Drug-eluting Stents
(TCTAP C-133 to TCTAP C-149)

TCTAP C-133
“Perfect Is Always the Enemy of Good” - A Good Lesson Revisit
Hoi Fan Danny Chow, C. L. Lau, Y. K. Lo
Hospital Authority, Hong Kong, China

[Clinical Information]
Patient initials or identifier number:
Ma. K.K

Relevant clinical history and physical exam:
73 years old gentleman with history of diabetes mellitus, hypertension, and ischemic heart disease presented with non-ST elevation myocardial infarction (NSTEMI) in 2002. He had percutaneous coronary intervention (PCI) on 5/11/2002 to middle right coronary artery (RCA) stented with an express II and PCI to proximal posterior descending artery (PDA) with 5/15 balloon. He had a 2nd PCI to proximal RCA on 11/2/2003 with Tsunami 3.0/15 and 3rd episode of PCI on 26/8/2003 with 2 overlapping taxus stent deployed to middle left anterior descending artery (LAD). He presented with another episode of NSTEMI 3/2013.

Relevant test results prior to catheterization:
Physical examinations of cardiovascular, respiratory, and abdominal system were unremarkable. Troponin I was 2.22 Ug/L. Echocardiogram on 14/3/2013 showed satisfactory left ventricular contraction with no significant valvular lesion.

Relevant catheterization findings:
Coronary angiogram on 18/4/2013 was initially done through right radial approach with Tiger II 6 French catheter and showed normal left main, middle LAD multiple calcified instent restenosis (ISR) LAD 70-80%, left circumflex (LCx) was small and non dominant, and proximal RCA showed 90% ISR and middle RCA 80% ISR.

[Interventional Management]
Procedural step:
PCI was done with JR4 6 French guiding catheter. RCA was wired with Sion. Intravascular ultrasound (IVUS) insertion was attempted to assess RCA lesion but was unable to pass despite predilatation with tazuna 2.5/15, flextome 2.5/10, and harya 2.5/15 up to 18 ATM. Resolute integrity 2.75/14 was initially planned to be placed in middle RCA but still could not pass with frequent backing of guiding catheter, so the stent was placed in proximal RCA.

Guiding catheter was changed to 6 French AL1 for better support. RCA was rewired with sion wire. Flextome 2.5/10 was again inserted to prepare the middle RCA ISR however the flextome could not pass through the mRCA stent. The flextome was trapped in pRCA stent during withdrawal. Multiple techniques to retrieve the trapped balloon were used. Reinfation of cutting balloon and pull failed. Then a buddy wire with Universal BMW wire with inflation of buddy balloon (including sapphire II 1.0/10, 1.2/15) along side the cutting balloon was attempted. Double guiding technique was attempted with another vascular access with right femoral approach with insertion of another 6 French SAL 0.75 guiding catheter but failed to engage the RCA. Later, a 5 in 6 ST01 catheter was used but failed to advance in the AL1 guiding catheter. Finally 6 Fr guideliner successfully retrieved the trapped cutting balloon with multiple manipulations. The original stent in proximal RCA was damaged with multiple manipulations and a second resolute integrity 3.0/15 was inserted to the proximal RCA. The middle RCA was not stented at the end and RCA showed TIMI III flow. LAD ISR was left for second stage.

Case Summary:
A 68 Y.O female presented with typical chest pain at exertion. Patient had history of PTCA and surgical coronary artery fistula (CAF) ligation 2 years prior. Coronary angiogram showed a patent stent at proximal LAD, partially ligated CAF from LAD to pulmonary artery (PA), and a large CAF from RCA to PA. The RCA CAF was then decided to be closed using microcoil embolization device. With transfemoral approach. The first attempt was using materials of JR 4.0 6F, microcatether progreat 2.4, asahi fielder and microcot tornado cook 8/4 mm. The coil deployment went with trouble. The coil could not be seated to CAF perfectly, with the end result of the coil blocking ostial of RCA. The coil was then snared with secure snare system LTE 2.4, asahi and microcot with a smaller size (6/4 mm). The coil could then be deployed easily but it was not sufficient to close the CAF. Since the insurance didn’t cover for an additional coil, the coil from the first attempt and PTCA guidewire (hi torque floppy) was then used as a coil substitute. The end result was that the CAF was closed nicely using those materials.
[Clinical Information]

