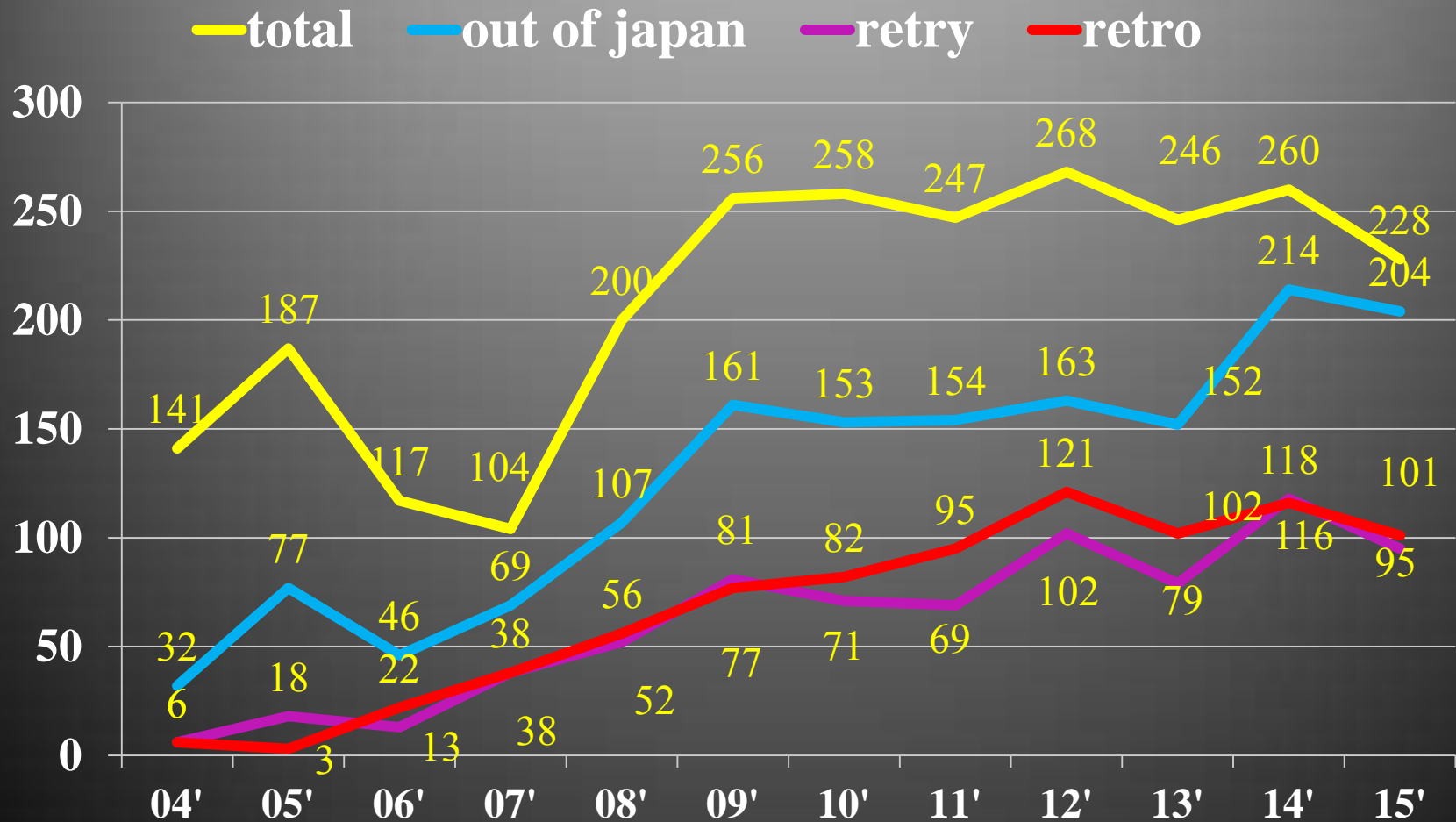


Complex PCI technique Current Retrograde Approach

Toshiya Muramatsu

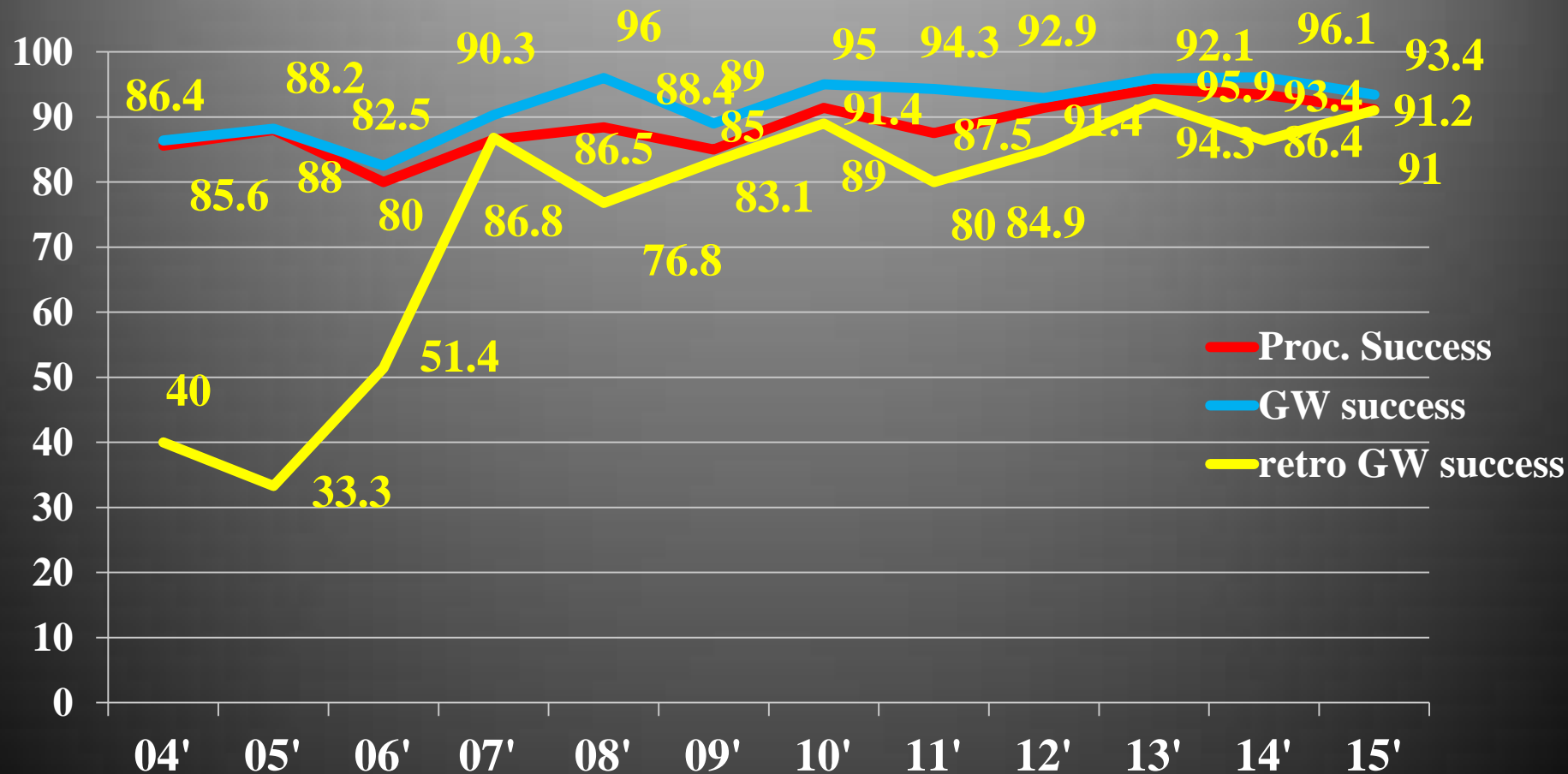
Tokyo General Hospital

Number of CTO lesion



Success rate and retrograde approach for CTO

(%)



