Heavy Calcified SFA Lesion:
How to Cross with Wire and Balloon

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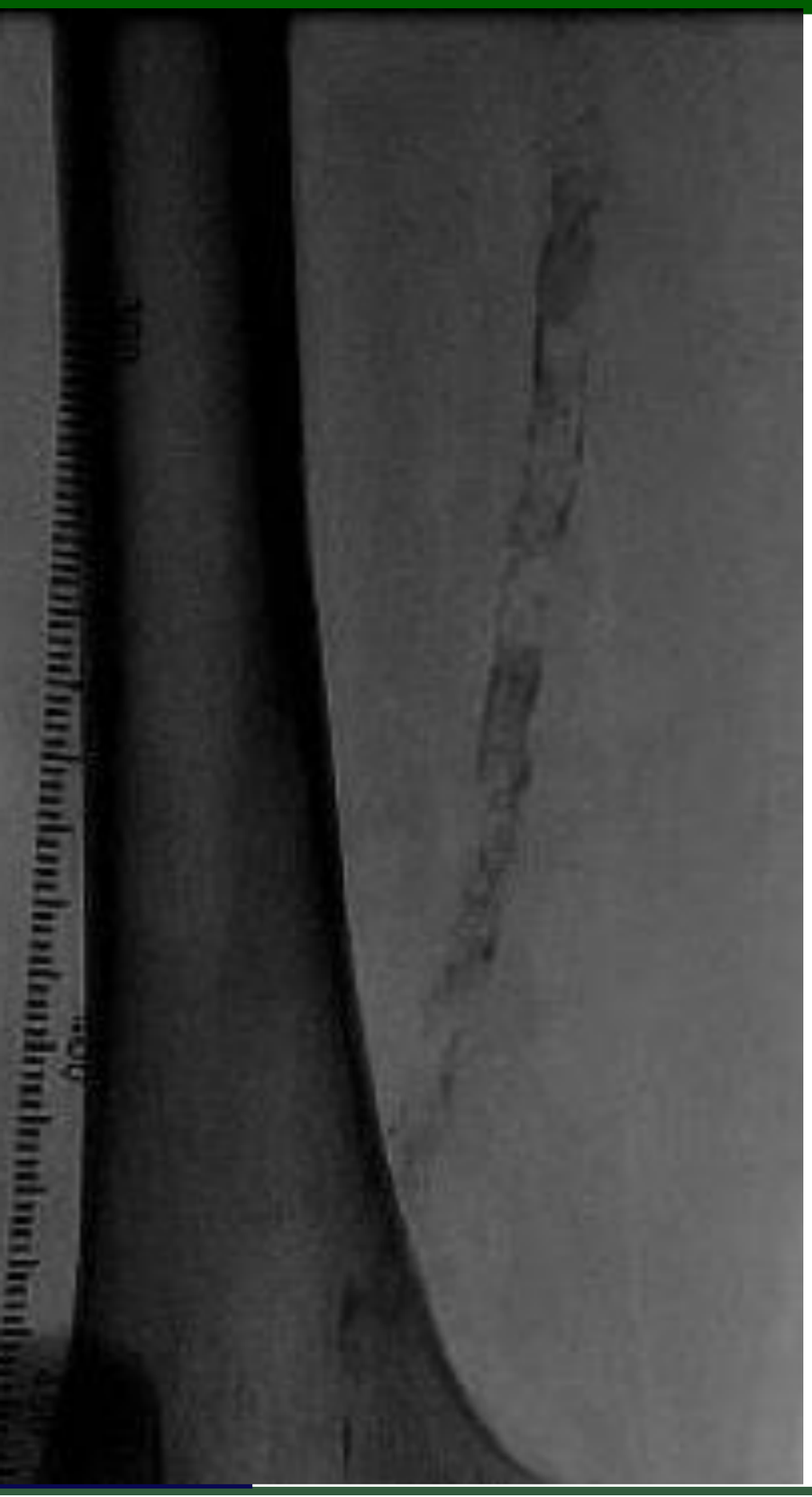
Vascular Calcification is been a big challenge



Limits of

1) Acute Procedural Success

2) Acute Device Success

3) the Clinical Durability of the intervention

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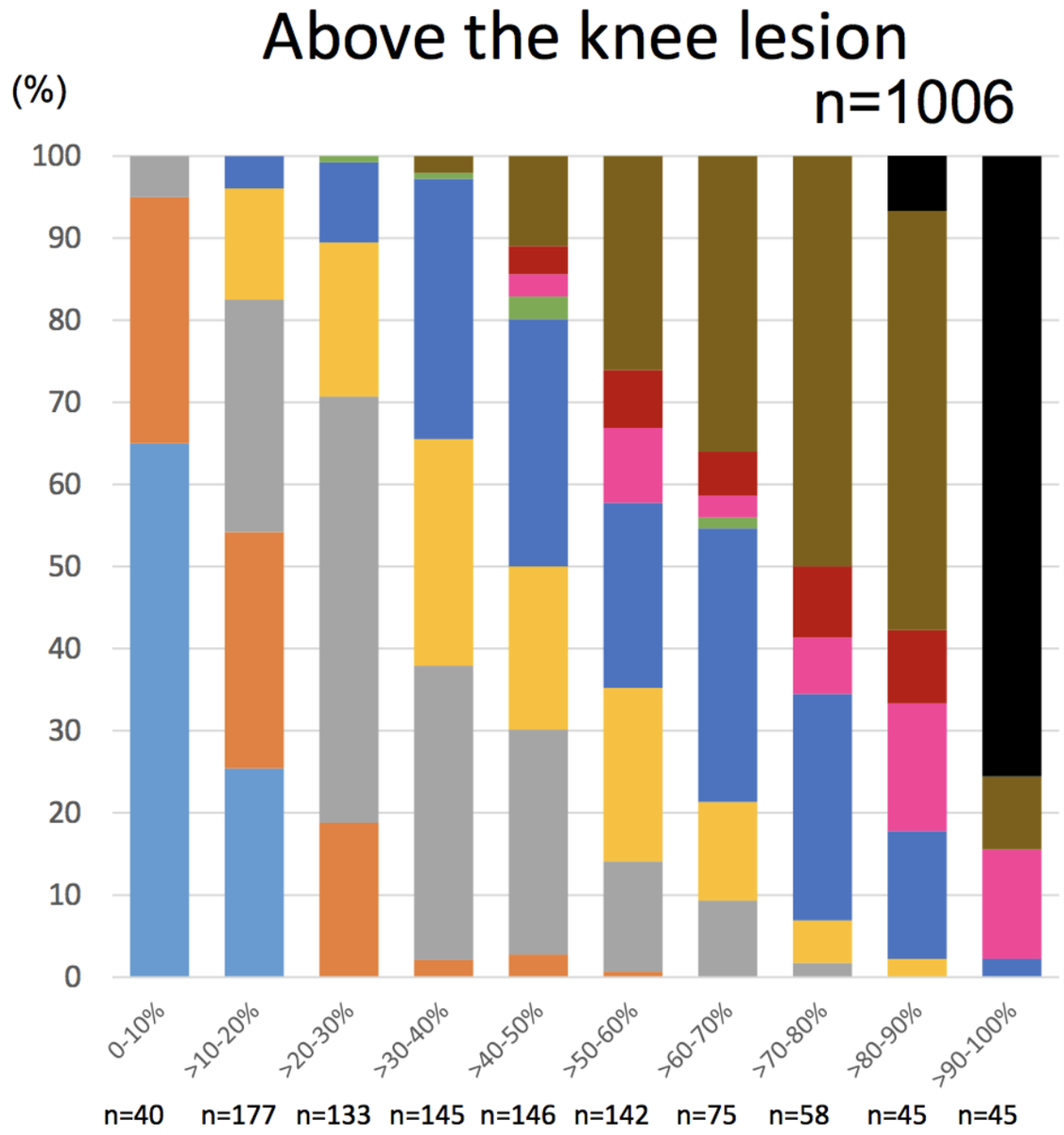
The Relationship between % stenosis & plaque type



MORE
COMPLEX
MORE
CAICIFICATION

AIT PIT Fibrous Plaque Fibroatheroma Fibrocalcific plaque TCFA

Rupture Calcified Nodule Healed Rupture/Calcified Nodule/Erosion CTO

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Torri S. JACC Imaging 2018

Vascular Calcification Risk Factors

Risk Factor	Intimal/Atherosclerotic calcification	Medical/Monckeberg's calcification
Dyslipidemia	Yes	No
Advanced Age	Yes	Yes
Elevated BP	Yes	Medial lesions worsen BP
Male gender	Yes	No
Smoking	Yes	No
Inflammation	Yes (Local)	Yes (Systemic Mediators)
DM	Yes	Yes
Reduced GFR	No	Yes
Hypercalcemia	No	Yes
Hyperphosphatemia	Yes	Yes
PTH abnormalities	No	No
Vit. D administration	No	Yes
Duration of Dialysis	No	Yes

Goodman WG et al. Am J Kid Dis. 2004 : 572-579

Way to Overcome the Calcium

Hardware

- Hard Wire
- Microcatheter
- Cutting Balloon
- Noncompliant balloon
- Atherectomy
- Drug eluting stent

