# Successful Revascularization Using Extreme Antegrade Guidewire Crossing by AnteOwl WR Intravascular Ultrasound Guided Parallel Wiring for Poor Run-off Cases of Continuous Occlusion From SFA to BTK

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# COI Disclosure Information

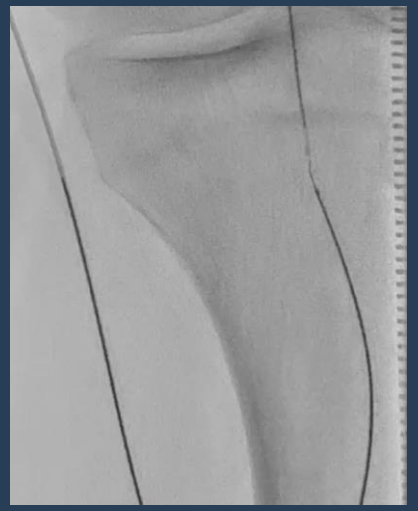
- Presenter：Naoki Hayakawa, MD

- I have no financial conflicts of interests to disclose concerning the presentation

# Introduction

- The initial success rate for femoropopliteal long CTO has become very high by various retrograde approaches, imaging guidance, and re-entry devices.







*1) P.A.Schneider. J Vasc Surg. 2017;66:916-923*
*2) Kitrou P, et al. J Endovasc Ther. 2015;22: 538-545.*
*3) Urasawa K, et al. J Cardiovasc Surg(Torino). 2014;55:395-400*
*4)Kawasaki D, et al. Catheter Cardiovasc Interv. 2008;71:727-733*
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- However, it is extremely difficult to perform the retrograde approach in cases where there is no site for distal puncture or in poor-run-off cases.

# Case presentation: 76 years old female

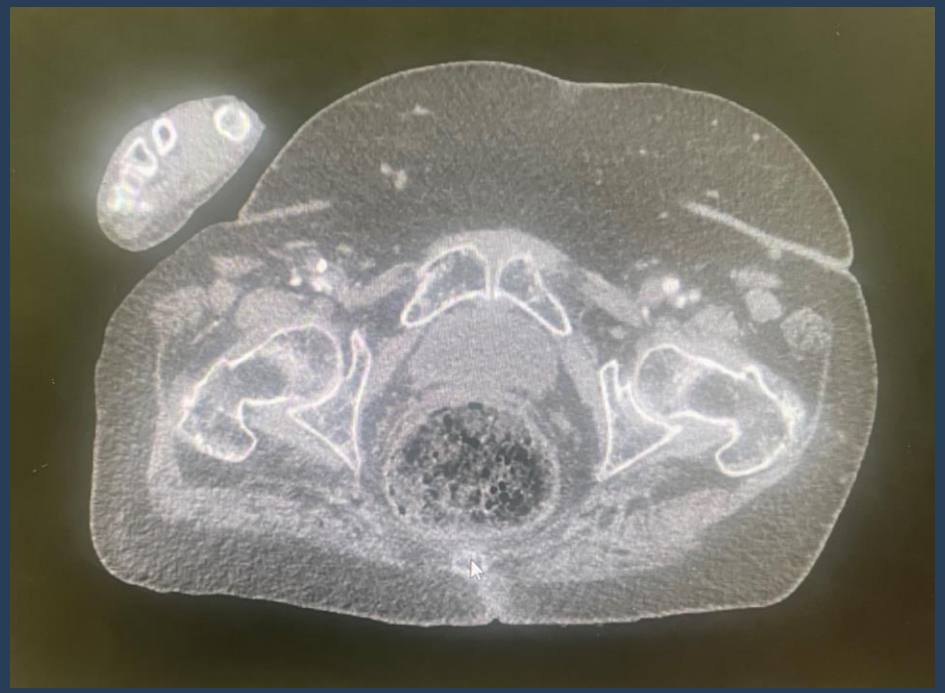
- CC：Rest pain and cyanosis of her right leg
- HPI：A 76-year-old female with diabetes mellitus presented with rest pain and cyanosis of the both lower limbs. Her BMI was 35.6. Her ambulatory status was mainly wheelchair due to contracture of the knee joint and obesity.
- PMH：Hypertension, Diabetis mellitus, Venous thromboembolism, Gastric ulcer
- MED：Aspirin 100 mg, Cilostazol 200 mg, Rosuvastatin 5 mg, Amlodipine 5mg, Lansoprazole 15mg, Sitagliptin 50mg, Telmisartan 20mg, Metformin 500mg
- SH：Smoking 5-10×35years (past smoker)

# Preprocedural enhanced CT



- Contrast-enhanced computed tomography (CT) showed total occlusion of right superficial femoral artery (SFA) to popliteal artery (PopA) to bellow the knee (BTK) arteries.
- And both iliac arteries were torchuous.
- There were several calcification in both femoropopliteal arteries.

