15 slides from OCT session

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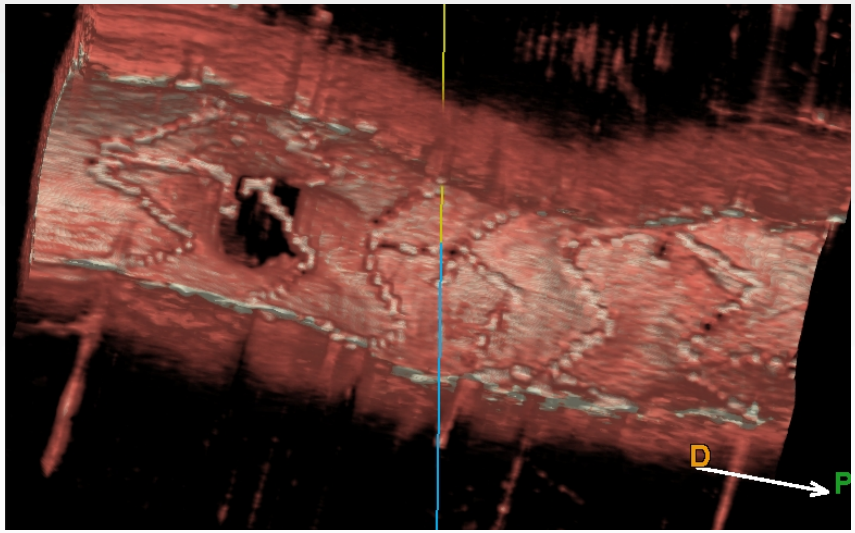
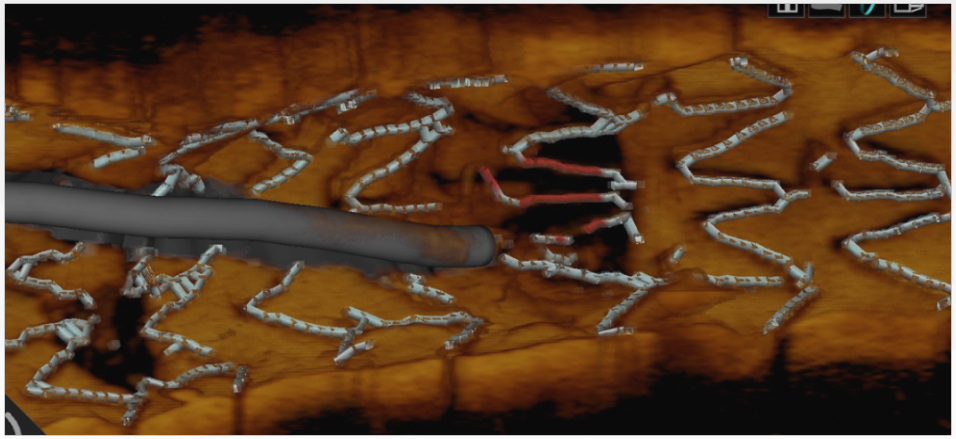
OCT enters the online 3D era

Fast and automatic 3D reconstruction of both vessel wall and stentr struts

Terumo OFDI 3D software



St Jude OPTIS™ Metallic Stent optimization Software



Side Branch Rewiring

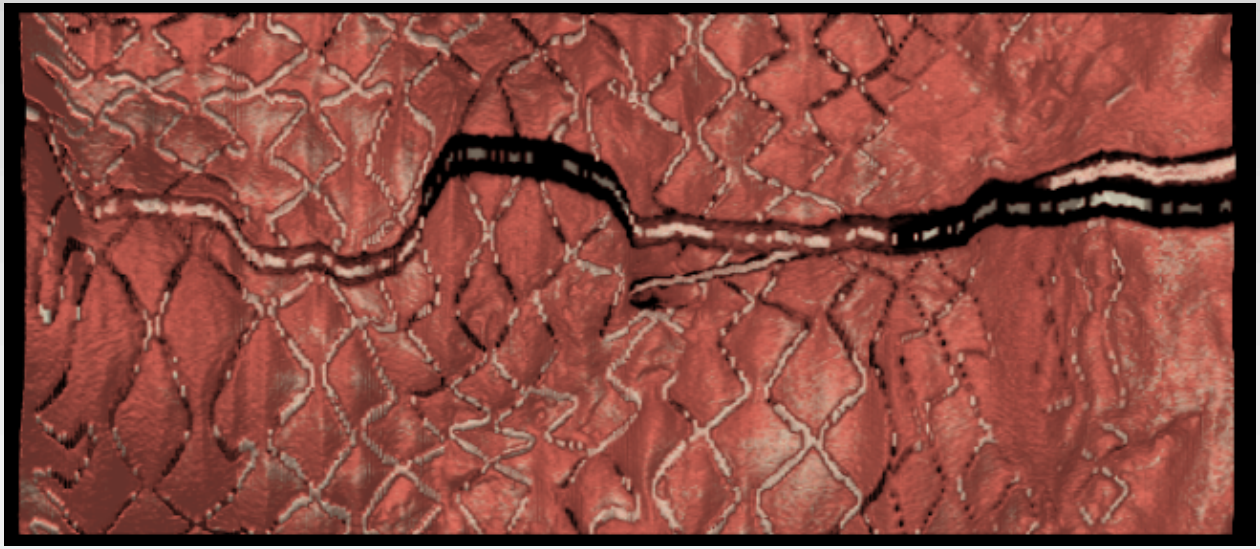
New 3D OFDI for the Bifurcation intervention

Takayuki Okamura, MD, Tatsuhiro Fujimura, MD
Yamaguchi University
Ube, Japan

XIII European Bifurcation Club meeting - Porto, Portugal - 13th & 14th October 2017

New algorithm of detecting stent strut

Current version

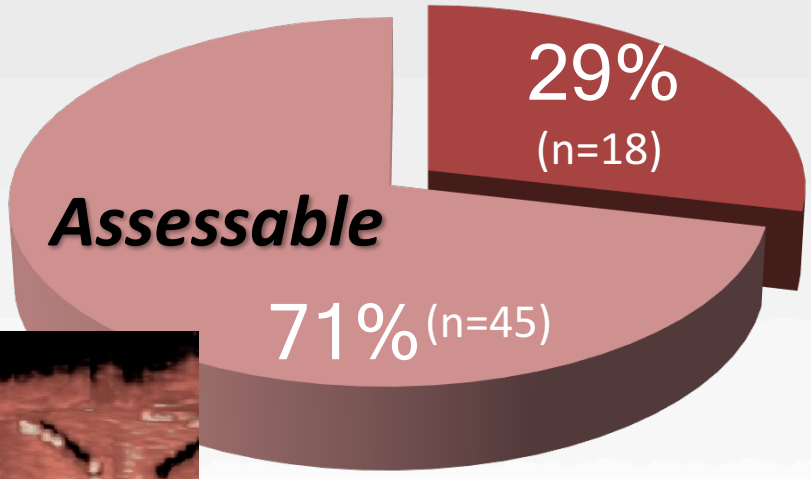


New version

Feasibility of the current version of 3D OFDI
for assessing jailing configuration and recrossing position

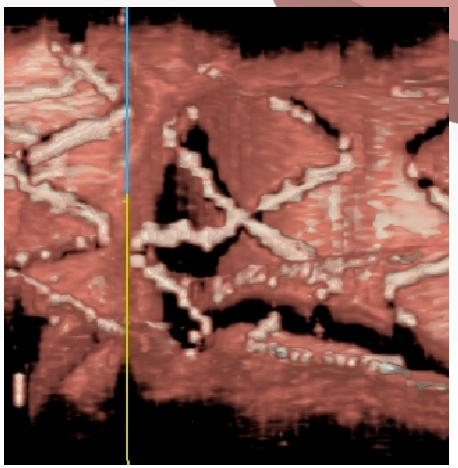
was investigated in consecutive patients who underwent bifurcation stenting under OFDI guidance in our hospital.

