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THE HEART BEAT

CardioVascular Research Foundation Newsletter

PAPER PUBLICATION

PCI and Drugs Equally Beneficial for Treating Coronary Chronic Total Occlusion: DECISION-CTO Randomized Trial

Dr. Seung-Jung Park presented a new randomized clinical trial: the DECISION-CTO trial, at American College of Cardiology's 66th Annual Scientific Session. He demonstrated that in patients with a coronary chronic total occlusion (CTO), treatment with medications alone was found to be equal to percutaneous coronary intervention (PCI), in terms of major adverse events over three years.

CTO has been generally defined as complete occlusion of antegrade coronary flow with estimated occlusion for more than three months. It has been observed in approximately one-third of patients referred for cardiac catheterization. Over the last decade, PCI for CTO has rapidly improved and become more generalized despite its technical challenges. Development of dedicated guidewires and microcatheters, implementation of new recanalization techniques, and accumulated experience of operators have increased the probability of procedural success and minimized the complication rate. Benefits of successful CTO-PCI include reduced angina frequency and improvements in quality of life, left ventricular ejection fraction, or survival. Accordingly, clinical guidelines advocate considering CTO-PCI in patients with selected clinical indications.

However, the current evidence on the prognostic benefits of PCI for CTO would be limited by several factors. CTO-PCI can lead to procedure-related complications including perforation, myocardial injury, or loss of recruitable collateral flow. Additionally, several studies suggest limited clinical benefit from PCI for well-adopted myocardium to chronic ischemia (Figure 1). More importantly, the evidence for CTO-PCI was obtained from observational studies, most of which compared successful and failed CTO-PCI without a control group receiving optimal medical treatment (OMT). Failed CTO-PCI may be not synonymous with an OMT control group.

To answer a clinical question of whether the clincal benefit demonstrated with successful PCI is related to the consequence of opening a chronically occluded vessel, DECISION-CTO trial was designed to compare the outcomes of OMT alone with PCI coupled with OMT. In this study, overall CTO-PCI success rate was 91%. The primary endpoint occurred in 81 patients assigned to OMT and 86 patients assigned to PCI (estimated event rate, 19.6% vs. 20.6%; event rate ratio, 1.05; hazard ratio [HR], 0.95; 95% confidence interval [CI], 0.74 to 1.22; *P*=0.008 for noninferiority) (Figure 2). The composite of death from any cause, myocardial infarction, or stroke occurred in 60 and 61 patients in the two groups, respectively (HR, 1.01; 95% CI, 0.75 to 1.35; *P*=0.97). Any repeat revascularization occurred in 34 patients in the OMT group as compared with 41 patients in the PCI group (HR, 0.81; 95% CI, 0.58 to 1.15; *P*=0.25). Measures of health-related quality of life did not differ significantly between the two groups over time. Therefore, findings suggest that it is not always necessary to open a CTO using PCI, which substantially increases costs and also can increase the risk of a procedural related complication around the time of the procedure.

APRIL 2017

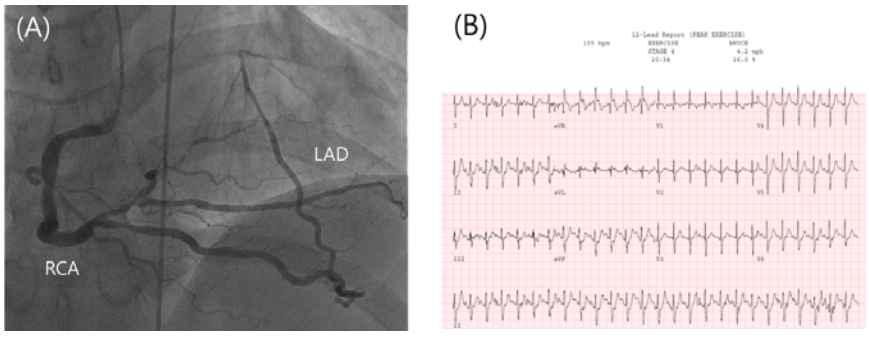

Figure 1. A 43-year-old man underwent drug-eluting stent implantation on mid right coronary artery (RCA) and medical treatment for chronic total occlusion of proximal left anterior descending artery (LAD) with good collateral from RCA (A). After midRCA stenting, treadmill test showed no ischemic changes at maximal exercise with a heart rate of 155 beats per minute (B). This case raised a question that complex percutaneous coronary intervention for chronic total occlusion with potential risk could improve patient survival.

