23rd CARDIOVASCULAR SUMMIT
TCTAP2018

TCTAP DAILY NEWS

Monday, April 30, 2018

Inside this Issue

2018 New Data from AMC; Novel and More

What is the Best Contemporary DES for Left Main PCI? In-Depth Analysis Using the Largest DB in the World

Pil-Hyung Lee, MD
Asan Medical Center, Korea

Dr. Pil Hyung Lee will present the results of study that investigated the comparative effectiveness and safety profiles of several second-generation drug-eluting stent (DES) for left main coronary artery (LMCA) disease. The current analysis included patients treated with 4 different types of DES, CoCr-EES (Xience V, Prime, Xpedition, or Alpine model), BP-BES (BioMatrix model; Nobori, PtCr-EES (Promus Element or Premier model), and the Re-ZES (Resolute Integrity model), using a pooled database from 3 large prospective clinical practice registries; IRIS-MAIN, IRIS-DES and PRECOMBAT.

The cumulative rates of target-vessel failure (primary endpoint) did not differ significantly among the groups in an analysis including the entire 3-year period (lowest was for the BP-BES [13.2%] and highest for the PtCr-EES [18.7%]), as well as in a landmark analysis starting 30 days after the index procedure. The cumulative incidences of death (lowest for the BP-BES [6.2%] and highest for the Re-ZES [8.3%]), MI (lowest for the CoCr-EES [5.4%] and highest for the PtCr-EES [7.0%]), or repeat revascularization (lowest for the Re-ZES [7.8%] and highest for the BP-BES [10.4%]) were also comparable among the groups. At 3 years, 11 cases (0.5%) of definite (n = 10) or probable (n = 1) stent thrombosis had occurred (6 for the Re-ZES, 4 for the CoCr-EES, and 2 for the BP-BES), mostly within 30 days (7 cases) of PCI. There were no stent thrombosis events in the PtCr-EES group. Accordingly, significant between-group differences in 3-year rates of stent thrombosis were observed, generally favoring the EES platforms.

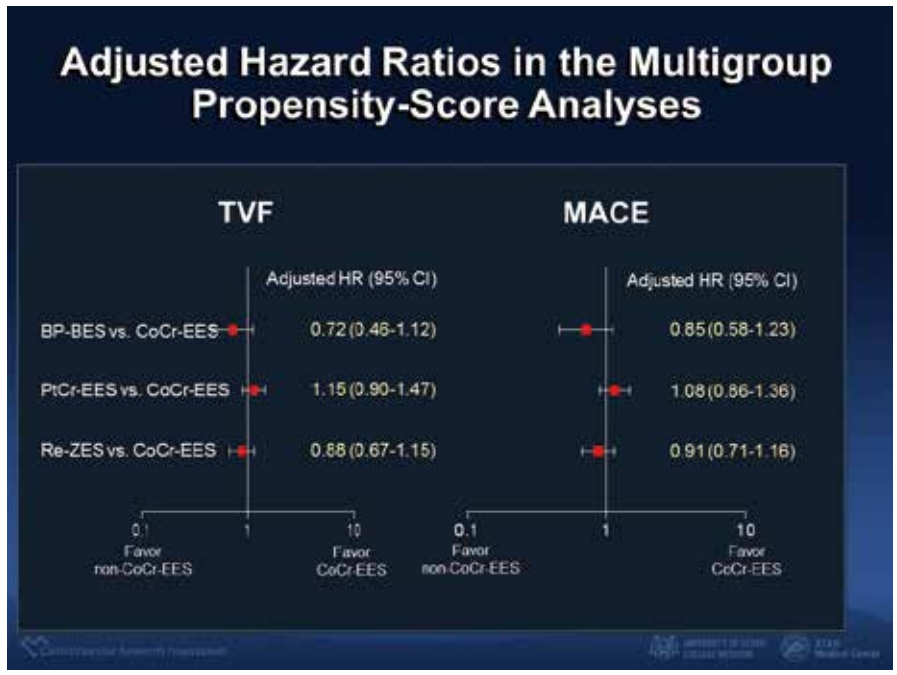


Figure 1. 3-year follow-up result analysis

The adjusted hazard ratios (HR) for multiple DES comparisons after application of multiple treatment propensity score weighting with the CoCr-EES set as the reference group, the HR for the other types of DES were similar with respect to risk of target-vessel failure, as well as to other secondary clinical outcomes. This pattern was consistent for all clinical outcomes in other pairwise comparisons, except that the HR for the risk of target-vessel failure of the PtCr-EES was marginally higher than that of the BP-BES (HR: 1.60; 95% confidence interval: 1.01 to 2.54; p=0.046) **(Figure 1)**.