Total (n=63)

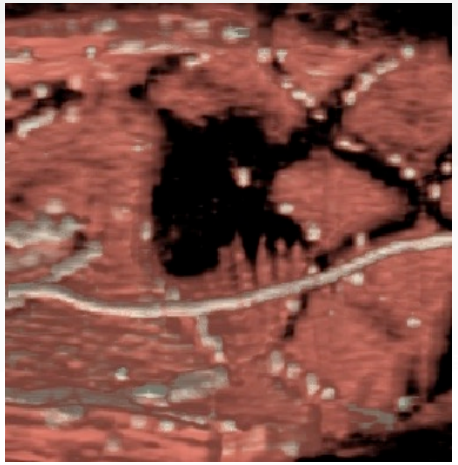


Reason

- **GW shadow (n=2, 11%)**
- **Incomplete flushing (n=3, 17%)**
- **Invisible strut (n=13, 72%)**



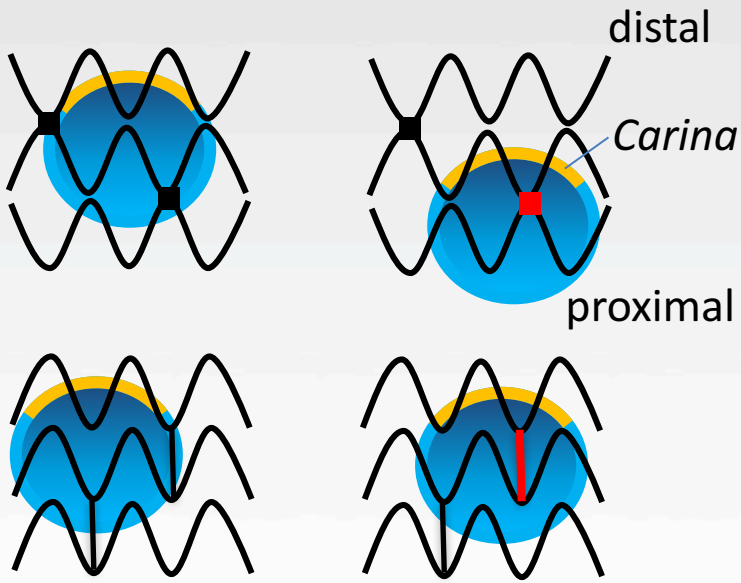
Feasibility of stent visualizing
45/(63-5) = 45/58 = 77.6%



Assessment of jailing configuration

Definition

Link (-) **Link (+)**



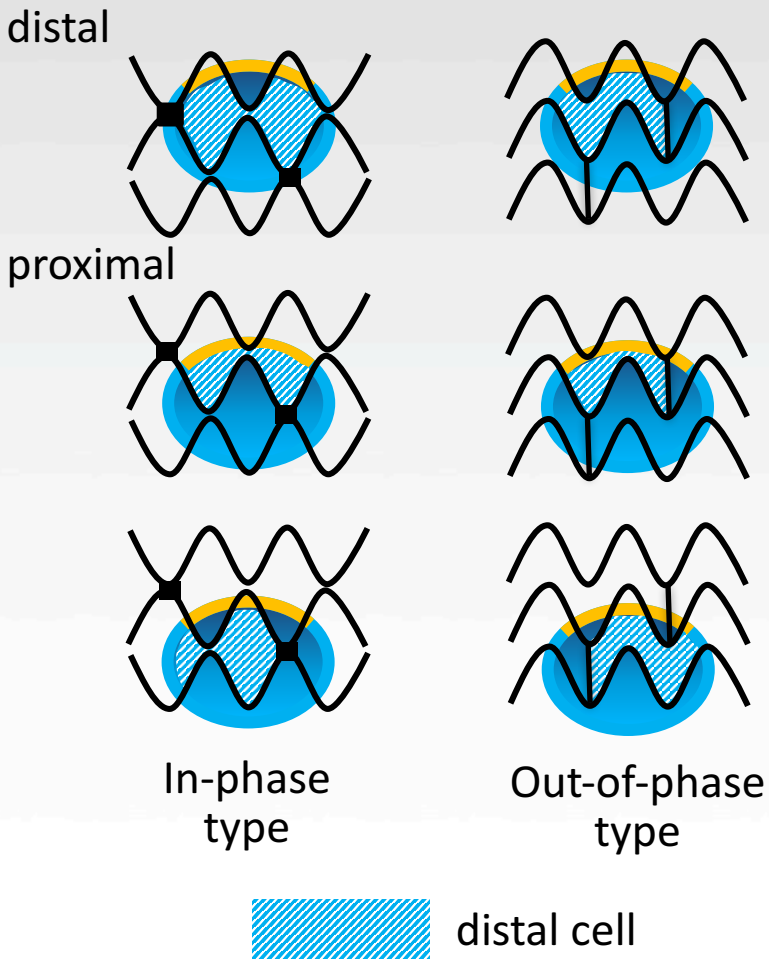
"Link-Free carina" type

"Link-Connecting to carina" type

N=47	CV	NV	Off-line
Link(-)	32(68.1)	26(55.3)	27(57.4)
Link(+)	12(25.5)	20(42.6)	18(38.3)
Not assessable	3(6.4)	1(2.1)	2(4.3)

Assessment of rewiring position

Definition



N=47	CV	NV	Off-line
Distal	41(87.2)	38(80.9)	40(85.1)
Non-distal	4(8.5)	8(17.0)	5(10.6)
Not assessable	2(4.3)	1(2.1)	2(4.3)

Agreement with off-line 3D

	Agree with off-line 3D	Disagree with off-line 3D	Ratio of agreement	P
Current version 3D-OFDI	36	11	76.5%	0.048
New version 3D-OFDI	43	4	91.4%	

(統計はχ2検定)

Side Branch Rewiring

Japanese 3D-OCT bifurcation registry

Feasibility of 3D-OCT guided bifurcation stenting and its clinical outcome

Takayuki Okamura, Ryoji Nagoshi, Tatsuhiro Fujimura, Yoshinobu Murasato, Masahiro Yamawaki, Shiro Ono, Takeshi Serikawa, Yutaka Hikichi, Hiroaki Norita, Fumiaki Nakao, Tomohiro Sakamoto, Toshiro Shinke,