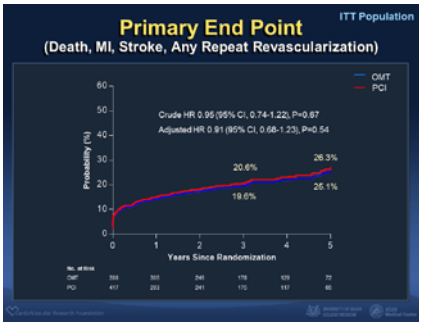

Figure 2. Primary Endpoint of the DECISION-CTO trial.

Coronary Artery Bypass Surgery versus Drug-Eluting Stent Implantation for Left Main or Multivessel Coronary Artery Disease: A Meta-Analysis of Individual Patient Data

Both coronary artery bypass surgery (CABG) and percutaneous coronary intervention (PCI) with drug-eluting stents (DES) are effective therapies for patients with left main or multivessel coronary artery disease (CAD). Traditionally, PCI has been limited to patients with less complex CAD, and or a higher surgical risk. Over the past decade, PCI technology has rapidly evolved with improved safety and efficacy, and increasingly used for the treatment of more complex CAD. However, the relative efficacy and safety of CABG versus PCI with DES for left main or multivessel CAD remain controversial. Several studies have compared CABG versus PCI with DES in patients with left main or multivessel CAD. These studies have typically shown superior outcomes of CABG over PCI regarding the composite endpoint of death, myocardial infarction, stroke, or repeat revascularization. The individual components of hard outcomes were comparable for CABG and PCI, although repeat revascularization was significantly increased in PCI-treated patients. However, these trials may have had limited power to solve complex problems regarding the relative merits of CABG and PCI in patients with left main or multivessel CAD. Pooling of patient-level data can increase the statistical power, which may allow for assessments of its separate effects among specific subgroups.

In this issue of JACC Cardiovasc Interv (2016; 24: *2481-89*), Dr. Lee et al performed patient-level meta-analysis to compare long-term outcomes of the two revascularization strategies in 3,280 patients with left main or multivessel CAD. Data were pooled from the BEST, PRECOMBAT, and SYNTAX trials. The primary outcome was a composite of all-cause death, myocardial infarction, or stroke. The median follow-up was 60 months, and follow-up was completed for 96.2% of patients. The rate of primary outcome was significantly lower with CABG than with PCI (13.0% versus 16.0%; hazard ratio [HR], 0.83; 95% confidence interval [CI], 0.69-1.00; *P*=0.046). The difference was mainly driven by reduction in myocardial infarction (HR, 0.46; 95%CI, 0.33-0.64; P<0.001). There was significant interaction between treatment effect and types of CAD, showing CABG to be superior compared to PCI with DES in patients with multivessel CAD (*P*=0.001), but no between-group difference in those with left main CAD (*P*=0.427). The rates for all-cause death and stroke were similar between the two groups. In contrast, the need for repeat revascularization was significantly lower in the CABG group compared to the PCI group. They concluded that CABG, as compared to PCI with DES, reduced long-term rates of the composite of all-cause death, myocardial infarction, or stroke in patients with left main or multivessel CAD. The advantage of CABG over PCI with DES was particularly pronounced in those with multivessel CAD.

The rate of myocardial infarction was remarkably lower after CABG than after PCI with DES in subgroup of patients with mutivessel CAD, supporting that CABG reduces the risk of myocardial infarction more effectively than does focal therapy of PCI with DES. However, there was no difference in myocardial infarction in subgroup of patients with left main CAD. This finding is in contrast to result in those with multivessel CAD. The reasons underlying the discrepancy remain unclear, but it might be related to the extent and severity of CAD. Generally, the risk of coronary events after PCI is a probability function, and half of coronary events are derived from the treated lesions and the other half stem from new lesions. Target lesion events are related to the stented length, number of stents, and minimal stent area, whereas new lesions events to the burden of residual coronary artery disease. The PCI of the left main CAD continues to evolve along with high rates of procedural success and favorable long-term outcomes. The risk of DES failure after left main stenting appears to be relatively low as a consequence of the short stent length and a larger minimal stent area. Patients with limited left main CAD can be treated with 1 or 2 stents, which leads to a lower risk of DES failure. Similarly, the burden of residual CAD in these patients is considered to be small, which contributes to lower risk of new lesion events. However, in those cases with extensive left main CAD, multiple stents with a large burden of residual CAD may increase the risk of both DES failure and new lesion events.

