

European Bifurcation Club
26-27 September 2008 - PRAGUE

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Thoraxcenter, Erasmus MC

European Bifurcation Club



Abbott bifurcation system

Thoraxcenter



Erasmus MC

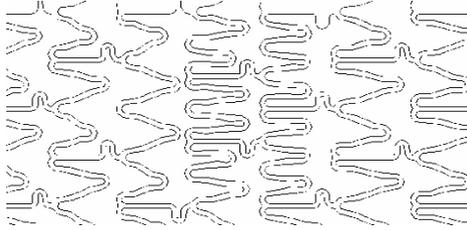
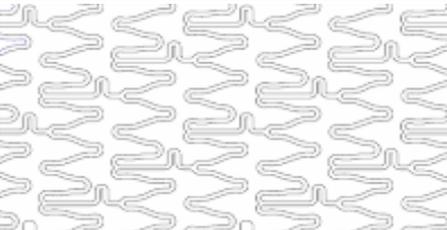
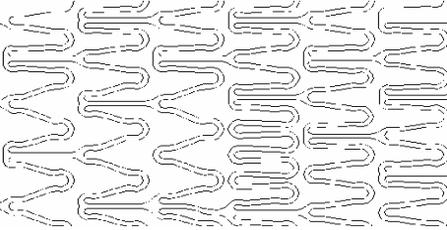


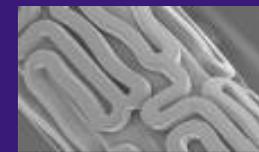
Bifurcation stent



Abbott
Vascular

Side Branch Device Attributes

Attribute	Abbott Bifurcation DES	XIENCE V	MULTI-LINK FRONTIER EU Launch in 2004
Stent Material	CoCr Alloy	CoCr Alloy	Stainless Steel
Stent Pattern			
Strut Thickness	0.0032"	0.0032"	0.0039"
Balloon Material	Pebax	Pebax	Nylon
Coating	Everolimus with Biocompatible Fluoropolymer	Everolimus with Biocompatible Fluoropolymer	No drug coating





Abbott bifurcation system (ABS) preclinical evaluation

Protocol

Porcine coronary model

Aselect implantation of ABS/Xience (SB>1.8 mm)

Recrossing and 'kissing postdilatation

Acute and 1 week imaging

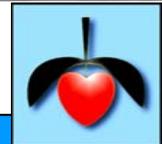
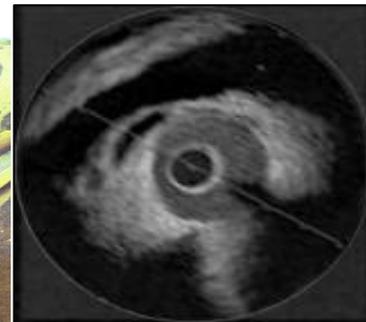
QCA (2D & 3D)

