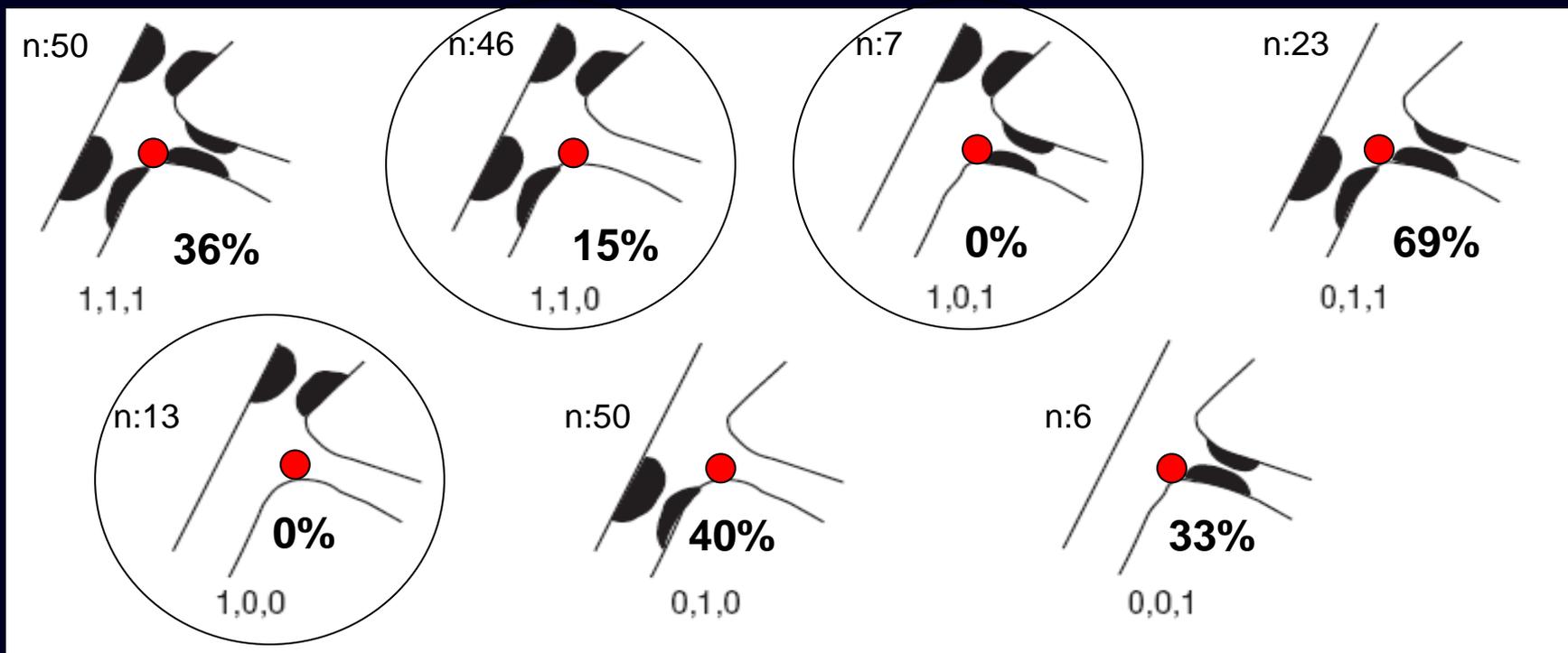
Plaque at the carina 63/195 (32%)



Carina free 132/195 (68%)

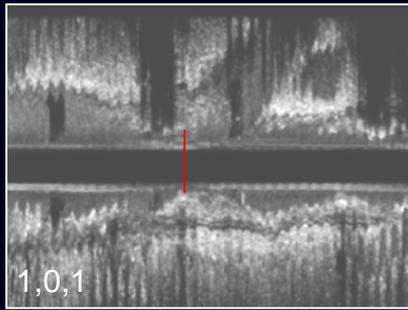


Presence of plaque at the carina 63/195 (32%)