Software

- Retrograde Access
- Strategies
- Experience
- Confidence
- Brave Heart

1. WIRE PASSAGE

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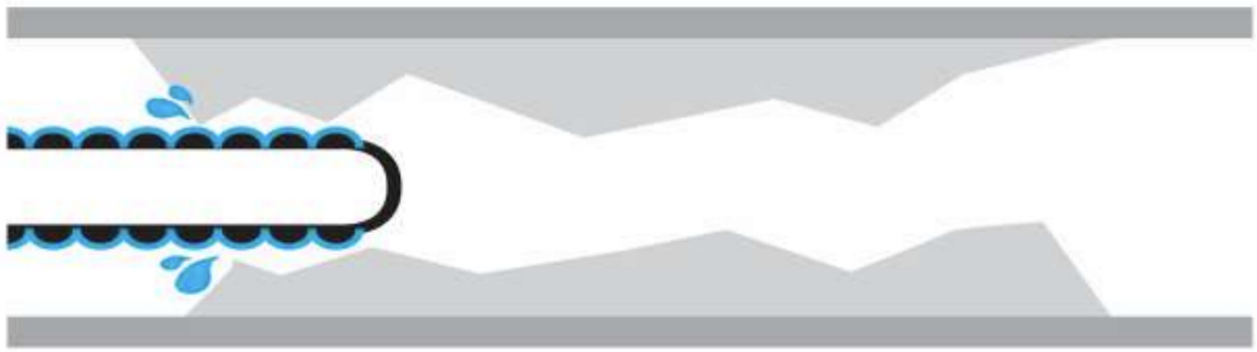
Wire Coating is Important

Hydrophobic = wax-like when wet

Provides tactile feedback

Hydrophilic = gel-like when wet



Slide through vessels + lesions

Hybrid Coating = Tactile feedback with hydrophilic performance

Halberd, Gaia PV, Astato series

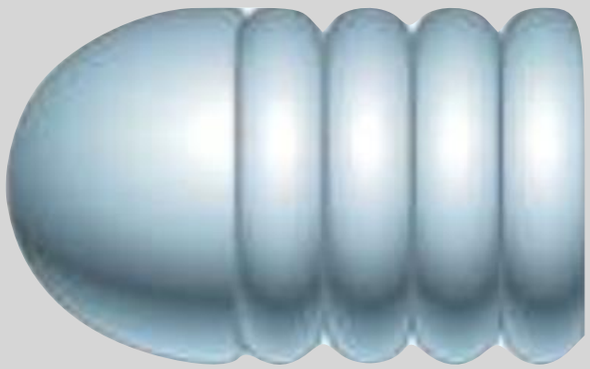
Polymer Jacket = gel-like & smooth (Lubricious)

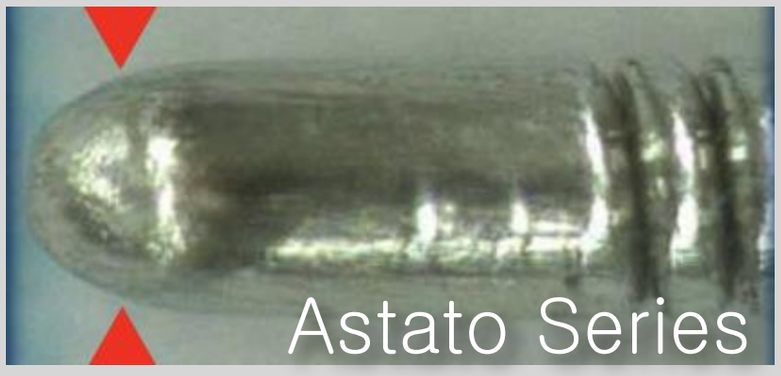
Regalia, Gladius, Command V14/18, Victory

Tracks / slides through tortuous vessels and heavily calcified lesions / micro-channels – reduces friction.

Tip End Design is Also Important

Plain Ball Tip

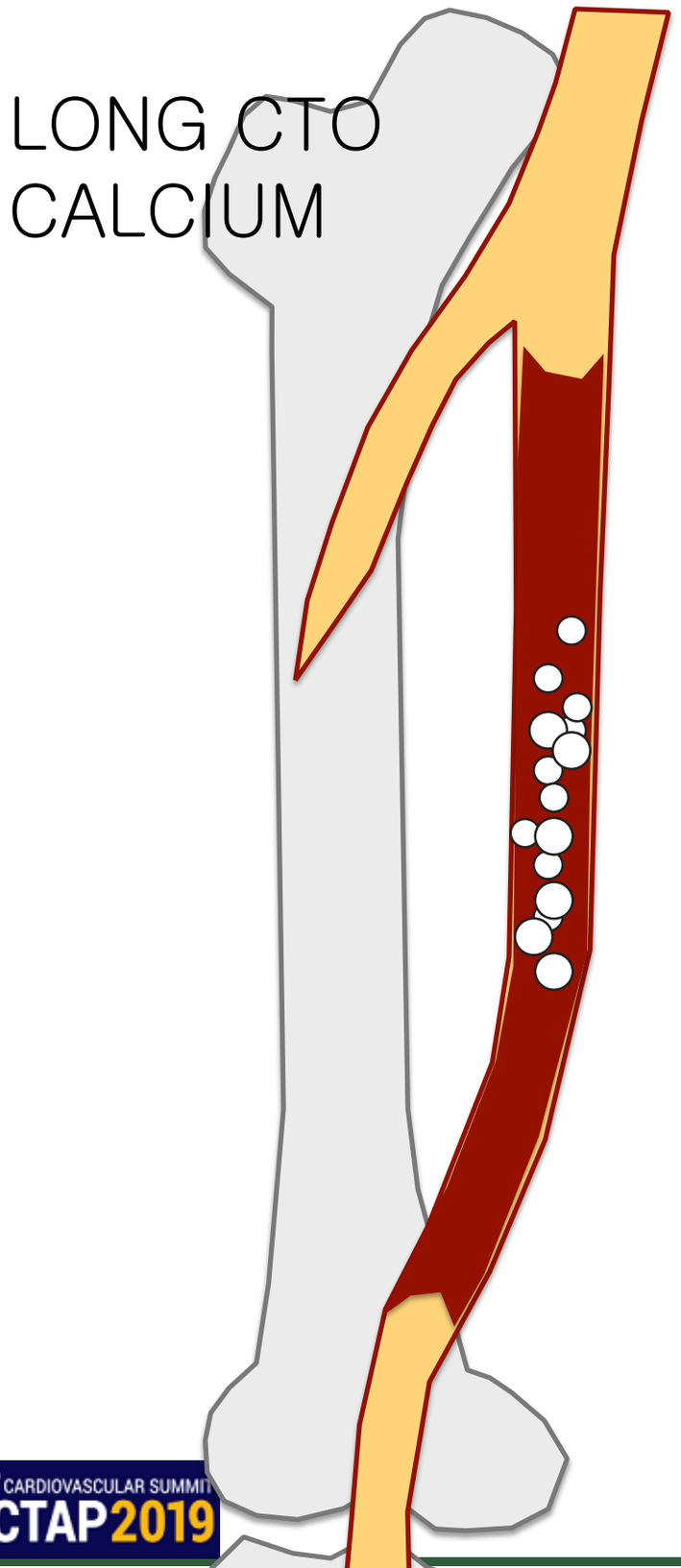




Micro-cone Tip

Strategy is also important

LONG CTO
CALCIUM



INTRALUMINAL

- Proximal Cap Penetration
- Follow micro-channels
- Delivery of Devices

→
- Penetrating wires
- Drilling wires
- CTO wires

SUBINTIMAL

- Re-entry Difficulties

→
- Durable Wires

Platform?

0.035

- Aggressive, Big Loops, Big Dissections, Big Profiles

0.018

- Good Support and Rail Power
- Lower Profile
- More Compatible SFA Devices
- Suitable for popliteal & proximal BTK artery
- Smaller Loops,