IVUS

OCT

Micro-CT

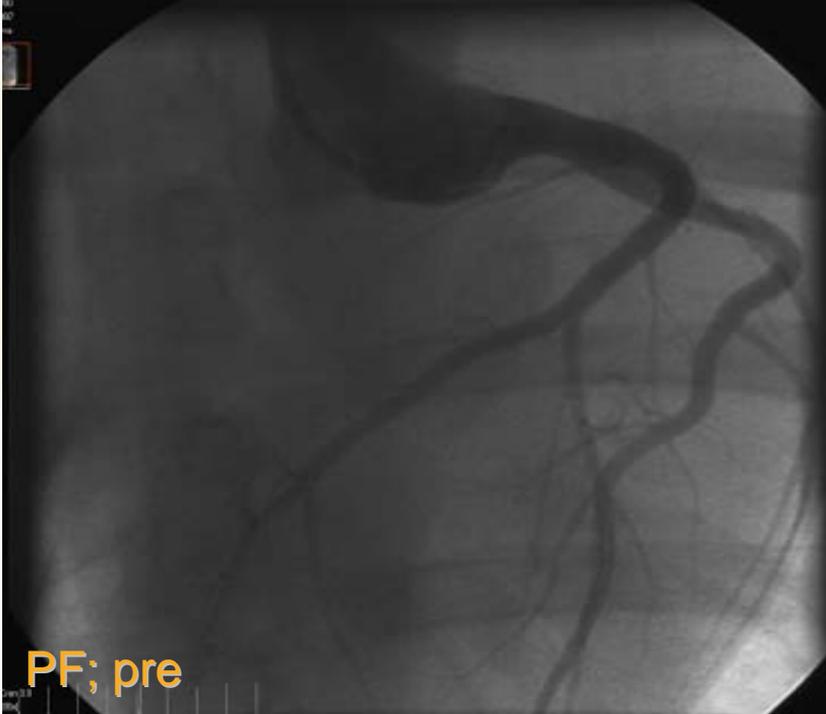
Macroscopy





Procedure

1. Selection
2. Stent placement
3/3.5x18 mm
3. Xience recrossing
4. Xience kissing
postdilation
5. Imaging protocol



PF; pre



PF; position



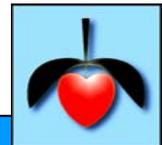
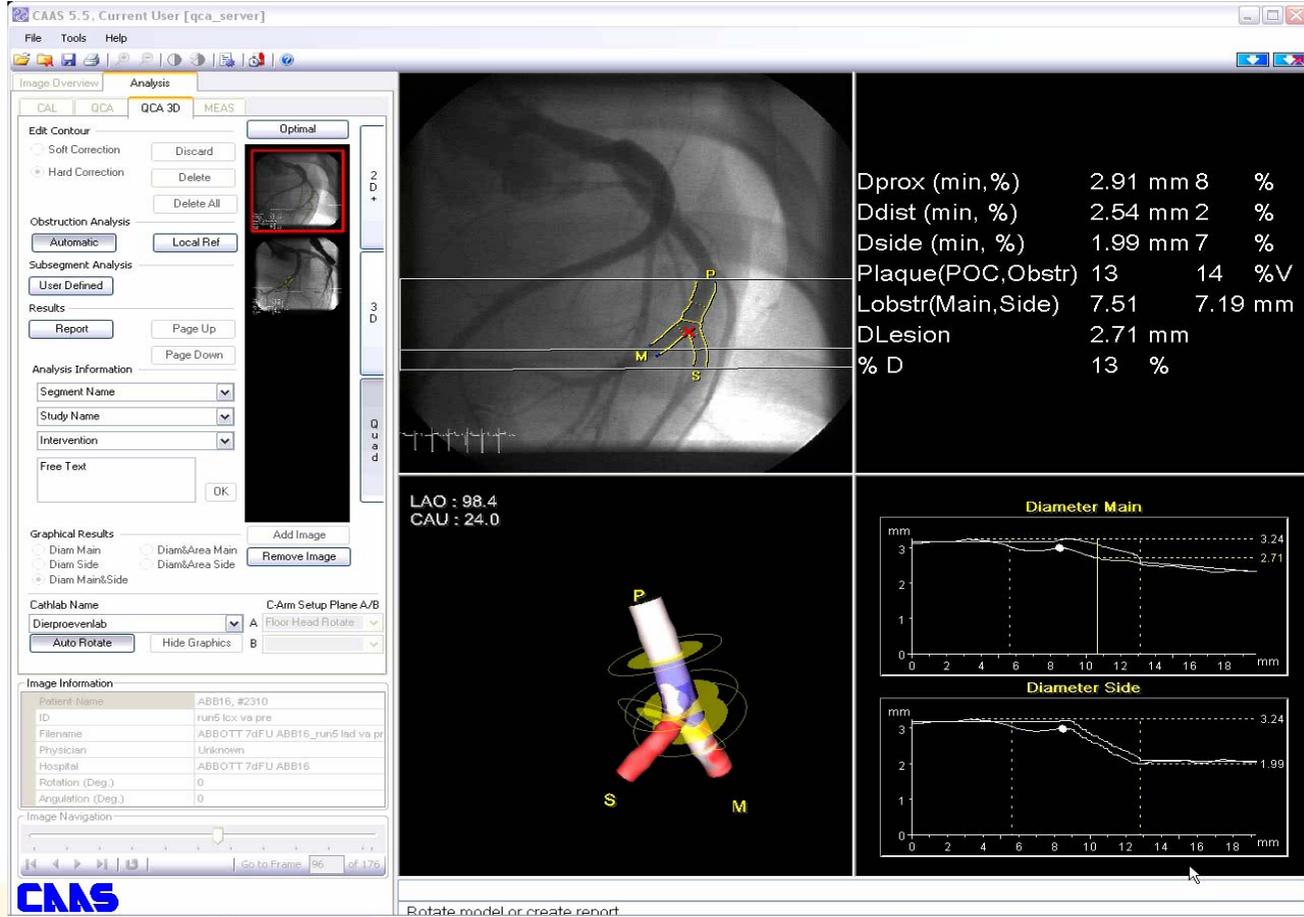
PF; max balloon