Junya Shite,

3D OCT investigators

Method

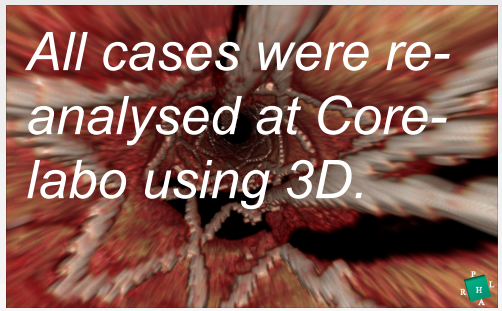
Stenting for main vessel

GW recross to side branch

OCT : GW recross point evaluation

on-site 3D-OCT guide
3 hospitals

2D-OCT guide
7 hospitals



Optimal recrossing
No Yes

Kissing ballooning to main vessel and side branch

OCT : final assessment for main vessel

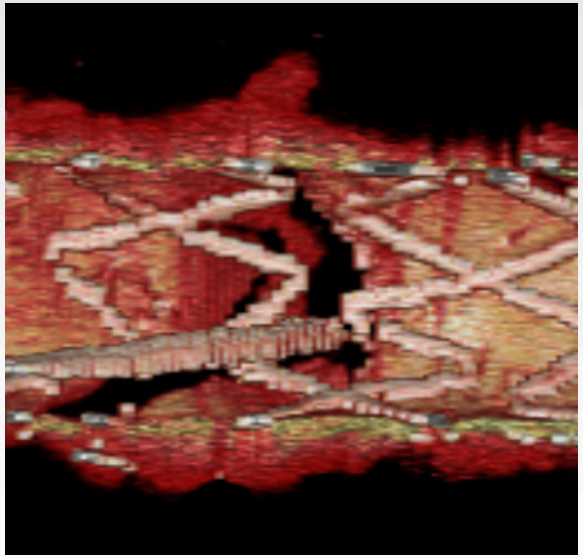
Clinical and Angio follow-up at 9 month

3D OCT investigators

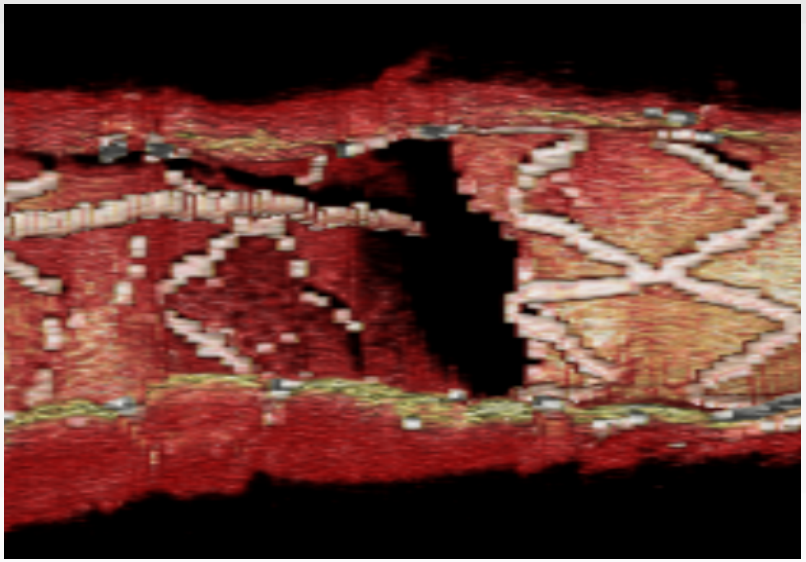
Classification of jailing configuration

"Link-free type"

GW recross distal cell



After kissing ballooning

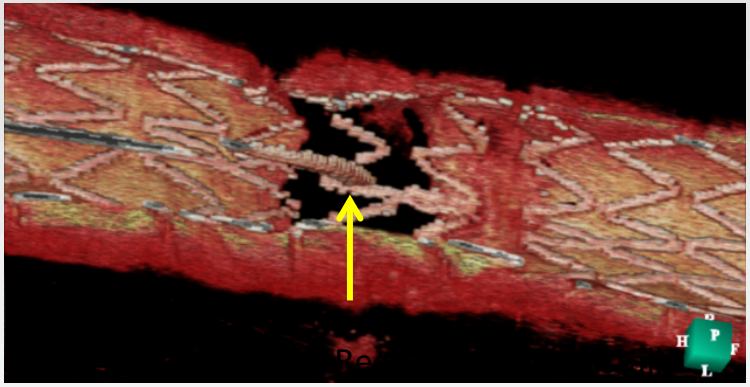


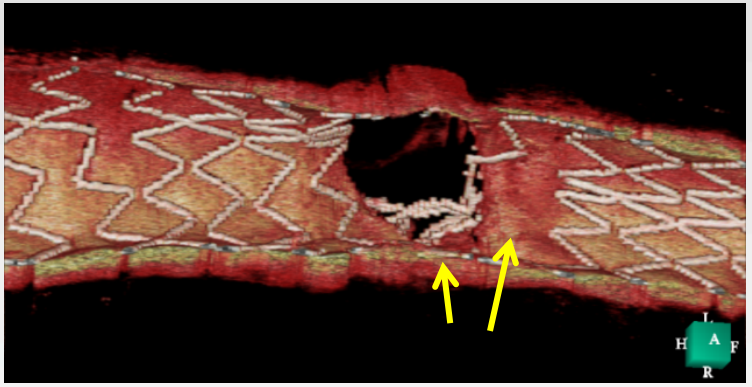
Optimal

Classification of jailing configuration

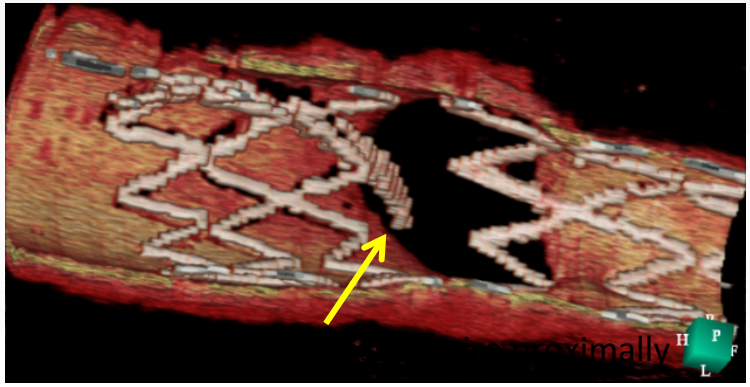
"Link-connecting to carina type"