TCTAP2017 HIGHLIGHTS

Inside TCTAP2017:
CardioVascular Summit, Bring Together All the Advances in Interventional Cardiology

Widely recognized as the educational hub where the world's best experts come to gather, TCTAP has built a strong reputation as the world premiere conference in cardiovascular field. Again in this year, TCTAP2017 will highlight its compact, concentrated contents containing the newest advance and its vision to create a new legacy for history of intervention cardiology in Asia Pacific region in three days. Hope every attendees enjoy the following highlights and get the best of TCTAP this year.

Highlights 1

Live Case Demonstrations from World Renowned Centers

There will be a feast of live cases at TCTAP2017 embracing topics of CTO, Coronary and Endovascular Intervention and Valve in depth. It is very proud to demonstrate various approaches to treatment and provide up-to-date medical therapy. All the live cases carefully arranged by the TCTAP committee will enrich your learning experiences.

Highlights 2

State-of-the-Art Lectures: CTO LIVE, Endovascular Symposium, TCTAP Workshops, Coronary & Valve Symposium and Focused Workshops on Hot Topics

Wide range of topics will be covered during these three full days of course. Lectures designed to disclose the hottest topics including BRS & DES, Valves, Left Main & Bifurcation, CTO, IVUS & FFR, etc. will help all the participants to be intrigued and inspired in all its aspects.

Highlights 3

Spotlights on New Clinical Trials & New Data from AMC

Distinguished and spotlighted studies including the most recent data are revealed in this session on Thursday, April 27. It is designed to give extensive knowledge both current experience and the insight of outcomes on trials recently at the center of extreme controversy. The lessons will be learned at the heart of the debates on these impressive trials. Also there are a number of eye-catching data from Asan Medical Center, Korea ready to present, it would be very worth attending to.

Highlights 4

International Chambers: Partnership Session with Global Society

Highly reputed 12 international societies organize and present their own session at TCTAP. It will gather different faculties all over the world, broaden the view of attendees and allow to experience different treatment approaches from each countries. We thank all delegates from ACC, BIT, CCT, CIAT, CIT, HKSTENT, IndiaLive, ISICAM, MYLIVE, TTT, TCT, VIVA for their unstinting support and contribution.

Highlights 5

Moderated Abstracts & Cases Competition Sessions

There is no better time and place than TCTAP to enjoy all the absorbing and challenging abstracts and cases. The sessions will be held from Tuesday, April 25 to Thursday, April 27 and give participants invaluable chance to get insights from experts' focus review. Presenters can also gain professional visibility and expand knowledge about new technology and practical tips relevant to their research area. It will be full of thought-provoking researches and sound competitiveness driven by enthusiastic cardiologist from all over the world.

New Book Release: 1st Complex Coronary Intervention

CVRF released "1st edition of the Complex Coronary Intervention: Technical Forum A to Z."

This book was developed with interesting clinical cases accompanied by an illustrated, up-to-date review of the topic including the most important literature, practical tips and techniques. It was published for individuals who work in the field of interventional cardiology, especially beginning interventionalists and paramedical staffs. It is designed to help them obtain basic knowledge in this rapidly growing field. And it will provide them with high quality academic opportunities to absorb and experience from current concept to state-of-the-art technique in coronary intervention. They can learn practical tips & tricks and up-to-date technological innovations that can be directly applied to clinical practice. They will find this book to be an important, useful and practical guideline to a wide range of inteventional cardiology procedures.

Report of Donation Activity in 2016

CVRF has been working for donation activity in order to support the overall research of cardiovascular diseases and also the medical treatment of patients in need from 2010. Through fundraising we are making progress toward our goal of "Leading to greatness for the better human life".