X; kissing

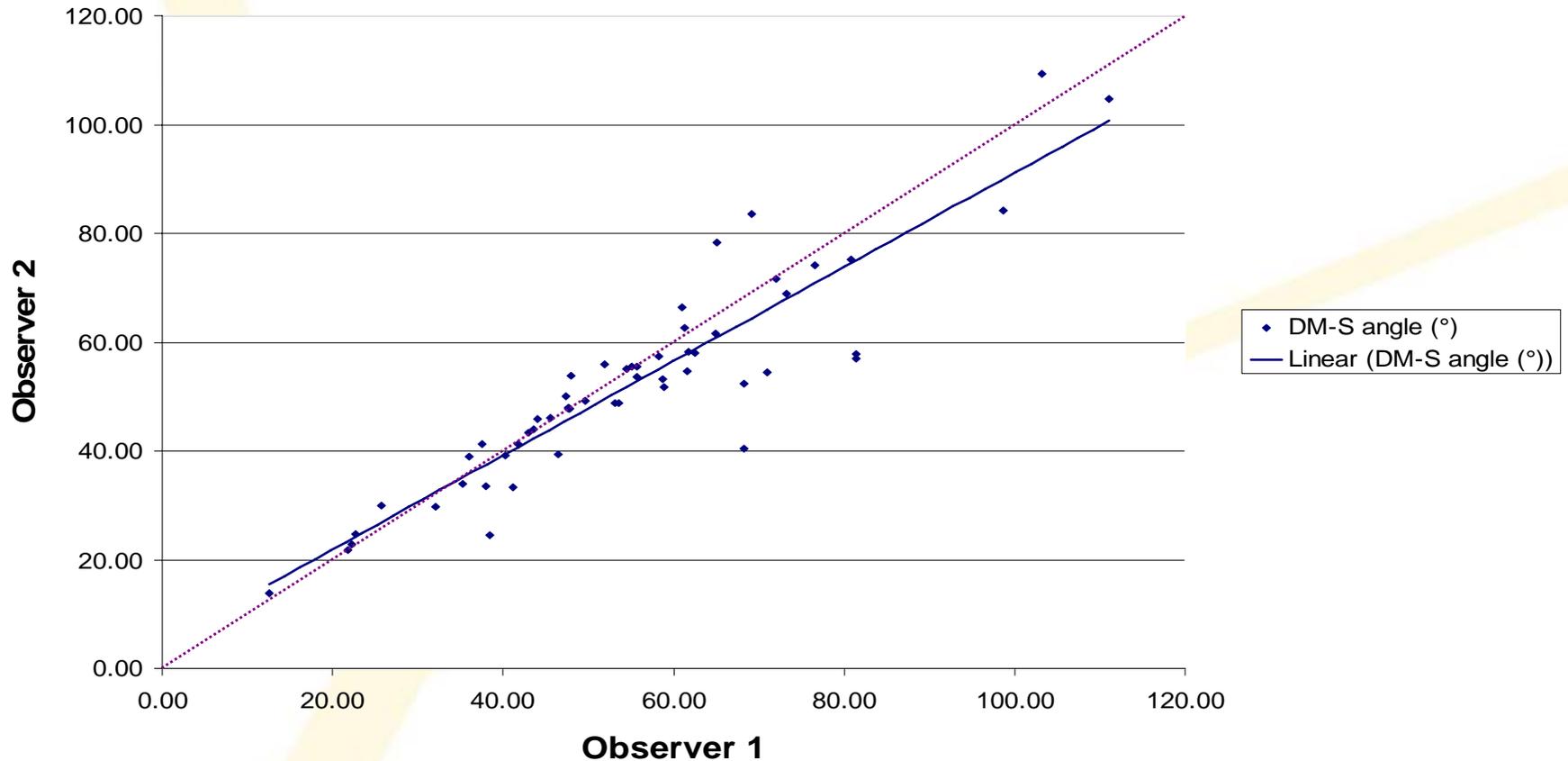
Interobserver variability

Mean Diam MB (mm)	0.01 ± 0.29
Mean Diam SB (mm)	0.02 ± 0.21
Dist angle (°)	1.89 ± 7.45



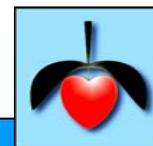


Interobserver variability angle distal MB-SB



3D-QCA

Pathfinder (n=12)	Pre	Post
main branch (mm)	2.96 ± 0.28	3.45 ± 0.55
SB (mm)	2.02 ± 0.24	2.08 ± 0.28
dist angle (°)	56.10 ± 29.60	48.45 ± 21.19
Xience V (n=11)	Pre	Post
main branch (mm)	3.08 ± 0.41	3.30 ± 0.53
SB (mm)	2.04 ± 0.29	1.90 ± 0.32 *
dist angle (°)	57.44 ± 13.34	55.26 ± 12.18 *



Abbott bifurcation system preclinical evaluation (QCA)

