A novel technique for proximal anterior tibial artery occlusion with severe calcification using direct puncture with Shoot the Needle Into the PERpendicular calcified Ring (SNIPER) technique

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Disclosure

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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)

- [ ] I do not have any potential conflict of interest
Arterial revascularization for below-the-knee arteries (BKA) with chronic limb-threatening ischemia (CLTI) is essential for limb salvage and wound healing.

The endovascular treatment (EVT) for severely calcified BKA lesion is challenging due to interrupting the passage of the devices.

During CTO wiring, the vessel path is unclear without imaging devices, leading to unsuccessful procedure, however, calcification sometimes help to visualize the vessel road.
Case: 77 y.o. male

CC: Right thumb ulcer and necrosis
(Rutherford 5, WIFI stage1(W-1 I-1 FI-0))

Medical history:
He had been suffered from right thumb ulcer and necrosis for one month.

HT: 165.0 cm, BW: 54.5 kg, BMI: 20.0

Risk factor:
Hypertension, Dyslipidemia, Diabetes mellitus, Hemodialysis

rtABI: 0.73, rtSPP: 32/37 mmHg

Prior EVT: rtSFA BMS (details unknown)
※Left major amputation due to CLTI

Drug: Aspirin, Atorvastatin, Teneligliptin
Initial angiography

Approach: rt CFA
GS: 6-Fr Parent Plus
Out of the vessel

Retrograde approach via distal ATA
Shoot the Needle Into the PERpendicular calcified Ring (SNIPER) technique
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Needle rendezvous technique

VASSALLO
NS3

2.0 BC

Tempo

X-Treme PV
Hemostasis

Final angiography

3.0 BC

2.0 BC

2.0 BC
The EVT for lesion with proximal blunt stump and calcification at the proximal entry point is challenging.
Calcification of BTK artery

Calcification of BTK is mainly in the medial.

Medial calcification can be merkmal of the vessel due to outside the lumen.
Vessel diameter

Comparison of QCA and IVUS (RVD)

0.4~0.7mm

Actual vessel diameter is larger than measured by angiography.
Shoot the Needle Into the PErpendicular calcified Ring (SNIPER) technique
Limitation

- Puncture skill is necessary.
- The puncture site is just area which the needle can reach.
- There is a possibility of nerve injury or arteriovenous fistula formation.
- The vessels with anatomic abnormalities or severe bends cannot be used.
Calcification helps visualize the vascular pathway and SNIPER technique using calcified merkmal is feasible for recanalization of severe calcified occlusion.