TCTAP 2018 Case Presentation

Non-ST Elevation Myocardial Infarction with Double Chronic Total Occlusions

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Clinical History

• This 71-year-old man presented with intermittent anterior chest tightness for 3 weeks and worse in severity and visited our emergent department on Feb 9, 2017.

• Past History: Hypertension, diabetes (HbA1c: 7.7%), dyslipidemia

• Serial cardiac enzymes:

<table>
<thead>
<tr>
<th></th>
<th>2/9 17:19</th>
<th>2/10 04:41</th>
<th>2/10 10:52</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPK(IU/L)</td>
<td>106</td>
<td>75</td>
<td>77</td>
</tr>
<tr>
<td>CK-MB(ng/ml)</td>
<td>3.8</td>
<td>2.5</td>
<td>2.3</td>
</tr>
<tr>
<td>Troponin-I(ng/ml)</td>
<td>0.54</td>
<td>0.698</td>
<td>0.571</td>
</tr>
</tbody>
</table>
Electrocardiogram (2017/2/9 17:09)
After admission, Echocardiography on Feb 11, 2017 showed:

- Normal LV systolic function (EF: 65.85%)
- LA dilatation (4.21cm)
- Mild MR
- Abnormal LV relaxation (E/A; 0.63)

No symptoms after admission, medical treatment was given first and he discharged on Feb 11, 2017.

However, he came to my OPD on Feb 16, 2017 while chest tightness persisted during exertion.

Coronary angiography was arranged on Feb 20, 2017.
RCA Angiogram

No significant stenosis
LCA Angiogram

LAD: seg. 6 chronic total occlusion
LCX: seg.11 chronic total occlusion
LAD: seg. 6 chronic total occlusion
LCX: seg. 11 chronic total occlusion
### J-CTO Score Sheet

#### Variables and Definitions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Entry Shape</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tapered</strong></td>
<td>Entry with any tapered tip or dimple indicating direction of true lumen is categorized as “tapered”.</td>
<td>□ Tapered (0) □ Blunt (1)</td>
</tr>
<tr>
<td><strong>Blunt</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Calcification</strong></td>
<td>Regardless of severity, 1 point is assigned if any evident calcification is detected within the CTO segment.</td>
<td>□ Absence (0) □ Presence (1)</td>
</tr>
<tr>
<td><strong>Bending &gt;45 degrees</strong></td>
<td>One point is assigned if bending &gt; 45 degrees is detected within the CTO segment. Any tortuosity separated from the CTO segment is excluded from this assessment.</td>
<td>□ Absence (0) □ Presence (1)</td>
</tr>
<tr>
<td><strong>Occl. Length</strong></td>
<td>Using good collateral images, try to measure “true” distance of occlusion, which tends to be shorter than the first impression.</td>
<td>□ ≤20mm (0) □ ≥20mm (1)</td>
</tr>
<tr>
<td><strong>Re-try lesion</strong></td>
<td>Is this Re-try (2nd attempt) lesion? (previously attempted but failed)</td>
<td>□ No (0) □ Yes (1)</td>
</tr>
</tbody>
</table>

#### Category of Difficulty (Total Point)

- □ easy (0)
- □ Intermediate (1)
- □ difficult (2)
- □ very difficult (≥3)

#### Total Points

Figure 5. J-CTO Score Sheet: A calculation sheet for J-CTO (Multicenter CTO Registry of Japan) scoring. A definitions of each variable are summarized and illustrated. The total score is identified as the “J-CTO score.”
**CTO of LCX**

<table>
<thead>
<tr>
<th>Entry shape</th>
<th>Calcification</th>
<th>Bending $&gt;45^\circ$</th>
<th>Occlusion length</th>
<th>Re-try lesion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tapered (0)</td>
<td>Presence (1)</td>
<td>Absence (0)</td>
<td>&lt;20mm (0)</td>
<td>No (0)</td>
</tr>
</tbody>
</table>

J-CTO score: 1 (intermittent)
<table>
<thead>
<tr>
<th>Entry shape</th>
<th>Calcification</th>
<th>Bending &gt;45°</th>
<th>Occlusion length</th>
<th>Re-try lesion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tapered (0)</td>
<td>Presence (1)</td>
<td>Absence (0)</td>
<td>&gt;20mm (1)</td>
<td>No (0)</td>
</tr>
</tbody>
</table>

**J-CTO score: 2 (difficult)**

*CTO of LAD*
PCI for LCX first

Guiding catheter: Medtronic EBU 3.5 7Fr with side hole, Torqued the Terumo Runthrough Floppy for a while to distal LCX
POBA with Boston Scientific Maverick, 2.0x20mm at LCX

Terumo Runthrough hypercoat to OM1

POBA with Abbott MiniTrek, 2.0x12mm at LCX-OM1
POBA with Boston Scientific Maverick, 2.5x20mm at LCX

Stenting with Boston Scientific Synergy, 2.5x32mm at LCX
Post-dilate with Boston Scientific NC Emerge, 2.5x15mm at LCX

LCX final result

Maybe recent total occlusion or recent infarction.
1. Initially left Terumo Runthrough Hypercoat in LCX as an anchor wire.
2. We tried the LAD CTO with Asahi Stride 2.2Fr plus Asahi UltimateBros 3 but it seemed in the wrong way.
1. Initially left Terumo Runthrough Hypercoat in LCX as an anchor wire.
2. We tried the LAD CTO with Asahi Stride 2.2Fr plus Asahi UltimateBros 3 but it seemed in the wrong way.
1. Asahi Fielder FC to another diagonal branch as 2nd anchor wire

2. Asahi Stride 2.2Fr with Asahi UltimateBros 3 to distal diagonal branch

3. POBA with Abbott MiniTrek (1.2x6mm) from the diagonal branch
1. POBA with Abbott MiniTrek (1.2x6mm) from the diagonal branch to the possible bifurcation between proximal LAD and diagonal branch

2. To be sad, after pushing Abbott MiniTrek, 2.0x12mm to the diagonal branch, all wires went outside!

Then, how could we continue our work?
The route of LAD became more clear after last POBA in the bifurcation of diagonal branch and LAD.
We re-wired again and successful
1. Asahi Fielder FC to distal diagonal branch first
2. Terumo Runthrough Floppy to distal LAD

POBA with Abbott MiniTrek, 1.2x6mm

POBA with Abbott MiniTrek, 2.0x12mm
POBA with Boston Scientific NC Emerge, 2.5x15mm

After POBA

Stenting with Boston Scientific Synergy, 2.5x38mm
Post-dilate with Boston Scientific NC Emerge, 2.5x15mm
The patient followed up in my OPD for more than one year without dyspnea or chest tightness.
Take Home Message

- Traditionally, NSTEMI could be treated with medication if no symptoms. However, an early invasive strategy with coronary angiography within 48 hours of symptoms onset is recommended in guidelines.

- Once TWO CTOs were encountered, we would like to fix the easier one first in clinical practice, but sometimes sequential CTO recanalization is also feasible and safe.

- Contralateral preparation for dual injection before CTO interventions is recommended, especial when collaterals are visible.
• In CTO intervention involving bifurcation lesions:
  - A predilatation with a small balloon from proximal main trunk to a side branch may give us the hints of lesion anatomy and also plaque modification, all of which bring the better successful rate in CTO PCI (side branch technique/open-sesame technique).
  - Other methods such as “deflecting balloon” or “Crusade catheter” could also be considered.