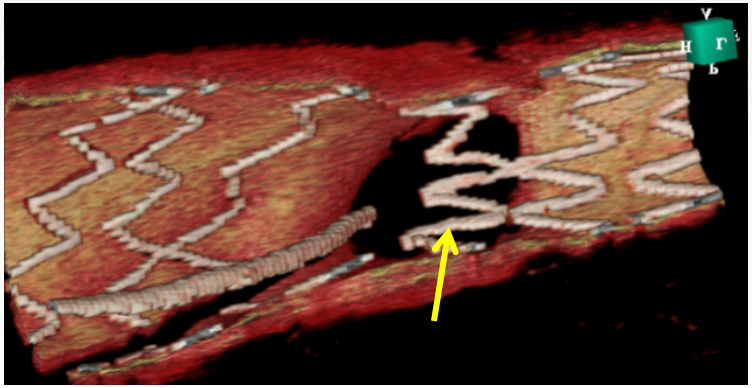
GW recross distal cell → After Kissing Ballooning





GW recross proximal cell



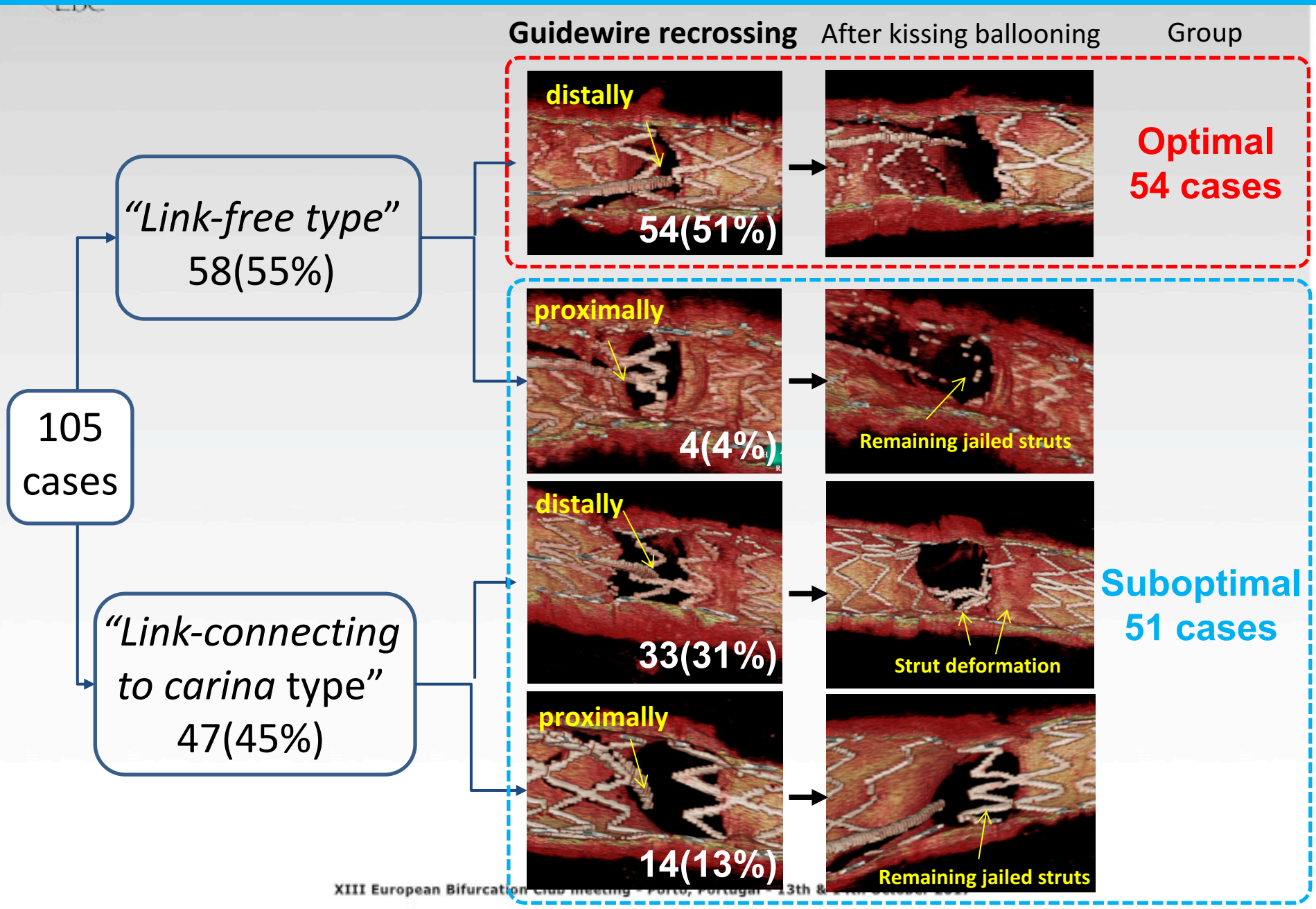


Suboptimal

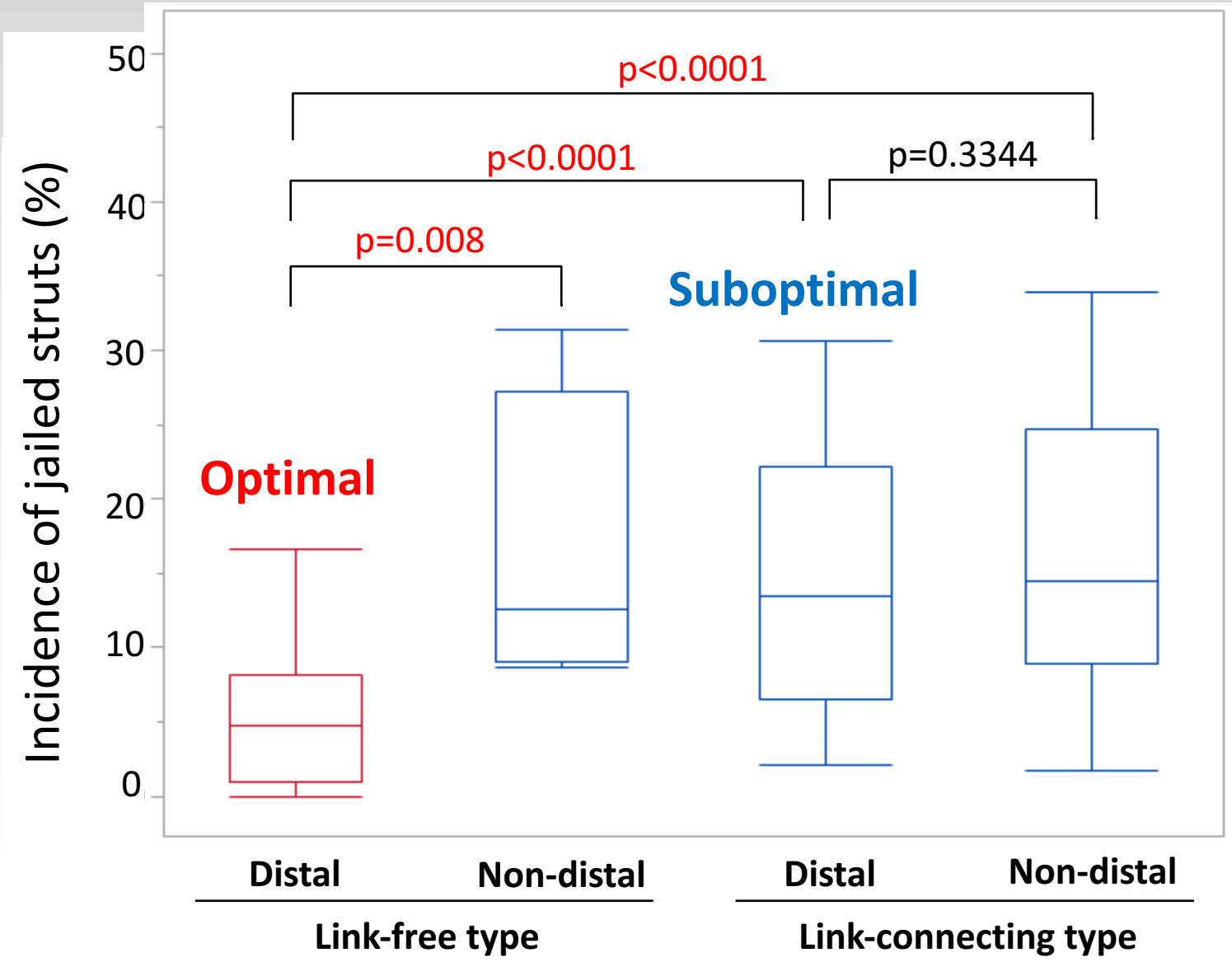
3D-guide vs 2D-guide

	3D-guide (n = 55)	2D-guide (n = 50)	P value
Distal recrossing	50/55 (91%)	37/50 (74%)	0.0362
Average recross times (min-max times)	1.55±0.69 (1-3)	1.08±0.34 (1-3)	<0.001
≥2 recross	24/55 (44%)	3/50 (6%)	<0.001
Total PCI contrast volume	146±46ml	171±55ml	0.0130
Radiation time	36.7±16.8min	31.2±15.8min	0.0911

Frequency of jailing configuration and rewiring position



Incidence of jailed struts at SB ostium according to stent link and rewiring position