# Problems of this case



Obesity and femoral bifurcation was high take-off

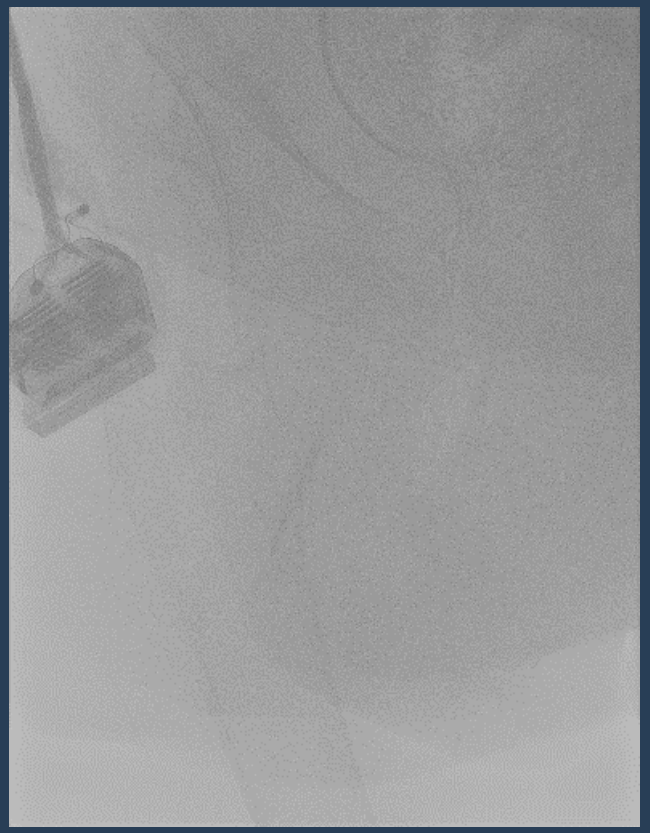
Contracture of the knee jooint

Extremely long CTO with calcification/ without run-off vessels

# EVT-1st step; Rt iliac crossover and EVT

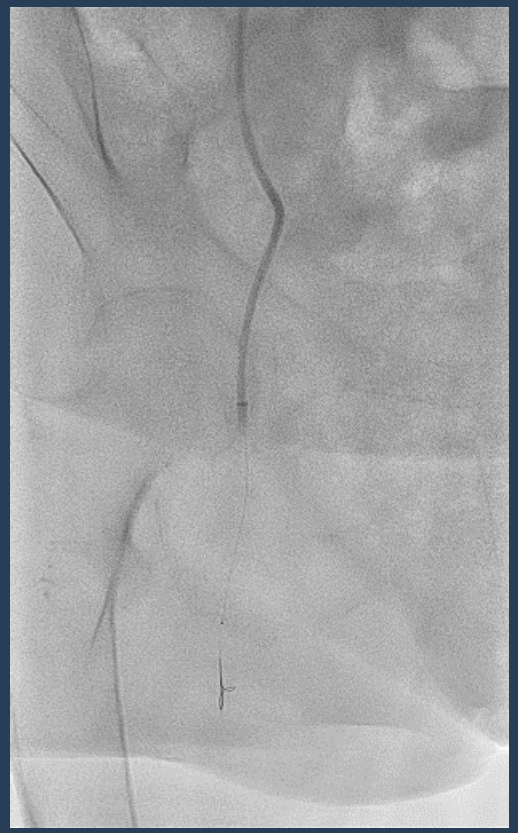
- Lt femoral approach: 6 Fr Crossroads® (Nipro, Tokyo, Japan) guiding-sheath
- Iliac arteries were very torchuous
- We dilated right EIA stenosis with a 7.0mm balloon, and guiding-sheath was advanced

