PAUL HSIEN-LI KAO, MD
PROFESSOR OF MEDICINE
NATIONAL TAIWAN UNIVERSITY HOSPITAL

Retrograde Channel Selection and Wiring

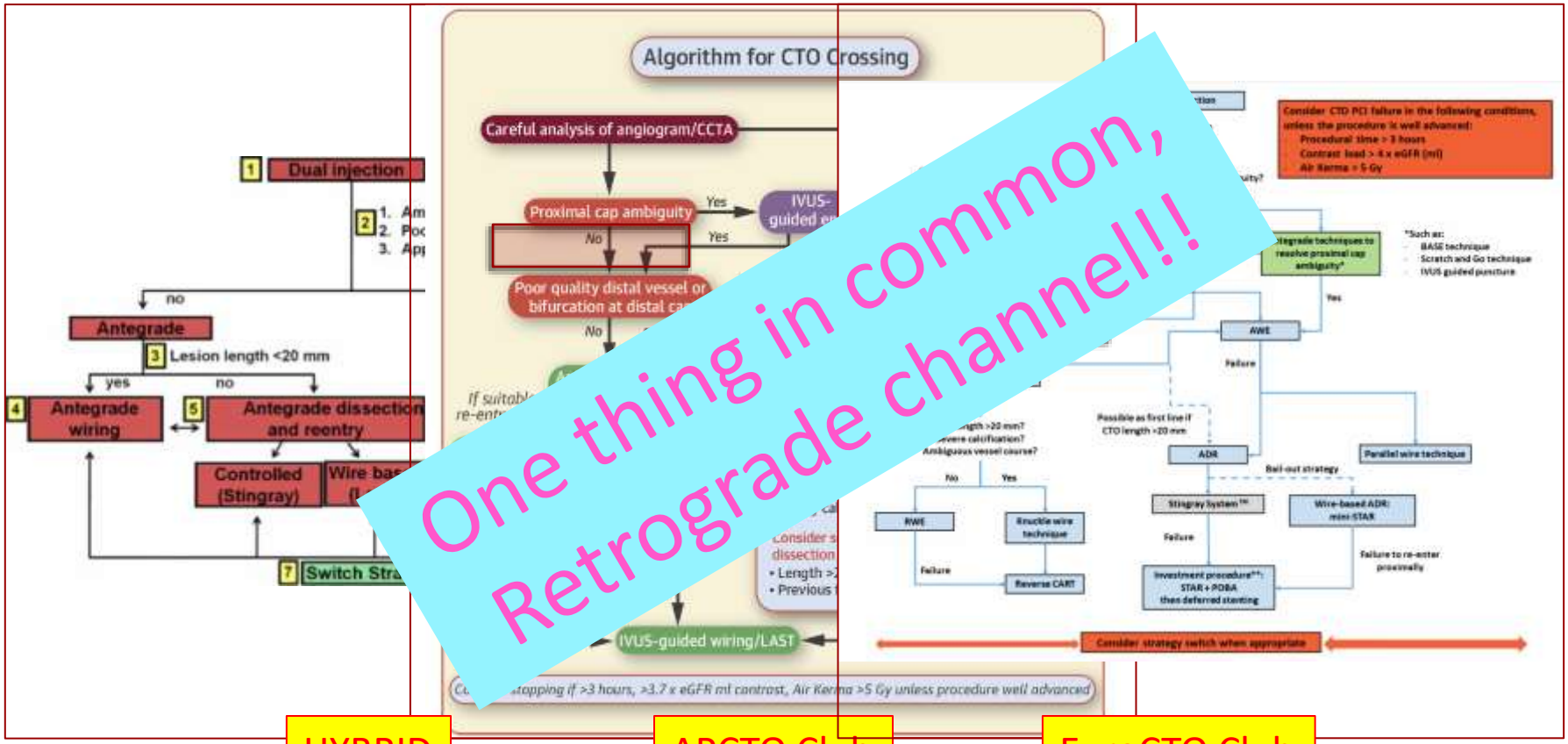
Disclosure

- I, Hsien-Li Kao, have the following to disclose

Honorarium

- Abbott Vascular
- Asahi Intecc
- Boston Scientific
- Terumo

Different CTO algorithms…



Significance of interventional channel

- >95% final success if IC tracking successful, but complication occurs most frequently during IC tracking
- Multiple IC often seen in 1 CTO
- So how do we choose IC? And how do we cross?

Channel size

- CC 0: no continuous connection
- CC 1: continuous threadlike connection
- CC 2: continuous small (>0 ranch–like connection
- CC 3 connection