In conclusion, there were no significant differences between stent-related and patient-related outcomes at 3-year follow-up among different types of newer generation DES for LMCA disease, except that the use of the PtCr-EES was associated with a higher risk of target-vessel failure than that of the BP-BES.

Continued on page 12

Today's Highlights

Opening of TCTAP 2018
9:20 AM - 10:00 AM
Main Arena, Level 3

TCTAP Award 2018 "Master of the Masters"
10:00 AM - 10:17 AM
Main Arena, Level 3

Endovascular Symposium
10:30 AM - 12:30 PM
Valve Theater, Level 1

Coronary Symposium
2:00 PM - 6:00 PM
Coronary Theater, Level 1

Valve Symposium
2:00 PM - 6:00 PM
Valve Theater, Level 1

Spotlights of Major Clinical Studies with Expert Commentary & 2018 New Data from AMC; Novel and More with Expert Commentary
2:00 PM - 4:56 PM
Room 104, Level 1

Moderated Abstract and Complex Case Competition
2:00 PM - 6:00 PM
Abstract & Case Zone, Level 1

TCTAP Award 2018 "Best Young Scientist Award"
5:51 PM - 6:00 PM
Room 104, Level 1

CE Program for Nurses (Pre-registration needed)
8:00 AM - 5:10 PM
Room 202, Level 2

Satellite Symposia: Morning Roundtable Forum
7:00 AM - 8:10 AM*

Lunchtime Activities
12:45 PM - 1:45 PM*

*For details on the locations, please check TCTAP 2018 App

General Information

Shuttle Bus

Free shuttle bus is provided between COEX and several venue hotels.
Visit the **CVRF booth** for more details.

Certificate of Attendance

Certificate of Attendance for TCTAP 2018 will be distributed along with the badge.

Cyber Station / Free Mobile Charging Station

- CVRF Booth, Grand Ballroom Lobby, Level 1
- Registration Lounge, Exhibition (B2) Hall Lobby, Level 1

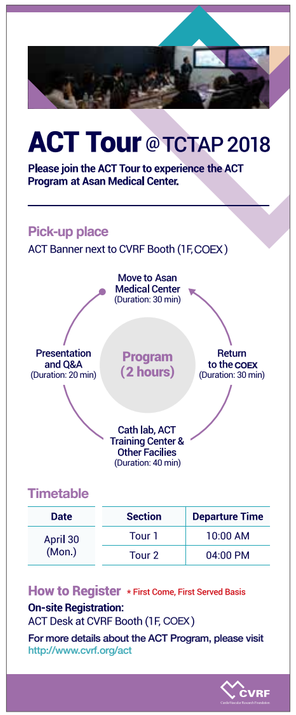
Registration / Lost and Found / Coat Room

- Opening Hours: **6:00 AM ~ 6:10 PM**, Sunday, April 29 ~ Tuesday, May 1
- Registration Booth, Exhibition (B2) Hall Lobby, Level 1

Tour Information

Tour information will be provided by COSMO JIN Tour and Seoul Metropolitan Government.

- Information Booth, Grand Ballroom Lobby, Level 1
- Seoul Promotional Booth, Grand Ballroom Lobby, Level 1



Program at a Glance + Partnership Session Schedule

	Main Arena *Level 3*	Coronary Theater *Level 1*	Valve Theater *Level 1*	Room 104 *Level 1*	Other Session Rooms	Room 202 *Level 2*	Abstract Zone I, II *Level 1*	Case Zone I, II, III *Level 1*
07:00		Satellite Symposia - Morning Roundtable Forum						
07:30								
08:00								
08:30	Live Case Session							
09:00								
09:30	Opening & Keynote Lecture							
10:00								
10:30	Master Award	TCT @ TCTAP	TCTAP Endovascular Symposium					
11:00								
11:30								
12:00						CE Program for Nurses *Korean Session		
12:30		Satellite Symposia - Lunchtime Activites						
13:00								
13:30								
14:00								
14:30	Heart Keeper *Korean Session	Coronary Symposium Live Cases & Lectures	Valve Symposium Live Cases & Lectures	Late-Breaking Research from AMC & Spotlight Major Clinical Trials with Expert's Opinion / TCTAP Best Young Scientist Award			Moderated Abstract Competition	Moderated Complex Case Competition
15:00								
15:30								
16:00								
16:30								
17:00								
17:30								
18:00								
18:30					Gala Evening *Invitation Only			
19:00								
19:30								
20:00								

Partnership Sessions with International Societies and Meetings

TCT @ TCTAP 2018
- 10:30 AM - 12:30 PM
  @ Coronary Theater, Level 1

TCTAP Wrap-up Interviews

Here the most debated issues will be discussed in an interactive way. TCTAP 2018 Wrap-up Interviews are 30-minute moderated interview sessions in an open studio.