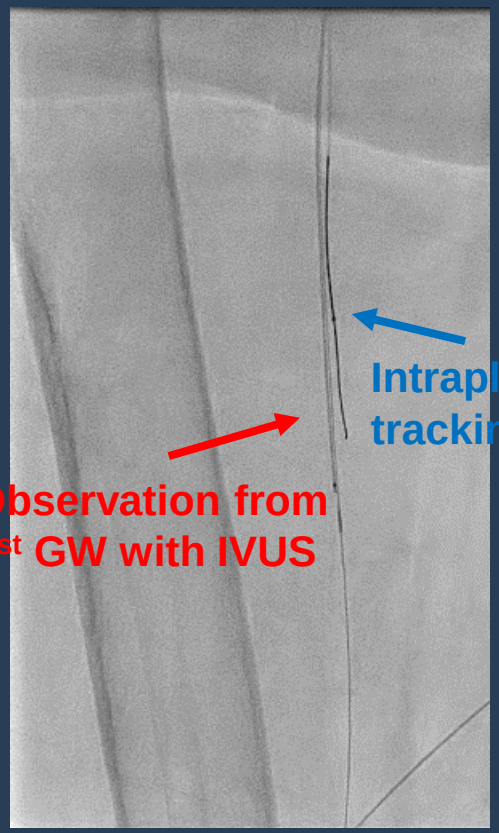
# EVT-2nd step; Rt femoropopliteal CTO

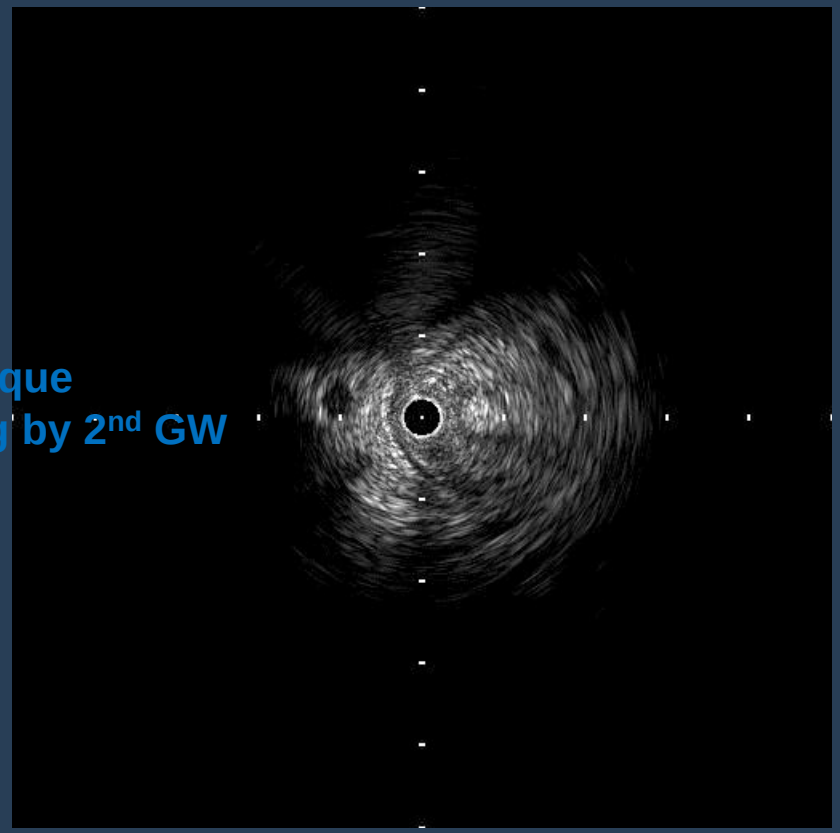



・Angiography showed total occlusion from SFA just proximal to BTK arteries.
・The distal dorsal pedis artery (DPA) was barely imaged, but the main trunk of tibial and peroneal was not imaged at all, and many collaterals were observed.