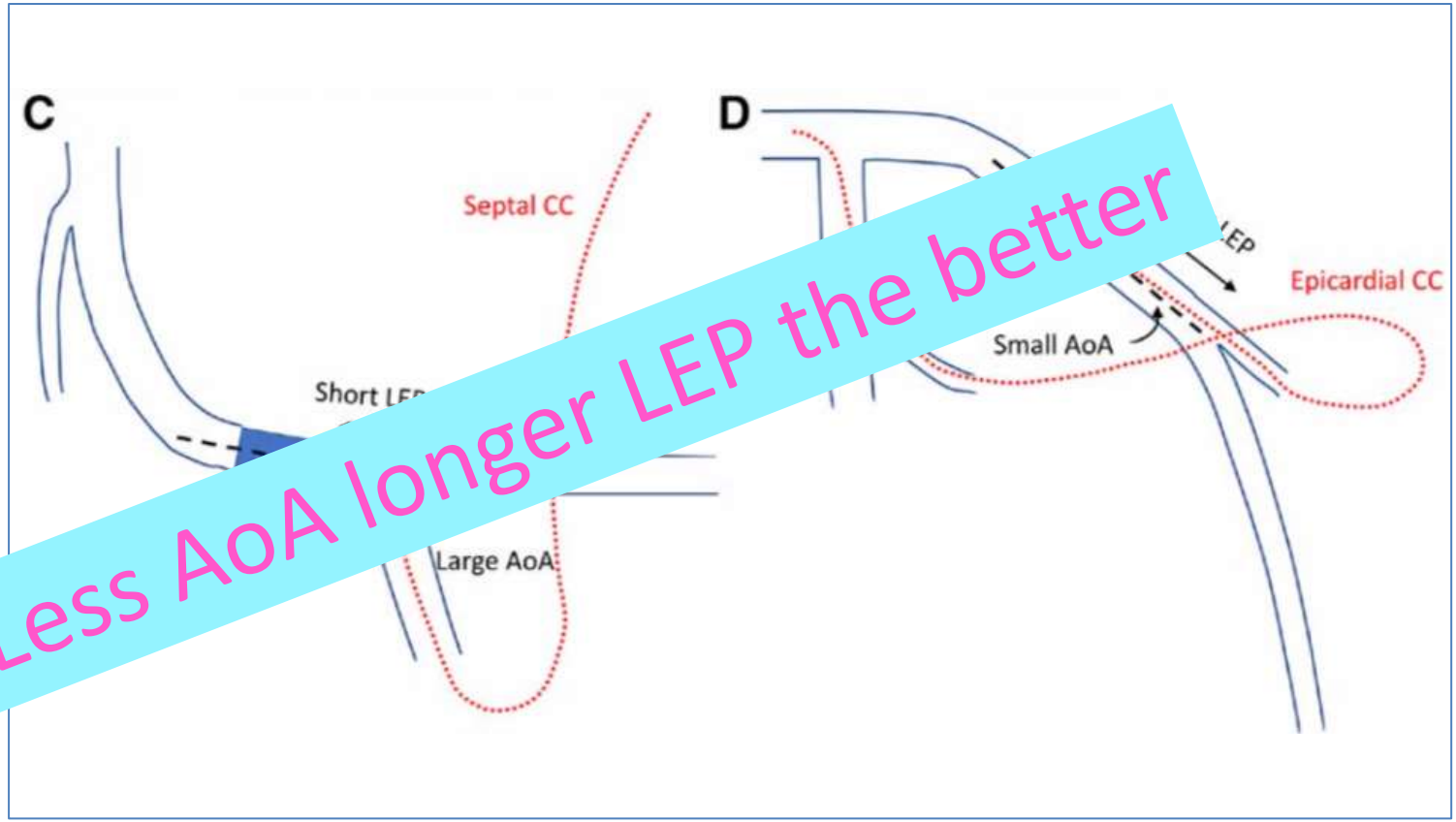
The larger the better

Channel tortuosity

- ≥2 high-frequency successive curves (within 2mm) in non-septal IC, or ≥1 high-frequency curve that failed to uncoil in diastole for septal IC
- A high-frequency curve i… curve that is >180^0 within a s… <3 times the diameter of the colla…