In 2016, 38 million won which accounts for 63% of total expenditure has been used for research fund, and the remainder was or will be used for fundraising management.

Especially for research fund in 2016, the below research projects began by CVRF's support.

- Effect of exposure to fibrin clot on vascular endothelial cells and plasma micro RNA expression in pulmonary embolism
  Pil-Ki Min, MD (Gangnam Severance Hospital, Korea)
- Temporal change of Thrombus Amount of culprit lesion using optiKal cohErence Tomography within 5 minutes. (TAKE-5 study)
  Hyuck Jun Yoon, MD
  (Keimyung University Dongsan Medical Center, Korea)

Regarding the overseas long-term fellowship training program, unfortunately, we did not have any candidate for this year.

Since we believe these activities will help to overcome numerous cardiovascular diseases ultimately, we always wait for your active participation to CVRF's donation activity. Please stay tuned for our movement.

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Looking Back on CVRF in 2016

1 January
- Annual meeting of the board of trustees was held.
- Bon-Kwon Koo, MD, PhD (Seoul National University Hospital, Korea) and Duk-Woo Park, MD, PhD (University of Ulsan, Asan Medical Center / Auditor) joined the board of trustees.

4 April
- The 21st CardioVascular Summit-TCTAP was held in Coex, Seoul during 4 days with around 4,000 attendees from 44 countries.

7 July
- CVRF Night for sponsors and staff members was held.

8 August
- The 5th AP VALVES was successfully held for 3 days in Seoul with about 300 attendees.

9 September
- CVRF workshop for staff members was held during 2 days.
- Seung-Ho Hur, MD, PhD (Keimyung University Dongsan Medical Center, Korea) joined the board of trustees.

11 November
- Two rookies joined CVRF
- A new book "1st edition of Complex Coronary Intervention" was published.

12 December
- A brand new meeting "1st COMPLEX PCI: Make it Simple!" was held for 2 days in Seoul with about 690 attendees.
- CVRF year-end party was held.

CVRF Welcomes New Staff Members: Rachel Yoo and Yoonjoo Bae

Q Please tell us about your current role at CVRF?

A **Rachel:** I am currently in charge of abstract submission and daily newspaper. My daily job is to manage abstracts including submission, review and arrangement. During the conference, abstracts will be presented verbally and moderators and panelists will participate in by using tablet PC. My role is to troubleshoot the sessions during the day of the event to make sure that all runs smoothly.

A **Yoonjoo:** I'm an assistant manager of global Marketing and PR. My day-to-day role involves sourcing advertising opportunities and placing adverts on/offline, which has a big impact on how CVRF promotes its various programs and conferences to the world. This means I'm responsible for communicating with people, both domestic and international, and I also manage the production of marketing materials, including posters, flyers and e-newsletters.

Q It's your first time in this year's TCTAP. Do you have an expectation to be the part of TCTAP? And please let us know your resolutions.

A **Rachel:** I genuinely look forward to seeing the result of our effort. I would also like to promote the success of the conference as the whole team plans and works hard for the goals of the team. Personally, I hope that I will be able to understand and follow the process of event management better.

A **Yoonjoo:** As all teams are passionately driven to deliver high-quality work during TCTAP, I want to display all of my abilities as a multi-player who can conduct various kinds of task. I will do so with my great appetite for work and with my natural sincerity.

Q Do you have a comfortable place where you like to go frequently?

A **Rachel:** One of the few places that I like to go is Olympic park. Walking around the park always makes me feel well and happy. I also love the benefit that I get from walking around the park. It gives me a good excuse getting things off my mind and ends up revitalizing me to keep myself motivated.

A **Yoonjoo:** Going to a movie theater is a great treat for me. It is a place where I can get away from all my troubles and struggles. In the theater, I can have a cozy sofa, a vast amount of various taste of popcorn and extremely large screen.

Q Is there something about you that people would be surprised to learn?

A **Rachel:** I enjoy trying new things. Recently, I tried indoor rock climbing and rifle shooting. When I went on my first time shooting, I scored 100% on the target.

A **Yoonjoo:** I repeatedly heard from others that I am calm and relaxed person, but I am keen to learn new ones and welcome to undertake new challenges. I went to the South America for 80 days by myself. I went ice climbing and trekked across high mountains during travel.