Angiographic ISR at 9 Month

	Optimal	Suboptimal	P value
n	48	39	
ISR	4(8%)	8(21%)	0.1254
PMV	0(0)	0(0)	-
DMV	1(2.1)	0(0)	1.0000
SB	4(8%)	8(21%)	0.1254

Side Branch Compromise

Imaging Session: OCT and New IVUS

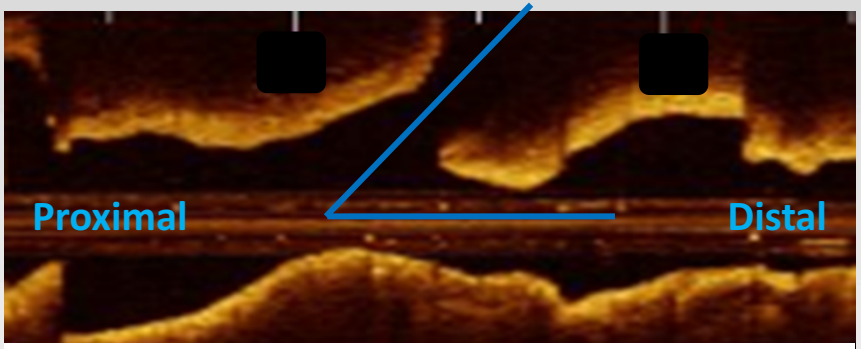
Predictors of Side Branch Compomise in OCT Observations

Shiro Uemura, MD, PhD

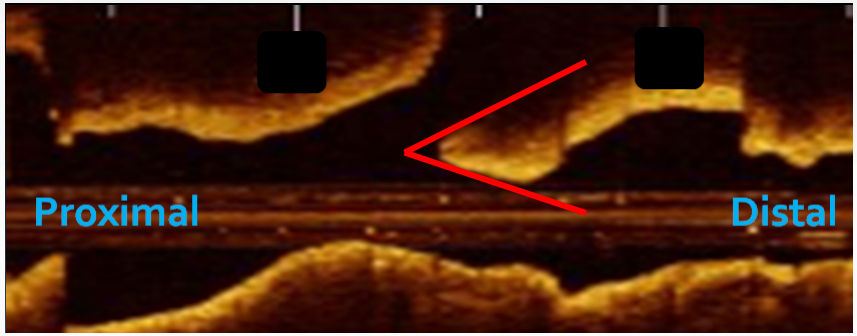
Cardiovascular Medicine
Kawasaki Medical School, Japan

XIII European Bifurcation Club meeting - Porto, Portugal - 13th & 14th October 2017

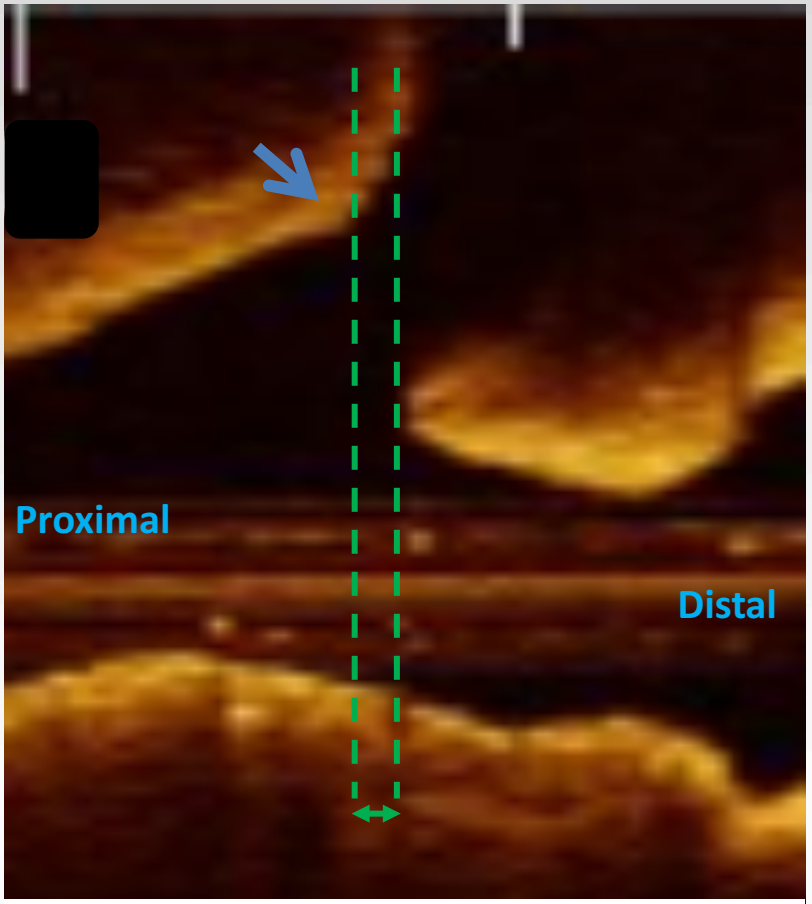
Planimetric Parameters of Bifurcation Lesion based on Longitudinal OCT Image