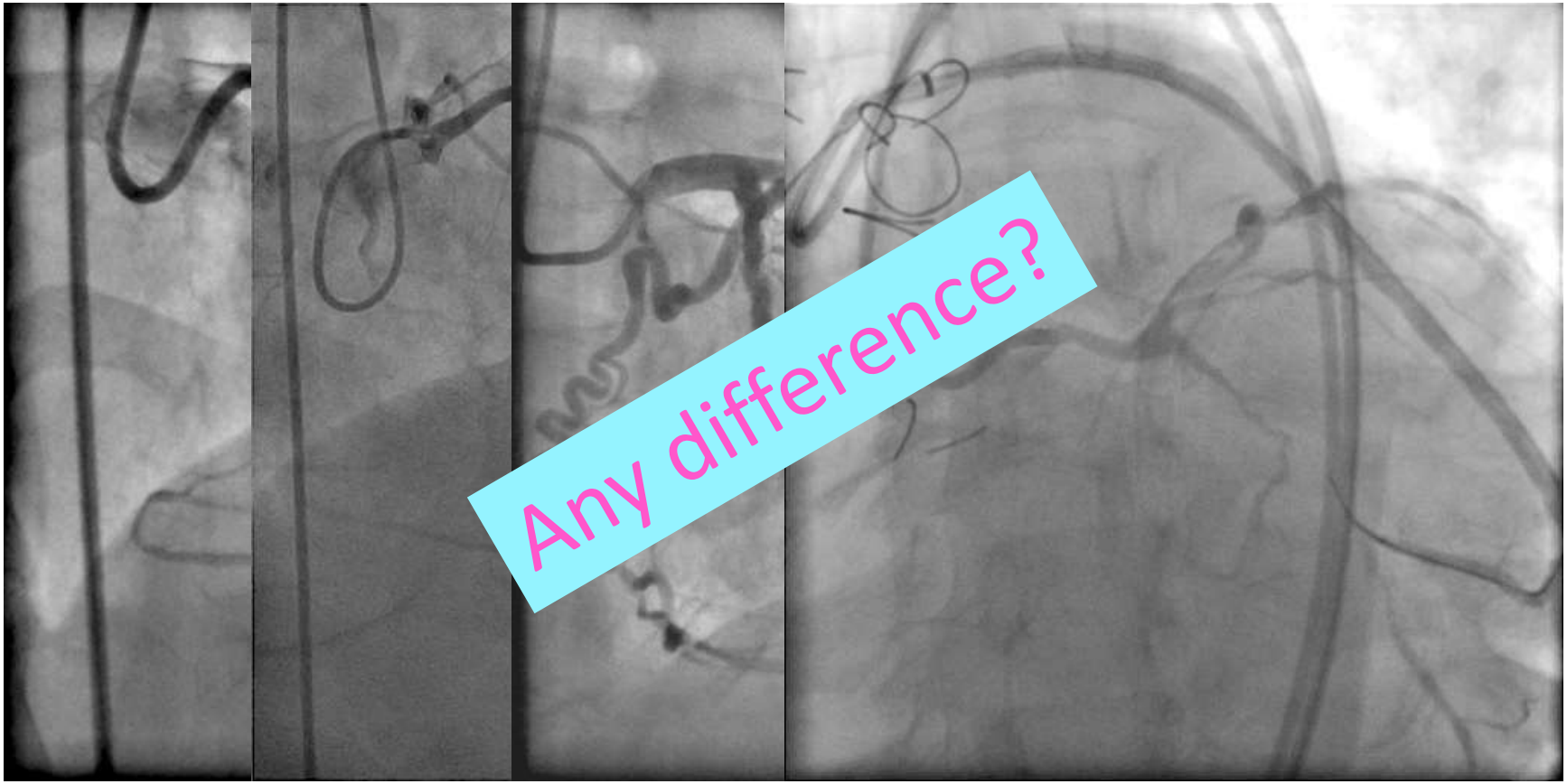
Less tortuous the better

AoA and LEP

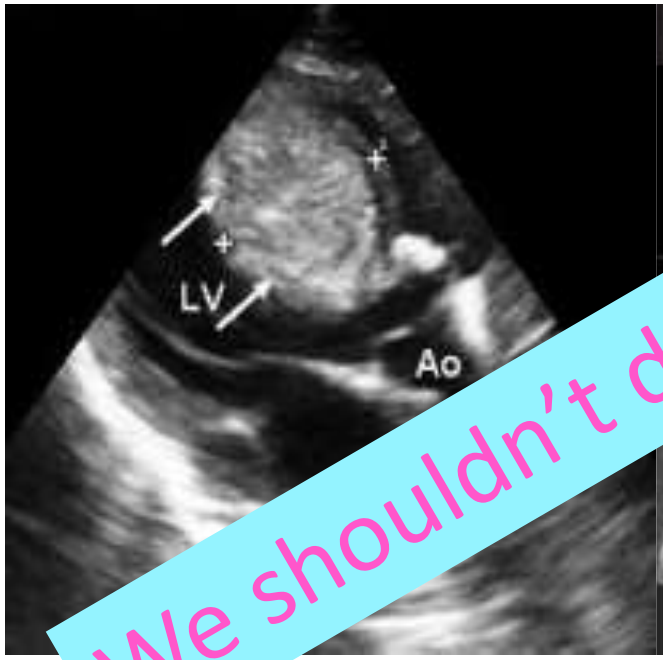


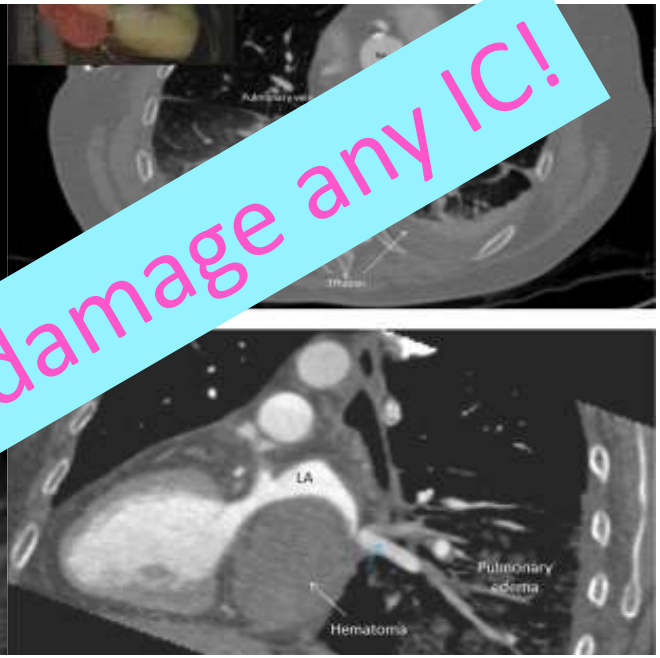
Huang CC et al, Circ CVI 2018;11(1):e005124

Channel types



Septal and LA hematoma



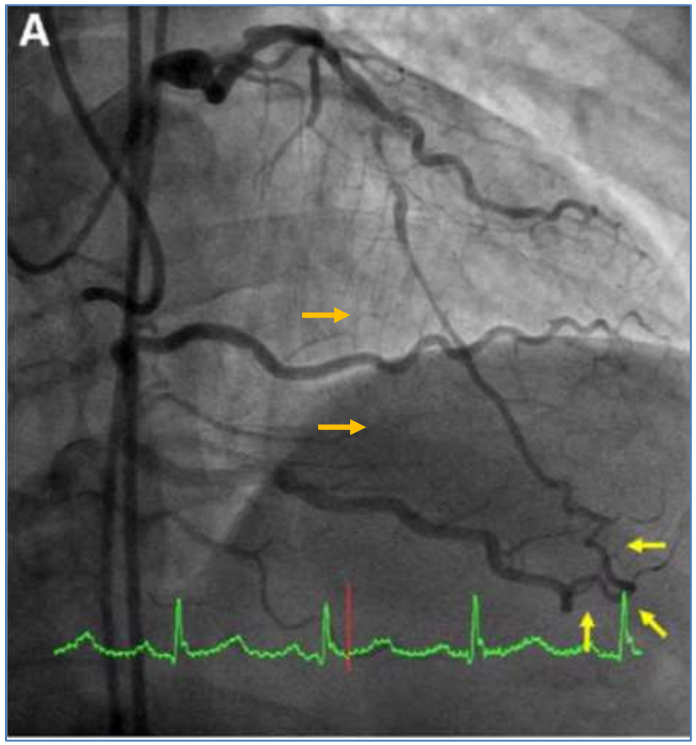


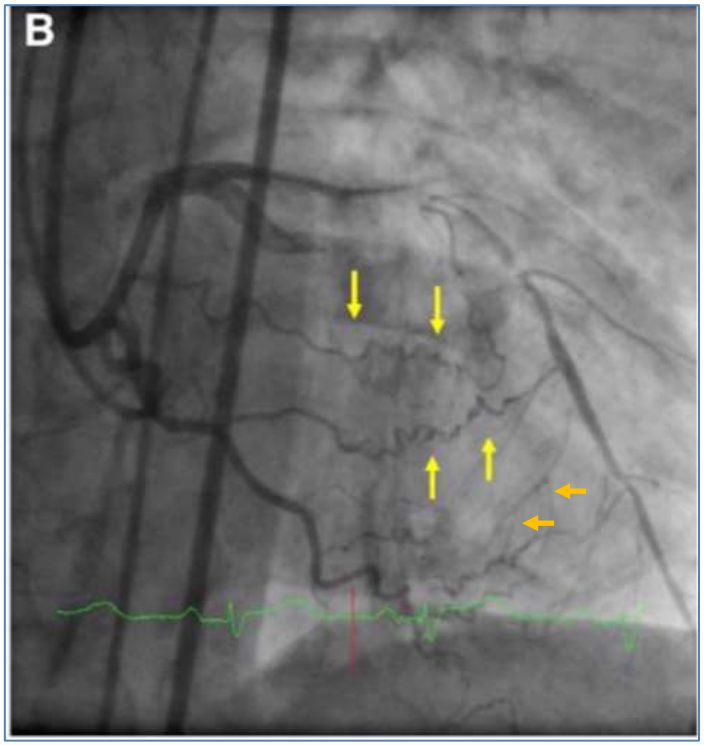
We shouldn't damage any IC!