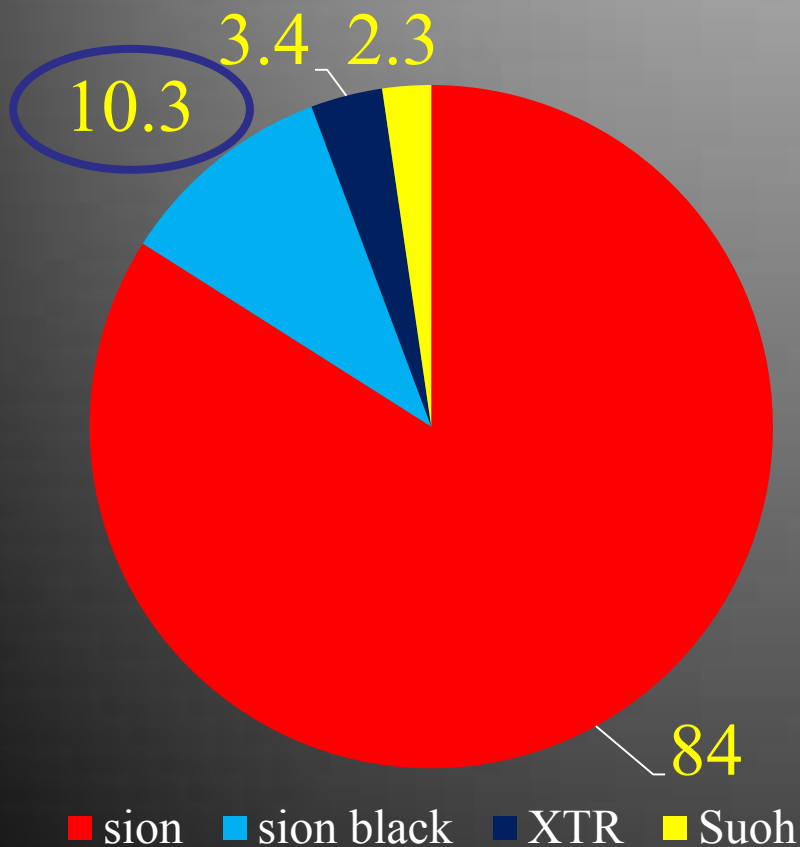
Tokyo General Hospital

Recent changes of retrograde approach

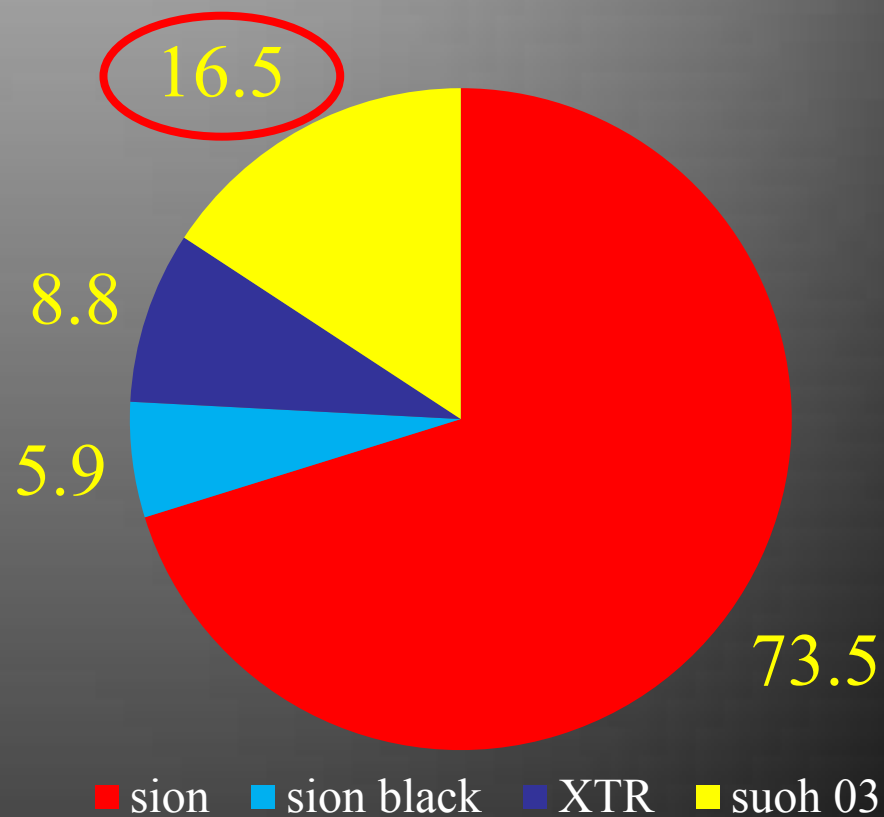
- **New Channel crossing GW**
Suoh 03 GW, Sion black GW
- **More epicardial channel**
How cross tortuous channel
- **How to cross retrogradely**
Knuckle wire technique
- **Contemporary r-CART**
New concept reverse CART
- **Time saving ,Less invasive**
Short time antegrade preparation
Use of Glide sheath

Types of channel crossing guidewire

2014 n=102



2015 n=85



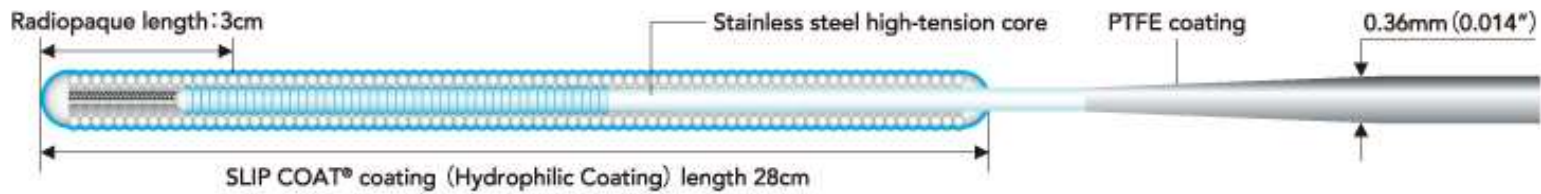
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Sion black

