CCT@LINC: Role of below the ankle intervention

Tatsuya Nakama, Makio Muraishi

Department of Cardiology,
Tokyo Bay Medical Center, Urayasu, Japan
Speaker name: Tatsuya Nakama MD.

I have the following potential conflicts of interest to report:

**Consulting:** Boston Scientific, Century Medical Inc., Medtronic

Employment in industry: None

Stockholder of a healthcare company: None

Owner of a healthcare company: None

**Honoraria received from:** Abbot Vascular, Asahi Intecc., Boston Scientific, COOK, Cordis, NIPRO, KANEKA, Lifeline, Medikit, Medtronic, Orbus Neichi, Terumo,
Aggressive BTA revascularization is the only one solution for SAD

- CLTI Patients with SAD have poor outflow.
- Therefore, conventional (wound related) one straight line method sometimes insufficient for wound healing.
- It is impossible to restore the poor outflow itself.
- Aggressive revascularization, “as many as”, “as distal as” possible strategy may be final solution for CLI with SAD.
Aggressive revascularization may improve the wound healing

**Higher**

Rate of wound healing

59% vs. 38%

**Faster**

Time to wound healing

211d vs. 365d

Sub-analysis of RENDEZVOUS registry

Figure: Primary outcomes
Rate of Wound healing at 1-year after primary treatment

- Multi-vessel strategy: 67.3%
- Single-vessel strategy: 43.3%

Log rank p=0.028

Type 2 PAA 95%
Type 3 PAA 90%
Type 2 Non-PAA 87%
Type 3 Non-PAA

Limb Salvage rate (%)

Time to Wound healing (months)

0 3 6 9 12

Single-vessel strategy
at risk: 44 30 27 25 22
%: 0.0 31.8 38.6 40.9 43.3

Multi-vessel strategy
at risk: 69 43 29 26 20
%: 0.0 37.7 56.8 61.2 67.3

Standard error did not exceed 10% in both groups

Nakama et al Presentation@ LINC2017

Tsubakimoto et al. JEVT accepted
We cannot restore the poor “out flow” itself, but perfusion pressure may improve after the additional aggressive revascularization.

- Patent ATA-DP
- Occluded PTA-LP
- Perfusion pressure may improve
Case overview

- 65yo male, DM
- Daily hemodialysis
- Previous history of CABG
- Poor Ejection fraction
- Rutherford 5,
- W2, I2, fI2, WiFi CS:4
BTK & BTA disease; SAD distribution
EVT for PTA and plantar (1\textsuperscript{st} attempt)
EVT for PTA and plantar (1st attempt)
Final angiogram in 1st session
What should we do???

Is there any solution?
These devices are **not available** in Japan.
How to cross complex BTK/BTA lesion

1.6/1.8Fr support catheter

Cross

2.0mm balloon (long; 200 to 250mm)*

NOT Cross

Cross

Additional dilatation with optimal size B/C*
(2.5 or 3.0mm or tapered)

NOT Cross

Cross

1.5mm or 1.25mm
High crossable balloon

NOT Cross

OFF label is acceptable?

NO

BAD FORM

Coronary B/C, Rotablator Crosser, Brochenbrough etc..

YES

Final angiogram

* If indentation is still remained after POBA, Non-compliant balloon will be used
Second session was performed

It seemed impossible to restore the ATA & DP
Second session was performed
PIERCE technique (16G needle) was performed

Special courtesy from Dr. Muraishi, my colleague

However... Impossible to cross

Difficult to destroy the calcium from outside of artery...
What should we do???

Is there any solution?
We need

More back up!

More back up!!

BADFORM Technique!!
BADFORM technique

A Novel Lesion Crossing Technique: Balloon Deployment Using Forcible Manner (BADFORM) Technique

Keisuke Nakabayashi, MD, Hiroshi Ando, MD, PhD, Nobuhito Kaneko, MD, Manabu Shiozaki, MD, Daisuke Sunaga, MD, PhD, Akihiro Matsui, MD, PhD, Kazuhiko Tanaka, MD, PhD, and Minoru Shimizu, MD, PhD

Fig. 1. The BALloon Deployment using FORcible Manner (BADFORM) technique system. A: The externalized wire is established between the left femoral artery (antegrade approach) and the left dorsalis pedis artery (retrograde approach). The black arrows indicate the direction of force. B: An enlarged image of the retrograde puncture site shows the microcatheter after it is cut to prevent the wire from advancing into it. The black arrowhead indicates the level of the cut microcatheter. C: An enlarged image of the proximal balloon exit port shows the torque device fixing the balloon catheter to the wire. [Color figure can be viewed at wileyonlinelibrary.com]
Prepare for BADFORM; Distal puncture and rendezvous
OK!!

Ready to start
BADFOOOOOM!!!!

Special courtesy from Dr. Muraishi, my colleague

Nakabayashi K et al, Catheter Cardiovasc Intern 2017
BADFORM does not work well...

OMG!!! (><)  
MC was broken!!
Combination with PIRCE and BADFORM
Balloon could pass the lesion, however...

Impossible to open up...
What should we do???

Is there any solution?
Use of Brochkenbrough needle

Nakama et al. Presentation @ LINC AP2017, LINC2018
Reasonable for proximal lesion

It is not fit for distal lesion (difficult to deliver)

Nakama et al. Presentation @ LINC AP2017, LINC2018
We finally found “alternative” needle!

Needle for PTCD/PTGBT 20cm needle
Inner PIERCE technique

INNER PIERCE technique

Special courtesy from Dr. Muraishi, my colleague
Debulk the calcified plaque, from inside.

Debulk the severe Ca
GW

Retrograde puncture point

PTGBD needle
2.0mm balloon was fully expanded, and...
Wiring to distal PTA and plantar
Final angiogram showed acceptable result
Follow-up angiogram 3-months after the procedure
Clinical course was very well
Summary of Case overview

- CLIT patients with unhealed toe gangrene and ulcerations
- Conventional endovascular recanalization was fail due to severely calcified plaque.
- Many of the Japanese technique was demonstrated to negotiate the calcified plaque... But all of them does not work well.
- use of Front cut debulking device is good option, but it is off-label in Japan and it contains risk of distal embolism
- Inner PIERCE technique was performed and it can negotiate the severely calcified plaque. Clinical course was very well.
We cannot restore the poor “out flow” itself, but perfusion pressure may improve after the additional aggressive revascularization.
Thank you for your attention

Tatsuya Nakama MD

Department of Cardiology,
Tokyo Bay Medical Center, Urayasu, Japan
CCT@LINC: Role of below the ankle intervention

Tatsuya Nakama, Makio Muraishi

Department of Cardiology,
Tokyo Bay Medical Center, Urayasu, Japan