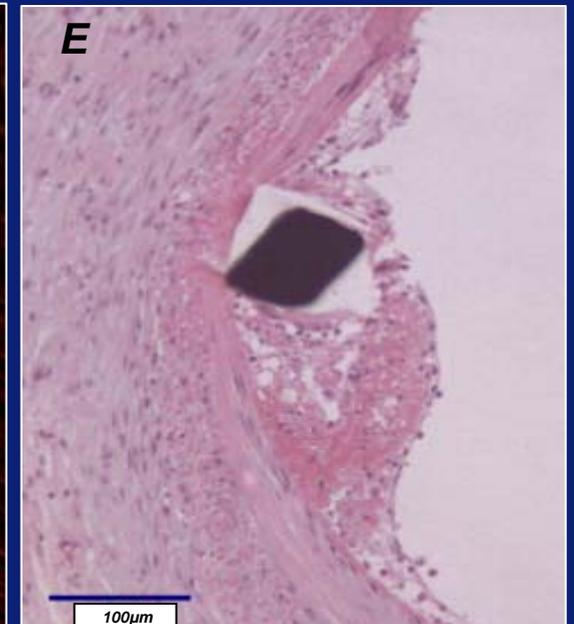
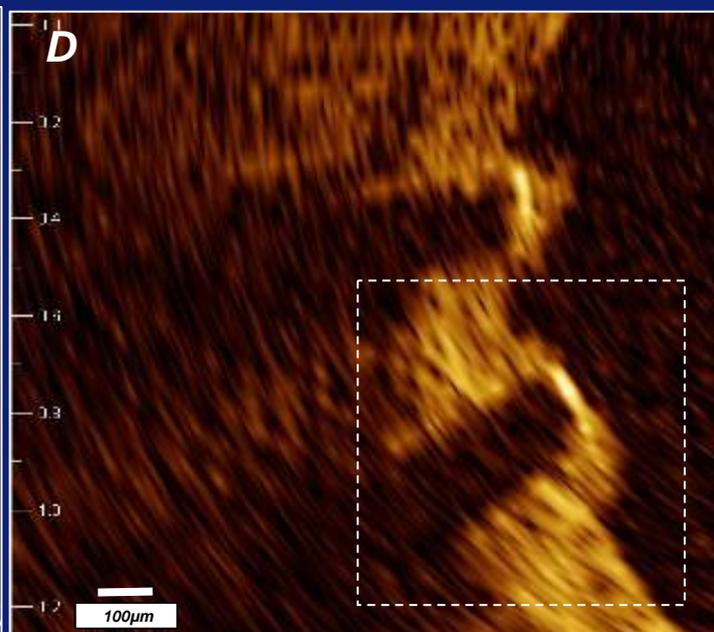
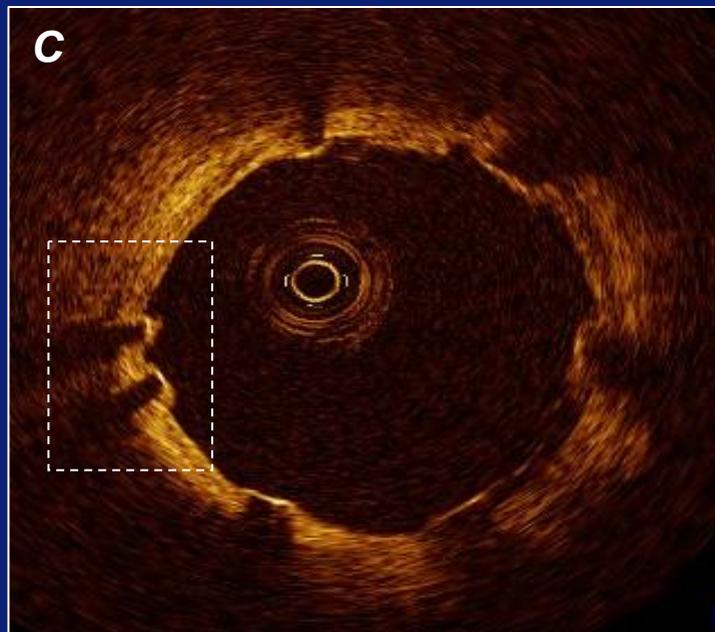
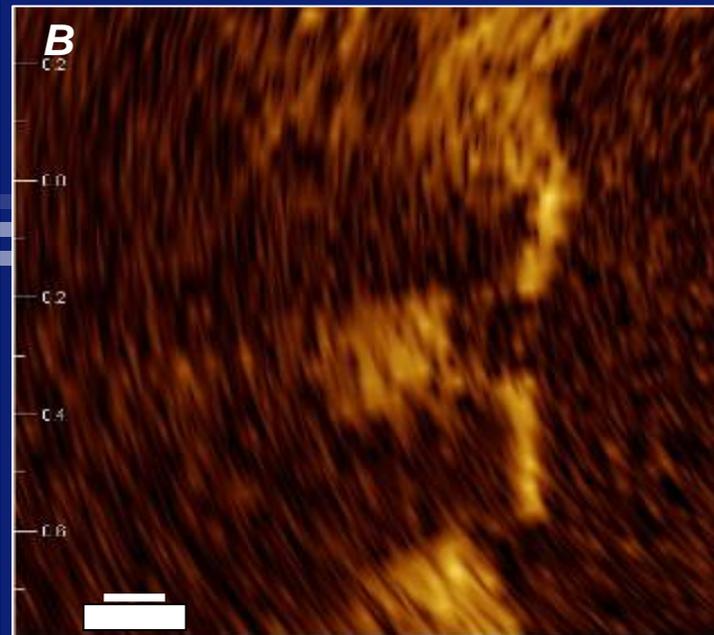
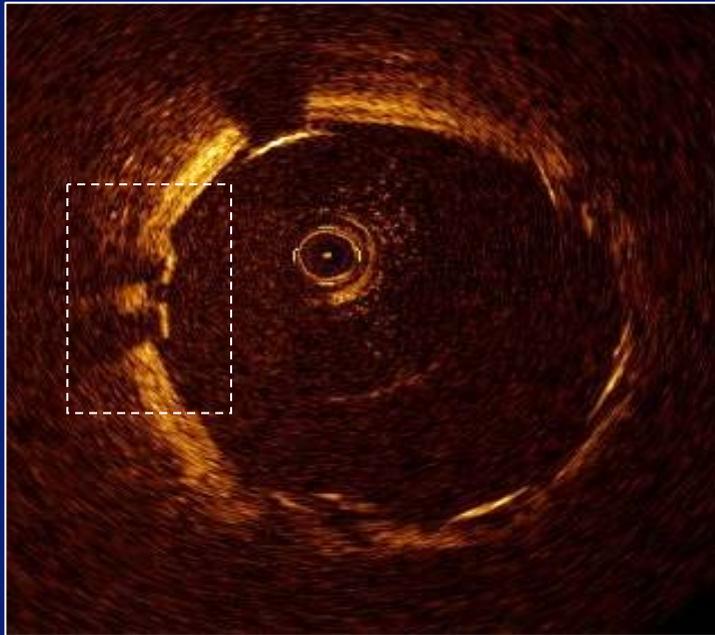
2D

Pathfinder (n=12)	Pre	Post
Mean D MB	2.91 ± 0.22	3.30 ± 0.38
Mean D SB	1.97 ± 0.29	1.99 ± 0.24
Dist angle (°)	51.20 ± 23.69	46.59 ± 17.84

3D

Pathfinder (n=12)	Pre	Post
Mean D MB	2.96 ± 0.28	3.45 ± 0.55
Mean D SB	2.02 ± 0.24	2.08 ± 0.28
Dist angle (°)	56.10 ± 29.60	48.45 ± 21.19