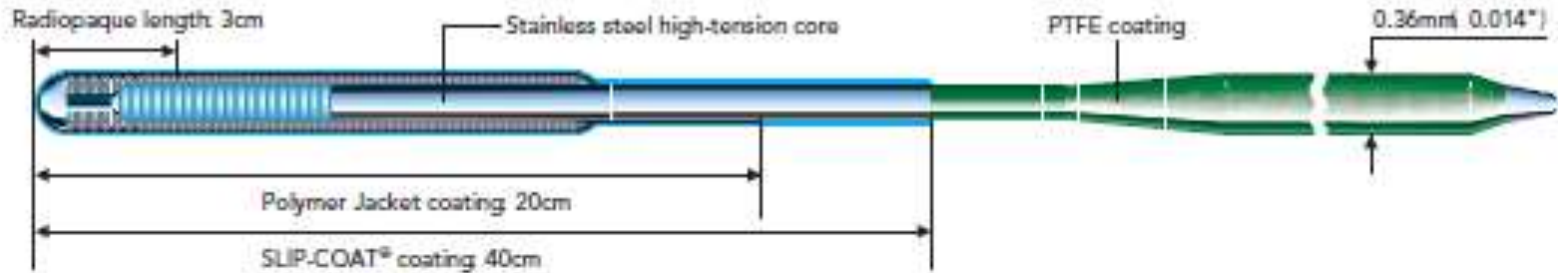
■ Structure

Sion guidewire



■ Structure

Sion black guidewire



Case of sion black guidewire



Tokyo General Hospital

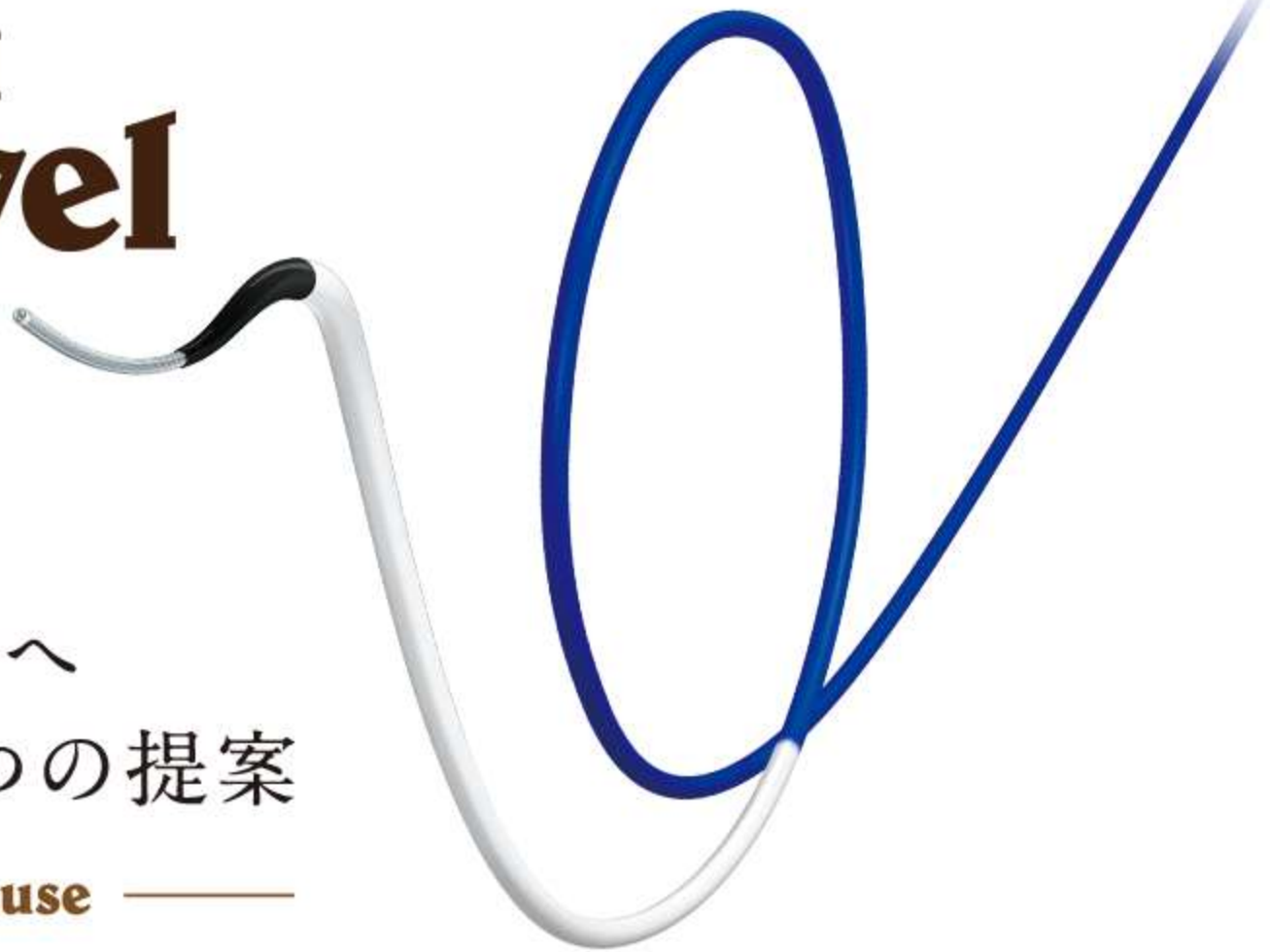
Suoh 03 guidewire



Case of Suoh 03 guidewire



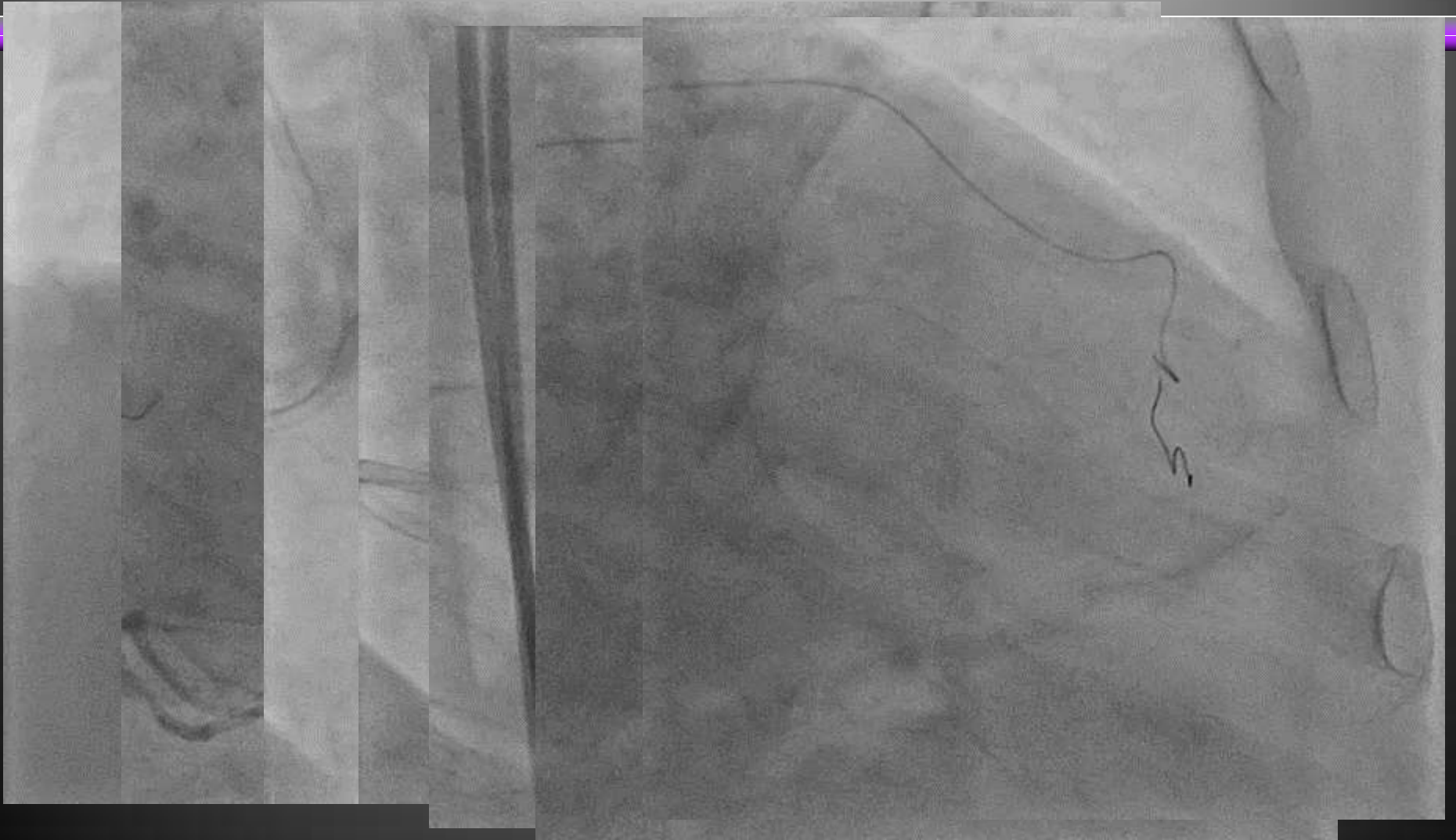
ASAHI Caravel