y tamponade
LVOT obstruction

PV obstruction
Mitral annulus deformity

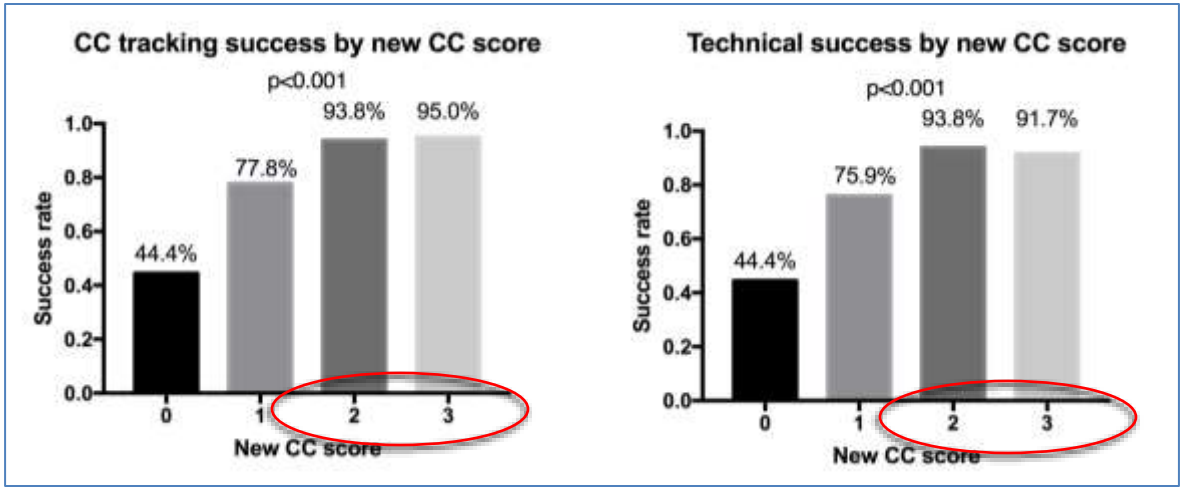
So how do we choose?





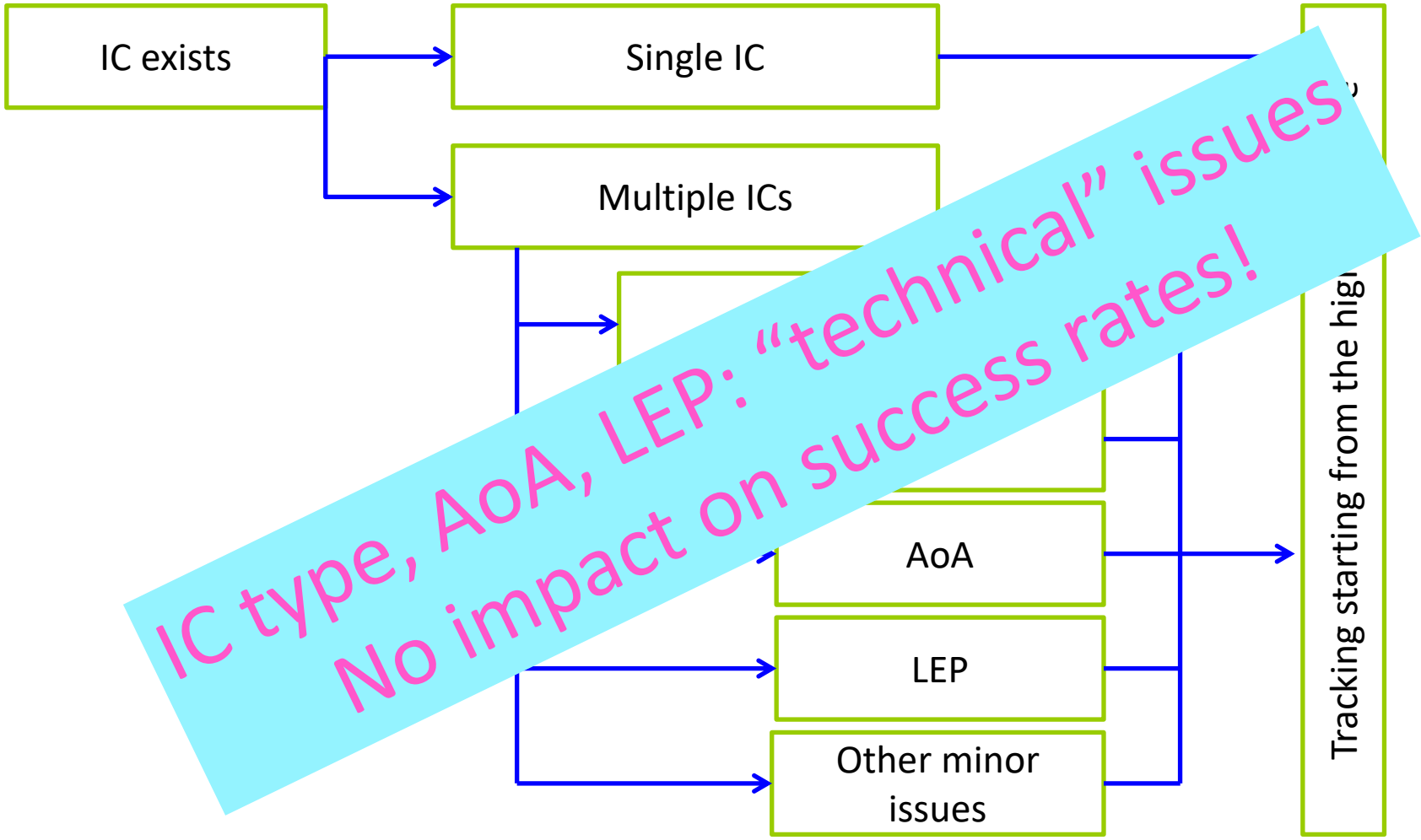
Selection for successful channel: R score

- Calculate for each individual channel
  - 1 point for CC 2/3, 0 points for CC 0/1
  - 2 point for non-tortuous, 0 point for tortuous
- R score ≥2 predicts success rates of ≥90%