In-vivo porcine coronary artery

Results: Case Example



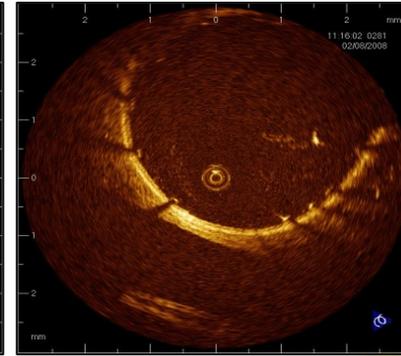
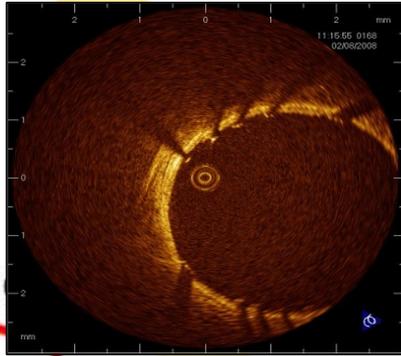
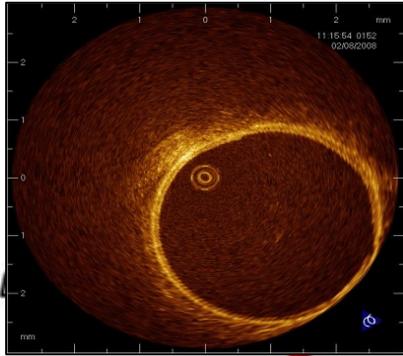
Dist Ref.

Dist Stent

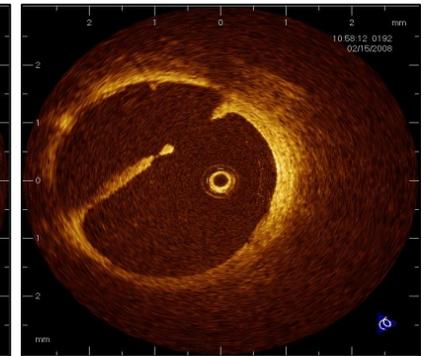
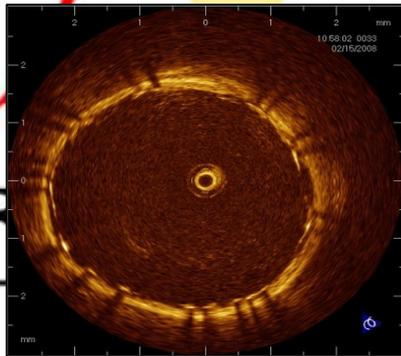
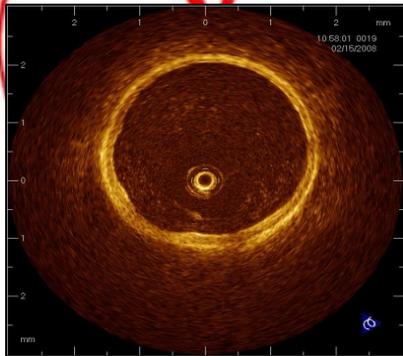
Carina

Prox Stent

Prox Ref.



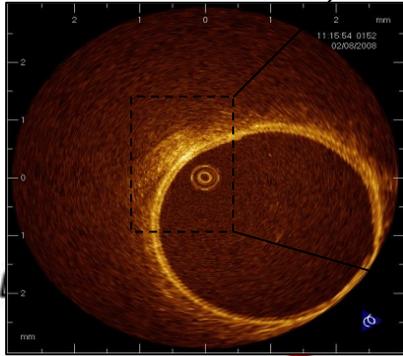
Baseline



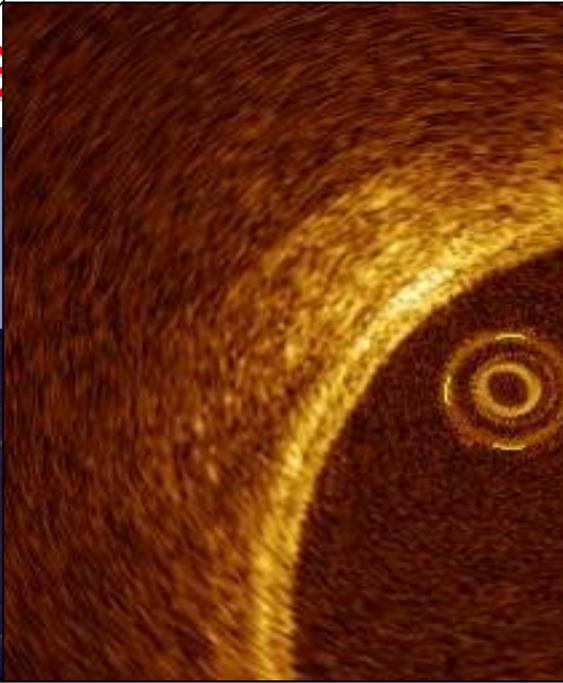
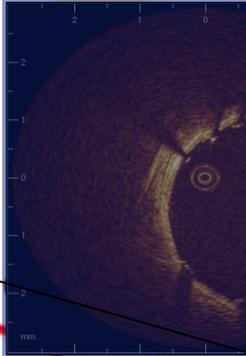
FUP 7d

Results: Case Example

Dist Ref.