# EVT-2nd step; antegrade wiring with IVUS guided for SFA



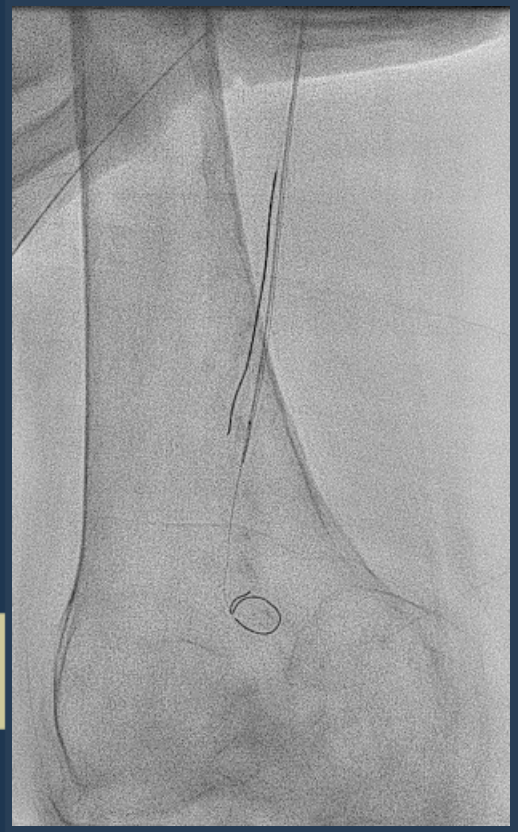


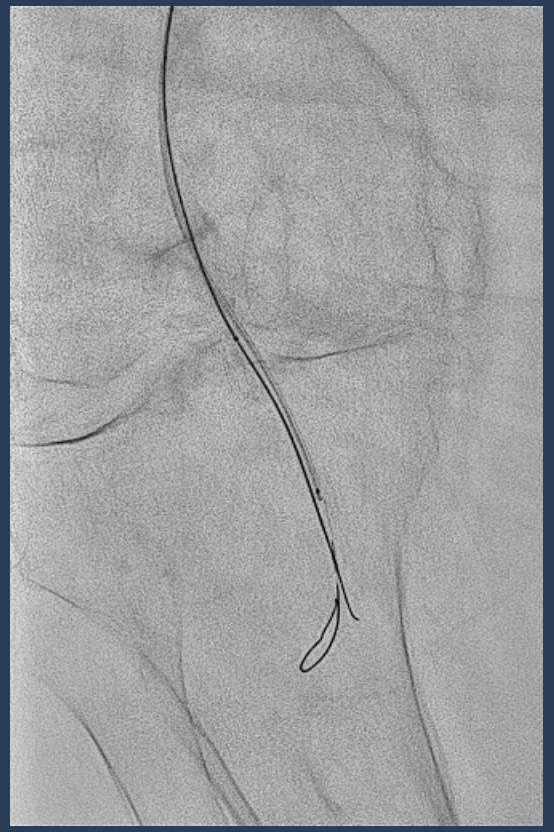




・We advanced Jupiter X and Gladius MGES 0.014-inch guidewire (1st GW) with Ichibanyari PAD2 micro-catheter to SFA CTO lesion.

・When **AnteOwl WR(AnteOwl) IVUS** was inserted at the proximal popliteal artery, it was subintimal from SFA mid, so IVUS guided parallel wiring was started using Astato XS9-40 0.014-inch guidewire (2nd GW).

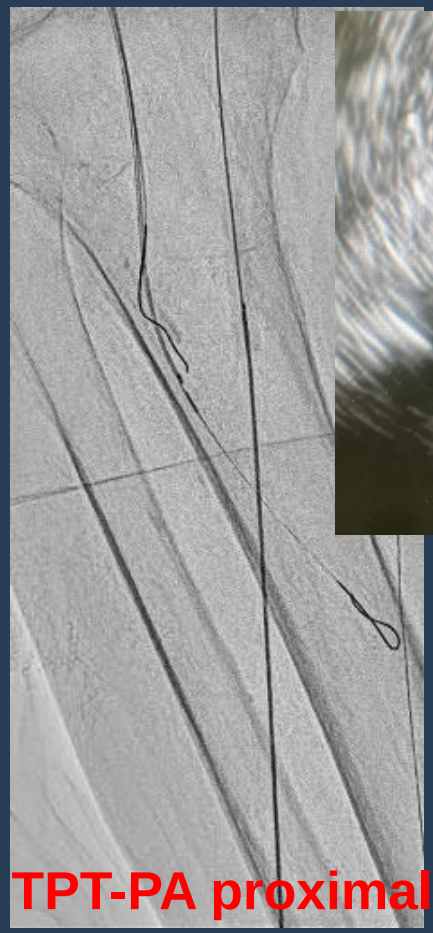
# EVT-3rd step; antegrade wiring with IVUS guided popliteal A



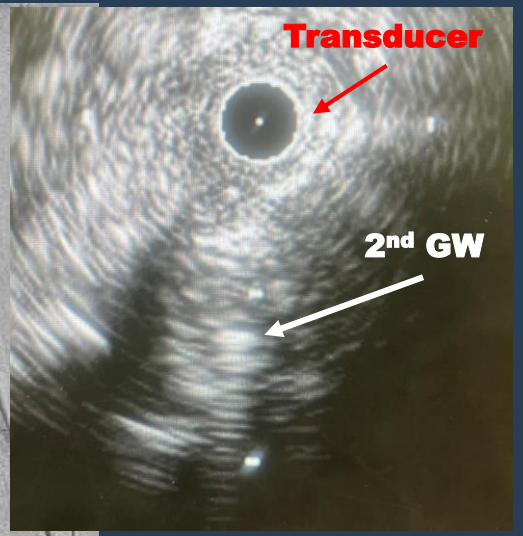



・We advanced the guidewire into the intraplaque route with IVUS guidance, and could reach the distal popliteal artery.