1st COMPLEX PCI: Make it Simple!

The 1st COMPLEX PCI: Make it Simple!, which was held on December 1–2, 2016 at Sheraton Grande Walkerhill, Seoul, Korea has been successfully wrapped up with a large delegate of 690 participants from 21 countries.

This meeting was newly designed to provide young interventionists of Asia Pacific region with a practical and comprehensive knowledge of interventional techniques from the bottom up to the newest trend in Complex Coronary Intervention field.

Over 2 days, 20 live cases were demonstrated at Asan Medical Center. As one of the key features of the meeting, this live session provided attendees with technical tips for applying Rotablation, Cutting Balloon, Angioscope, Angiographic-Guided BVS, Imaging- & Physiology-Guided PCI, DES, BVS, TRI, etc. to each lesion subset. In addition, it was much more highlighted with 13 valuable lectures from leading international experts. Interactive Q & A and panel discussions also added more academic atmosphere to each sessions.

With the greater interest, there were 82 cases being submitted from 19 countries. Among them, 52 challenging cases were accepted and enthusiastically presented through the case presentation sessions.

16 medical companies attended the exhibition and they introduced their latest products to attendees.

The 2nd COMPLEX PCI: Make it Simple! will take place in Sheraton Grande Walkerhill, Seoul on November 30–December 1, 2017.

TRAINNING PROGRAM

Report of ACT Program in 2016

The Asan Medical Center Interventional Cardiology Training Program (ACT Program) has been successfully operating for 8 years since 2009. So far, over 1,050 participants join this program and they could learn from the basics to high techniques of interventional cardiology in only 4 days. Also, they could upgrade their knowledge and obtain more skills through live case demonstrations, hands-on experiences, case presentations, round table discussions and state-of-the-art lectures by mutual communications.

The regular ACT Program in 2016 had been operating 11 times and there were 123 participants from 14 countries (Table 1). And special course of BVS and CTO for Korean doctors were operated as well (It's not included into the table).

Table 1. The Number of the Participants by Country

Country	NO.	Country	NO.
China	33	Vietnam	4
India	30	Malaysia	3
Korea	20	Philippines	3
Japan	13	Taiwan	3
Thailand	3	Pakistan	2
Indonesia	3	Cambodia	1
Hong Kong	4	Bangladesh	1
Total	123		

And almost all of the participants are interventional cardiologists and have had careers as a doctor for more than 7 years (Table 2, 3).

Table 2. Specialty of the Participants

Specialty	NO.
Interventional Cardiologist	95
GeneralCardiologist	18
Physicians Interested in Cardiology and Vascular Medicine	7
Technologist	1
Nurse	1
Other	1
Total	123

Table 3. Career of the Participants

Career	NO.
More than 7 years	75
More than 5 years and less than 7 years	16
More than 3 years and less than 5 years	15
More than 1 year and less than 2 years	5
Less than 1 year	3
No response	9
Total	123

After every course, the program is evaluated by the participants and had received high scores on average (Table 4).

Table 4. Evaluation from the Participants

	Out of 100
Information/Level/Expertise	87.6
Course Structure	88.8
Instructor	90.7
Satisfaction	90.6
Total Average	89.2

Last year, the program had received positive feedback from the participants and drives for making it more practical and efficient for physicians. The ACT Program will be continued with more practical and developed programs in 2017.

Yearly Plan in 2017

Section	Dates
95th	January 17 (Tue.) ~ 19 (Thu.)
96th	February 13 (Mon.) ~ 16 (Thu.)
97th	March 20 (Mon.) ~ 23 (Thu.)
98th	May 22 (Mon.) ~ 25 (Thu.)
99th	June 12 (Mon.) ~ 15 (Thu.)
100th	July 10 (Mon.) ~ 13 (Thu.)
101st	August 7 (Mon.) ~ 10 (Thu.)
102nd	September 4 (Mon.) ~ 7 (Thu.)
103rd	October 16 (Mon.) ~ 19 (Thu.)
104th	November 13 (Mon.) ~ 16 (Thu.)
105th	December 11 (Mon.) ~ 14 (Thu.)

Registration & Contact

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