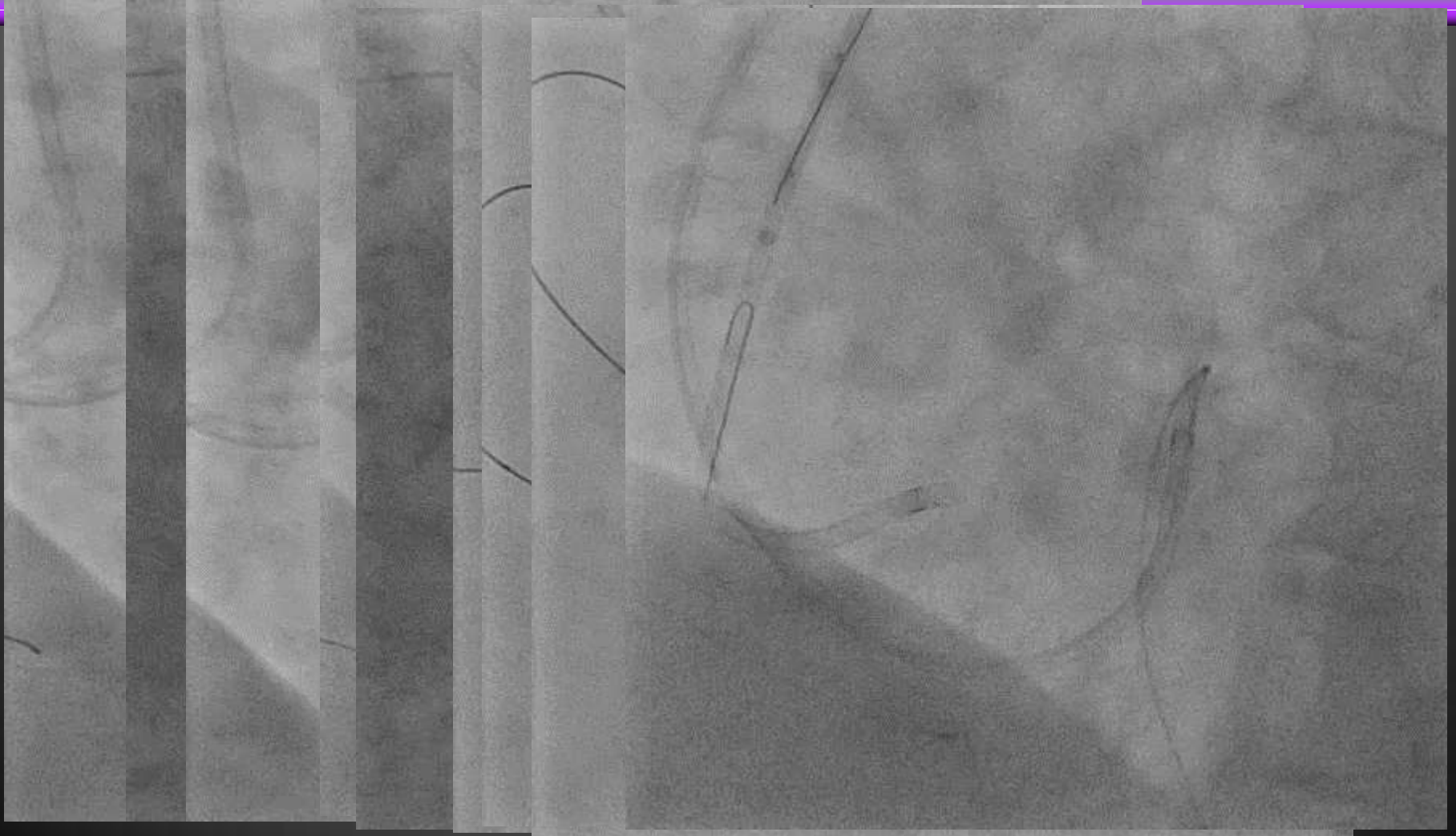
快適な PCI へ
もうひとつの提案

— For daily use —

Case of Suoh 03 GW+Caravell



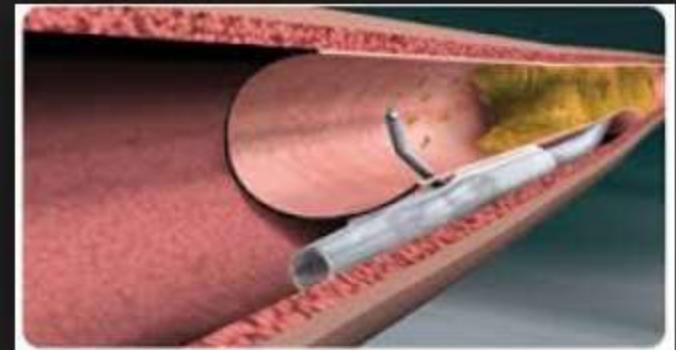
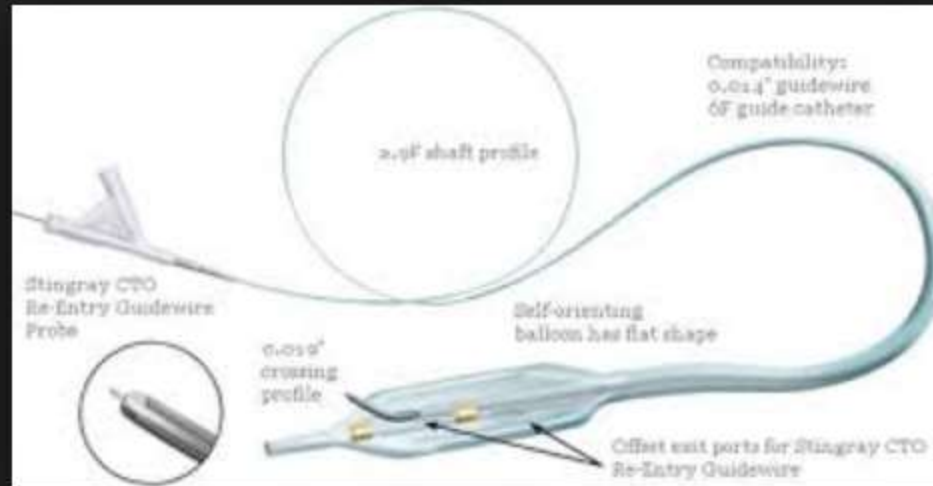
Case of Suoh 03 GW+Caravell



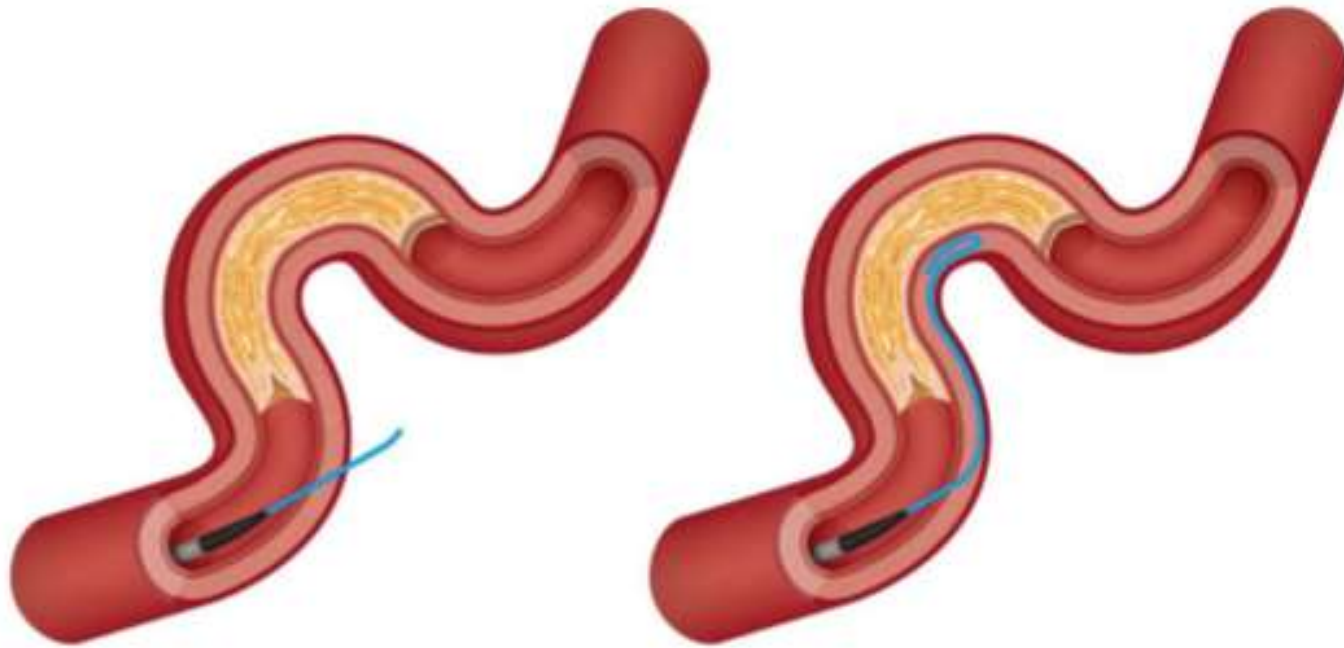
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Stingray system



