Guidewire Technology & my guidewire algorithm for SFA-pop occlusions

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Disclosures Koen Deloose, MD

- I have the following potential conflicts of interest to report:

  - Consulting: Abbott, BD, Biotronik, Boston Scientific, Cook, CTI vascular, iVascular, Medtronic, Philips, Terumo, CyndRX, Profusa
  - Employment in industry
  - Stockholder of a healthcare company
  - Owner of a healthcare company
  - Other(s)

- I do not have any potential conflict of interest
Guidewires are essential

An **appropriate guidewire selection** makes it easier to overcome difficult clinical situations

**Access towards lesions**

**Cross through lesions**

**Deliver to lesions**

100% of the procedures
Guidewires are essential

**Characteristics:**
- Tip durability
- Pushability
- Steerability/torquability
- Trackability/support
- Tactile feedback
- Prolapse tendency
- Penetration power

**Clinical Situation:**
- Vessel anatomy (tortuosities, acute angles, straight run-off...)
- Lesion location
- Lesion type (CTO, Ca, stenosis,...)
Labyrinth of guidewires

Which platform?

Frontline cases?

Workhorse

Complex cases?

Specialty
The way through the labyrinth: which platform?

0.018”

SUPPORT

PROFILE

>0,014”

<0,035”
Creating order in the chaos: which platform?

Intravascular and Extravascular Microvessel Formation in Chronic Total Occlusions
A Micro-CT Imaging Study

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Figure 1. Micro-CT Axial Slices and Labeling Procedure
Micro-computed tomography (μ-CT) slices are shown from (A) proximal to (H) distal positions through the lesion and follow both the intravascular channels (red) and extravascular channels (blue). The patent lumen is identified with the letter "L." The dotted yellow line represents the outer border of the artery. (I) Resulting volumes generated from the labeled materials and the location of the axial slices are shown. (J) Angiogram of a 12-week-old chronic total occlusion (red arrowheads identify the proximal and distal ends).
Creating order in the chaos: which platform?

Figure 5. Communicating Vessels in Arterial Occlusions
(A) A micro-computed tomography slice showing intravascular microvessels (red) communicating with extravascular microvessels in the arterial wall (blue). (B) Longitudinal slice through the occlusion showing communicating channels (yellow arrows). (C) Number of such channels as a function of the occlusion age. (D) Volume-rendered image of a 12-week chronic total occlusion showing several extravascular microvessels (blue) communicating with intravascular vessels. Inset image shows wide-field view of the chronic total occlusion, with the proximal entrance located in the upper left-hand corner; the yellow box illustrates the magnified region shown in the main image.

Figure 2. Progression of an Arterial Occlusion Over Time
Progression of microvasculature at (A) 2 weeks, (B) 6 weeks, (C) 12 weeks, and (D) 18 to 24 weeks. White arrows represent the proximal end; black arrows represent the distal end. Intravascular channels are shown in red; extravascular channels are shown in blue.
More and more devices are 0,018” compatible
Immediately working on the lower platform in CTO’s
Extension from CFA towards BTK-range
Excellent for “exotic accesses”
Stents with lower COF are 0,018” compatible
Less traumatic -> smaller loops subintimal
Creating order in the chaos: which cases?

• Frontline cases
  - Easy, straightforward lesions
  - Stenoses, fresh thrombus

ABSOLUTELY STAY INTRALUMINAL
AVOID DISSECTIONS

SLIDING WIRES
Creating order in the chaos: which cases?

- Complex cases
  - (long) CTO’s, different Ca+ levels

TRY TO STAY INTRALUMINAL
- Proximal cap penetration
- Following microchannels
- Delivery of devices

SUBINTIMAL RECANALIZATION
- Re-entry difficulties

PENETRATING WIRES
DRILLING WIRES
CTO WIRES

DURABLE WIRES
Sliding wires

*Frontline cases*
- Easy, straight forward lesions
- Stenoses, fresh thrombus

**ABSOLUTELY STAY INTRALUMINAL**
**AVOID DISSECTIONS**

**SLIDING WIRES**

**ASAHI Gladius 0.018**

Polymer Jacket + Hydrophilic Coating (10cm)

- **Support:** ★★★★★
- **Torque:** ★★★★★
- **Penetration:** ★★★★★
- **Lubricity:** ★★★★★

**Polymer Jacket Micrograph**

**Polymer Jacket Type**

**Coil Type**

**Polymer Jacket = gel-like & smooth**
(Lubrious)

Tracks / slides through tortuous vessels and heavily calcified lesions / micro-channels – reduces friction.
**Frontline cases**
- Easy, straightforward lesions
- Stenoses, fresh thrombus

**ABSOLUTELY STAY INTRALUMINAL**
**AVOID DISSECTIONS**

**SLIDING WIRES**

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**Round Core**

**Better Torque Response**

**No Whip Motion**

**ACT ONE**

**Protect Core From Kinking**

**Increases Torque Force**
Case example
CTO wires

*Complex cases*
✓ (long) CTO's, different Ca+ levels
✓ Proximal cap penetration
✓ Following microchannels
✓ Delivery of devices

TRY TO STAY INTRALUMINAL

PENETRATING WIRES
DRILLING WIRES
CTO WIRES

ASAHI Halberd 0.018

Hydrophilic Coating on Spring Coll (11cm)

Support
	● ● ● ● ●
Torque
	● ● ● ● ●
Penetration
	● ● ● ● ●
Lubricity
	● ● ● ● ●
Case example

Fast spinning

Halberd 0.018”

Halberd 0.018”
CTO wires

- Complex cases
  - (long) CTO's, different Ca+ levels
  - TRY TO STAY INTRALUMINAL
  - Proximal cap penetration
  - Following microchannels
  - Delivery of devices

Astato 30

- Diameter: 0.45 mm (0.018 in)
- Usable length: 180/300 cm
- Coil length: 15 cm
- Radiopaque length: 15 cm

Tapered tip provides excellent penetration.

Gram/πr²
Case example
Case example

ASTATO 30
Durable dissecting wires

- (Baby J tip) Terumo 0,035” Glidewire
- Advantage Terumo 0,018”
- Command Abbott 0,018”

- With a short loop, subintimal tract
- Bolia technique
- Spinning loop
- Enforcing re-entry
Case example
To visualize the solution for the labyrinth...

ATK

ASAHI GLADIUS 0.018”

ASAHI HALBERD 0.018”

ASAHI ASTATO 30

Stenosis  Thrombotic lesion  Fibrotic lesion  Calcific lesion  Highly Calcific lesion
CONCLUSION

*Choosing the right wire is thé key for a successful procedure
*Sliding, penetrating and dissecting potentials are the most important requirements
*0.018” platforms are my favourite platforms for femoropopliteal work
*Sliding Gladius for frontline cases
*Penetrating Halberd for fibrotic and calcified lesions
*Drilling Astato 30 for the extreme lesions
*Dissecting Advantage, Command and Baby J-tip Glidewire for subintimal recanalizations
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