TCTAP C-134
Successful Retrieval of Right Coronary Artery Stent Dislodgement with Small Balloon Supported with Hearttrail Catheter

You-Mi Hwang, Keon-Woong Moon
St. Vincent's Hospital, Korea (Republic of)

Relevant clinical history and physical exam:
A 71 years old female, known to have stable angina and had previous PCI at mid RCA, proximal LAD, and ostium of LCX, admitted because of recurrent exertional chest pain for one month.

Relevant test results prior to catheterization:
Coronary CT angiography

Relevant catheterization findings:
Follow up CAG showed progression of distal RCA stenosis approximately 90% with heavy calcification through mid to distal RCA.

[Interventional Management]

Procedural step:
Elective PCI was attempted with 6 Fr JR 4 transradial approach. However, stent passage failed over and over, several times of balloon dilation with 2.0 x 20 mm Ikazuchi (Kaneka Medix Corporation) and 2.5 x 20 mm Ryujin™ Plus (Terumo Europe N.V.) was done through mid to distal RCA repeatedly. In spite of multiple balloon dilation, 2.5 x 14 mm Zotarolimus coated stent (Resolute integrity®, Medtronic) passage repetitively failed owing to proximal angulation and irregular calcification of the lesion. For the better support to approach the target lesion, we changed to femoral 7 Fr AR 1 guiding, however, there still was difficulty in passing stent through mid RCA. Accordingly, another 2.5 x 20 mm drug eluting stent coated with Everolimus (PROMUS™ Element™, Boston Scientific) was deployed at mid RCA. Furthermore, buddy wire with anchor balloon technique was attempted. Despite every endeavor, stent penetration was unsuccessful, what is more, repeated ballooning caused rupture of the balloon, consequently led to distal RCA dissection. To make it worse, while retrieving stent catheter, unexpanded stent was caught at proximal RCA without occlusion of RCA. As a result, only balloon catheter was evacuated. To regain the dislodged stent, we used a 5 Fr Heartrail catheter and a small balloon catheter, size of 1.25mm, when inflated to 10atm. After passage of the balloon through the peeled off stent, we cautiously inflated the balloon up to 10atm and trapped the stent with the balloon, then gently pulled out into the Heartrail catheter. Enclosed within the Heartrail catheter, dislocated stent was successfully removed. Furthermore, final attempt of PCI to distal RCA with 2.5 x 14-mm Resolute integrity® stent succeeded but with TIMI 1 flow at PD branch.

TCTAP C-135
Late Catch up Two Years After Sirolimus-eluting Stent Deployment in Left Main Coronary Artery

Yoshiaki Idemoto, Yoshinobu Murasato
Shinuyakahashi Hospital, Japan

[Interventional Information]

Patient initials or identifier number: initial K.K
male 59 years old

Relevant clinical history and physical exam:
The patient was admitted due to unstable angina in December, 2007. The CAG showed 90% stenosis with ruptured plaque in the LMCA shaft. An SES 3.5/13mm stent was deployed in the lesion. There was no restenosis found in the 18-months follow up CAG.

The patient was admitted again due to the recurrence of effort angina in August, 2012.

Relevant catheterization findings:
A CAG showed 90% in-stent restenosis in the previously treated LMCA.

[Interventional Management]

Procedural step:
We expanded the lesion with NC trek 2.5/8mm and deployed Xience V 3.5/8mm. A CAG showed 90% in-stent restenosis in the previously treated LMCA.

Follow up CAG showed progression of distal RCA stenosis approximately 90% with heavy calcification through mid to distal RCA.