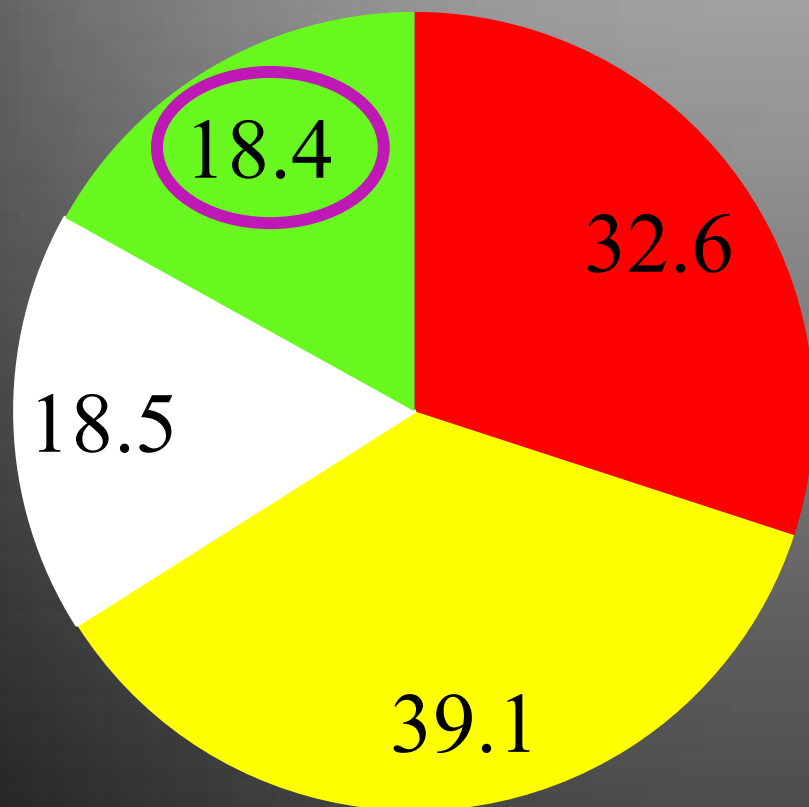
Straight vs. Knuckled wires



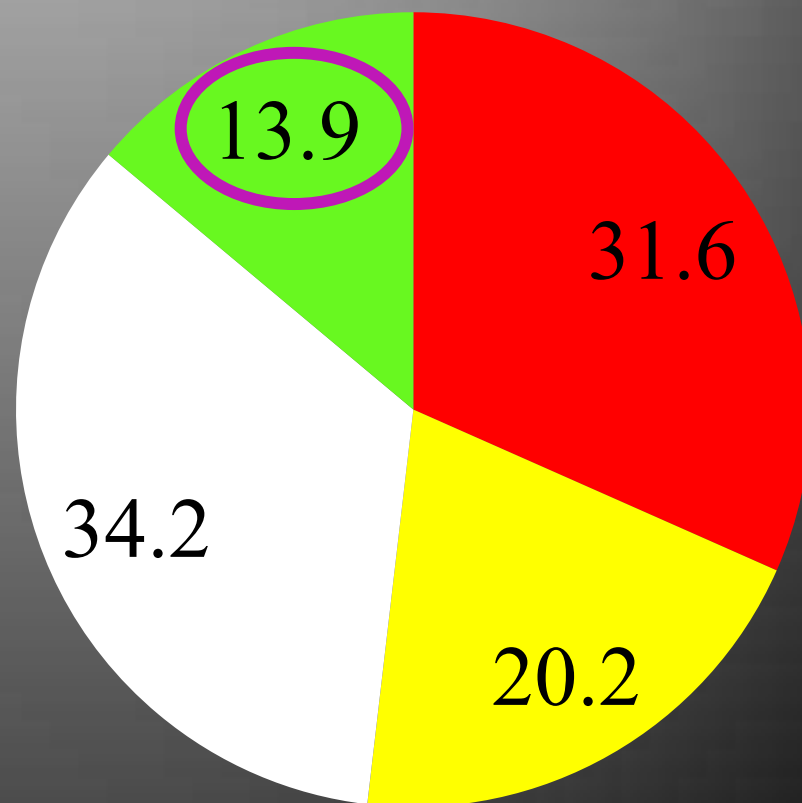
Illustrations from 'A Guide to Mastering Retrograde CTO PCI' / www.ctoibooks.com

Strategies of retro CTO crossing

2014 n=102



2015 n=85



■ Retro GW ■ KWT ■ r-CART ■ Knuckle

Key issue of knuckle wire technique

- **Use of knuckle GW**
XTR GW, Fielder FC GW
- **Timing of knuckle wire**
Long CTO, Both GW into subintima
- **How to make it**
More than 90 degree bent of GW tip
- **How to advance**
Support microcatheter
- **Avoid complication**
Try to introduce same line as antegrade GW
Don't inject dye
Don't insert side branch and injury area which created by stiff GW

Retrograde long knuckle wire

Im: 1/129
Se: 1

Im: 1/120
Se: 1

Im: 1/46
Se: 1

Im: 1/121
Se: 1

Im: 1/121
Se: 1

HWANG JIAN-REN
000233020D
1953/01/03 M
VGHTC-CATH02
92123171
Cardiac
Left Coronary 15 fps(fine)

WL: 113 WW: 53
LAO: 53

WL: 113 WW: 53
LAO: 53

WL: 113 WW: 53
LAO: 53

WL: 113 WW: 227 [D]

WL: 59 CAU: 17

LAO: 59 CAU: 17

2016/10/07 18:19:31

2016/10/07 18:17:03

Retrograde long knuckle wire

Im: 1/225
Se: 1

Im: 1
Se: 1

Im: 1/13
Se: 1

Im: 1/225
Se: 1

HWANG JIAN-REN
000233020D
1953/01/03 M
VGHTC-CATH02
92123171
Cardiac
Fluoroscopy

WL: 128 WW: 25
LAO: 50

WL: :
LAO: :

WL: 113 WW: 2
RAO: 25 CAU: 2

WL: 128 WW: 256 [D]
LAO: 50

2016/10/07 18:42:39

Retrograde long knuckle wire

Im: 1/186
Se: 1

Im: 1/60
Se: 1

HWANG JIAN-REN

HWANG JIAN-REN
000233020D
1953/01/03 M
VGHTC-CATH02
92123171
Cardiac
Left Coronary 15 fps(fine)

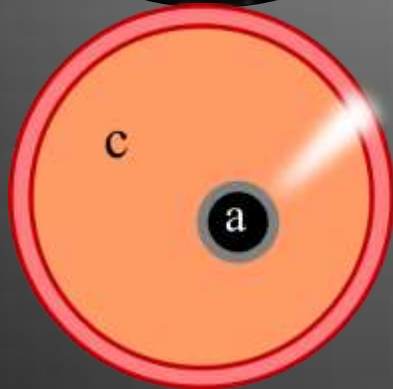
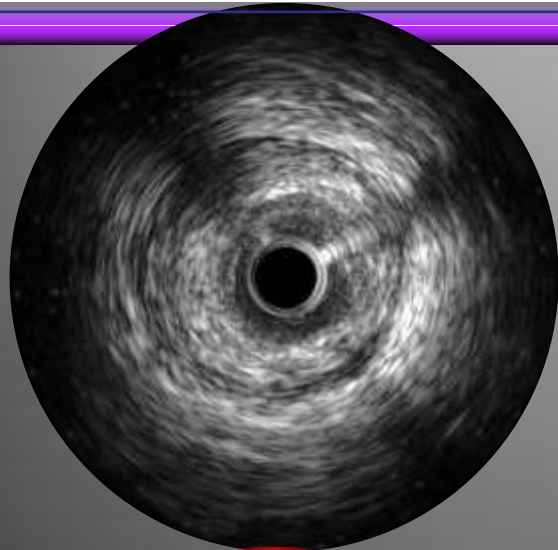
WL: 128 WW: 5
LAO: 50

WL: 113 WW: 227 [D]
LAO: 50 CRA: 15

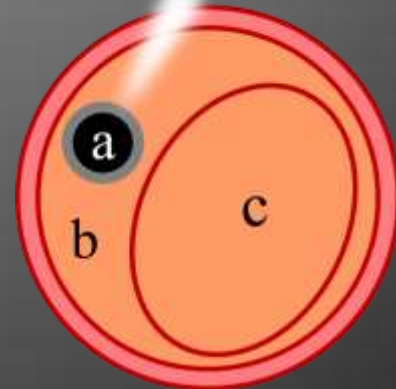
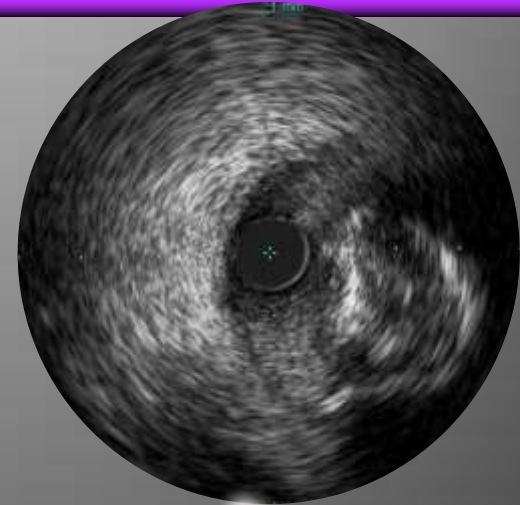
2016/10/07 18:57:04

