Percutaneous needle disruption of heavily calcified tibial artery during infrapopliteal angioplasty

Personal experience with the PIERCE technique

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Disclosure

Speaker name: Jinoo Kim

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)

- [x] I do not have any potential conflict of interest
We may anticipate failure due to:

① Unsuccessful wire passage
② Failure to track balloon catheter over the wire
③ Refractory stenosis

Heavily calcified CTO lesions
110 cm guiding

Flossing

0.014” platform

2.0mm → 1.5mm

110 cm guiding

1.25mm OTW → RX

Flossing
# Technique of Percutaneous Direct Needle Puncture of Calcified Plaque in the Superficial Femoral Artery or Tibial Artery to Facilitate Balloon Catheter Passage and Balloon Dilation of Calcified Lesions

Shigeo Ichihashi, MD, Tomoyasu Sato, MD, Shinichi Iwakoshi, MD, Hirofumi Itoh, MD, and Kimihiko Kichikawa, MD

**PIERCE = percutaneous direct needle puncture of calcified plaque, J Vasc Interv Radiol 2014; 25:784–788**

## Table: Summary of Cases

<table>
<thead>
<tr>
<th>Case</th>
<th>Age/gender</th>
<th>Comorbidity</th>
<th>Rutherford classification</th>
<th>Lesion site</th>
<th>Indication for PIERCE technique</th>
<th>Guide wire for lesion cross</th>
<th>Device used for lesion passage</th>
<th>Stent</th>
<th>Complication</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>85/M</td>
<td>CKD with HD</td>
<td>5</td>
<td>SFA</td>
<td>Difficulty of device passage</td>
<td>0.018-inch</td>
<td>Penetration microcatheter X support</td>
<td>Zilver PTX (Cook Japan, Tokyo, Japan) 6 mm/12 cm</td>
<td>Minor hemorrhage from punctured tract</td>
</tr>
<tr>
<td>2</td>
<td>67/M</td>
<td>CKD with HD</td>
<td>4</td>
<td>SFA</td>
<td>Difficulty of device passage</td>
<td>0.014-inch</td>
<td>Penetration microcatheter X support</td>
<td>Zilver PTX 7 mm/12 cm</td>
<td>Minor hemorrhage from punctured tract</td>
</tr>
<tr>
<td>3</td>
<td>75/F</td>
<td>CKD</td>
<td>5</td>
<td>SFA</td>
<td>Insufficient expansion of balloon</td>
<td>0.014-inch</td>
<td>1.5-mm coronary balloon</td>
<td>SMART (Cordis Corporation Japan, Tokyo, Japan) 6 mm/10 cm</td>
<td>—</td>
</tr>
<tr>
<td>4</td>
<td>55/M</td>
<td>CKD with HD</td>
<td>5</td>
<td>PTA</td>
<td>Difficulty of device passage and insufficient expansion of balloon</td>
<td>0.014-inch</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

T. Sato (Japan)
74 year-old male with right heel wound

Refractory stenosis
Disruption of calcification

Balloon tamponade and angioplasty
Fragmentation & redistribution

Before

After
55 year-old male on hemodialysis
Multiple toe wounds in the left foot
Failed PTA recanalization
Summary

• Heavily calcified CTOs may be difficult to treat despite advanced techniques and devices

• Tibial calcifications may be disrupted percutaneously using a needle

• The technique is an easy, reproducible and serves as another bail-out option
Thank you for your attention.

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