# EVT-4th step; antegrade wiring with IVUS guided BTK



TPT-PA proximal



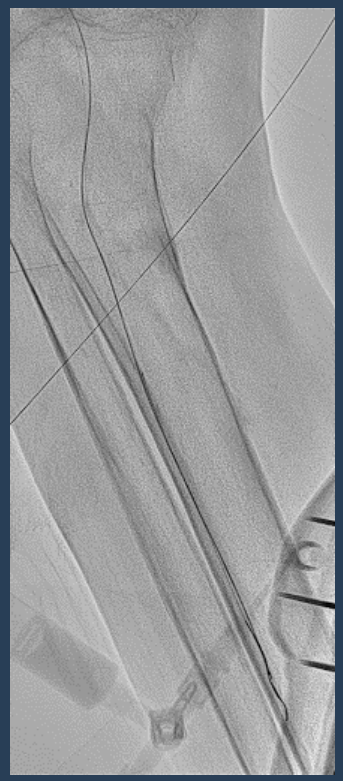

PA proximal-IVUS guided tracking with hard GW


Advanced floppy GW

PA distal-IVUS guided wiring


2022

# Far distal IVUS guided wiring→successful antegrade GW crossing!!

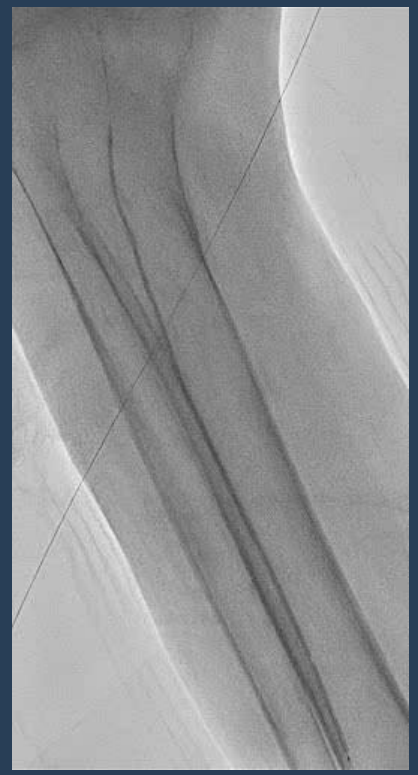


**GW pass !!**

・By repeating these steps of IVUS guided parallel wiring several times, we finally succeeded in passing it through the distal true lumen.

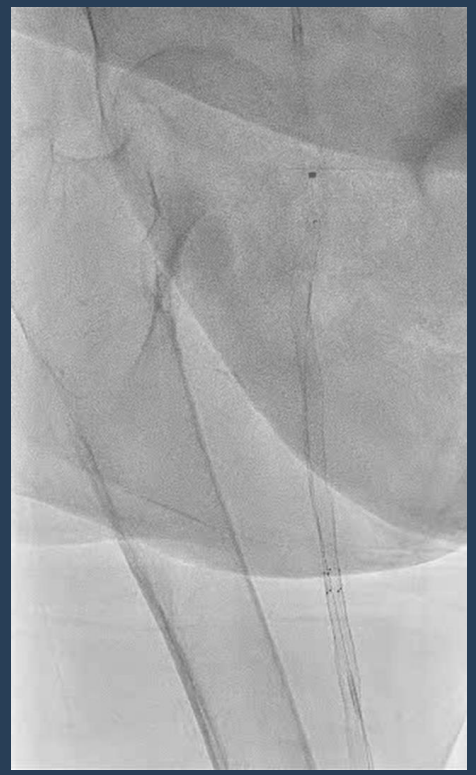
・Tip injection confirmed that the distal true lumen of the peroneal was connected to the DPA.