Dist Stent



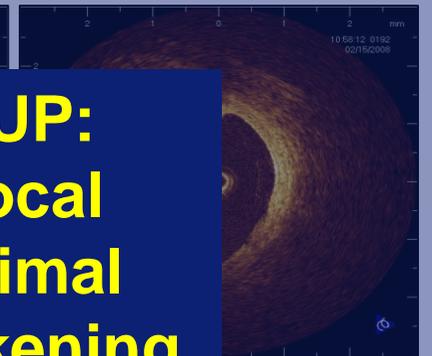
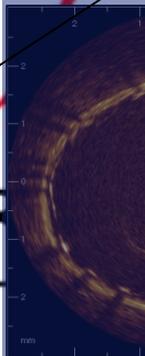
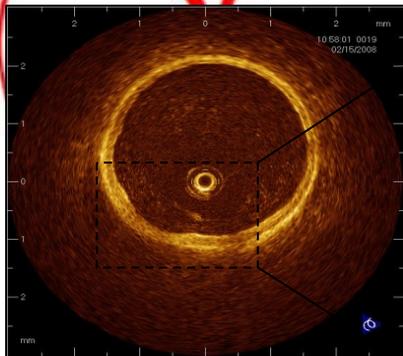
Prox Stent



Ref.

**BL:
Normal
intimal
layer**

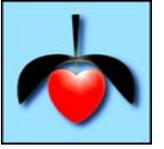
Baseline



**FUP:
Focal
intimal
thickening**

FUP 7d

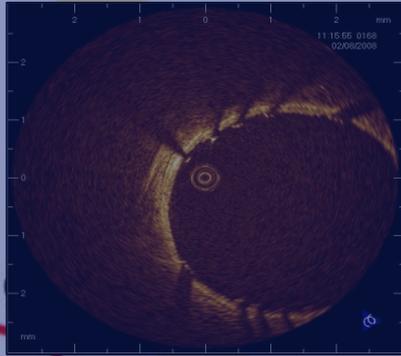
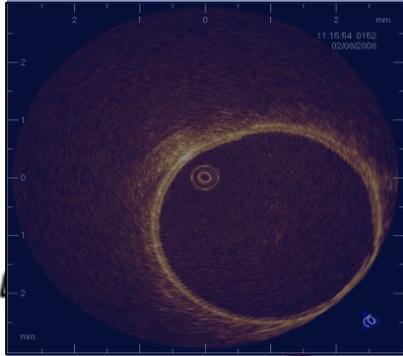
Results: Case Example



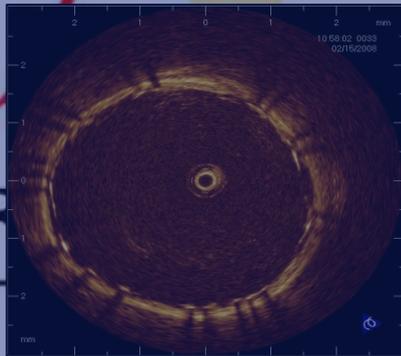
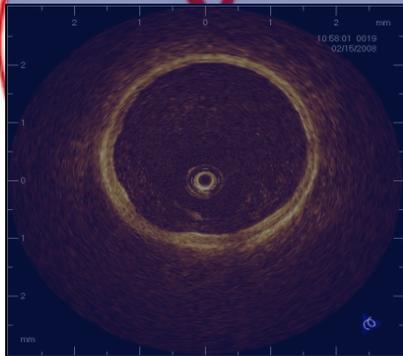
Dist Ref.