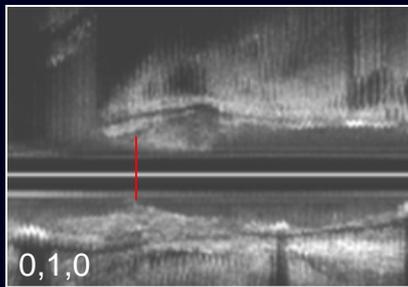


● Plaque at the carina

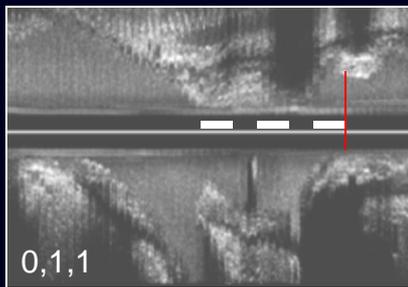
Plaque at the carina



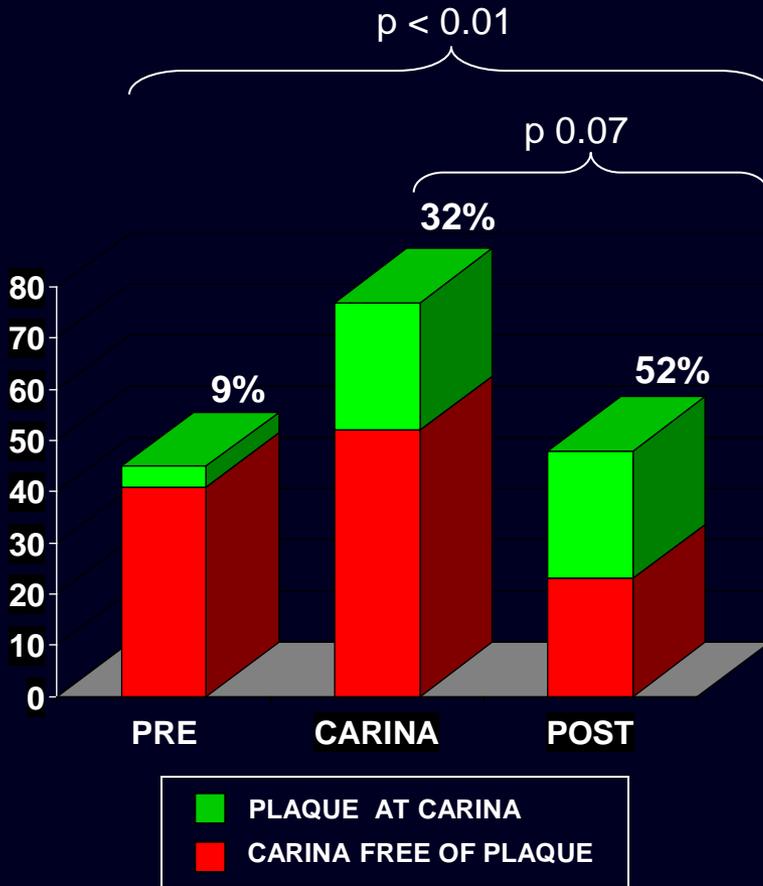
MLA proximal to carina



MLA at carina



MLA distal to carina



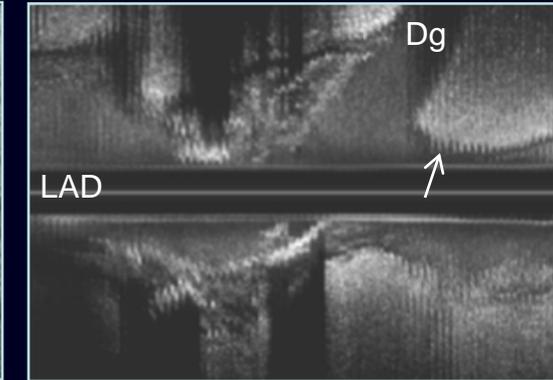
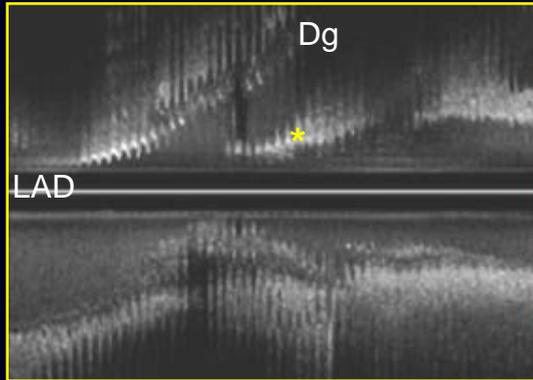