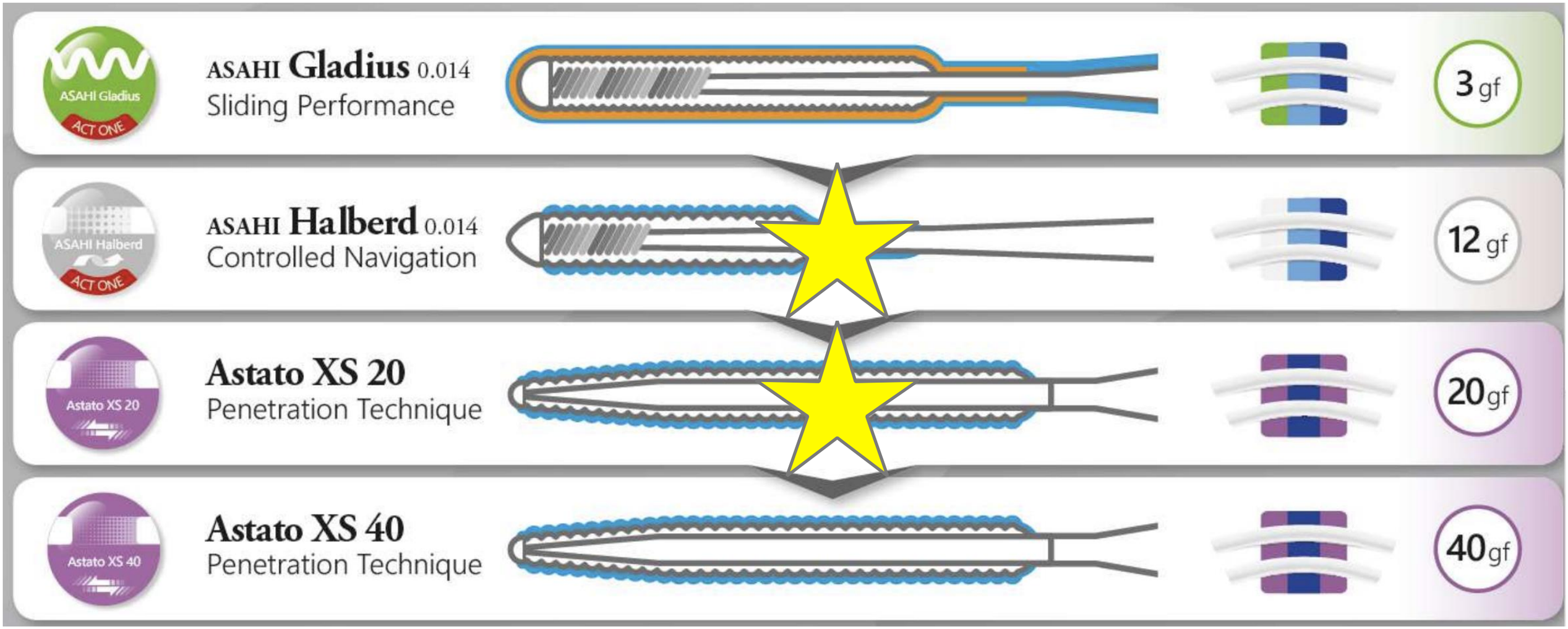
0.014

- Lack of Support, Weak Penetration power, Less compatible SFA devices
- Precise Controllable, Familiar to Interventinal Cardiologist

0.018 Wires for SFA

		TUBE CLIP	TIP LOAD
ASAHI Gladius ACT ONE	**ASAHI Gladius** 0.018 Sliding Performance		4 gf
ASAHI Halberd ACT ONE	**ASAHI Halberd** 0.018 Controlled Navigation		12 gf
Treasure 12	**Treasure 12** Controlled Drilling		12 gf
ASAHI Gaia PV ACT ONE	**ASAHI Gaia PV** Torque & Tip Flexibility		7.5 gf
Astato 30	**Astato 30** Penetration Technique		30 gf

0.014 Wires for SFA



2. TROUBLE SHOTTING

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Already we have many IDEA from CTO PCI

CTO-PCI

Antegrade Approach

Retrograde Approach

IVUS guided Reentry

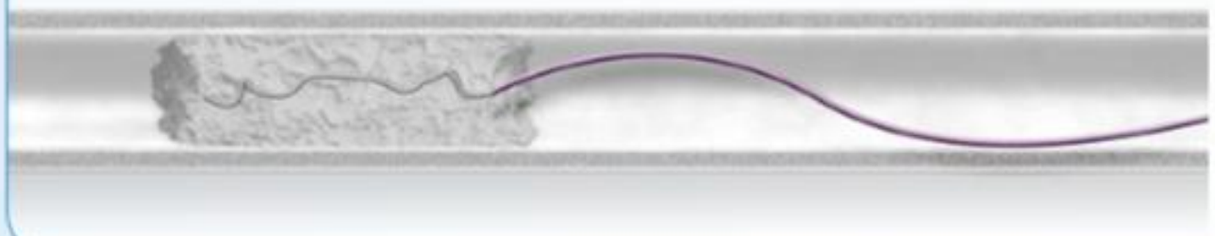
SUCCESS

FAILURE

- Single Wire Technique
- Parallel Wire Technique
- IVUS guide identification of the
- Retrograde Wire Cross
- Kissing Wire Cross
- CART
- Reverse CART

Trouble Shooting

Tip enters lesion but wire fails to follow + Wire body curves and buckles



Friction
- Increase Lubricity
- Decrease Diameter

and or

Push
- Increase Wire Rail Support
- Increase Wire Support by adding a Support Catheter

Tip fails to enter lesion – Wire tip buckles against lesion

Penetrating power
- Increase Tip Load
- Decrease Wire Tip Diameter
- Focus tip force by adding a support Catheter