Dist Stent

Carina



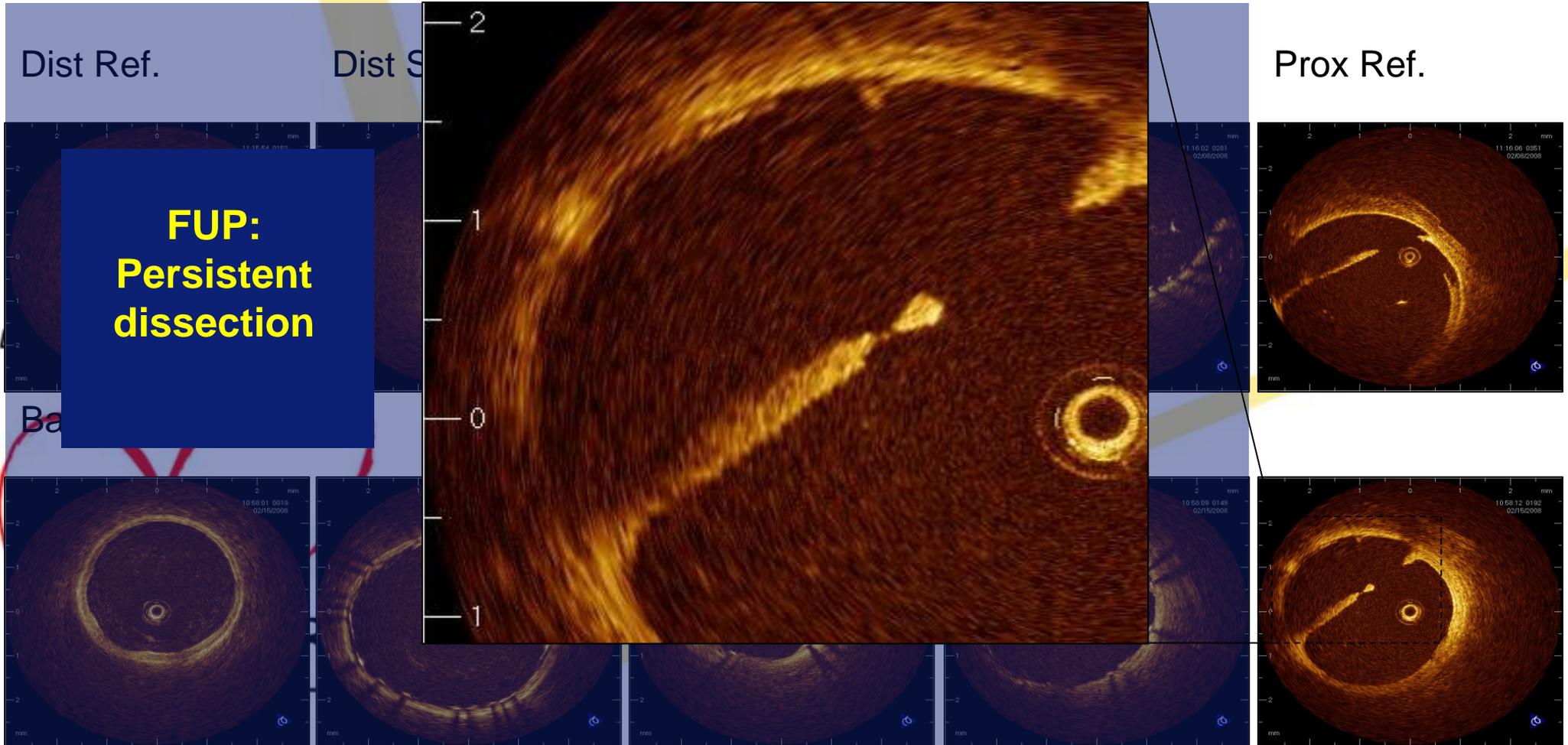
Baseline



**FUP:
Thin
Strut
coverage**

FUP 7d

Results: Case Example



**FUP:
Persistent
dissection**

FUP 7d



Results OCT: Qualitative analysis

Total of n=23	Ref Proximal	Stent Proximal	Stent Carina	Stent Distal	Ref Distal
Dissection	5 (21.7)	7 (30.4)	1 (4.3)	2 (8.7)	6 (26.1)
Intraluminal tissue	1 (4.3)	4 (17.4)	1 (4.3)	2 (8.7)	0
Incomplete apposition	n.a.	8 (34.8)	7 (36.8)	5 (21.7)	n.a.





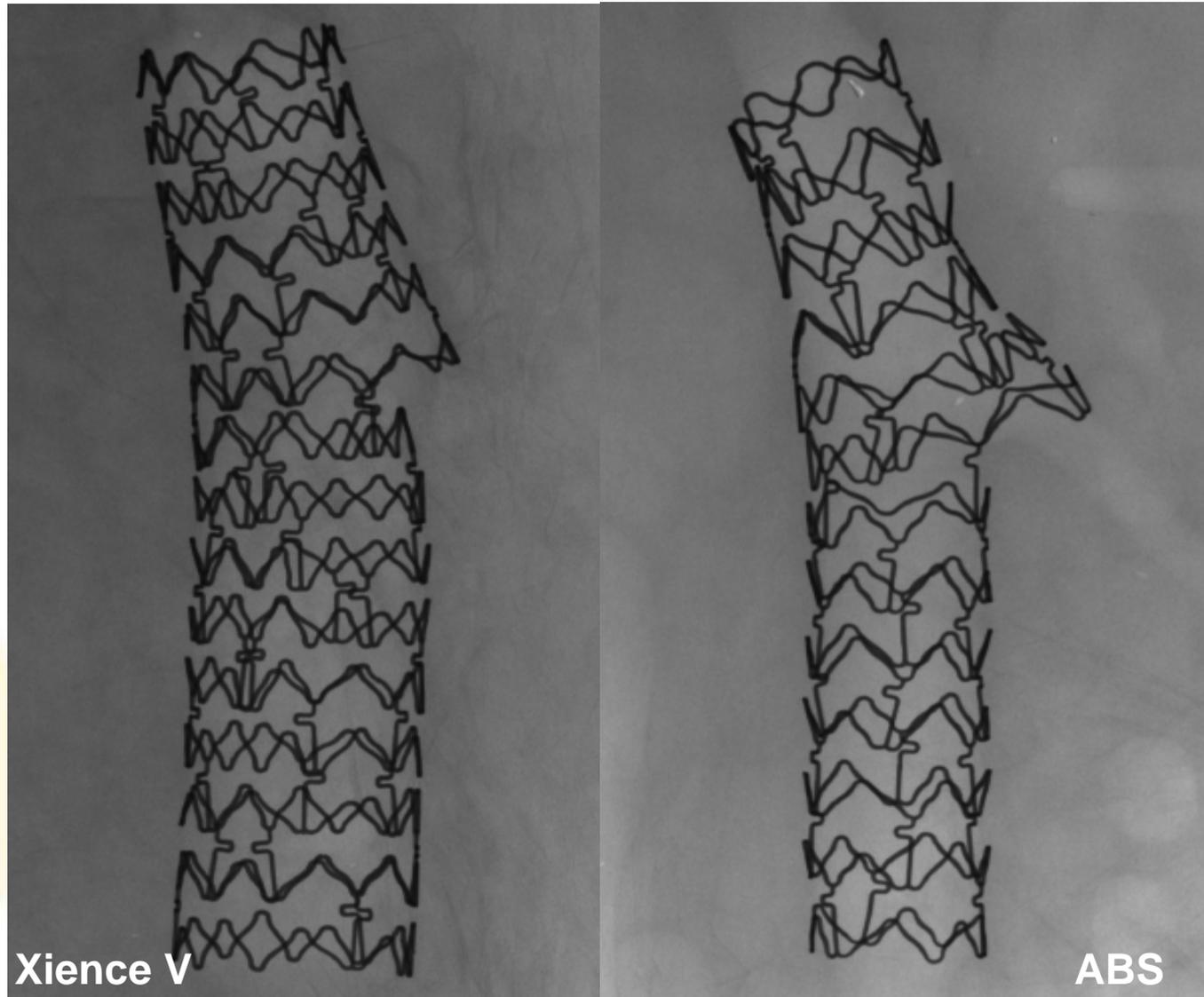
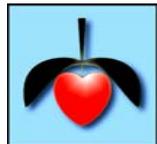
Abbott bifurcation system (ABS) preclinical evaluation