The purpose of these interviews is to address professional knowledge and experience on selected topics in details with world's leading experts in the field of cardiovascular medicine. Distinguished experts will provide various aspects of the selected topics and exchange lessons learned through open discussions.

Participants at TCTAP 2018 will be able to watch the interviews during the meeting not only at the designated spots but also via TCTAP Webcast (webcast.summitmd.com) and TCTAP mobile application in real-time.

Completed interviews will be broadcasted on our websites at **www.summit-tctap.com, www.youtube.com/CVRFevents, and webcast.summitmd.com,** and **on TCTAP mobile application.**

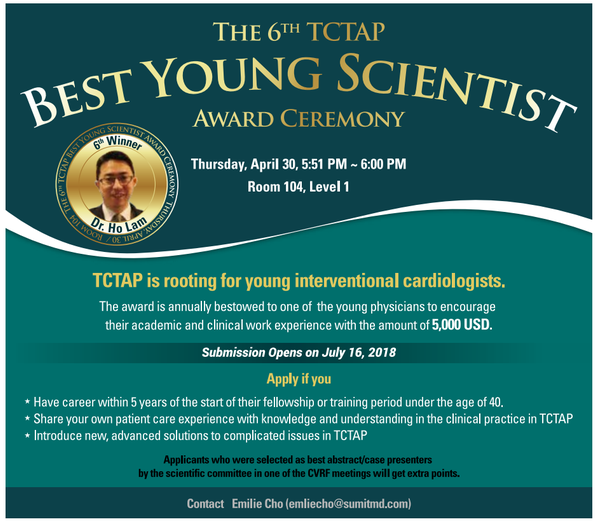
Monday, April 30

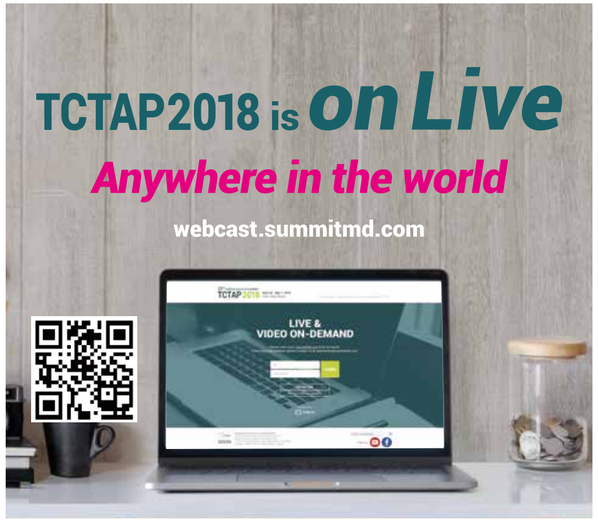
CTO: To Open or Not to Open
8:40 AM - 9:10 AM
Moderator: Gerald Werner
Interviewees: Kambis Mashayekhi, Seung-Whan Lee, Paul Hsien-Li Kao

TAVR: Current Status and Future Perspectives
9:30 AM - 10:00 AM
Moderator: Eberhard Grube
Interviewees: John Graydon Webb, Owen Christopher Raffel, Vinayak Bapat

Non-vitamin K antagonist Oral Anticoagulants (NOACs) in Atherosclerotic Cardiovascular Disease
10:30 AM - 11:00 AM
Moderator: David J. Cohen
Interviewees: Dominick J. Angiolillo, Tullio Palmerini

PCI vs. CABG in Left Main and MVD
2:30 PM - 3:00 PM
Moderator: Patrick W. Serruys
Interviewees: Gregg W. Stone, Seung-Jung Park, Marie-Claude Morice





Live Case Transmission from World-Renowned Medical Centers

Asan Medical Center, Seoul, Korea
- 8:10 AM ~ 9:20 AM @ Main Arena, Level 3
- Operator(s): (Case #1) Seung-Jung Park, Do-Yoon Kang
  (Case #2) Duk-Woo Park, Pil Hyung Lee
  (Case #3) Jung-Min Ahn
- 2:00 PM ~ 3:00 PM @ Coronary Theater, Level 1
- Operator(s): (Case #1) Duk-Woo Park, Pil Hyung Lee
  (Case #2) Thierry Lefevre, Do-Yoon Kang
- 2:00 PM ~ 3:30 PM @ Valve Theater, Level 1
- Operator(s): (Case #1) Jung-Min Ahn
  (Case #2) Duk-Woo Park, Vinayak Bapat, Kyusup Lee
- Echo Interpreter: Dae-Hee Kim
- 4:00 PM ~ 5:30 PM @ Valve Theater, Level 1
- Operator(s): (Case #3) Yoon Seok Koh, Vinayak Bapat
  (Case #4) Jung-Min Ahn, Kentaro Hayashida, Kyusup Lee
- Echo Interpreter: Dae-Hee Kim