or

Exchange for a Crossing Device
- Mechanically breakthrough the lesion

Wire enters Subintimal space but fails to re enter true lumen

Change Support to the wire tip
Change catheter shape will provide backup support

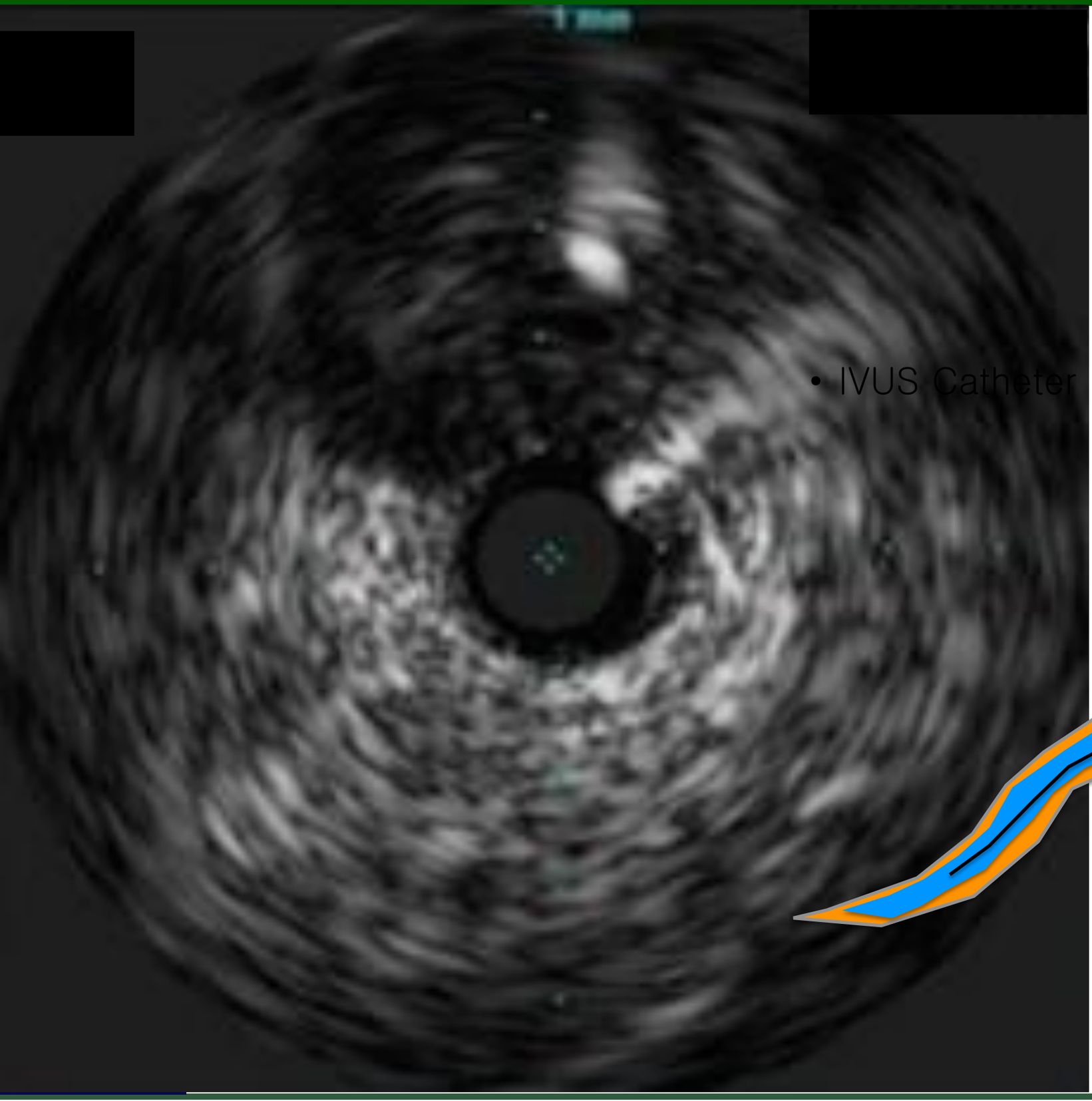
and

Try different wire types
Smaller wires, stiffer tips, different torque control

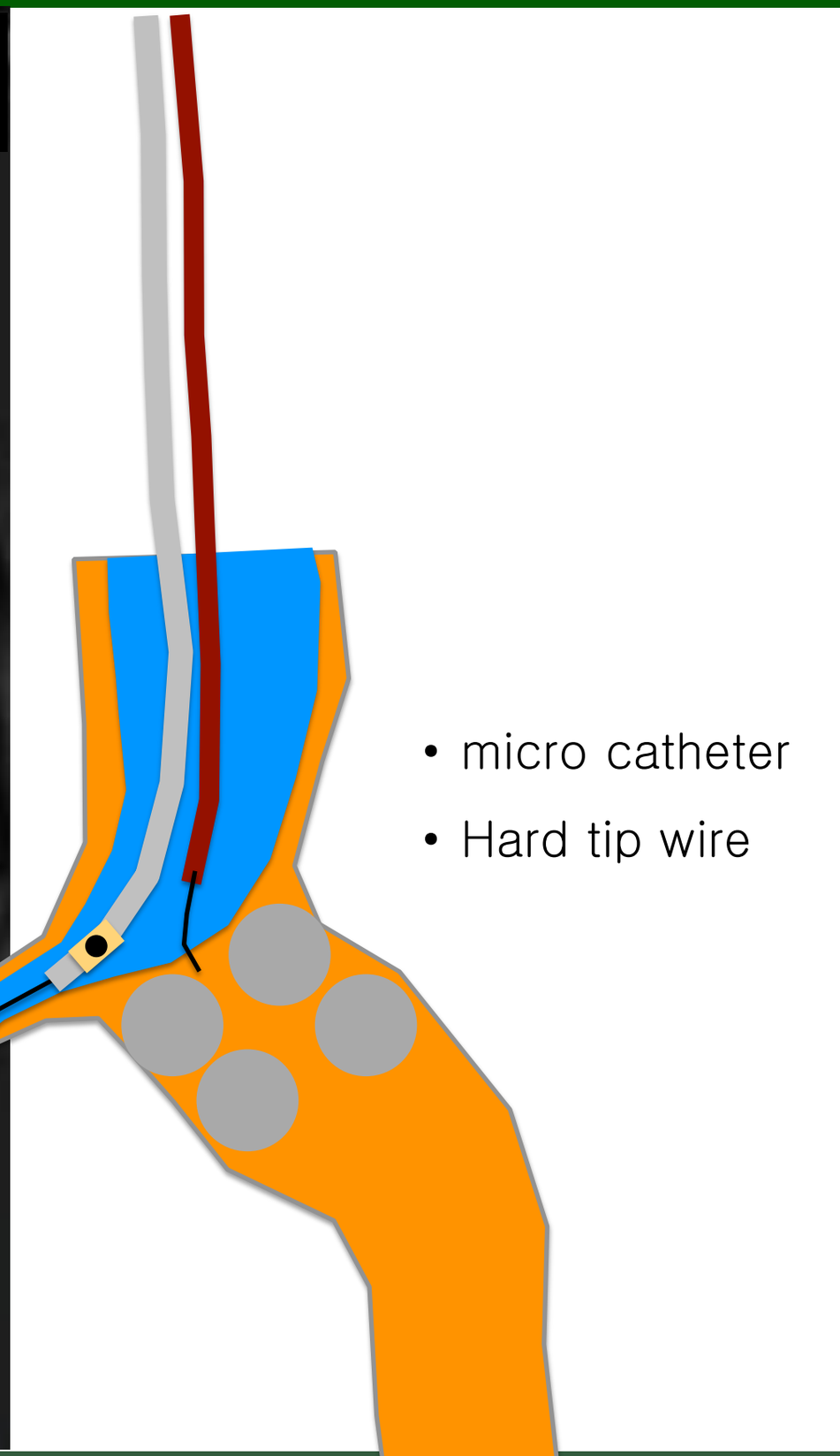
or

Use a Re entry device
To provide direction and to puncture back into the true lumen allowing wire to re enter