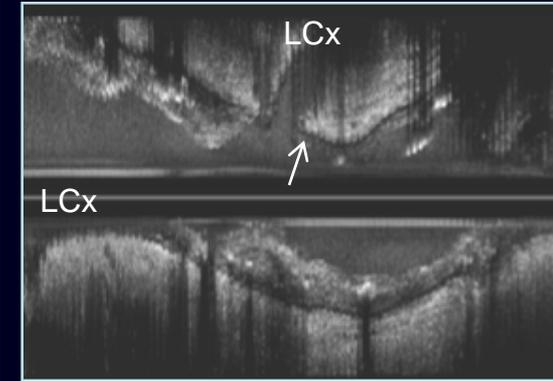
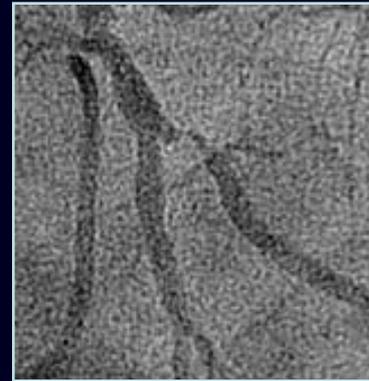
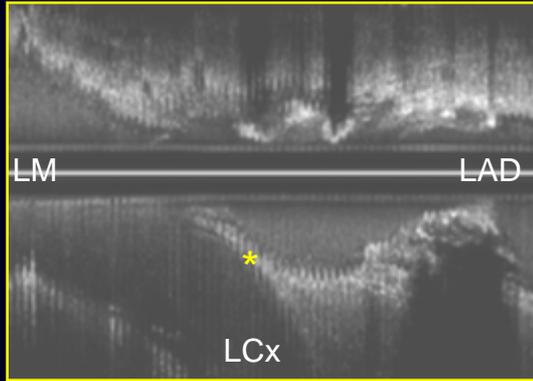
***LOCATION OF MINIMAL LUMEN AREA
IN MAIN BRANCH***

ULTRASONOGRAPHIC CARINA MORPHOLOGY

Eyebrow sign

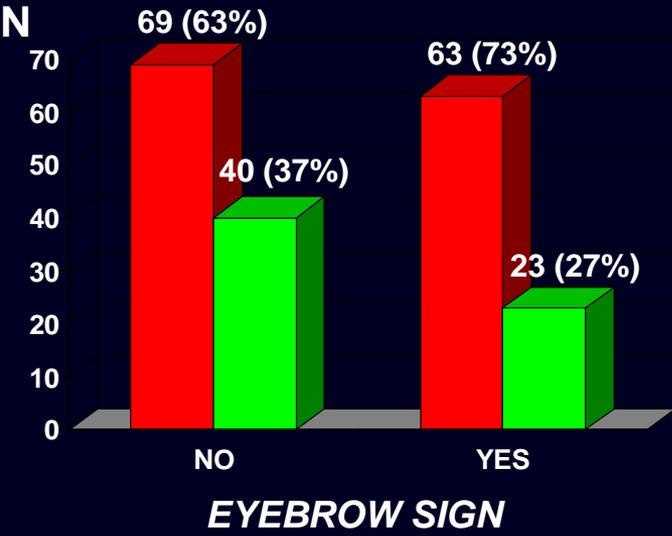
YES: 87 (45%)

NO: 108 (55%)