SB angle : side branch angle



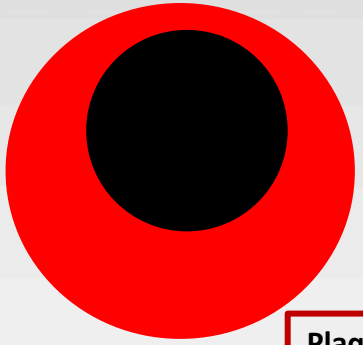
CT angle : carina tip angle



BP-CT length : length between proximal branching-point (BP) to carina tip (CT)

Plaque Distrubution at Carina Tip Level

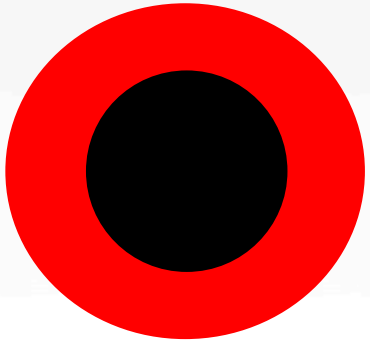
Theoretical Plaque Distribution



Type 1

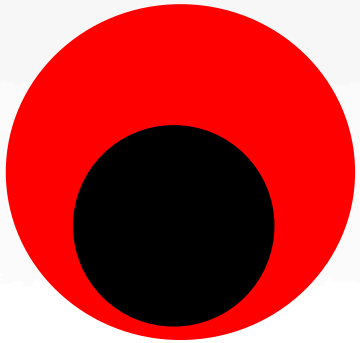
Plaque on opposite side to SB
Thin carina without plaque
(susceptible to carina shift)

Concentric plaque



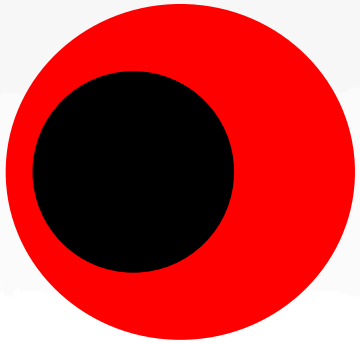
Type 2

Eccentric plaque



Type 2

Eccentric plaque



Type 2

OCT Predictors of SB Compromise

	HR	95% CI	p Value
Lumen area at proximal BP	0.96	0.66-1.38	0.81
Theoretical plaque distribution at carina tip	8.53	1.21-59.9	<0.05
CT angle (≦51°)	10.5	1.17-94.4	<0.05
BP-CT length (≦ 1.75 mm)	19.2	2.27-162	<0.01

Watanabe, Uemura, et al. Coron Artery Dis. 2014;:321-9.

Neointimal coverage of jailed side branches in coronary bifurcation lesions: an optical coherence tomography analysis

Teruyoshi Kume, Ryotaro Yamada, Koyama Terumasa, Tomoko Tamada, Koichiro Imai, Kenzo Fukuhara, Yutaka Goryo, Ai Kawamura, Okamoto Hiroshi, Yoji Neishi and Shiro Uemura

Coron Artery Dis. 2017 doi: 10.1097/MCA.0000000000000563.

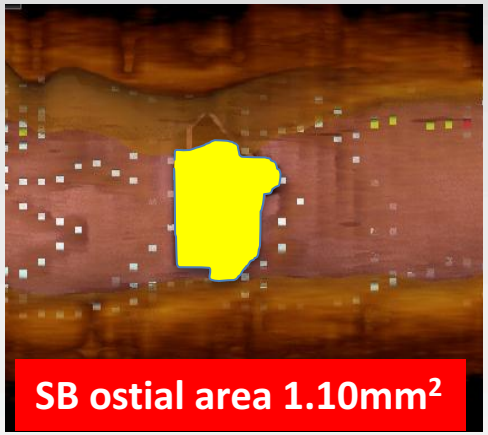
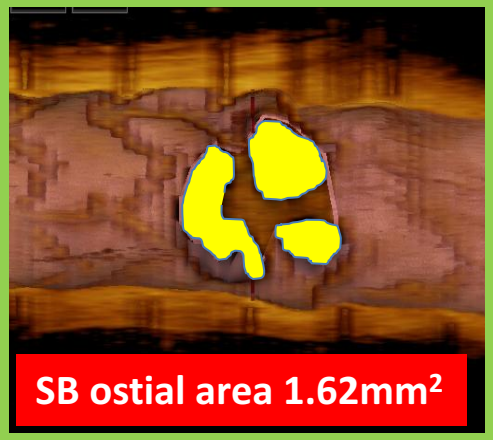
Background

In addition to risk of late stent thromobosis, overhanging struts within SB ostium may be the risk of SB flow disturbance during long-term follow-up, by means of late tissue growth (neointimal proliferation or fibrin deposition) around struts.

Purpose

To characterize the relationship between the jailing strut pattern within the SB ostium and the tissue coverage of the jailed SB ostium at the chronic phase.

Serial Tissue Growth at SB Ostium

	Baseline	18-month F/U
No-link group		
Link group		

Kume T, Uemura S, et al. Coron Artery Dis. 2017
doi: 10.1097/MCA.0000000000000563

OCT Analysis

	Link group (n=11)	No-link group (n=18)	p value
Baseline			
Total number (dots) of struts within SB ostium	8.9±2.5	4.6±2.4	<0.001
SB ostial area (mm^2)	1.59±0.71	1.07±0.46	0.025
18-month Follow-up	30.0±12.6	29.8±12.6	0.973
SB ostial area free from neointima (mm^2)	1.13±0.58	0.98±0.54	0.485
SB ostial obstruction by neointima (%)	26.8±21.9	9.5±22.1	0.049

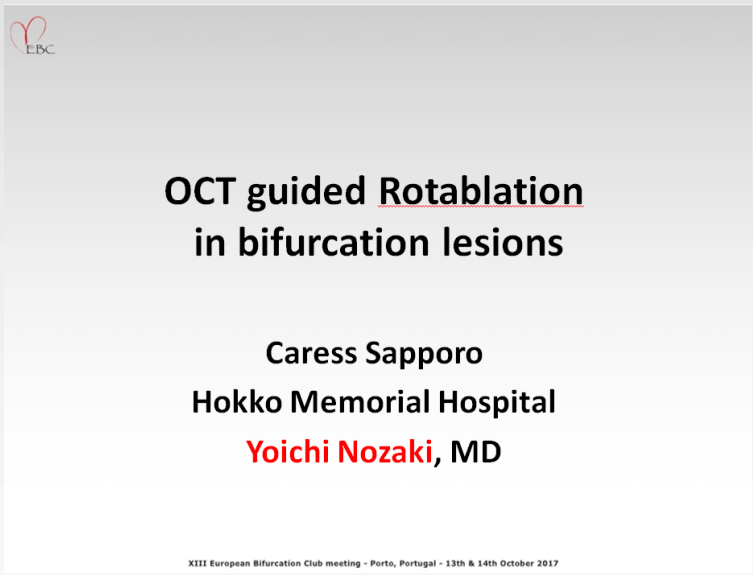
Overhanging strut with link is a risk for neointimal overgrowth at SB ostium(>18 months).