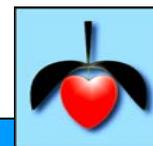
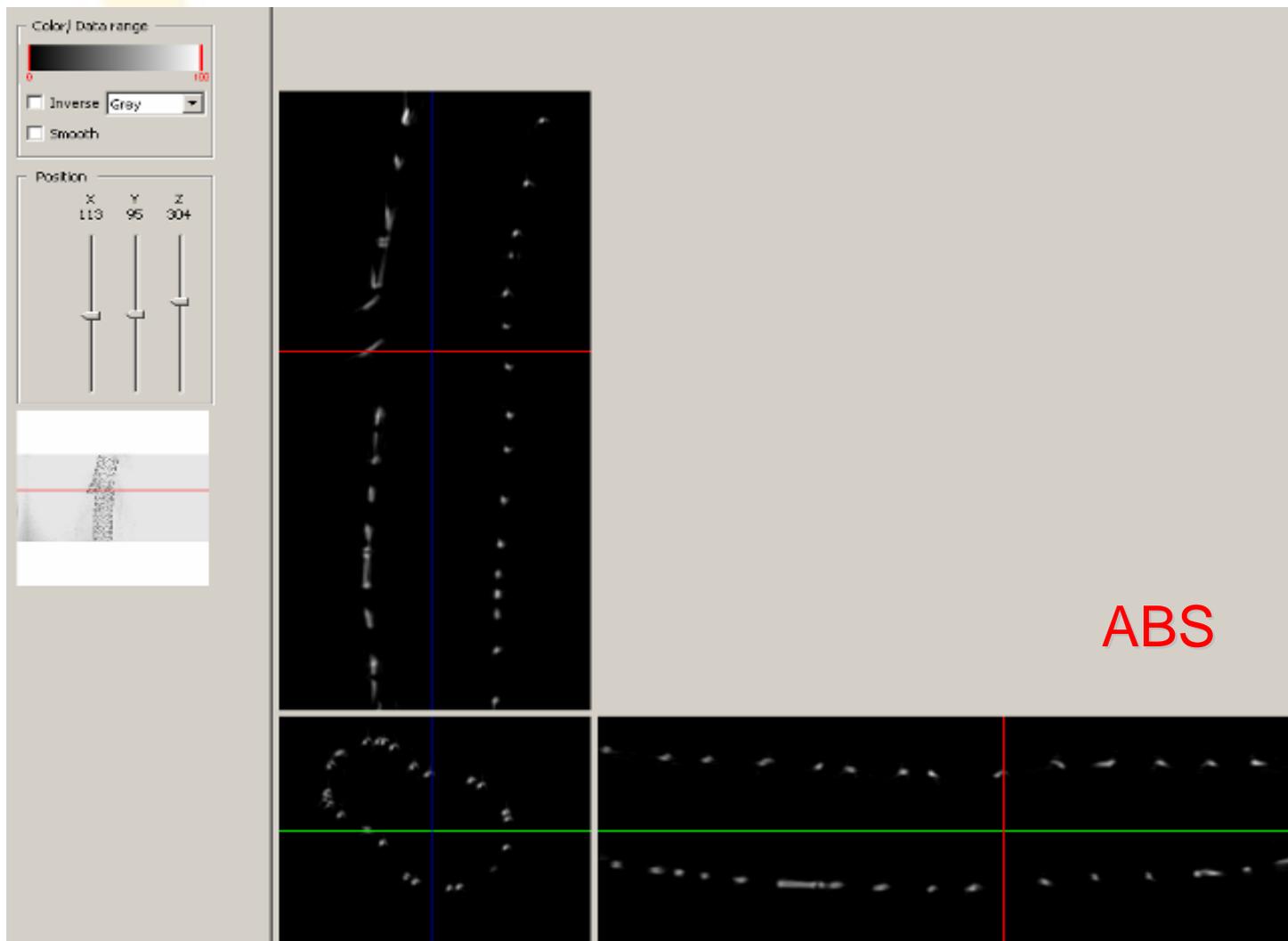


Abbott bifurcation system (ABS) preclinical evaluation

- Micro-CT
resolution $9\mu\text{m}$
- Analysis
symmetry
tapering
deformation



3D reconstruction mCT, xyz view





Macroscopy:

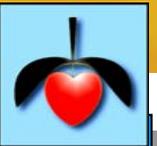
Side branch coverage by ABS



Xience V



Pathfinder





Abbott bifurcation system preclinical evaluation

- Preliminary Conclusions

- ABS supports the SB ostium, as evidenced by a preserved diameter on QCA, microCT and Macroscopy
- OCT may form the new ‘gold standard’ for optimizing stent placement
- 3D QCA has excellent inter-observer variability for diameter and distal angle and it’s angle measurements are in good agreement with macroscopy





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