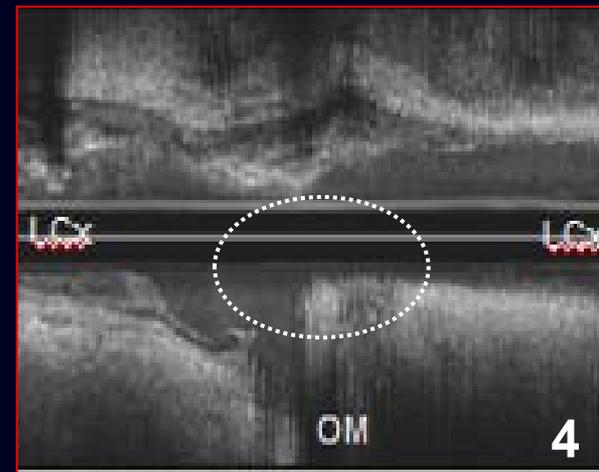
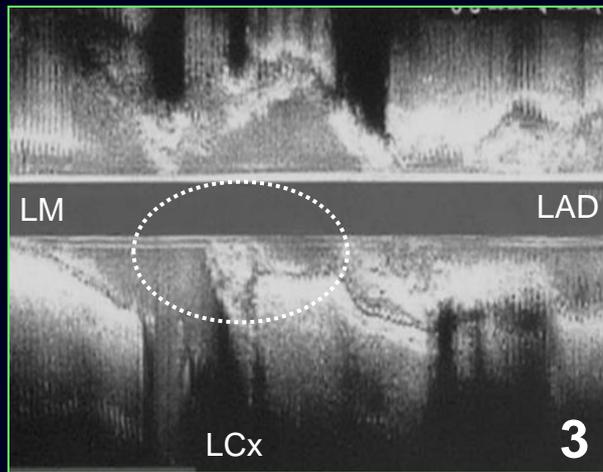
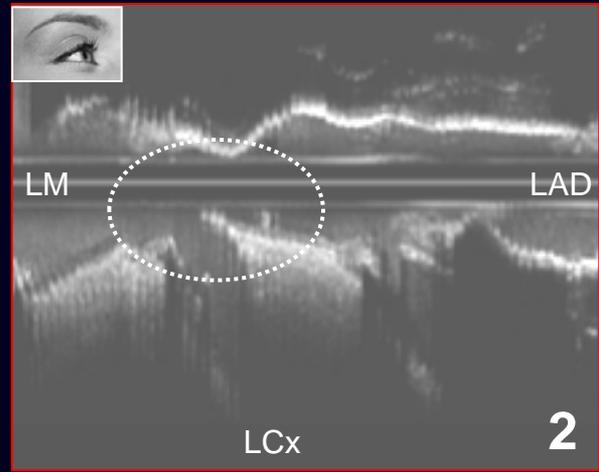
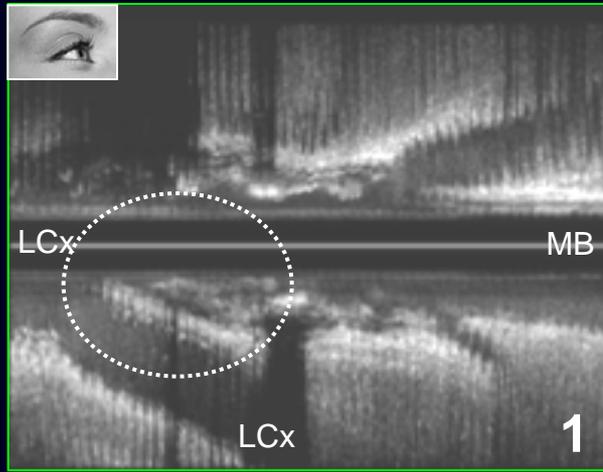


"Vulnerable anatomy of the carina in ostial left anterior descending lesions treated with floating stent" Medina et al . Rev Esp Cardiol. 2009;62(11):1240-9