Late loss of SB ostial area (mm^2)	0.46±0.35	0.09±0.24	0.002

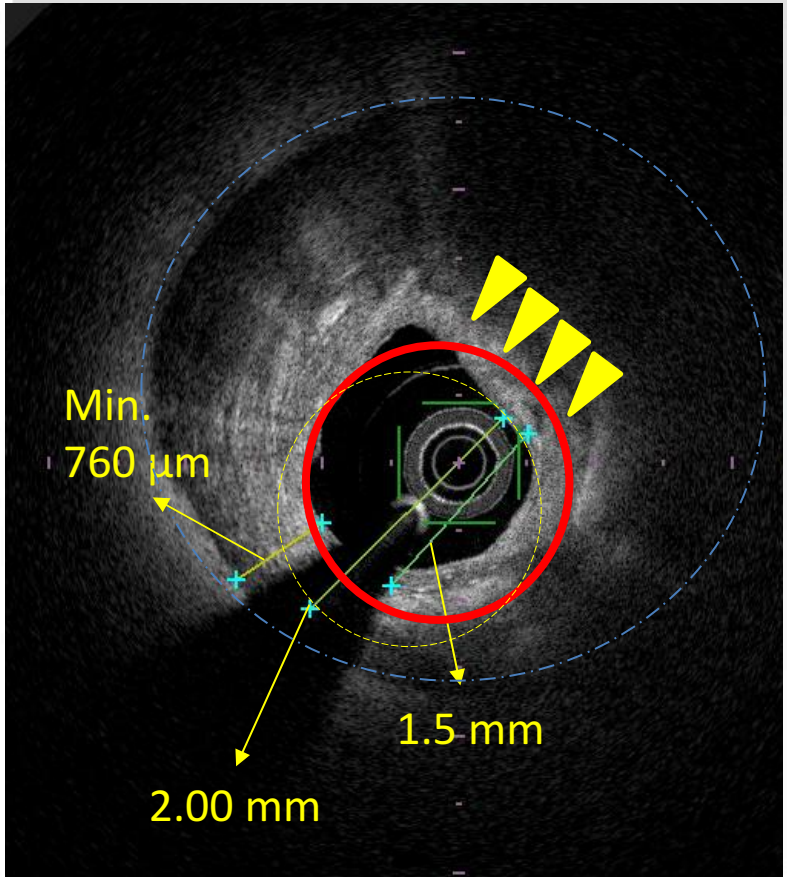
Values are mean ± SD or n (%). SB: side branch.

Kume T, Uemura S, et al. Coron Artery Dis. 2017
doi: 10.1097/MCA.0000000000000563

Calcific bifurcations



How to decide burr size for napkin ring lesions under OCT guidance in our center.