Clinique Pasteur Toulouse, Groupe CardioVascuLaire Interventionnel, France
- 3:30 PM ~ 4:30 PM @ Coronary Theater, Level 1
- Operator(s): Jean Fajadet, Benjamin Honton

Chonnam National University Hospital, Gwangju, Korea
- 5:00 PM ~ 6:00 PM @ Coronary Theater, Level 1
- Operator(s): (Case #1) Youngkeun Ahn, Min Chul Kim, Jumin Won
- Imaging Interpreter: Young Joon Hong
- Operator(s): (Case #2) Ju Han Kim, Doo Sun Sim, Sung Sik Oh
- Imaging Interpreter: Youngcheol Kim

Main Arena

40th Anniversary of PCI

Forty years ago, Dr. Andreas Gruentzig performed the world's first coronary angioplasty (percutaneous coronary intervention, PCI), fundamentally changing the arena of management of coronary artery disease (CAD). Dr. Bernhard Meier, who worked with Dr. Gruentzig and actually identified the patient for the procedure, gave a memorial lecture under the theme "40 Years of PCI- Where next?" on April 29th.

As a recent medical school graduate in Zurich in 1977, Dr. Meier began working in the specialty of angiology when Dr. Gruentzig just had developed the first balloon catheter to open occluded vessels in legs. Dr. Gruentzig's goal was to miniaturize the balloons and use them in patients with CAD. He needed a patient who was a good candidate for the first procedure. At that time, Dr. Meier was treating an ideal patient and introduced the patient to Dr. Gruentzig. Before the inception of coronary angioplasty, patients with CAD had two treatment options: medical management or revascularization with coronary artery bypass graft (CABG). The advent of interventional cardiology, however, afforded physicians the opportunity to treat the underlying disease, such as CAD, more effectively than with medical therapy and less invasively than with surgery. Stent, which was introduced in 1986, was the only innovation that dramatically improved the overall performance of the procedure. The subsequent introduction of the drug-eluting stent, which prevented the over-zealous coverage of the stent by tissue, was another significant advancement - the restenosis rate was reduced from 15% to 3-4%. Stent is basically the only milestone. The newest generation drug-eluting stents show reduced repeat revascularization and stent thrombosis rates compared with bare-metal stents at 6 years follow-up. The long-term risk of stent thrombosis is lower than the risk of myocardial infarction remote from the stent. To address residual late stent failure due to stent fracture and neoatherosclerosis formation, and to minimize the loss of vasomotor function, bioresorbable scaffolds have been tested as the next advancement in PCI. However, the results are so far disappointing. It is hoped, however, that future iterations of bioresorbable scaffolds with perhaps thinner stent struts and more biocompatible materials might overcome these disadvantages.

At TCTAP 2018, we celebrate the 40th anniversary of PCI. Today, as a part of this celebration, two keynote lectures are given at the opening of TCTAP 2018 (Main Arena, Level 3). The first lecture delivered by Dr. Patrick W. Serruys is "The History of 40 Years of PTCA" and the second lecture delivered by Dr. Yean-Leng Lim is "Asian Perspectives in 40 years of PTCA".