Bailout Wire Technique : IVUS guided



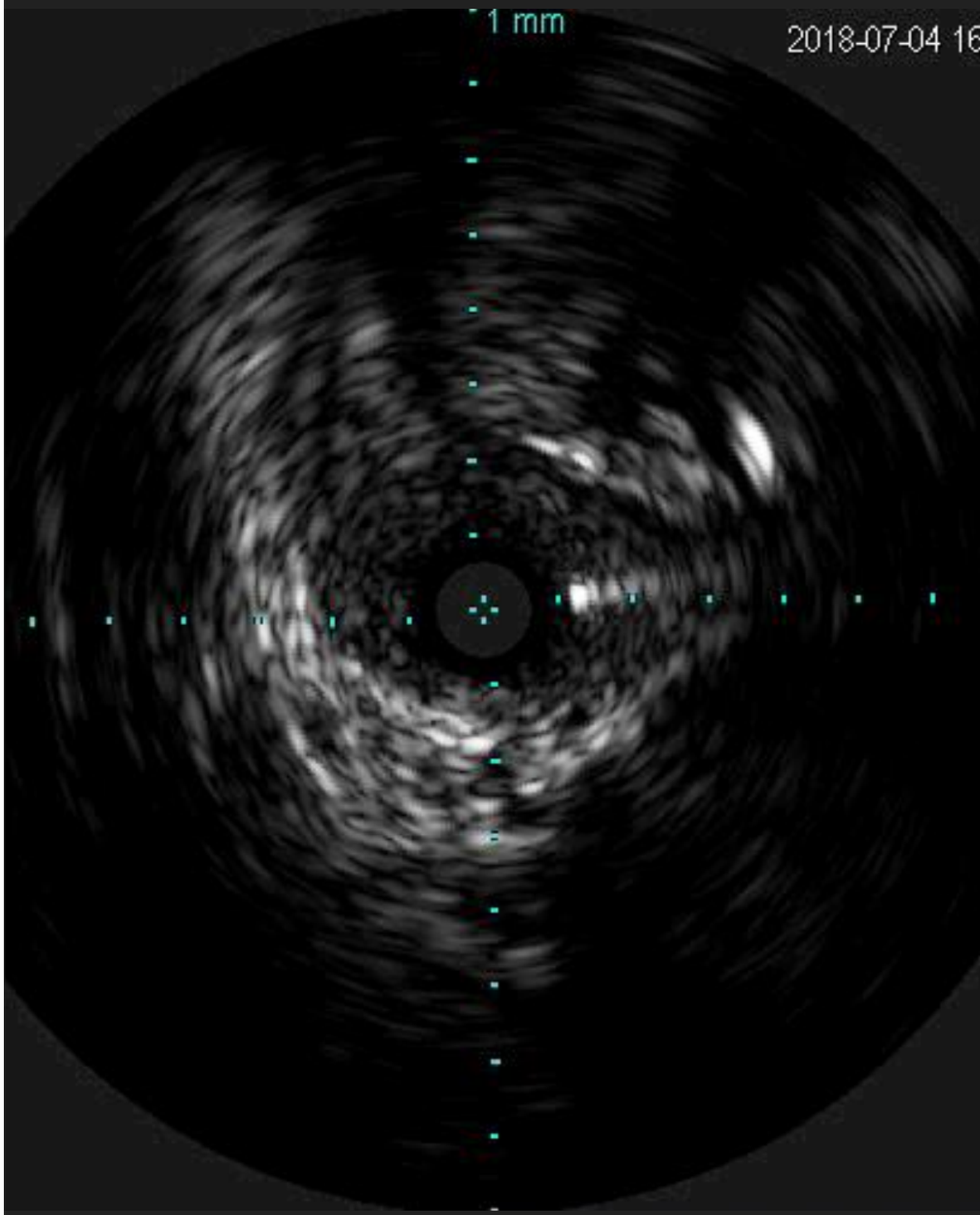
- IVUS Catheter



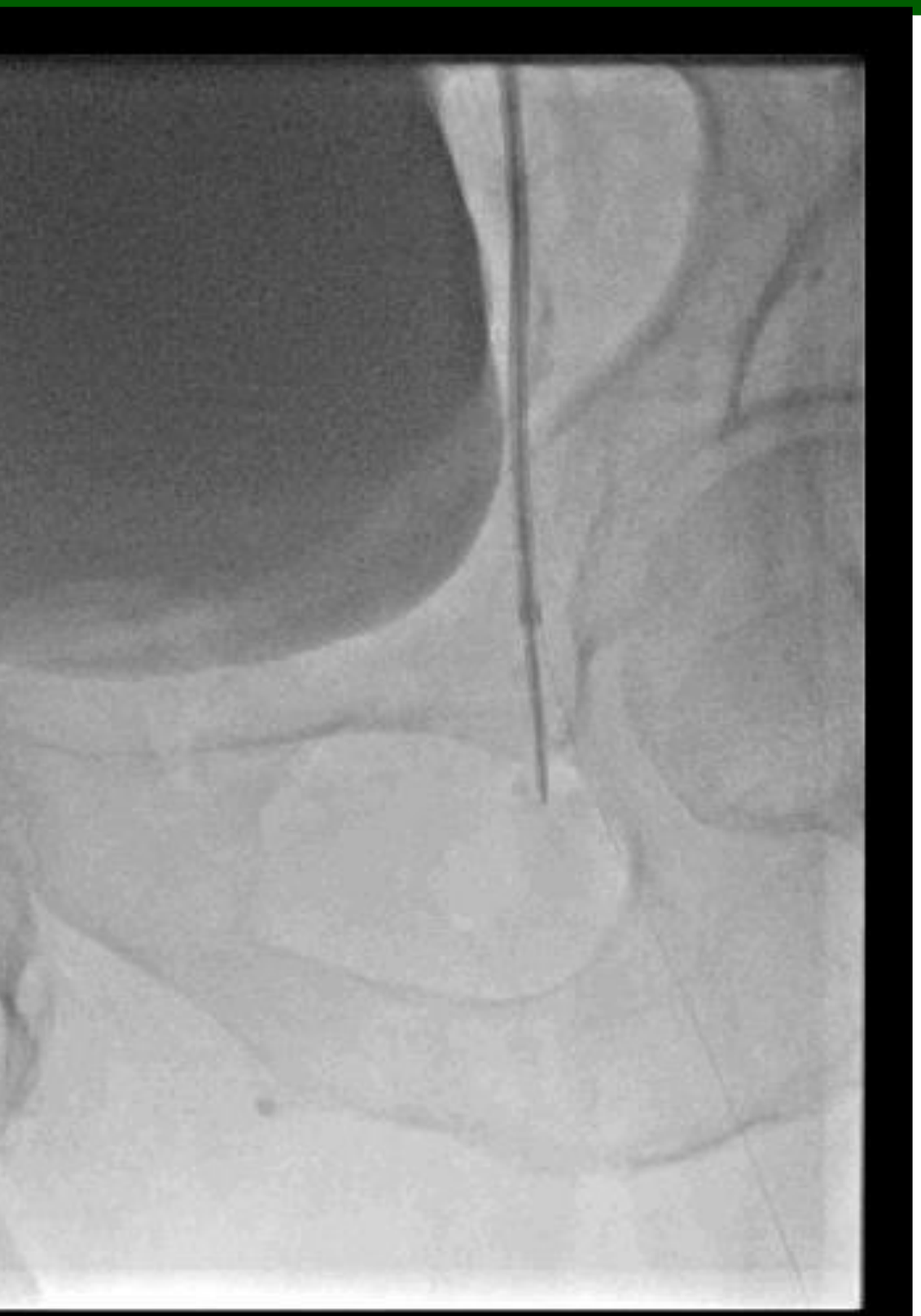
- micro catheter
- Hard tip wire

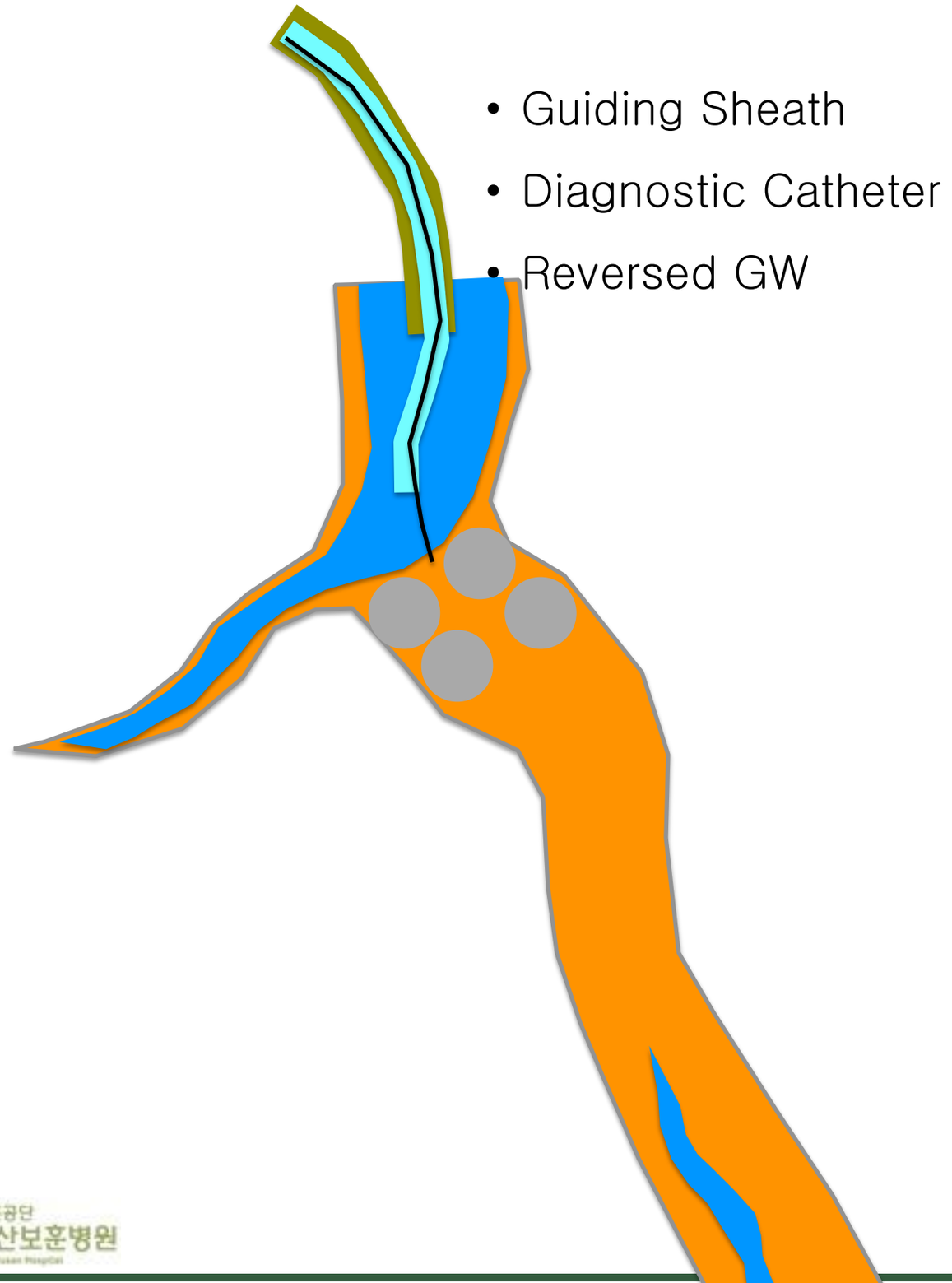
- Anterior IVUS guided
- Antegrade, CXI, Astato XS 20g

- Anterior IVUS guided
- Antegrade, CXI, Astato XS 20g



Bailout Wire Technique : Reversed GW





- Guiding Sheath
- Diagnostic Catheter
- Reversed GW

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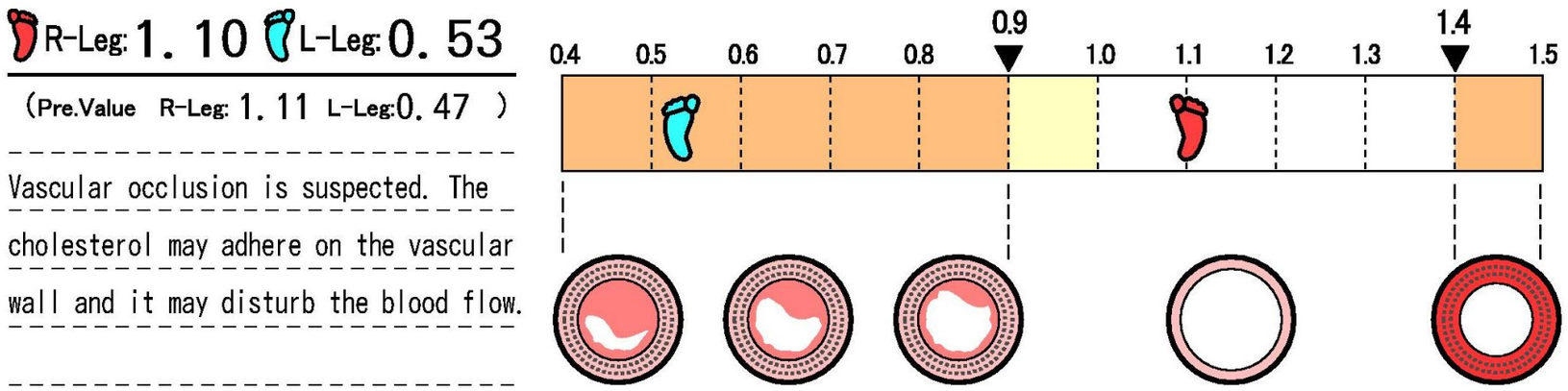
CASE : reversed GW & Reentry with Hard GW

- 73 YO Male
- Left Claudication for 9 months
- 3 YA & 1.5 YA Smart stent at mSFA, 1