# Finalize from BTK to SFA



PA:3.0mm balloon

TPT:4.0mm balloon

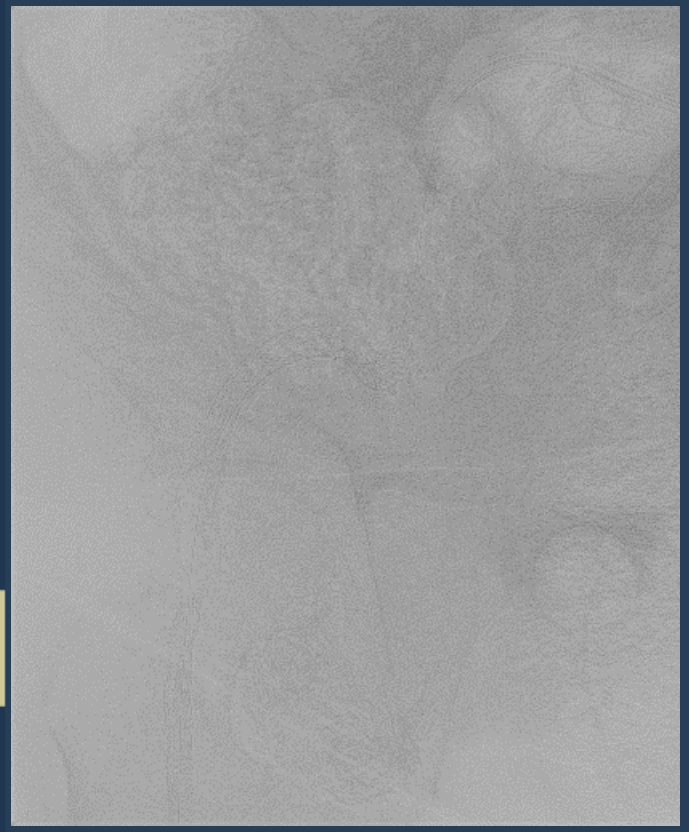
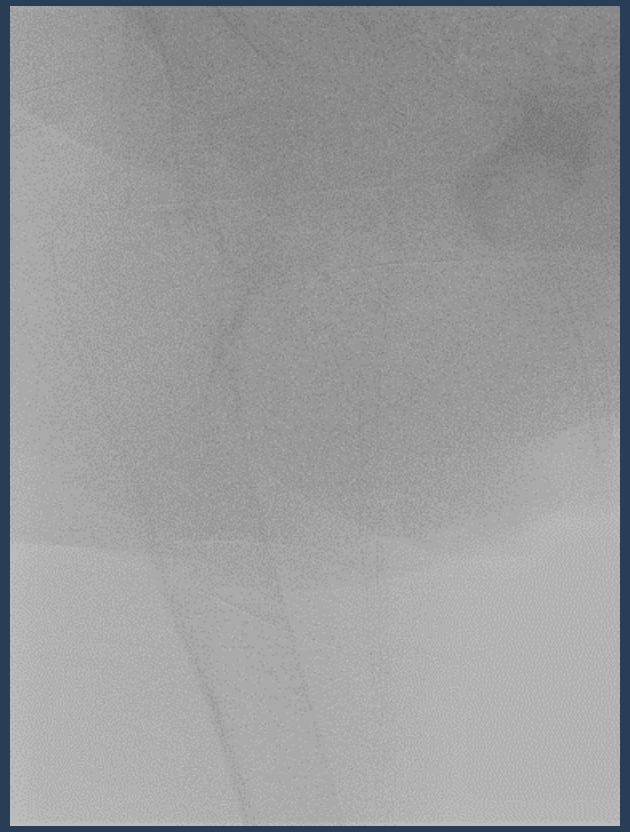


Eluvia 7.0/120mm, Eluvia 7.0/120mm, Eluvia 6.0/120mm, Eluvia 6.0/40mm

Ranger DCB 4.0/150mm

・1 Epic stent was deployed for EIA, 4 Eluvia stent for PopA to SFA, 1 Ranger drug-coated balloon for PopA, and balloon dilation for peroneal artery.

# Final angiography-iliac ~ FP-

- Final angiography was very well
- We confirmed sufficient expansion of iliac to femoropopliteal arteries and antegrade flow