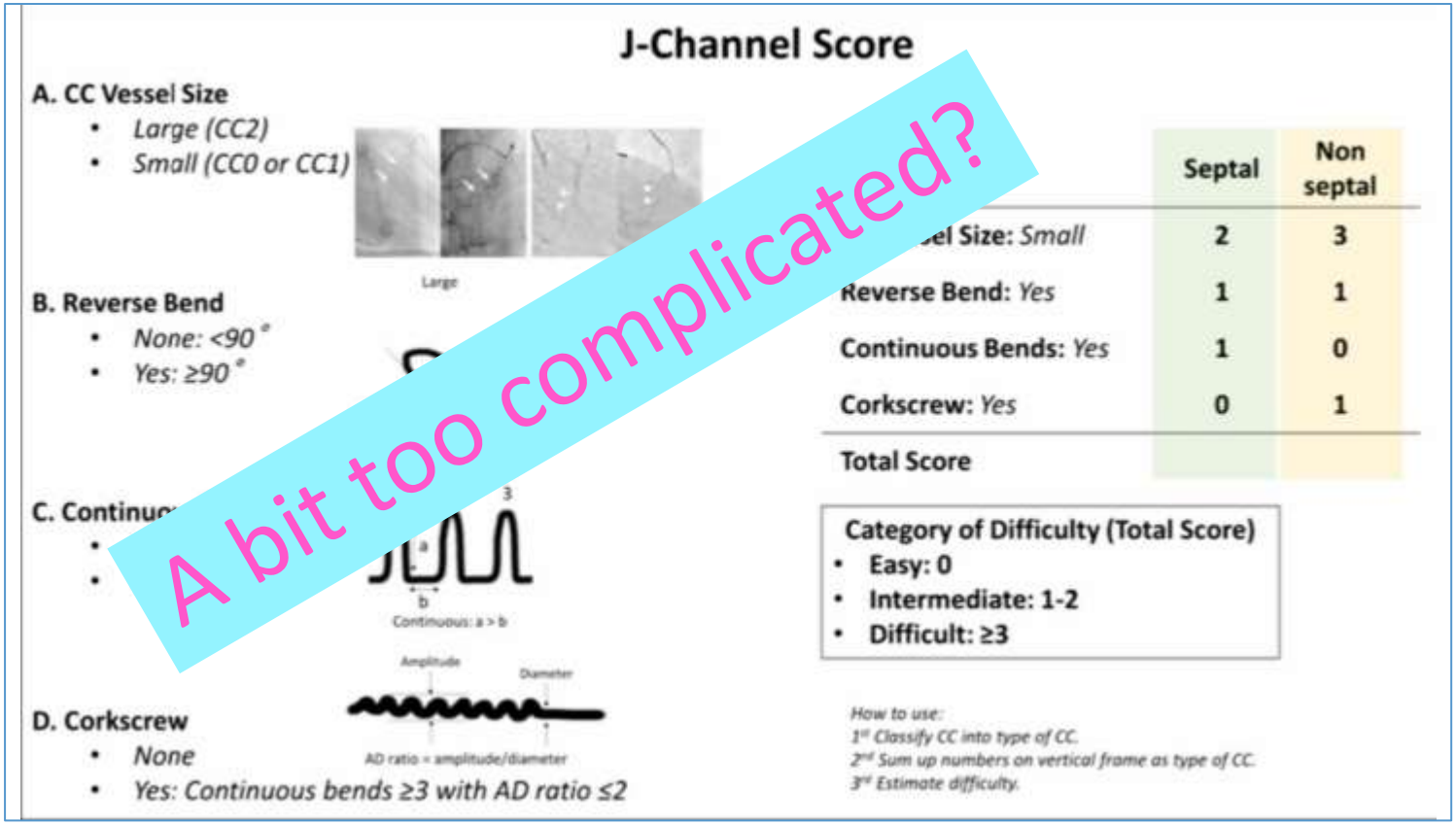
Hunag CC et al, Circ CVI 2018;11(1):e005124