  Suprea at dSFA, 1 Supera stent at pSFA, 1

  Supera at PA(P2)
- Total occlusion from L-osSFA to P2



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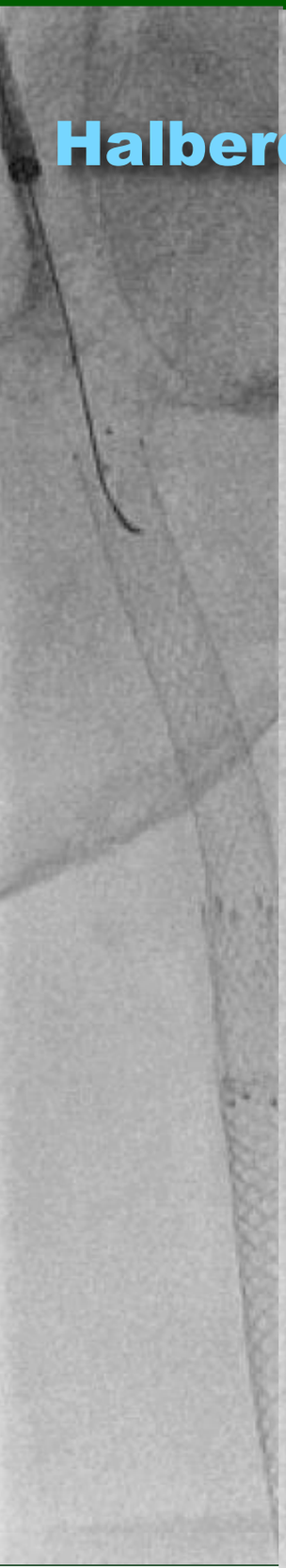
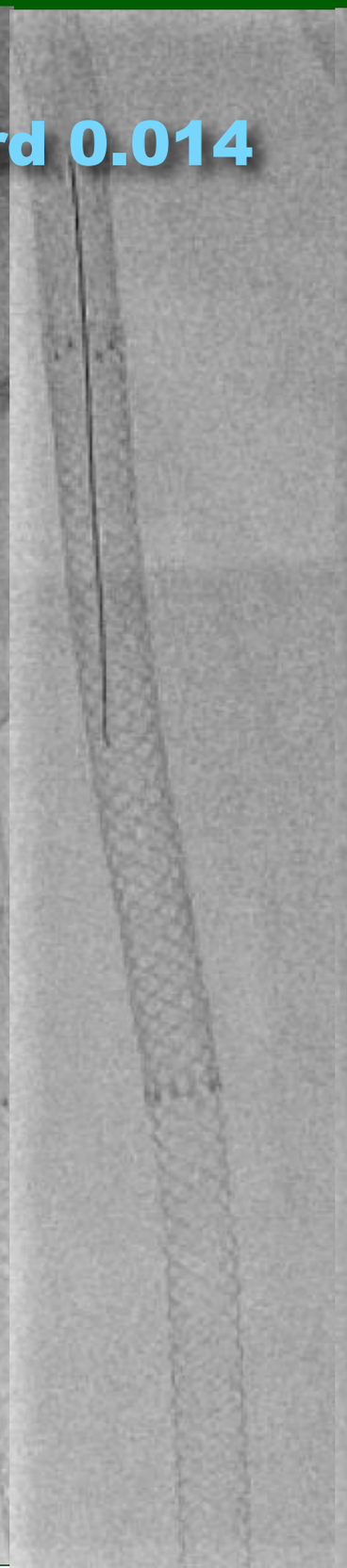
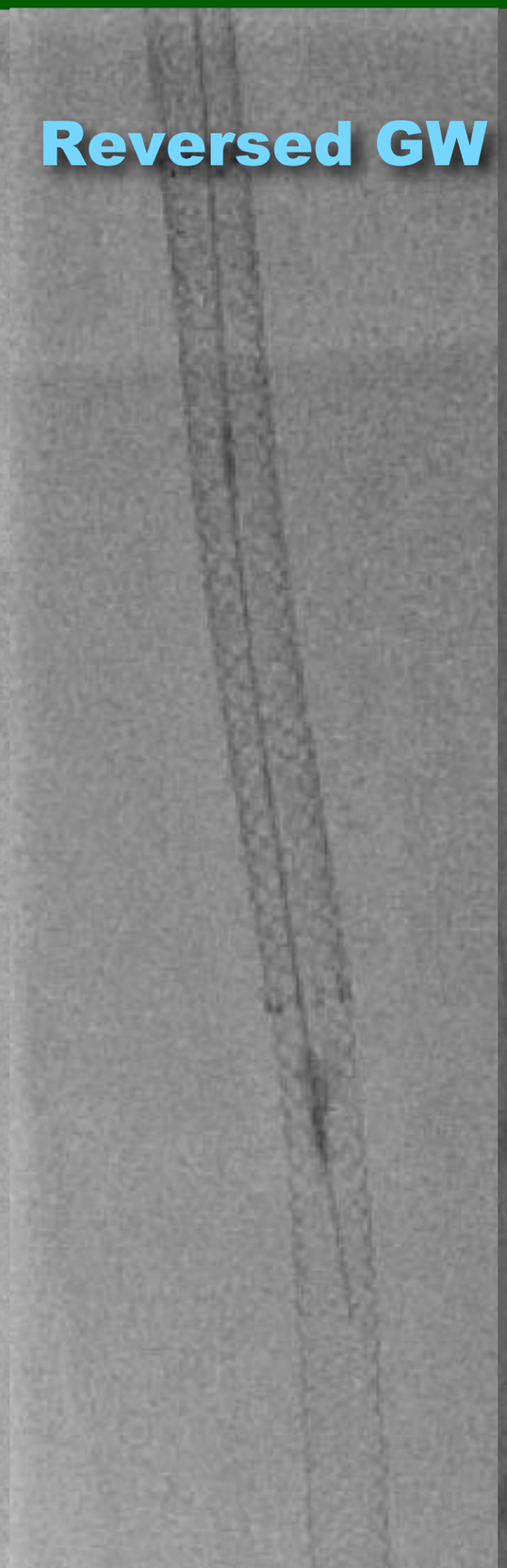
CASE : reversed GW & Reentry with Hard GW



