Crossing Strategy for Complex & CTO Lesion
- Cross with Confidence -

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Advanced Techniques and Tools
to Treat Below the Knee CTO

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Standard setup for BTK intervention

1. Puncture site  
   ipsi-lateral antegrade

2. Sheath  
   Sheathless guiding cathe.  
   ex. 4.5F Parent-Plus (Medikit)

3. Guidewire  
   0.014” guidewire  
   Various products

4. Guidewire buck-up  
   0.014” compatible micro-cathe.  
   Prominent (Tokai Medical Products)  
   Corsair-PV (Asahi Intec)
Wiring techniques for BTK-CTO

1. Antegrade wiring

2. Bi-directional wiring with distal puncture
   - Dorsalis Pedis
   - distal ATA
   - distal PTA
   - distal PA
   - Plantar artery
   - Digital arteries

3. Bi-directional wiring using collateral channel
   - Trans-collateral angioplasty (TCA)
TCA for BTK-CTO : Case 1

Case: 83yo Male
Diagnosis: CLI (Rutherford 5)
Risk factors: Hypertension, Diabetes Mellitus
Control angiography
Tip injection from a Prominent at peroneal trunk
Selective angiography of a collateral channel
Angiogram of a channel connecting to PTA
Prominent was successfully advanced to PTA
Balloon dilatation of PTA
Balloon dilatation of distal PTA and plantar A.
Angiography after balloon angioplasty
TCA for BTK-CTO: Case 2

Case: 71yo Male
Diagnosis: CLI (Rutherford 5)
Risk factors: Hypertension, Diabetes Mellitus, Chronic renal failure (HD)
Control angiography
Wiring to the ATA (Micro Knuckle Method)

Cruise (Neos)
Prominent (Tokai Medical Products)
Angioplasty for the diffuse stenosis of ATA
Angiography after balloon angioplasty
Tip injection at DP
Cruise was advanced to lateral plantar artery
Prominent was advanced through the channel
Tip injection at lateral plantar A.
Retrograde wire was advanced to the proximal end of CTO

Chevalier floppy (JJ Cordis)
Advance an antegrade wire to the PTA

Astato XS9-12
(Asahi Intec)
Corsair-PV
(Asahi Intec)
Wire Rendez-vous at distal PTA
Advance antegrade wire to the plantar A.
Balloon angioplasty of PTA-CTO
Balloon angioplasty of plantar A.
Antegrade wiring to the PA
Balloon angioplasty of PA
Final angiography
Two Key Issues which are essential for successful TCA

1. Technique for safe and secure guidewire navigation within collateral channels.

2. Guidewire and micro-catheter selection
TCA : Tips - 1

Channel selection

Pick up collateral channels suitable for TCA on control angiogram / MDCT

- not too long
- not too tortuous
- not too fine
TCA : Tips - 2

Guidewire selection

Cruise ® (= Fielder / Regalia)
0.014” soft tip wire (Tip weight = 1~ g)
Plastic jacket / Hydrophilic coating
Poor tip-shape memory

As far as we tested, Cruise seems to be the only one guidewire suitable for TCA. Tapered type guidewires are dangerous, and easily result in wire-induced channel perforation.
TCA : Tips - 3

Microcatheter selection for backup support

Prominent (Tokai Medical Products: TMP)
Prominent-TCA (TMP)
Prominent-BTK (TMP)
Corsair-PV (Asahi Intec)
TCA : Tips - 4

How to pass a guidewire (Cruise) through a collateral channel

1. Shaping of guidewire tip
   Create 45 degree angle at the 1mm from the tip

2. Step by step technique
   Advance guidewire, then advance micro-catheter to straighten the segment.

3. Re-create load-map frequently
   Three dimensional shape of the collateral channel may change dramatically after the passage of guidewire and micro-catheter.
Summary

Trans-collateral approach is extremely useful to set-up bi-directional wiring, and greatly enhances the initial success rate of BTK intervention.

Although TCA is a little bit difficult compared with distal punctures, it is worthwhile to learn the skill of trans-collateral wiring if you want to expand your EVT activity.