Channel selection algorithm



Huang CC et al, Circ CVI 2018;11(1):e005124

J-retro score for channel selection

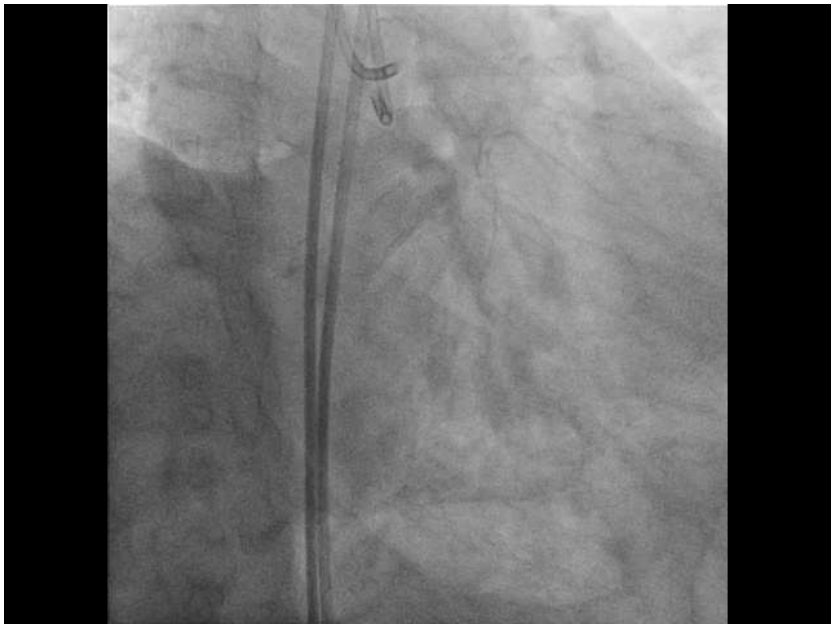


Nakamatsu W et al, EuroIntervention. 2019 Apr doi:10.4244/EIJ-D-18-00993

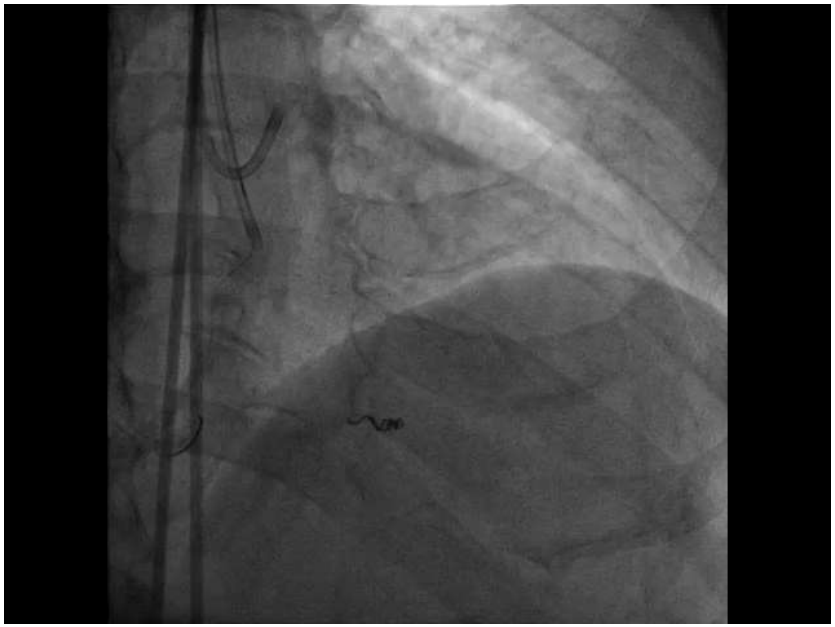
Identify the target channel

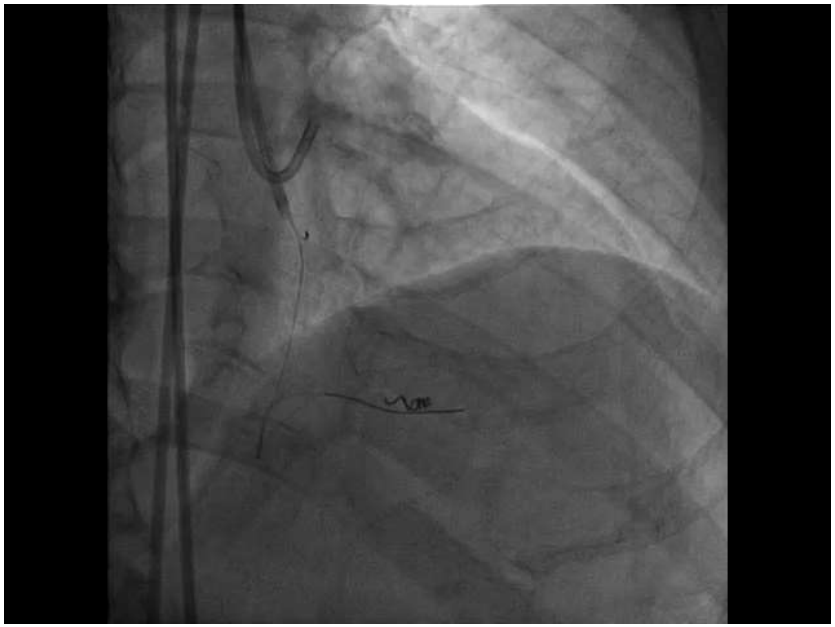
- Multiple projections
- Low magnification and don’t pan
- Timing of injection
- Generous contrast amount and exposure time
- Avoid over-selection RCA
- Super-selective injection

AVG IC



Conus epicardial IC

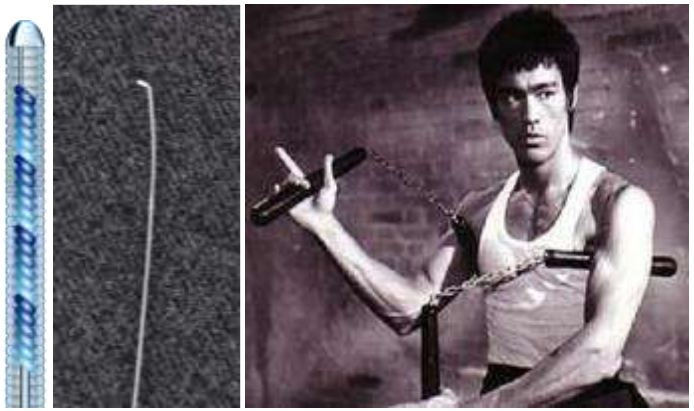




Proper equipment for success

	Septal	Non-septal	Long loop
Wire	Sion*/Sion black* Suoh03 EveryReach	Suoh03 EveryReach Sion*/SionBlack*	
Microcatheter (MC)	CorsairPro Finecross Turpike LP MiZuki Flex/Mamba Flex	Caravel Turnpike LP CorsairPro XS MiZuki Flex/Mamba Flex	InstantPass 170
Others	OTWBC	Sasuke	Short guide Guide extension