Halberd 0.014

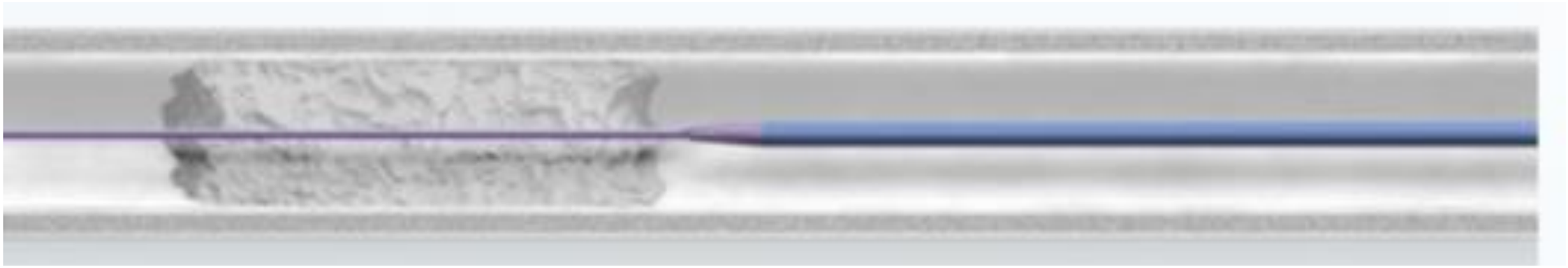




Reversed GW

Astato XS 20g

After Passing the GW, No Device can cross



Profile

- Smaller Wire Platform
- Lower Profile Devices

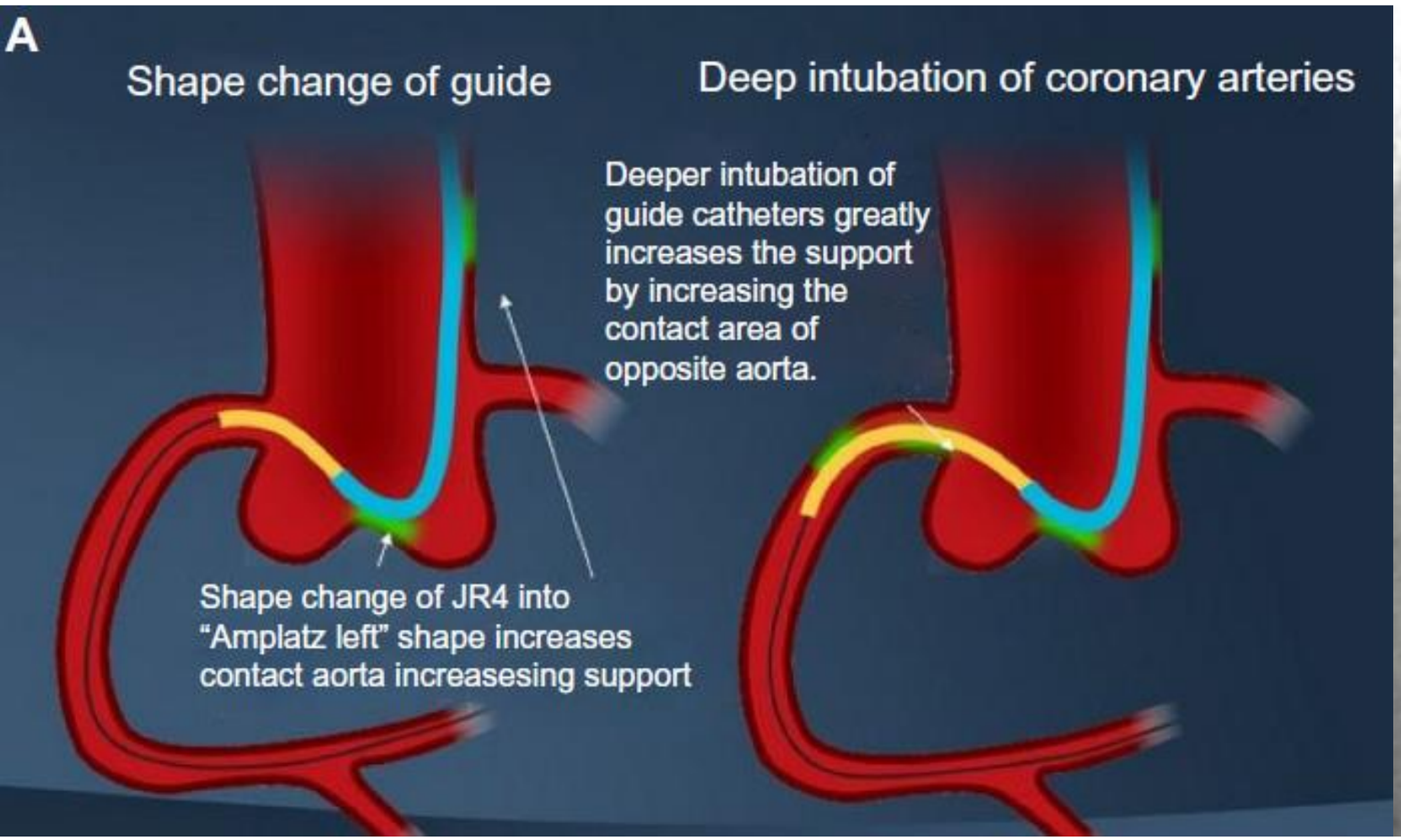
Support

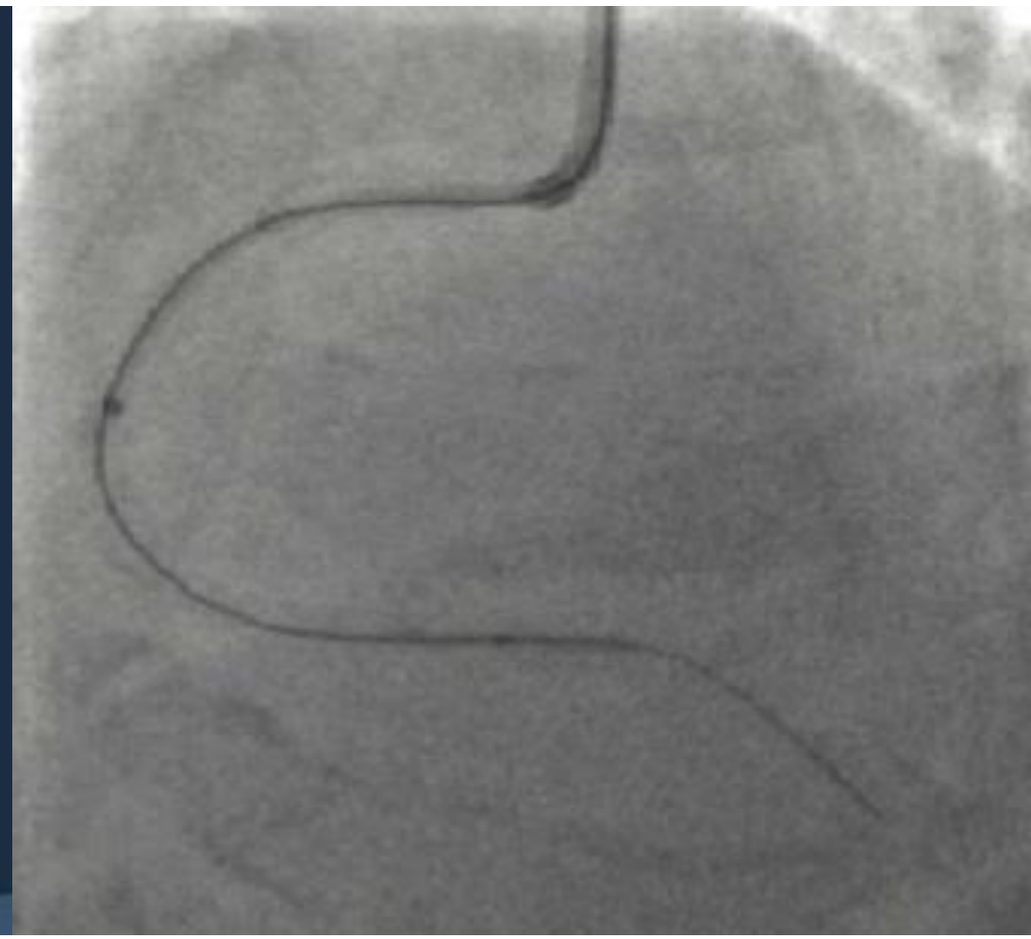
- Increase Wire Rail Support
- Increase Wire Support by adding a Guiding Catheter

After Passing the GW, No Device can cross

- Ipsilateral Antegrade Approach >> Contralateral Approach
- Bigger Sheath
- Sheath Advancement nearest the lesion
- Balloon assisted microdissection with the most slender devices : Armada XT OTW balloon
- Mother & Child Tech. using Guideziller/Guideliner
- Bidirectional Access via Retrograde Approach
- Simultaneous movement of both GW & Balloons : BADFORM tech.
- Piercing Technique : Needle Cracking
- Massage Technique

