Advanced Crossing and Wiring Technique for BTK Vessels

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Disclosure

Speaker name:

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I have the following potential conflicts of interest to report:

☐ Consulting
☐ Employment in industry
☐ Stockholder of a healthcare company
☐ Owner of a healthcare company
☒ Other(s)  Cook, Terumo, BSJ, Medotoronic, BIRD
Two point of BTK crossing

1. Strategy

2. Guidewire selection
Strategies of BTK crossing

1. Antegrade approach
   1-1: Intraluminal approach
     • Japanese art: 0.014-inch GW
   1-2: Subintimal approach (loop technique)
     • Hydro-dynamic boost (SUICA)
     • Micro-knuckle

2. Retrograde approach
   2-1: Distal puncture
   2-2: Trans-collateral or pedal
Appropriate GW for BTK

Japan: 0.014

Euro: 0.018

Not suitable for BTK: 0.035

State of art

Japanese technique with 0.014 GW
Strategies of BTK crossing

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2. Retrograde approach
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First choice & main guidewire

- Regalia XS 1.0
- Chevalier
- Command
- Jupiter FC

Polymer-jacketed GW
Differences in each PJ-GWs

- **Regalia XS 1.0**
  Basic GW (best for TCA or TPA), Safe, Poor durability

- **Chevalier floppy**
  Controllable GW; Good Trackability & Pushability

- **HT-Command**
  Strong durability but slightly stiff (Tip weight: 3g)

- **Jupiter FC/ FC3**
  Balanced （Trackability, pushability & Durability）
First choice guidewire
(Polymer jacketed guidewire)

Not pass the lesion

Possibility of $\text{Ca}^{2+}$ guided wiring

**YES**
- Penetration GW
  - Astato XS 9-12/9-40
  - Chevalier tapered 15/30g
  - Jupiter 45g

**NO**
- Drilling GW
  - Ruby (IM, Hard)
  - Treasure XS 12
  - Halberd

Possibility of $\text{Ca}^{2+}$ guided wiring
Calcium tell us the way to go

Easy to use penetration GW
How I shape the tip of guidewires?

For non-CTO lesions:
- Use a small needle to shape the tip.
- Shaping has smooth curve.
- The diameter of the curve is 3 to 6 mm.

For CTO lesions:
- We bend the tip.
- 2 bending points.
- Distal bending is only 1 to 2 mm in length.
Stiffer GW have risk of GW perforation

Ca guided wiring is impossible

→ Subintimal approach may be safe
Strong point of Subintimal approach

relative safe
(Do not to outside of the vessel)
uncontrollable (By chance procedure)
(bi-directional approach often required)
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Shaft of the Regalia XS 1.0 is not so strong:
Easy to make **smaller loop** than other PJ-GW
Definition of **micro-knuckle**

A technique in which a **microcatheter** advance into the CTO without any preceding GW leading
Representative case

CLI: 70s female on dialysis
Micro-knuckle for occluded PTA
Final angiogram
Antegrade approach sometimes fails

However
20 to 30% Failure

Advancing into CTO lumen
Wiring in CTO body
Successful penetration
Retrograde access is key to success.
Various retrograde access technique

Distal site puncture

Trans-collateral

Trans-pedal (Pedal plantar loop)
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Lateral view is appropriate for...

Distal PTA and plantar artery
Frontal view is appropriate for...

ATA, dorsal, metatarsal and peroneal artery
Extreme retro-access

Metatarsal artery puncture technique
GW for Distal puncture

Regalia XS 1.0

Do not make injury to punctured artery

Command, Jupiter PC, Chevalier

Shaft is strong = provide strong back-up force but contains a possibility of vessel injury.
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Two challenges for TCA

1. How to cross Collateral channels?

2. How to cross The target lesions?
Problem of the channel tracking

- Tortuosity
- Bending angle
- Channel length
Channel selection is important

Not tortuous
Not bended
Not long

Select the channel, candidate for wiring
Small, right angled Regalia XS is the best
Two challenges for TCA

1. How to cross Collateral channels?

2. How to cross The target lesions?
GW selection for retrograde wiring

Situation is slightly severer than antegrade wiring

Maintain the GW Trackablity and pushability

Polymer jacketed GW with strong shaft
• Retro wiring with DP
  Polymer jacketed GW with **Stainless steal core**
  • Regalia XS 1.0 (Asahi), Chevalier floppy, PLX (Cordis)
  Maintain **Trackablily & Pushabibility**

• Retro wiring with TCA/TPA
  Polymer jacketed GW with **Nitinol Core**
  • Jupiter FC/FC3 (Boston), Hi-torque Command (Abbot)
  Relatively tough situation to DP
  Pushability, **Durability** and **Tip memory**
After the retro-set up

Reverse CART
CART
Double balloon
Wire rendezvous

Several technique for reconstitution
Take home message

There are many specific techniques for BTK interventions. We should learn about strength and weakness of each techniques.

Accumulation of evidence, development of dedicated devices and novel techniques were required for standardization of BTK interventions.
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