CARINA MORPHOLOGY & PRESENCE OF PLAQUE



■ PLAQUE AT CARINA
■ CARINA FREE OF PLAQUE



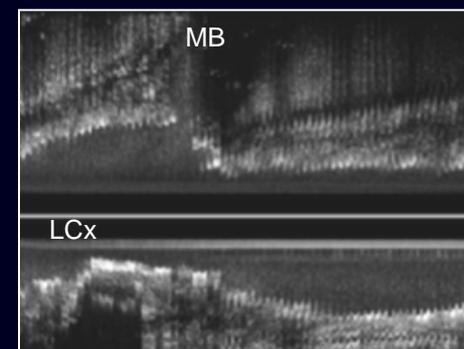
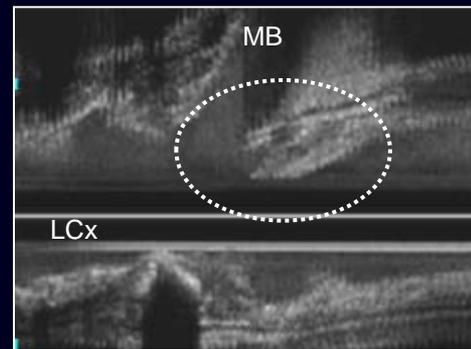
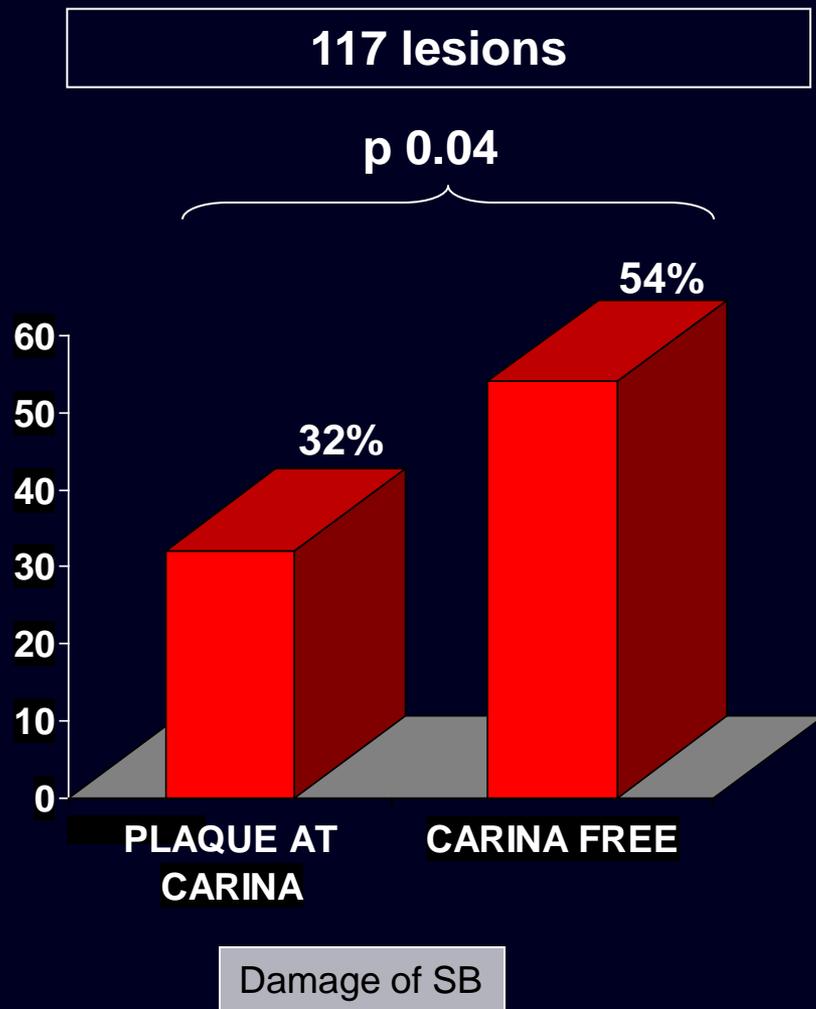
PLAQUE AT CARINA