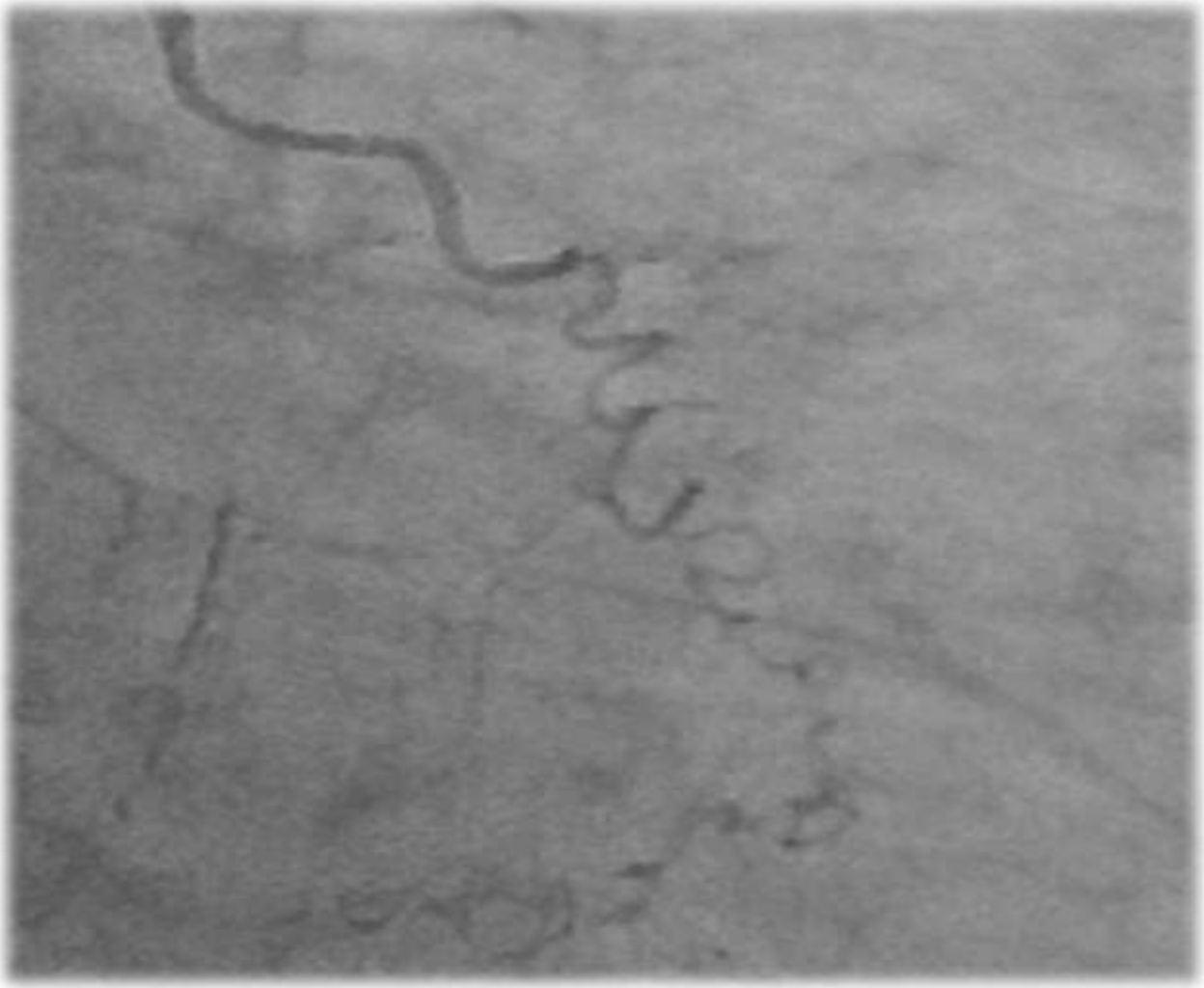
*: Intentional tip fracture



Wiring the IC

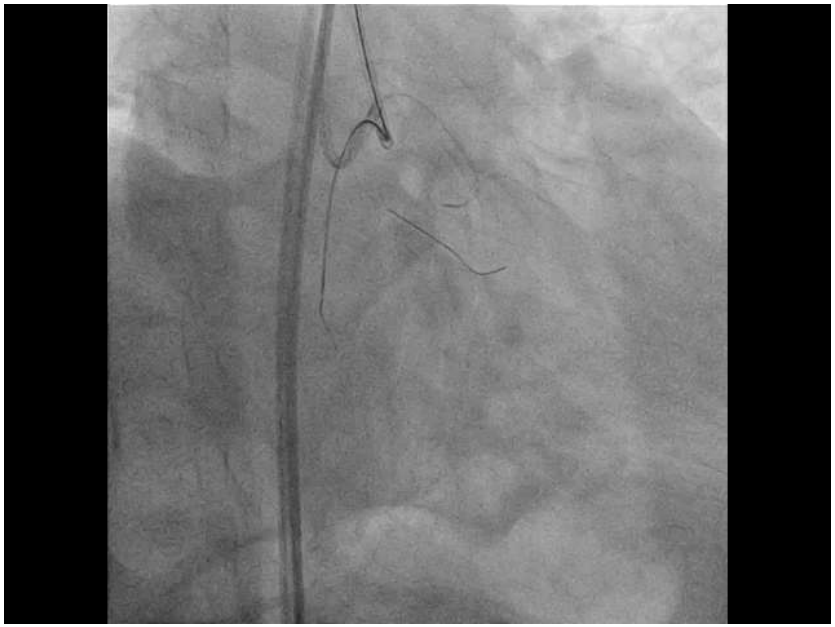
- Gentile push and keep the tip free
- Avoid over-torquing
- Follow the MC to prevent knotting
- Mind the cardiac cycle
- Pay attention to the imaginary route and potential change of configuration

