Tips and Tricks for Crossing, Wiring, and Treating BTK CTOs: It Is not Simple and Technical Details Matter

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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

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)

**How I shape the tip of guidewires?**

<table>
<thead>
<tr>
<th>For non-CTO lesions</th>
<th>For CTO lesions</th>
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<tbody>
<tr>
<td>Use a small needle to shape the tip.</td>
<td>We bend the tip.</td>
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<tr>
<td>Shaping has smooth lines.</td>
<td>2 bending points.</td>
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<tr>
<td>The diameter of the curve is 2 to 8 mm.</td>
<td>Distal bending to any 7 to 2 mm in length.</td>
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**Calcium tell us the way to go**

**First choice guidewire**  
(Polymer jacketed guidewire)

- Penetration GW: **YES**  
  - Astatto XS 9-12/9-40  
  - Chevalier tapered 15/30g  
  - Jupiter 45g
- Drilling GW: **NO**  
  - Ruby (IM, Hard)  
  - Treasure XS 12  
  - Halberd

**Strategy 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
Shaft of the Regalia XS 1.0 is not so strong: Easy to make **smaller loop** than other PJ-GW

**Strategies of BTK crossing**

1. Antegrade approach
   1-1: Intraluminal approach
   - Japanese art: 0.014-inch GW
   1-2: Subintimal approach
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   - Micro-knuckle
2. Retrograde approach
   2-1: Distal puncture
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**Various retrograde access 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.

GW selection for retrograde wiring

- Situation is slightly severer than antegrade wiring
- Maintain the GW Trackability and pushability
- Polymer jacketed GW with strong shaft
Small, right angled **Regalia XS** is the best

- Retro wiring with DP
  - Polymer jacketed GW with **Stainless steel core**
    - Regalia XS 1.0 (Asahi), Chevalier floppy, PLX (Cordis)
  - Maintain **Trackability & Pushability**

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

After the retro-set up

- Reverse CART
- CART
- Double balloon
- Wire rendezvous

Several techniques for reconstitution

**Take home message**

There are many specific techniques for BTK-CTO interventions.

We should learn about the strength and weakness of each strategy and the characteristics of each guide wire.

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