IVUS Image

Intimal vs. Sub-Intimal Tracking



Intimal Plaque Tracking

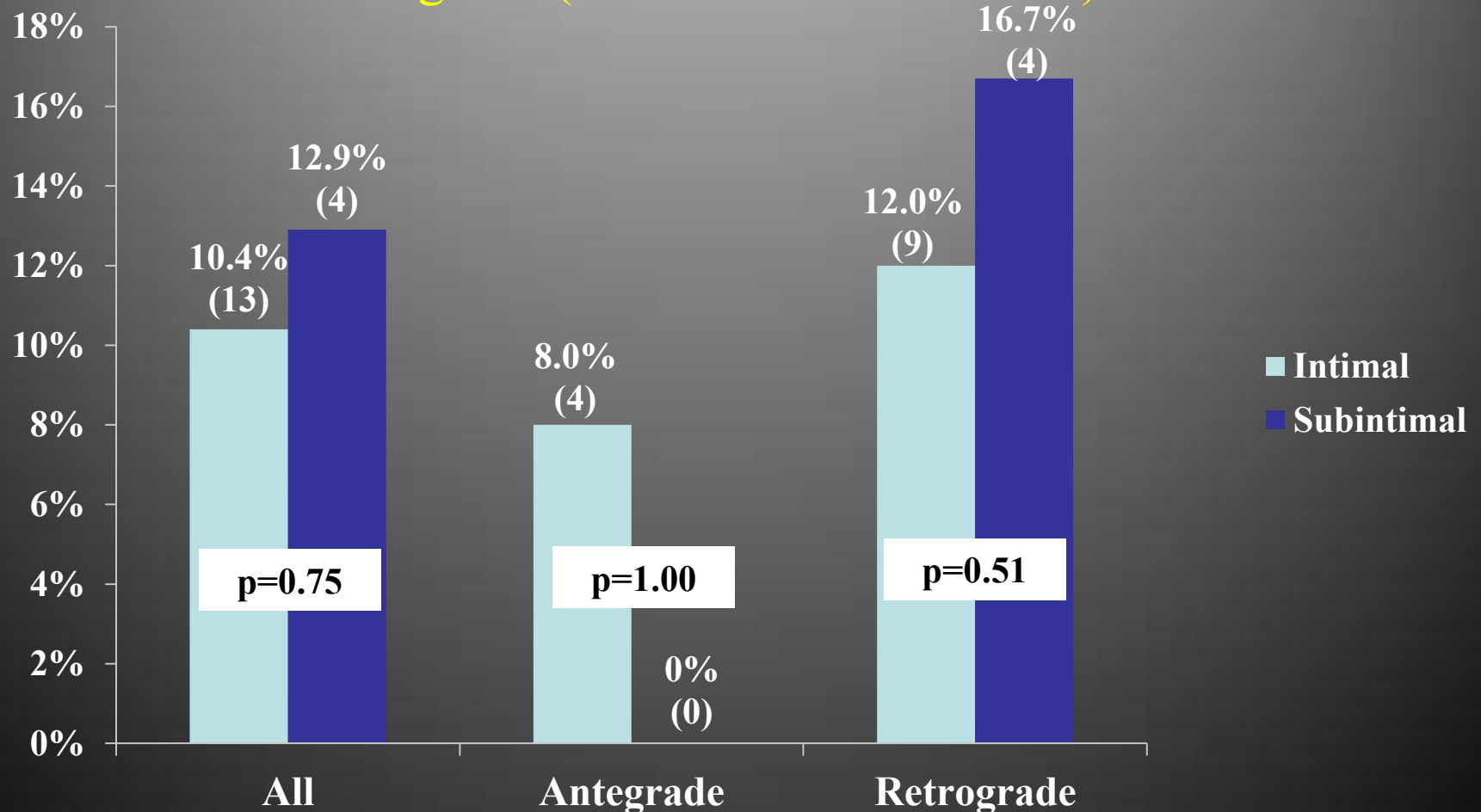


Sub-Intimal Tracking

a = IVUS catheter , b = Sub-Intimal space, c = the Intimal Plaque

TVR at 12 months

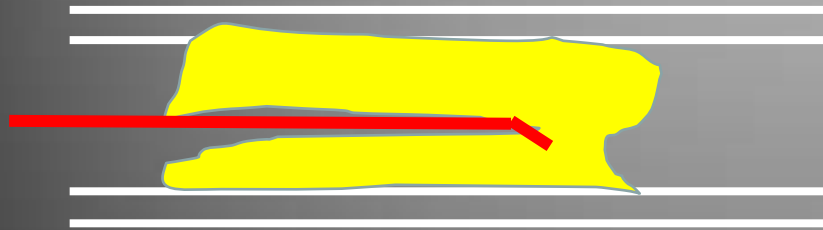
Antegrade (Intimal vs. Sub-intimal)
Retrograde (Intimal vs. Sub-intimal)



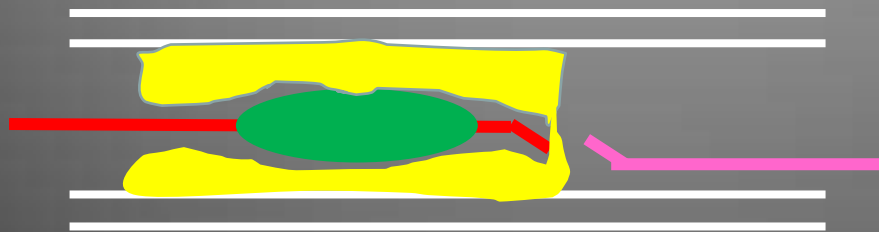
Recent changes of retrograde approach

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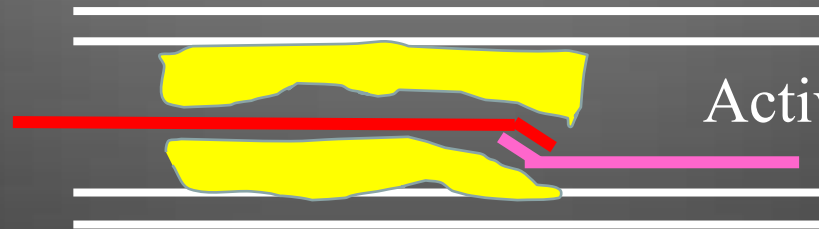
Concept of contemporary r-CART



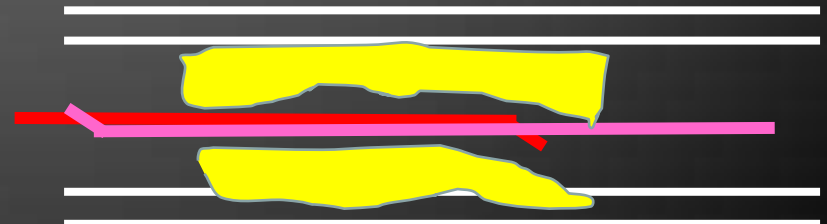
Antegrade GW advance
in the CTO true lumen



