SUCCESSFUL RECANALIZATION OF CTO IN THE PROXIMAL LAD VIA SVG IN PATIENT AFTER CABG

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64 YRS-OLD MALE

Present illness

• 1993/3: He underwent CABG (SVG to LAD, SVG to LCX) and AVR (SJM 23) for prior anterior MI and aortic stenosis.

• 2008/9: Angina recurred. CAG revealed significant stenosis in the proximal SVG to LAD and LCX, both of which were treated with BMS under distal protection.

• 2009/1: CTO in RCA was treated with 2 cypher stents with antegrade approach.

• 2009/10: Angina symptom developed again and diagnosed as UAP. Emergent CAG showed focal ISR in the proximal RCA and tight stenosis at the distal anastomosis site of SVG to LAD, though ISRs in the proximal SVGs were not identified. Both lesions were treated with balloon dilatation alone.

• Since this procedure, angina symptom has been diminished. However, we supposed life expectancy of these SVGs were very limited. Therefore, we planned to perform PCI to CTO in the native LAD.

Past history

• HL, former smoking (1 pack/day for 40yrs),

Family history

• Father and elderly brother; MI
One Liberte stent 4.0/12mm in the proximal SVG to LAD and one Vision stent 4.0/12mm in the proximal SVG to LCX. Both lesions were treated under distal protection.
Two cypher stents (2.5/28mm and 3.0/33mm) were deployed in the CTO lesion of proximal to mid RCA with antegrade approach.
ISR in the proximal RCA was dilated by balloon alone. Blood flow in SVG to LAD showed delayed fashion presumably due to severe narrowing of anastomosis site which was treated by Scoreflex.
One cypher stent (2.5/18) was deployed at the distal anastomosis of the SVG to LCX.
PCI ON DECEMBER 2009
LAD CTO LESION

SVG to LAD; 7Fr AL 0.75 and LCA; 7Fr EBU 3.5 via FA.

Antegrade approach first with Fielder XT with Finecross support.

GW exchanged to ML 3g, 12g.

MC exchanged to Tornus 88.

However the GW could not get through the distal fibrous cup of CTO segment.
PCI ON DECEMBER 2009
LAD CTO LESION

Proceeded to retrograde via SVG to LAD with Fielder FC and Corsair back up.

GW proceeded to the native LAD and Corsair cross the anastomosis site with sharp angle.

GW got into CTO segment, but Corsair could not.

For preparation of reverse CART, 1.3mm balloon was advanced and dilated, upgraded to 2.0mm balloon

In order for IVUS (Volcano) to be advanced, 2.5mm balloon was needed.
PCI ON DECEMBER 2009
LAD CTO LESION

IVUS observation before reverse CART
PCI on December 2009
LAD CTO lesion

Larger balloon (3.5mm) to make a connection but failed

IVUS showed still thick atheroma layer between 2 GWs

Retrograde GW exchanged to ML 3g and tried to advance more proximal

However, at this stage, we realized retrograde GW was completely cut off.

Removed Corsair and luckily, torn distal part of GW could be withdrawn with Corsair
CORSAIR AND MIRACLE 3G GW
CORSAIR AND MIRACLE 3G GW
PCI on December 2009
LAD CTO lesion

Proceeded to classic CART

Again, we advanced a GW (Whisper MS) with Finecross retrogradely via SVG

Trapped retrograded GW by antegrade balloon in the CTO segment

Finecross was removed and 2.5mm balloon was advanced

Classic CART was applied but failed to pass the antegrade GW to the distal true lumen.
We moved back to antegrade approach.

GW via SVG was advanced to distal LAD and dilated anastomosis with 2.5mm balloon.

Tried to cross with several kinds of GWs including Conquest pro and Fielder XT.

Finally, succeeded to pass with Fielder XT to the distal true lumen.
PCI ON DECEMBER 2009
LAD CTO LESION

IVUS observation after GW crossing
Four cypher stents (2.5/28mm, 3.0/33mm, 3.5/28mm and 3.5/13mm) was deployed from mid LAD to LMT.

Final angiogram showed TIMI 3 flow without significant residual stenosis, however, SVG was not seen.
ANOTHER CASE WITH CORSAIR COMPLICATION
CORSAIR AND FIELDER XT GW
SUMMARY 1

We succeeded to recanalyze CTO lesion in the proximal LAD in patient after CABG and AVR.

Multidiscipline approaches were attempted to have success:

1. Antegrade approach failed
2. Retrograde approach via SVG (reverse CART) failed
3. Retrograde approach via SVG (classical CART) failed
4. Antegrade approach with balloon dilatation at distal anastomosis site of SVG to LAD. succeeded

To tackle to CTO and try to obtain more than 90% success rate, we have to understand that each technique should be a part of the overall and multiple backup plans should be in place.
Everybody admits that Corsair is very useful device when we tackle CTO with retrograde approach, however, it also has limitations.

Although tip of Corsair is so tapered and flexible that can track tortuous vessel and get into very tight or occluded lesion, it can be damaged, when we turn around Corsair too much (usually more than 10 rotations at one time) in very calcified and/or angulated anatomy.

Tip of Corsair can be twisted and guide wire gets stuck with Corsair and this could lead to rupture of guide wire coil and guide wire core shaft itself.

This can happen either with coil wire or polymer jacket wire.