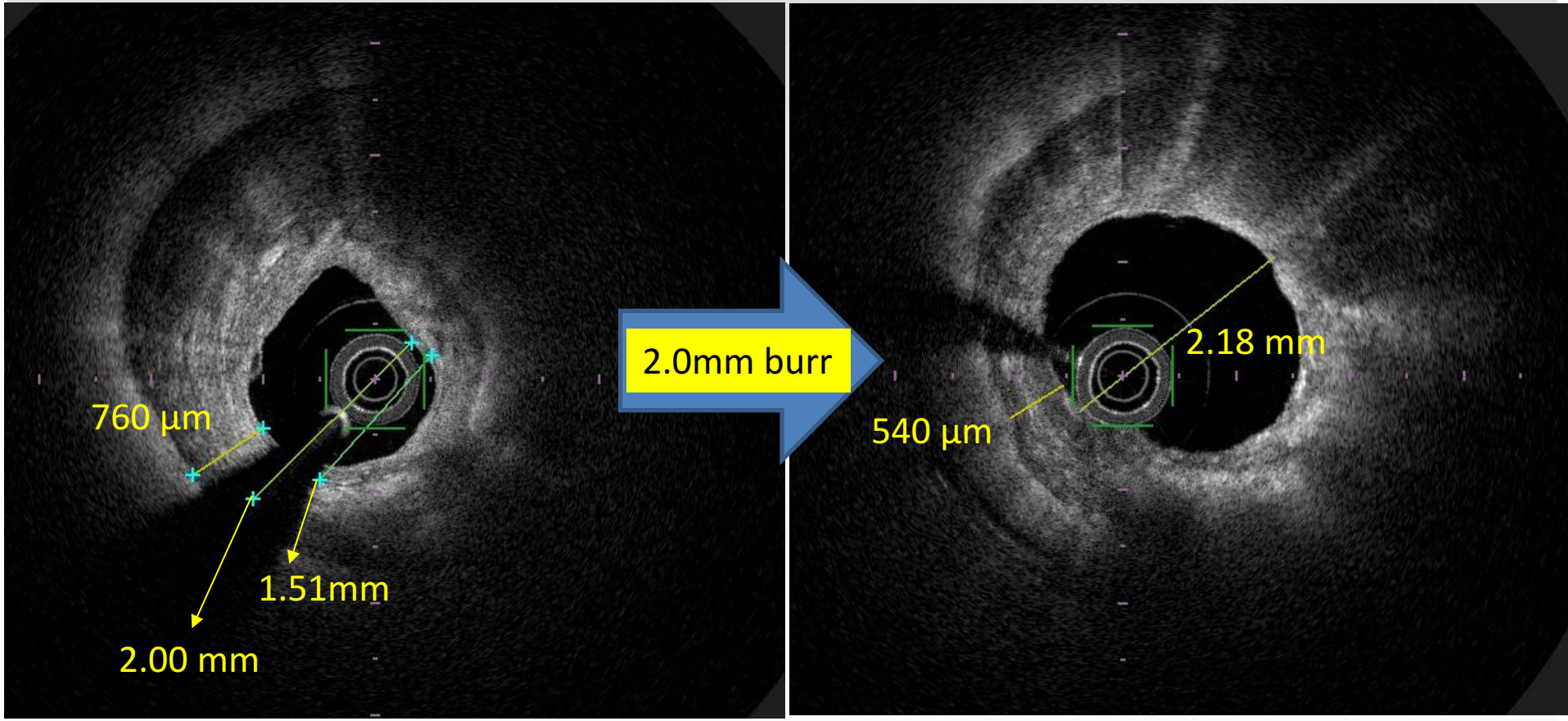


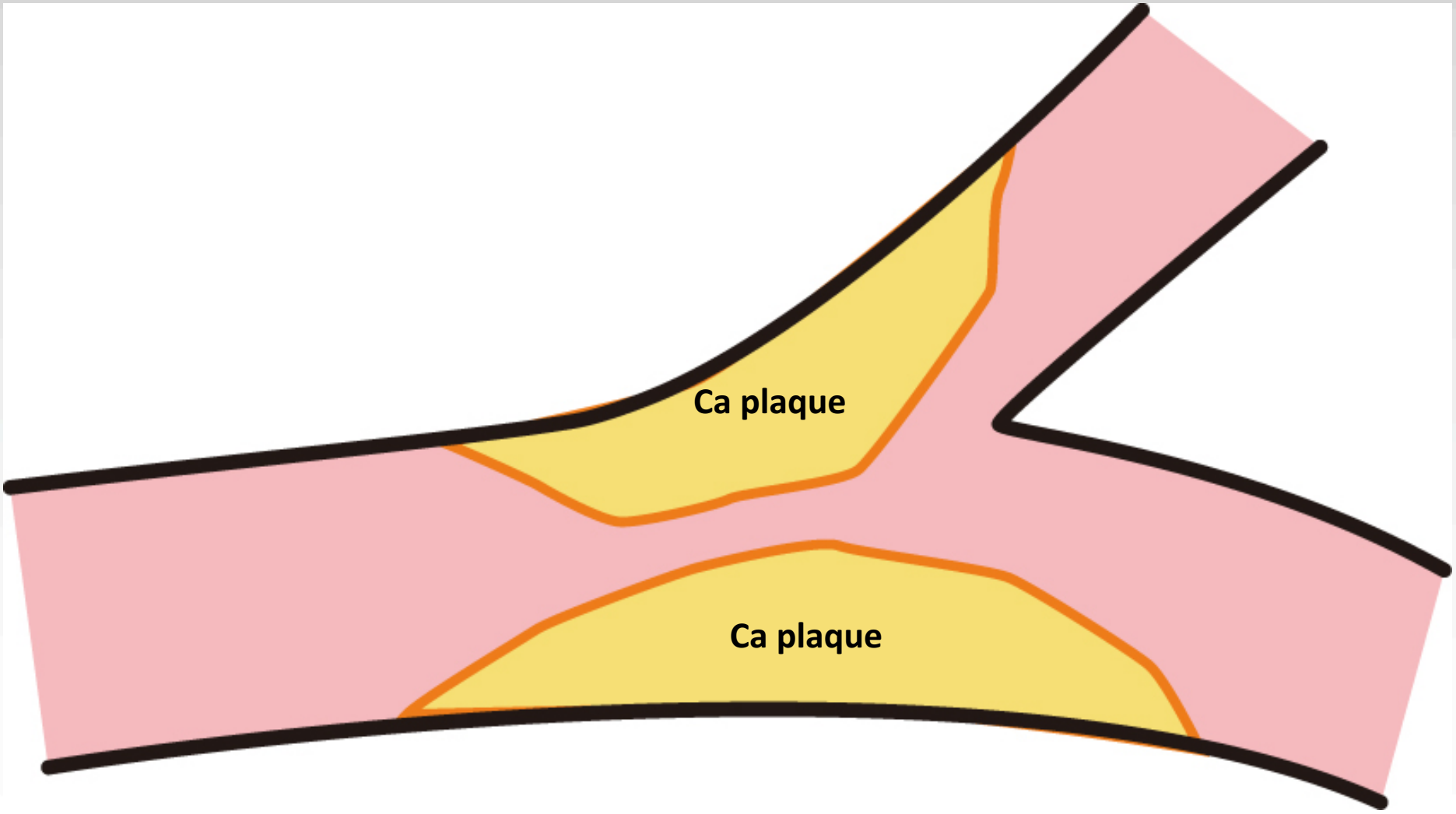
(1) Napkin ring → aggressive ablation
(2) Min. Ca thick = 760 um (>200um)
(3) Wire bias → Counter side of Min. Ca site (mainly ablated)
(4) Lumen diameter = 1.5 mm
(5) Max. burr diameter = 2.0mm
(6) Virtual circle of Rota burr to achieve minimum thickness (=500 um, considering wire bias.

Burr size > 2mm is needed **at least**.

Pre- procedure OCT

Post- rotablator OCT




Ca plaque
Ca plaque

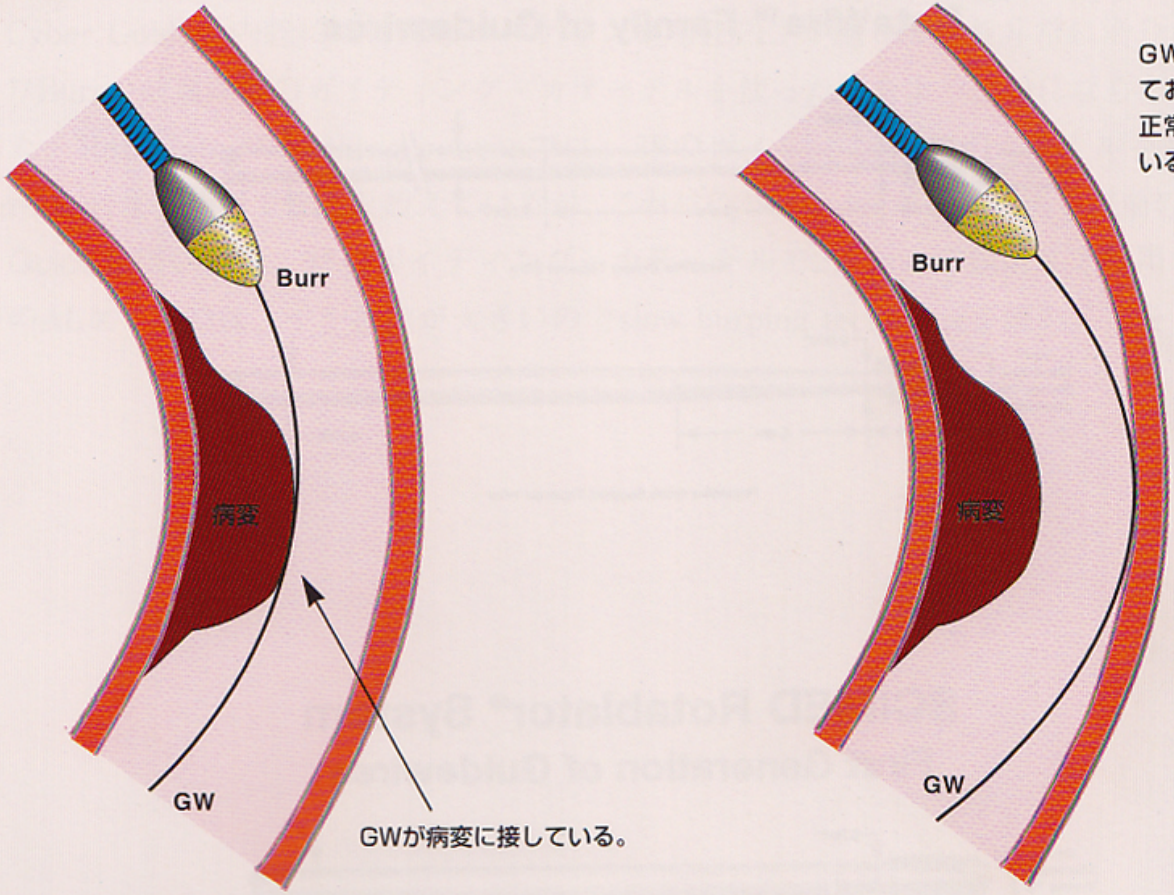


図28　favorable GW biasとunfavorable GW biasの状態

From textbook　Rotablator Illustrated by Kazuo Misumi

Thank you for all these data !!!