A case that obtained wound healing with incredible SPP improvement by endovascular therapy to the anterior tibial artery using the combination of a reverse CART technique and a wire rendez-vous technique.

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Pre EVT

Case

A 72-year-old male, suffering from left toe necrosis due to CLI, referred to our hospital. Comorbidities included hypertension, diabetes mellitus, hemodialysis on diabetic nephropathy. His angiography showed that external iliac artery (EIA) , superficial femoral artery (SFA) and posterior tibial artery (PTA) in proximal portion had severe stenosis, and anterior tibial artery (ATA) was occluded with heavy calcification.
Cardiac catheterization revealed three vessel disease (TVD).

1st EVT

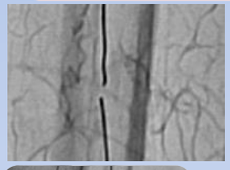
The patient was initially referred for surgery, but because of underlying the possibility of wound infection and TVD, he was not considered a reasonable candidate at this time.
After discussion with his family, it was felt the best course of action would be to fix the critical PAD lesion.
Although we performed endovascular therapy (EVT) to the EIA and SFA via the brachial approach, CLI didn't improve and Skin Perfusion Pressure (SPP) remained low (18mmHg).
We performed 2nd attempt EVT to Below the Knee lesions.

2nd EVT

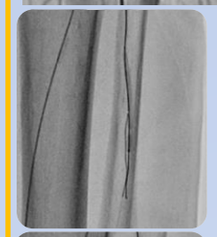
We used a 4.5-fr 40cm sheath, a 0.014 inch guidewire; Command (ABBOTT VASCULAR) and a microcatheter; Corsair PV (ASAHI INTEC) from an ipsilateral antegrade approach. At first, we attempted EVT to the PTA. The guidewire passed and a 2.5mm balloon; SHIDEN (ASAHI INTEC) could cross easily and dilate to the PTA.
Next, we tried the dilation to the ATA proximal lesion (chronic total occlusion; CTO) from the antegrade approach, not only the Command but a 0.014 inch guidewire; ASTATO (ASAHI INTEC) couldn't pass because of severe calcifications of the CTO lesion.

As a result, we attempted to the retrograde approach.
We made the guidewire and microcatheter advanced to the distal PTA, and brought into the pedal arch. Subsequently, we could advance them to the mid ATA. But the retrograde wire couldn't pass the CTO lesion.
The lesion was so hard to cross that we had to use the combination of a reverse CART technique and a wire rendez-vous technique.

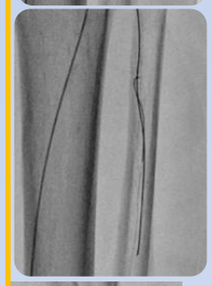
Reverse CART & Rendezvous technique



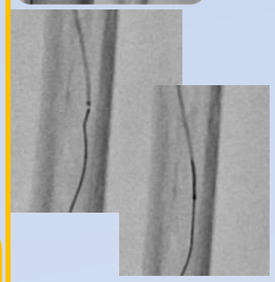
We could not advance the antegrade and retrograde wires because there was a heavily calcified plaque between those guidewires.



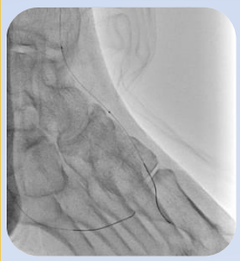
Pushed the guidewires strongly, the antegrade guidewire was advanced into the plaque (subintimal space) of the lesion distal. But we could not put into the true lumen or achieve recanalization.
A SHIDEN balloon was dilated on the antegrade guidewire and an ASTATO guidewire was advanced from the retrograde approach. (reverse CART technique).



The retrograde guidewire was advanced into the proximal true lumen of the ATA. Subsequently, we tried to perform the guidewire externalization from the retrograde approach.
But both retrograde guidewire and retrograde microcatheter couldn't be advanced any further because the pedal arch had severe tortuosity and both PTA and ATA had heavy friction with diffuse calcifications.



As a result, we attempted to undergo the wire rendezvous technique in the ATA CTO lesion.
We advanced the microcatheter from antegrade approach in the balloon-dilated lumen with the reverse CART technique, and succeeded to put the retrograde guidewire into the antegrade microcatheter lumen.



After that, the antegrade microcatheter was crossed the CTO lesion and advanced to the distal ATA.
We pulled off the retrograde guidewire into the antegrade microcatheter and could bring the antegrade guidewire to the distal ATA.

After the balloon dilation in the ATA CTO lesion with good result, the procedure was concluded.

Post-procedure Course

After the 2nd procedure, the major amputation could be avoided and only the minor amputation was performed.
The result that his wound was improved and the SPP was increased from 18mmHg to 66mmHg could be achieved.

Post EVT