Relevant catheterization findings:
Follow up CAG showed progression of distal RCA stenosis approximately 90% with heavy calcification through mid to distal RCA.

[Interventional Management]

Procedural step:
Elective PCI was attempted with 6 Fr JR 4 transradial approach. However, stent passage failed over and over, several times of balloon dilation with 2.0 x 20 mm Ikazuchi (Kaneka Medix Corporation) and 2.5 x 20 mm Ryujin™ Plus (Terumo Europe N.V.) was done through mid to distal RCA repeatedly. In spite of multiple balloon dilation, 2.5 x 14 mm Zotarolimus coated stent (Resolute integrity®, Medtronic) passage repetitively failed owing to proximal angulation and irregular calcification of the lesion. For the better support to approach the target lesion, we changed to femoral 7 Fr AR 1 guiding, however, there still was difficulty in passing stent through mid RCA. Accordingly, another 2.5 x 20 mm drug eluting stent coated with Everolimus (PROMUS™ Element™, Boston Scientific) was deployed at mid RCA. Furthermore, buddy wire with anchor balloon technique was attempted. Despite every endeavor, stent penetration was unsuccessful, what is more, repeated ballooning caused rupture of the balloon, consequently led to distal RCA dissection. To make it worse, while retrieving stent catheter, unexpanded stent was caught at proximal RCA without occlusion of RCA. As a result, only balloon catheter was evacuated. To regain the dislodged stent, we used a 5 Fr Heartrail catheter and a small balloon catheter, size of 1.25mm, when inflated to 10atm. After passage of the balloon through the peeled off stent, we cautiously inflated the balloon up to 10atm and trapped the stent with the balloon, then gently pulled out into the Heartrail catheter. Enclosed within the Heartrail catheter, dislocated stent was successfully removed. Furthermore, final attempt of PCI to distal RCA with 2.5 x 14-mm Resolute integrity® stent succeeded but with TIMI 1 flow at PD branch.

TCTAP C-136
A Coronary Artery Aneurysm with In-stent Chronic Total Occlusion 4 Years After Implantation of Drug Eluting Stent

Mi-Hyang Jung, Keon-Woong Moon
St. Vincent's Hospital, Korea (Republic of)

[Interventional Information]

Patient initials or identifier number: initial:K.K

Relevant clinical history and physical exam:
An 83-year-old male visited emergency room for recurrent syncope.

Relevant test results prior to catheterization:
The initial electrocardiogram (ECG) showed SA block with the longest pause of 5.6 seconds. The patient had a prior history of non-ST segment elevation myocardial infarction requiring PCI in 2009. At that time, coronary angiography (CAG) revealed two culprit lesions; pLCX 90% in-stent restenosis in the previously treated LMCA. For the better support to approach the target lesion, we changed to femoral 7 Fr AR 1 guiding, however, there still was difficulty in passing stent through mid RCA. Accordingly, another 2.5 x 20 mm drug eluting stent coated with Everolimus (PROMUS™ Element™, Boston Scientific) was deployed at mid RCA. Furthermore, buddy wire with anchor balloon technique was attempted. Despite every endeavor, stent penetration was unsuccessful, what is more, repeated ballooning caused rupture of the balloon, consequently led to distal RCA dissection. To make it worse, while retrieving stent catheter, unexpanded stent was caught at proximal RCA without occlusion of RCA. As a result, only balloon catheter was evacuated. To regain the dislodged stent, we used a 5 Fr Heartrail catheter and a small balloon catheter, size of 1.25mm, when inflated to 10atm. After passage of the balloon through the peeled off stent, we cautiously inflated the balloon up to 10atm and trapped the stent with the balloon, then gently pulled out into the Heartrail catheter. Enclosed within the Heartrail catheter, dislocated stent was successfully removed. Furthermore, final attempt of PCI to distal RCA with 2.5 x 14-mm Resolute integrity® stent succeeded but with TIMI 1 flow at PD branch.