CARINA FREE OF PLAQUE

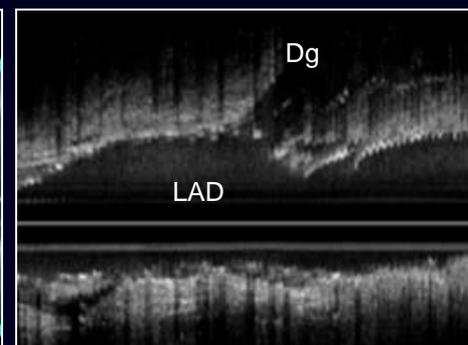
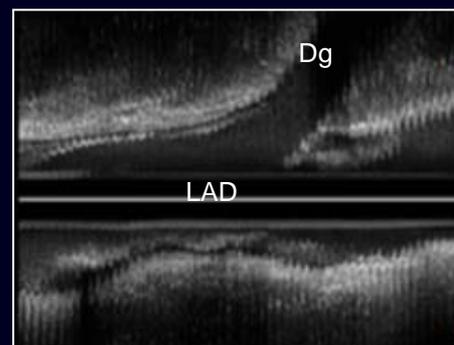
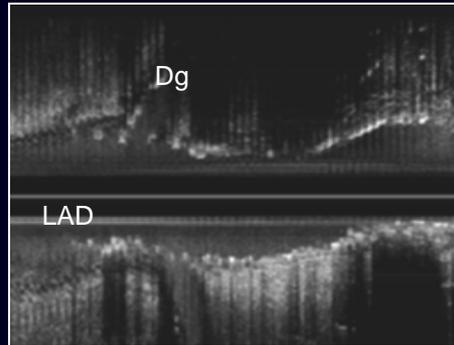
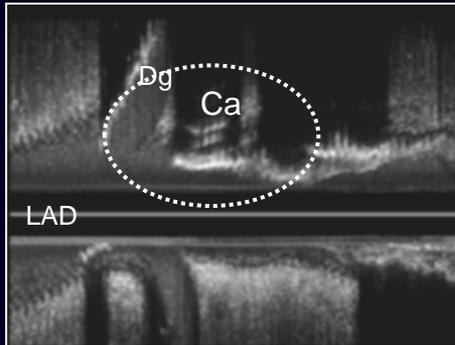
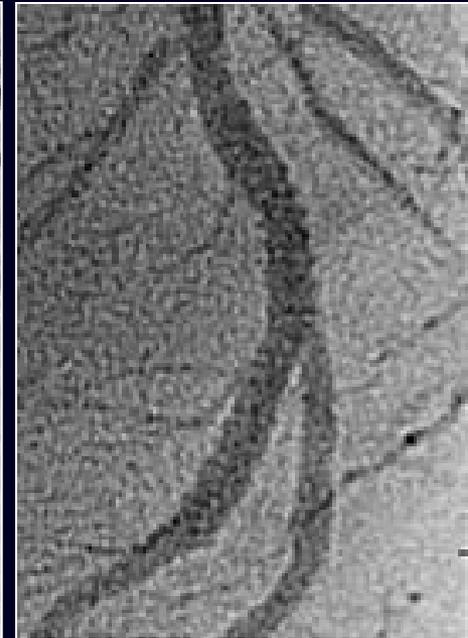