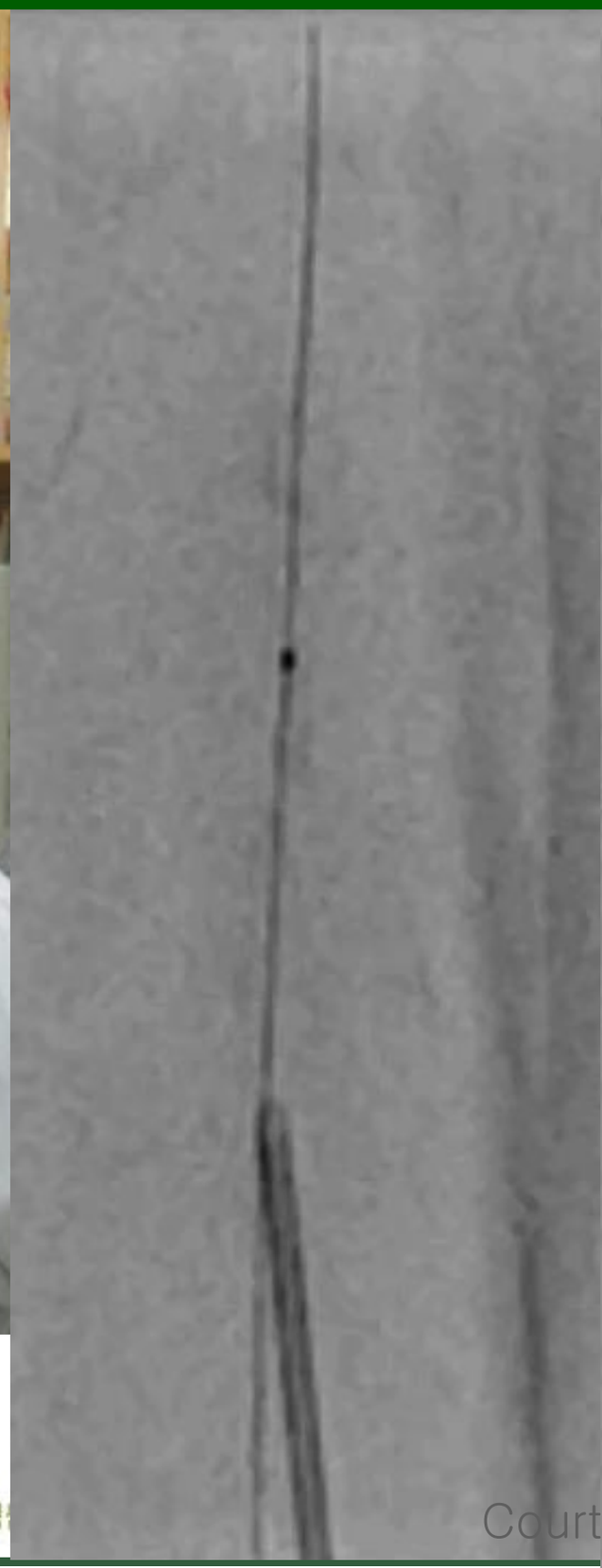
Mother & Child Technique

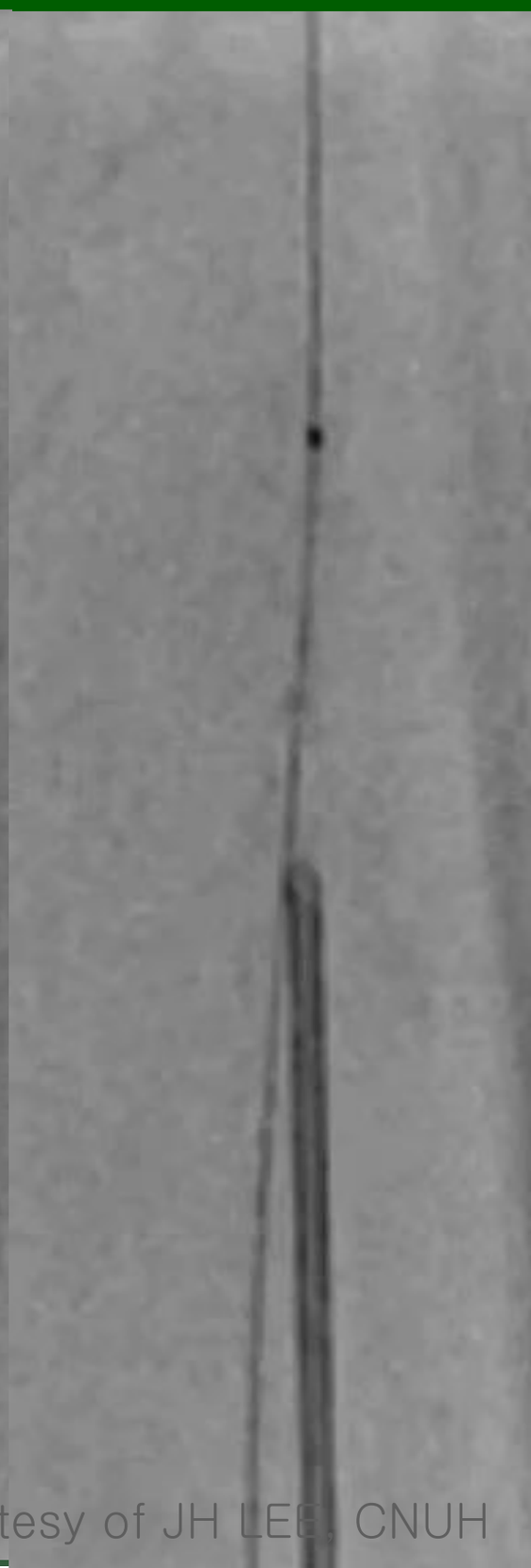




Needle Cracking (Piercing) Technique

Tomoyasu Sato, Japan

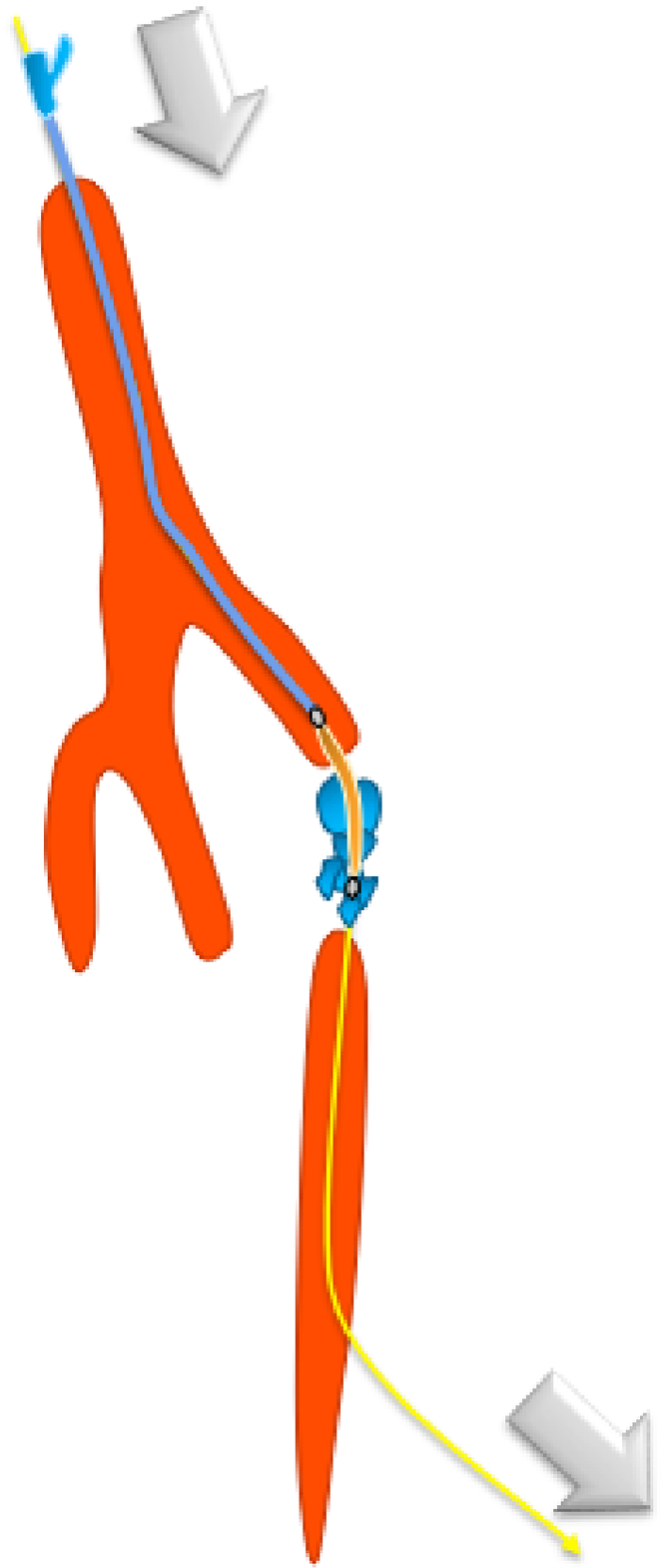




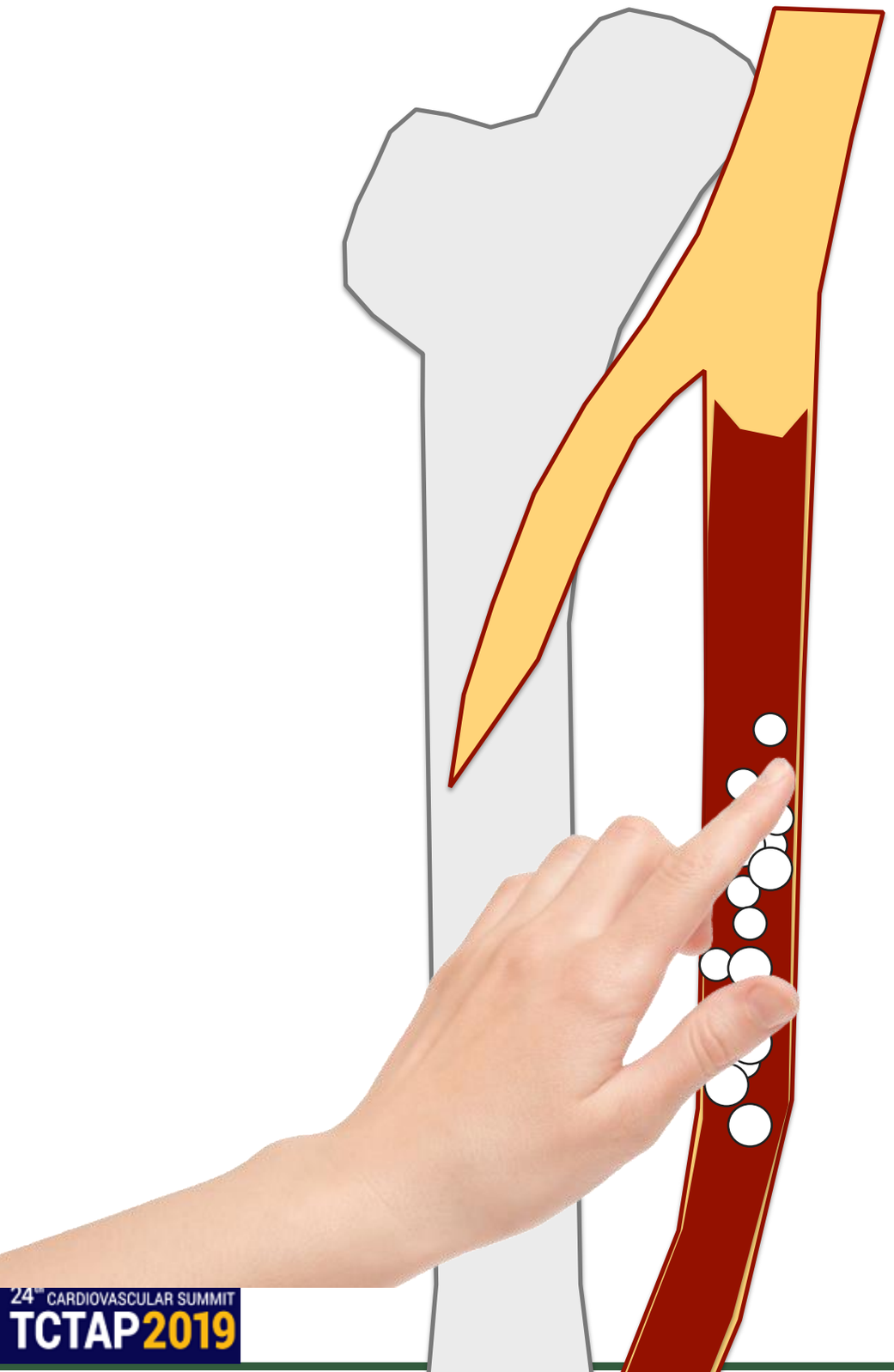
Courtesy of JH LEE, CNUH

BAD-FORM (BAlloon Deployment using FORcible Manner)

Hiroshi Ando, Japan



Massage



Summary

- 0.018 or 0.014 inch GW are important for FP disease intervention
- Must know the performance of the familiar guide wires
- Should be familiar to the trouble shooting techniques
- Should be familiar to the bail-out technique for the calcified femoral artery disease
- Must have the brave heart & confidence for the calcified femoral artery intervention

Many Thanks for UR Attention

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