Antegrade ballooning in
CTO in the plaque using
small balloon



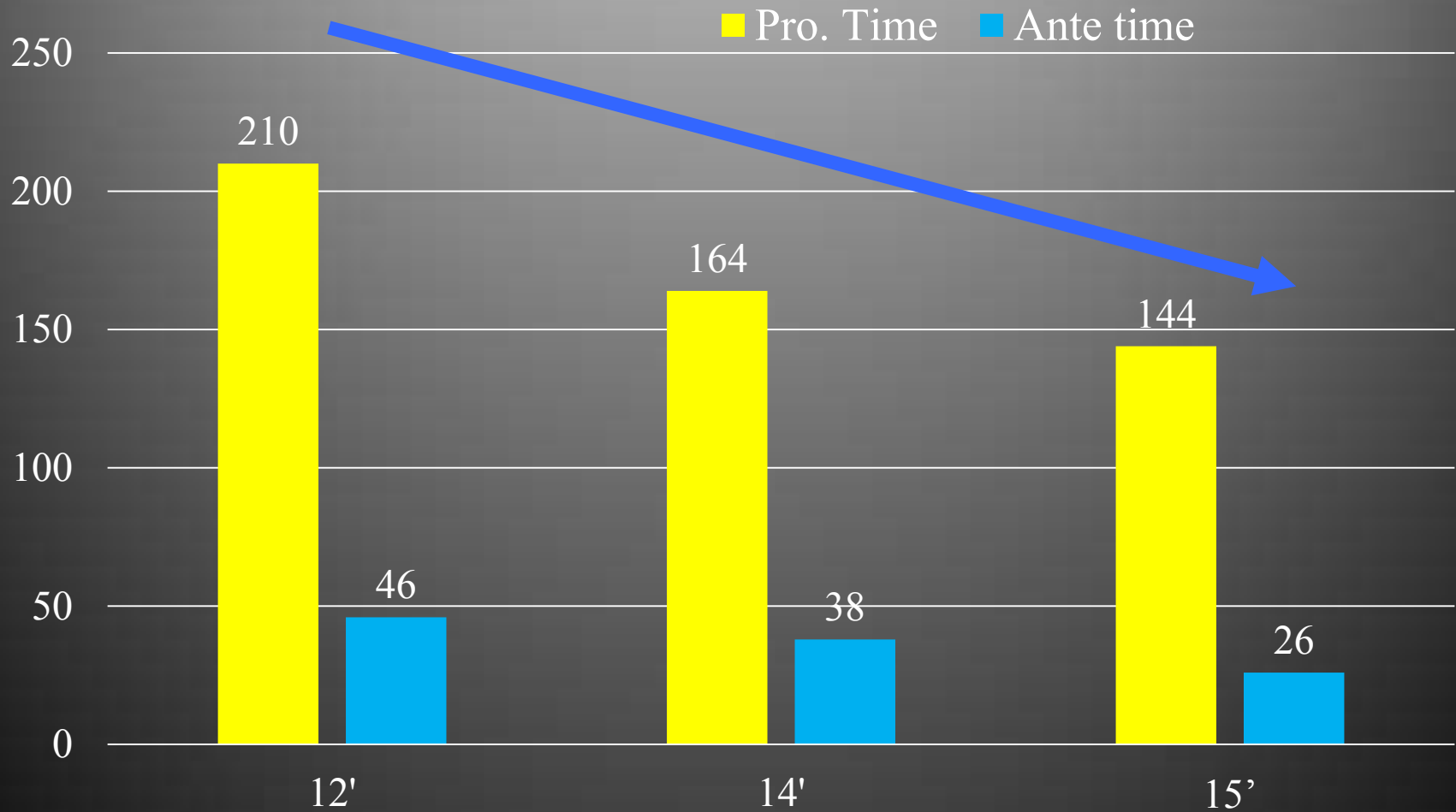
Active controlled wiring
by Gaia series GW



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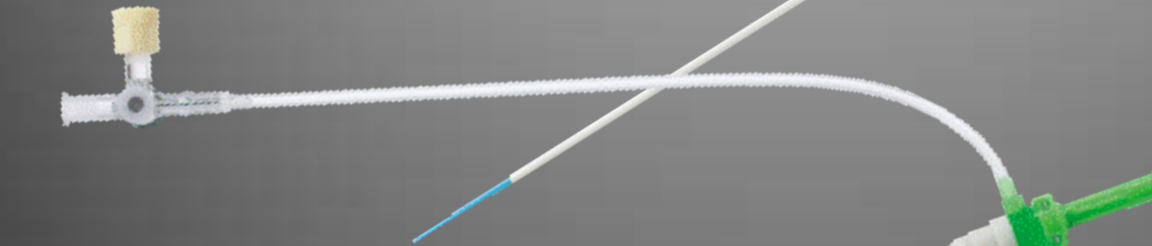
Recent changes of Procedure time