Super-selective information

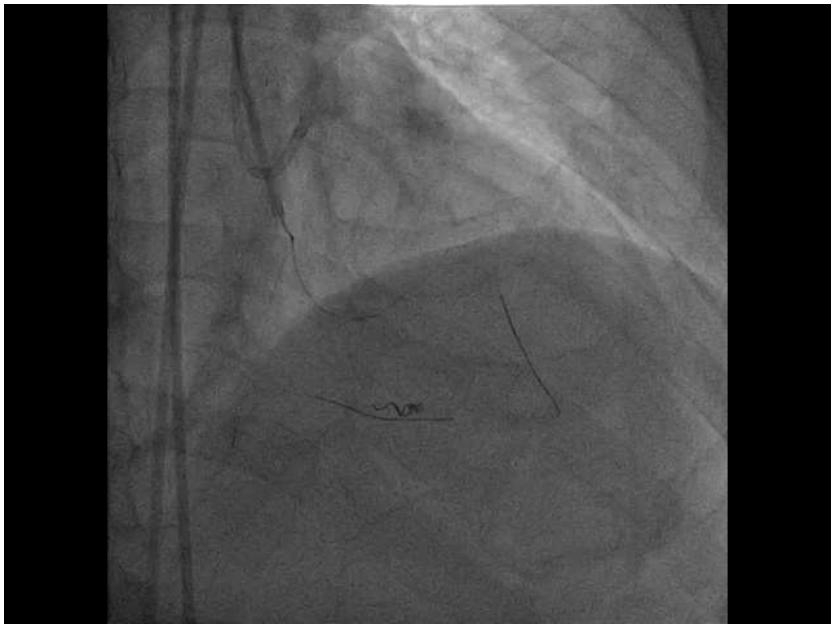


Courtesy of Etsuo Tsuchikane

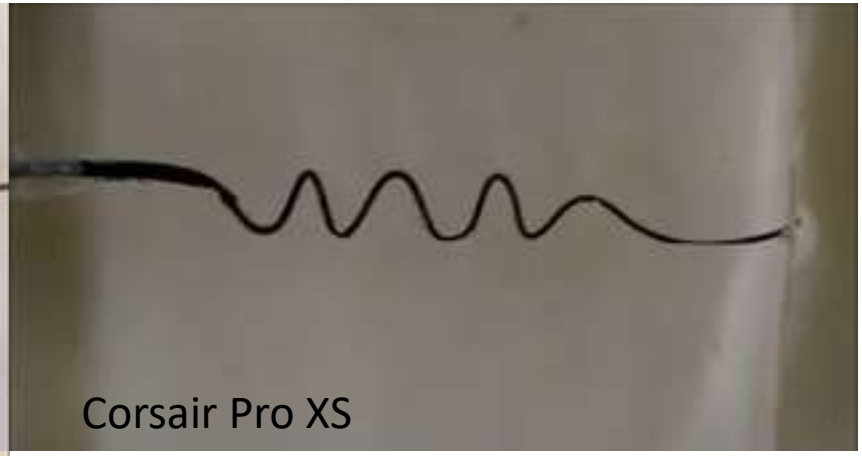
Wire manipulation

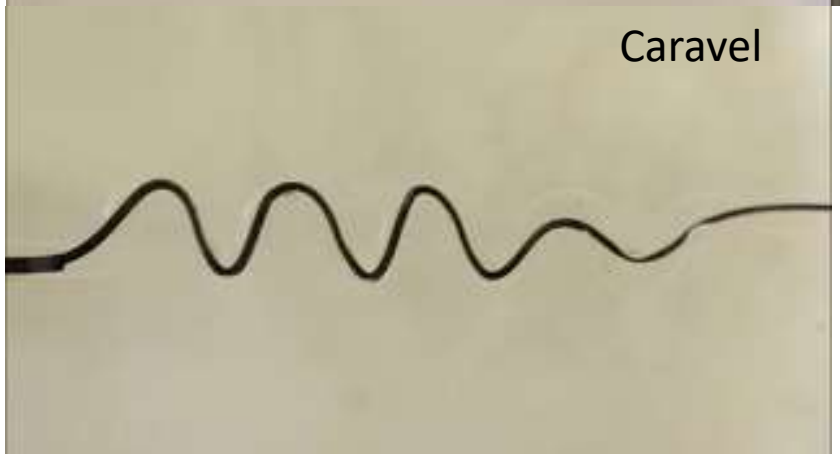


Advancing MC

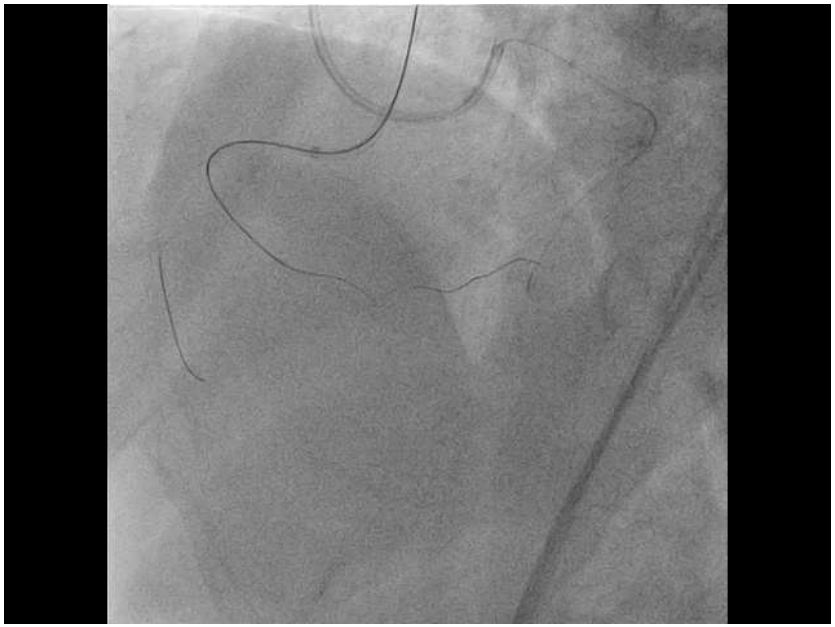


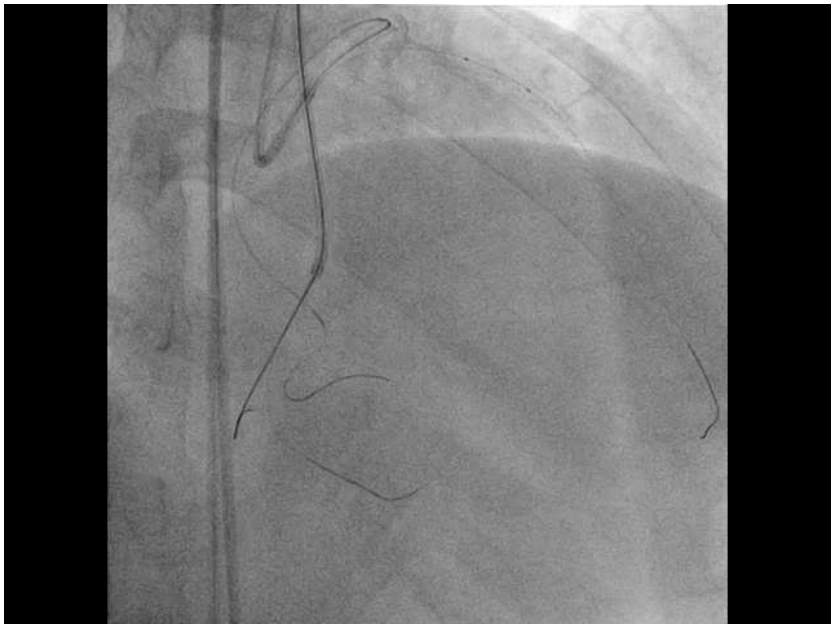
Different MC





Cyclic motion





Conclusions

- Choosing and tracking IC is the … critical step in retrograde CTO PCI
- Select IC's ac… and diamet…
- …ion when needed
- …lable devices, and handle …

Thank You For Attention

Predictors for channel failure

Characteristics	Definition
Type	non-septal
Size	CC 0, or <1mm in non-septal
Angle	adverse entry or exit angle of >45^0
Rupture risk	non-septal with ≤ half th… …icrocatheter
Multiple bifurcations	particularly at n… …rvature, or just after channel entry
Extreme length	difficu… …n equipment, even with a short guide and mother-daughter catheter
Severe tortuosity	…ency successive curves (within 2mm) in non-septal, or ≥1 high-frequency curve tha… …ied to uncoil in diastole in septal A high-frequency curve is defined as: a curve that is >180 degrees occurring within a segment length <3 times the diameter of the channel

But how to be successful?

McEntegart MB et al, EuroIntervention. 2016 Apr 8;11(14):e1596-603