"No ! carena is not always free of disease ! **is it important or not?**

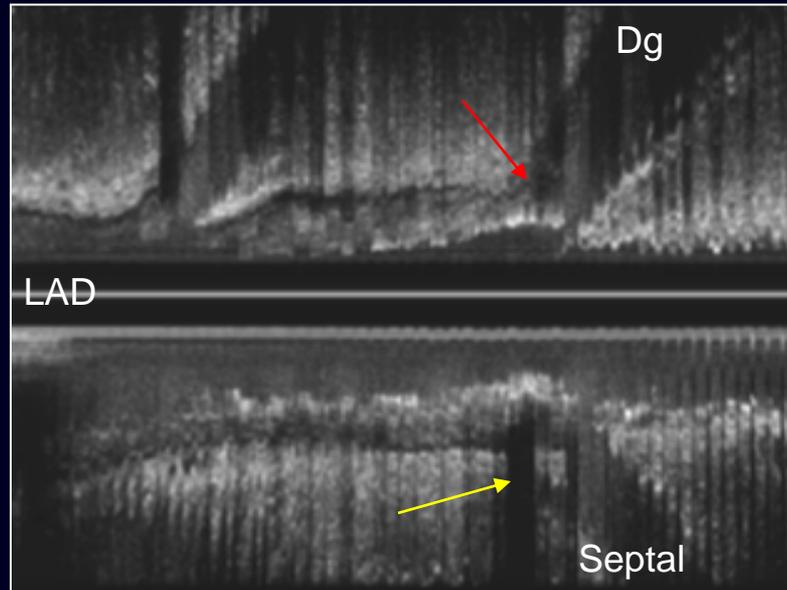
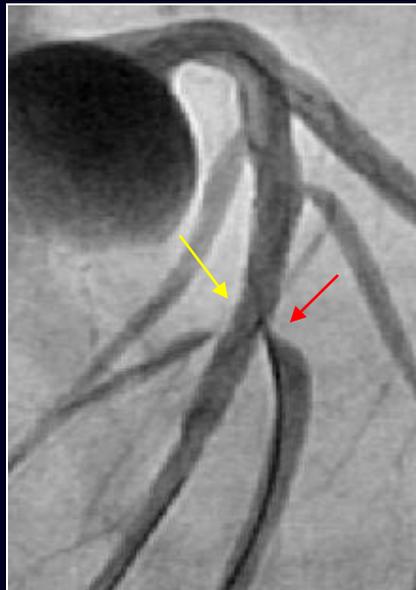
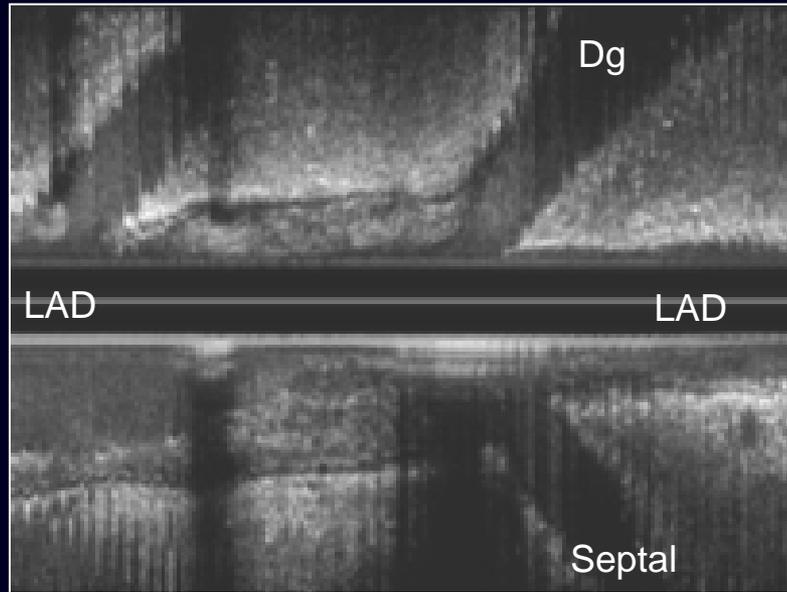
Damage of SB with stent across in lesions { -, -, 0 }



"No! carena is not always free of disease! **is it important or not?**"



Snow plow effect-plaque proximal to carinal area



Conclusions

Plaque at the carina is present in one third of the bifurcation lesions

This prevalence seems to be lower in 1,1,0 bifurcation lesions / absent in 1,0,1 & 1,0,0

In bifurcation coronary lesions where the MLA is located distal to the carinal point, the prevalence of plaque at the carina seems to be higher (no atheroprotective effect of high wall shear stress?)

In simple bifurcation coronary lesions { __,__,0}, the presence of plaque at the carina is not a factor influencing SB damage after stenting the main branch