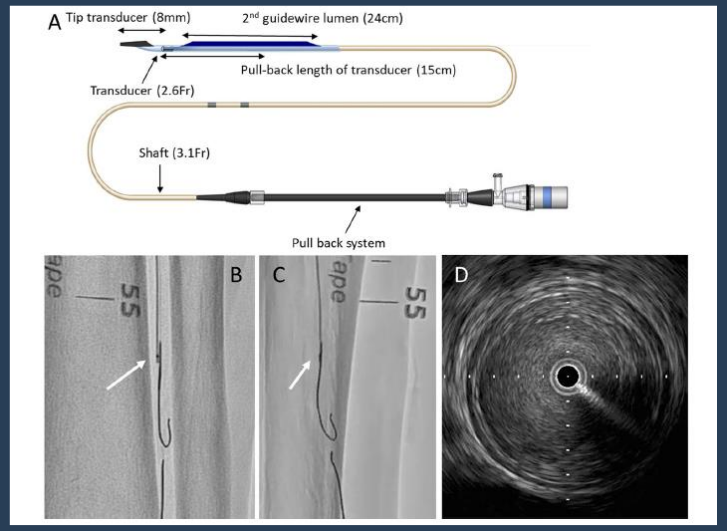
# Final angiography-BTK ~ BTA-

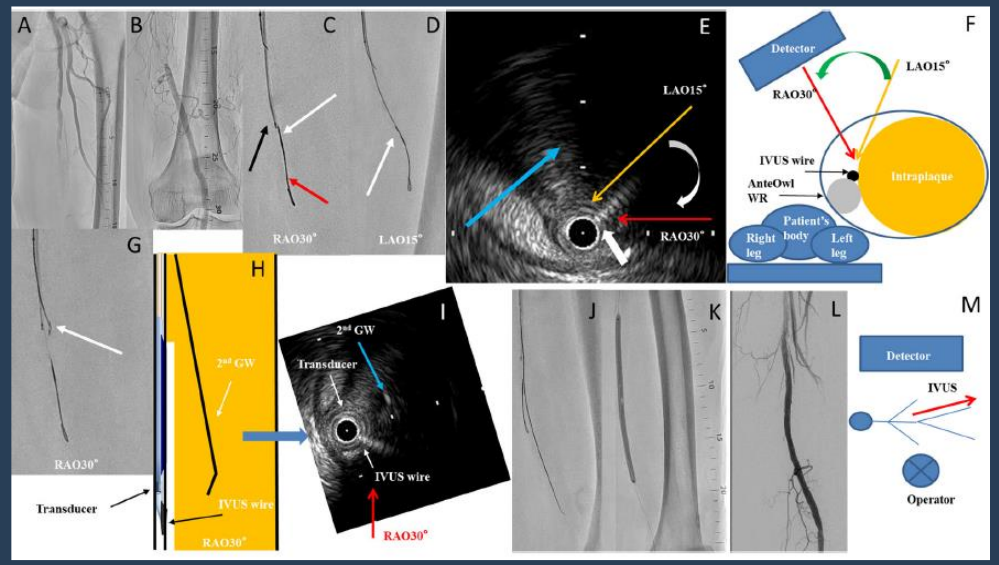
- We could get 1 straight line from TPT to peroneal artery and BTA vessels.
- All of CTO vessels were dilated from the true lumen, indicating the emergence of various branches.
- This improves the run-off vessel and improves the antegrade blood flow.
- Postoperative ABI improved to 0.9, and a good clinical course has been obtained.

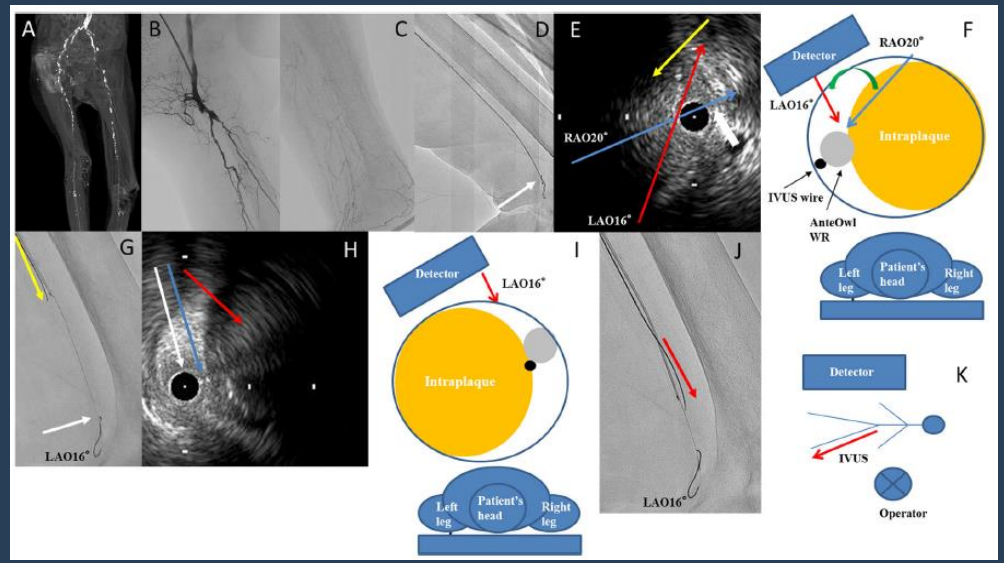
# Our method of IVUS guided intraplaque wiring

Efficacy of navigating through the intraplaque route using AnteOwl WR intravascular ultrasound in femoropopliteal chronic total occlusion

Naoki Hayakawa[1*], Satoshi Kodera[2], Keisuke Takanashi[1], Shuichi Sahashi[1], Sandeep Shakya[1] and Junji Kanda[1]