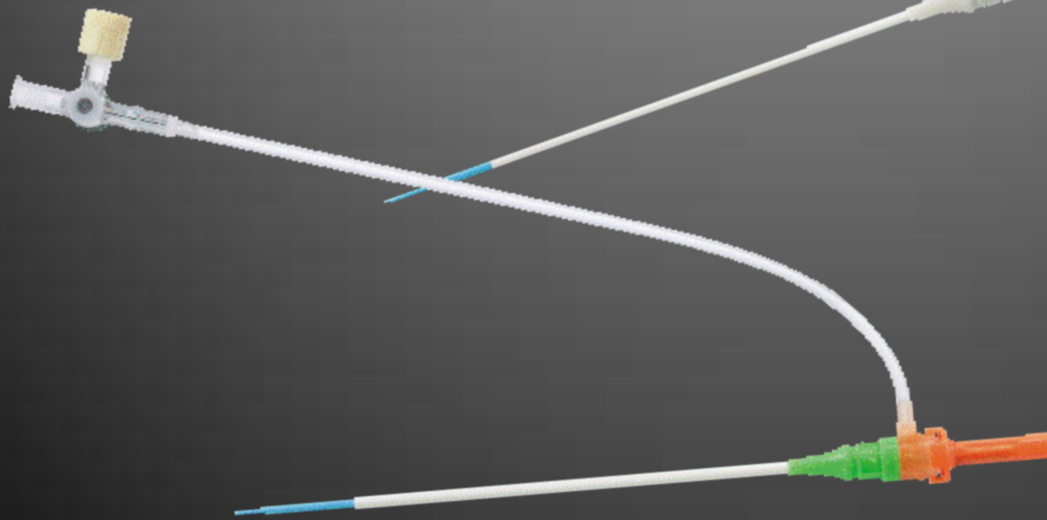
New Glide Sheath



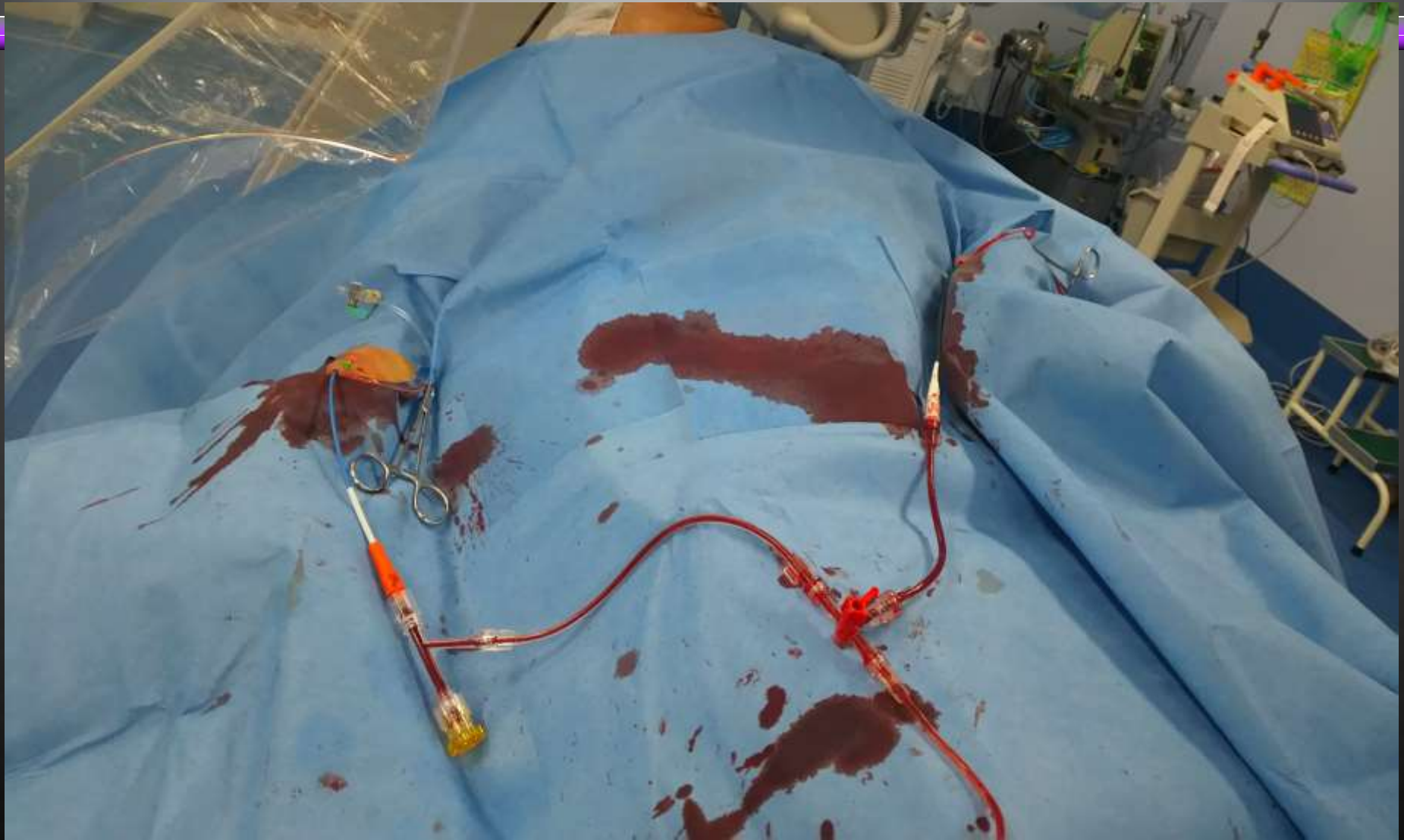
5Fr
Less invasiveness



6Fr
Daily Practice



7Fr
Complex PCI



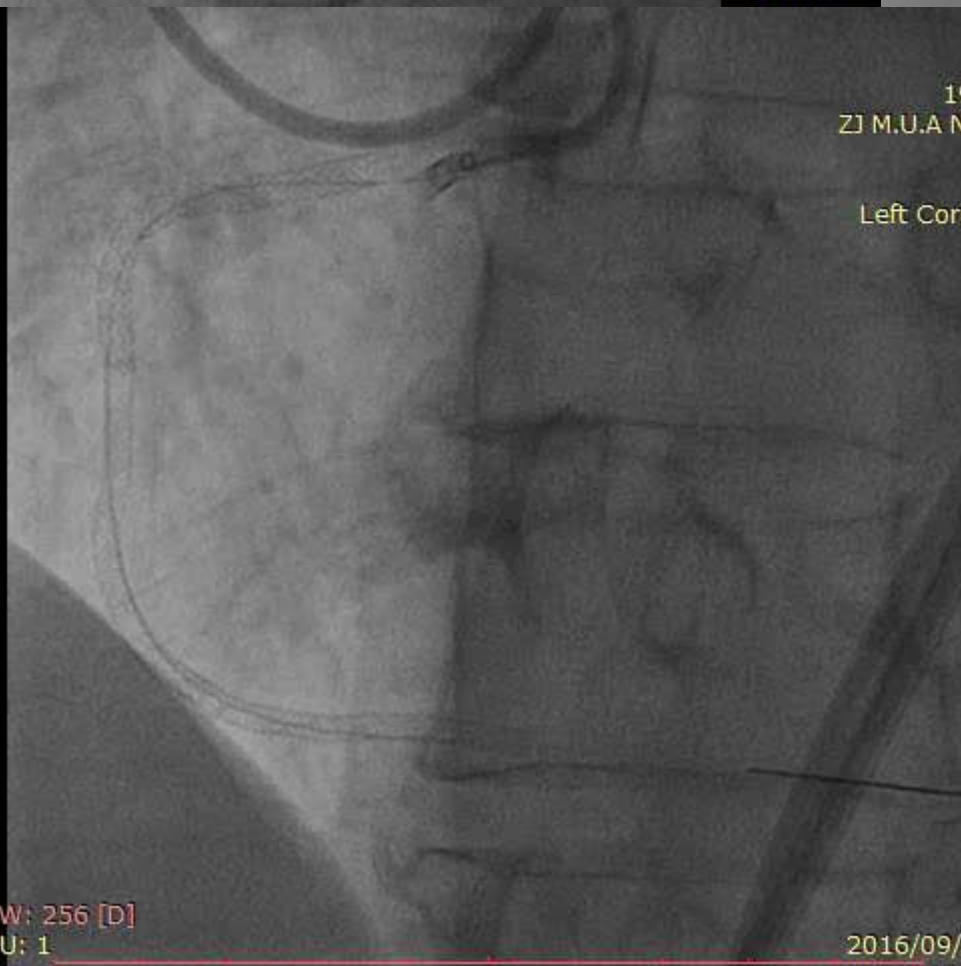
Tokyo General Hospital

Retrograde approach

Im: 1/70
Se: 4

Im: 1/11
Se: 29

Im: 1/ Im: 1/36
Se: 30 Se: 32



lei sheng
08860968
1946/12/15 M
ZJ M.U.A No.2 Hospital
XA00003
Cardiac
Left Coronary 15 fps

WL: 128 WW: 128 W
LAO: 42 CRA: 35 CA
WL: 1; WL: 128 WW: 256 [D]
LAO: 3 LAO: 35 CAU: 1

2016/09/24 12:35:24

Bail out Coronary perforation by balloon covered stent

Im: 1/42 Im: 1/1 Im: Im: 1 Im: Im: Im: 1/81
Se: 35 Se: 36 Se: Se: 4 Se: Se: Se: 56

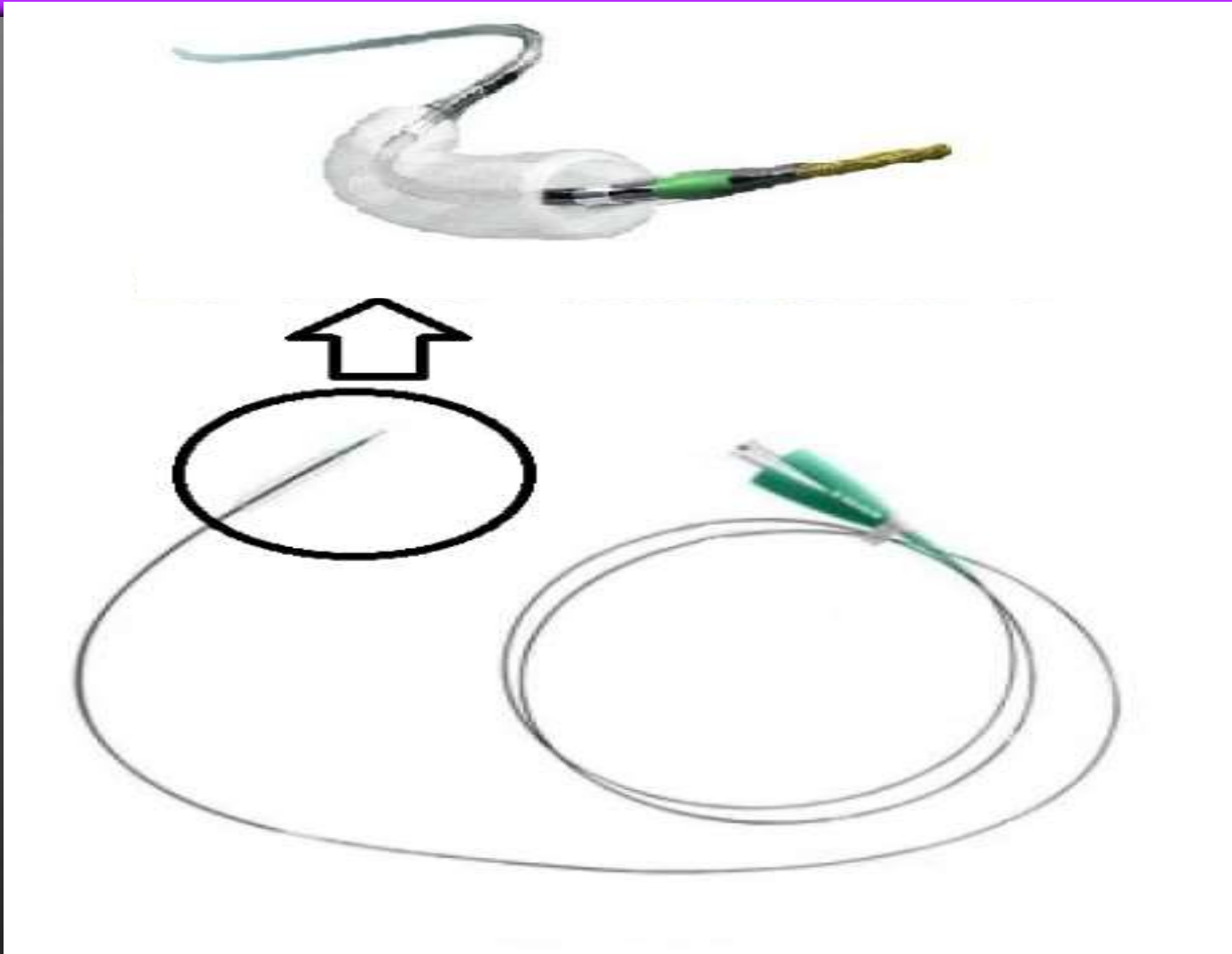
lei sheng
08860968
1946/12/15 M
ZJ M.U.A No.2 Hospital
XA00003
Cardiac
Left Coronary 15 fps



WL: 128 WL: 12 WL WL: : WL: WL: WL: 128 WW: 256 [D]
LAO: 35 LAO: 3 LAC LAO: LAO LAO LAO: 29

2016/09/24 15:02:16

Balloon covered stent



Conclusion

- 1. New light weight GW is promising to cross tortuous collateral channel**
- 2. It is important how to overcome tortuous epicardial channel**
- 3. Contemporary r-CART is new concept**
- 4. Knuckle wiring is helpful for calcified, long, bent CTO lesion**
- 1. Less invasive strategy will be needed**