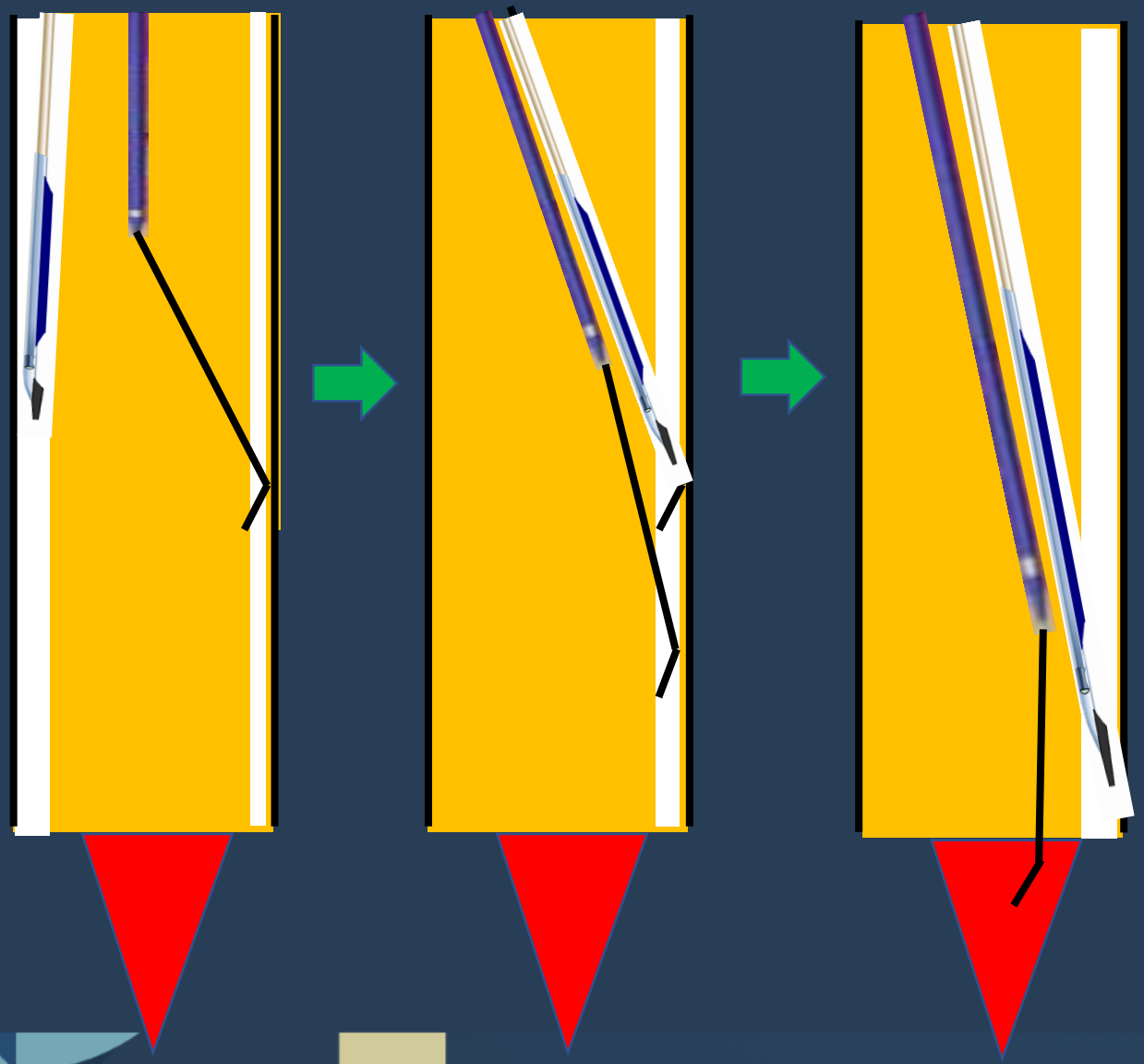




Conclusions: AnteOwl is an effective IVUS for FP CTO and facilitates a complex IVUS-guided procedure.

Hayakawa N et al. CVIR Endovasc.2021

# EXtreme antegrade guidewire Crossing to distal true lumen with AnteOwl WR intraVAscular ulTrasOund guided paRallel wiring to bellow the knee artery

## -EXCAVATOR technique-



**Key point of this procedure**

1. It can be used to treat cases that are difficult to retrograde approach.

2. **GW passage route is true lumen**, so not only stents but also DCBs can be used, branches can emerge, and additional branches can be easily treated.

3. Since branches and periphery appear, it is easy to obtain good flow.

Hayakawa N et al. now submitting

# Conclusion / Take-home Message

- We experienced a case in which the new IVUS was used to pass through all true lumen antegradely, and revascularization was successful.

- We have named this technique the EXCAVATOR technique

(EXtreme antegrade guidewire Crossing to distal true lumen with AnteOwl WR intraVAscular ulTrasOund guided paRallel wiring to a bellow the knee artery)

- This technique can be one of the method to overcome poor run-off cases