Asia-Pacific, the youngest of the global PTCA blocs, is currently performing more than 1.5 million PCI procedures a year. Quantitatively, its growth rates in the various countries, although rapid, are heterogeneous. Qualitatively, Asian expertise in PCI has contributed significantly in the advancement of PTCA in many areas. All these would not have been possible without the assistance of our more advanced western counterparts. This initial assistance has turned into a strong partnership, as evident in the training of Asian experts, collaborative international major meetings such as this TCTAP, CIT-TCT and PCR-SingLive (soon to be renamed PCR-AP). Asia's own important sub-specialized meetings, such as CCT in Japan and CBS in China have also become important international PCI conferences. Asian leaders from South Korea, Japan and China are now playing pivotal roles in groundbreaking research in technical, diagnostic and clinical advances in the treatment of CAD. Various Life Achievement awards in the West have recognized their works. Coronary revascularization by PCI alone is much more prevalent in Asia compared to the West. Cultural reluctance to have open chest surgery of Asian patients, the lack of CABG expertise in majority of Asian hospitals and economic constraints in many developing Asian nations are the main reasons for this difference. The number of PCI compared to CABG performed in Asian hospitals can be twenty-fold or infinity for many years to come. Complete coronary revascularization by PCI alone is often the only choice, and good evidence of equivalence of long-term outcome of this practice to surgical options is still in need. Although radial vascular access for PCI was first described in the West, it was in Asia, in particular, Japan, Korea and China, that the technique was advanced. The first bioabsorbable stent, the Igaki-Tamai stent was also an Asian invention. The relative lack of surgical coronary revascularization in Asia had an unexpected positive outcome. With no available surgical bypass option, coronary lesions of all complexities are treated by PCI alone. This resulted in development of novel skills and techniques for treating complex coronary diseases by percutaneous intervention. Highly technical ante-grade and retrograde approaches pioneered by Dr. O Katoh and his colleagues in Japan have significantly improved the success rate of chronic total occlusion (CTO) recanalization through aforementioned innovation and continue to share their knowledge at CCT annually. Similarly, the CBS Symposium organized by Dr. SL Chen of China is a global bifurcation summit for bifurcation stenting. The groundbreaking work by Dr. SJ Park, our Course Director, in stenting unprotected left main lesion has made PCI a routine and an acceptable alternative to CABG.

With all these accomplishments in PCI over the past 40 years, we may be at the brink of realizing the hope of all coronary patients that complete coronary revascularization can be achieved by PCI alone, when necessary. This historical medical breakthrough can start with a collaborative randomized trial between Asia and the West. During the second lecture, Dr. Yean-Leng Lim will present a proposal on the trial called the CBS (Coronary Bypass versus Stenting) trial to take one step towards this goal **(Figure 1)**.

Complete Coronary Revascularization by Bypass versus Stenting Trial (CBS)

Hypothesis: "Equivalent long-term outcome after Complete Revascularization (rSS <8) by Stenting versus CABG Surgery

Inclusion: Complex CAD pts (by FSS>33) ***Therapy:*** PCI with target Residual rSS < 8 in selected centers in Asia & West	vs	***Inclusion:*** Complex CAD pts (FSS>33) ***Therapy:*** CABG withtarget rSS <8 in selected centers in Asia & West

Primary End-point: **In-hospital, 30d & annual all-cause mortality & MACCE for at least 5 years**

Figure 1. Proposed Asia and Western collaborative Complete PCI vs. CABG Coronary Revascularization Trial

Main Arena
Opening of TCTAP 2018
›› Monday, April 30, 9:20 AM - 10:00 AM
›› Main Arena, Level 3

Bernhard Meier, MD
Swiss Cardiovascular Center, Switzerland
DES & New BRS
Memorial Lecture 2018: 40 Years of PCI - Where Next?
›› Sunday, April 29, 10:30 AM - 12:25 PM
›› Room 104, Level 1

Yean-Leng Lim, MD
Monash University, Australia
Opening of TCTAP 2018
Asian Perspectives in 40 Years of PTCA
›› Monday, April 30, 9:20 AM - 10:00 AM
›› Main Arena, Level 3

TCTAP Workshops & Morning Roundtable Forum

ACS & Pharmacotherapy

DAPT Dilemmas in ACS: Where to Go - Shorter vs. Longer Durations?

Tullio Palmerini, MD
University of Bologna, Italy

The optimal duration of dual antiplatelet therapy (DAPT) with aspirin and a P2Y12 inhibitor after drug-eluting stent(s) (DES) implantation varies according to clinical presentation. The most recent European and US guidelines state 6-month DAPT may be reasonable after second generation DES for stable angina. However, Among the 18 randomized trials which have investigated different durations of DAPT after DES implantation, only 3 trials were specifically designed for patients with acute coronary syndromes (ACS): DAPT SMART, REDUCE, and DAPT STEMI.

DAPT SMART enrolled 2,712 patients with non-ST elevation ACS treated with second generation DES to either 6-month DAPT or 12-month or longer DAPT. At 18 months after the index procedure, 6-month DAPT was non-inferior to 12-month or longer DAPT for the primary composite endpoint of all-cause mortality, myocardial infarction (MI), and stroke (4.7% vs. 4.2%, pnon-inferiority=0.03) **(Figure 1)**. The rate of BARC type 2-5 bleeding, one of the secondary endpoints, was not significantly different between groups (2.7% vs. 3.9%, p=0.09). Similarly, the REDUCE trial enrolled 1,496 patients with ACS treated with the COMBO DES to either 3-month DAPT or 12-month DAPT. The primary composite endpoint of all-cause death, MI, stent thrombosis, stroke, target vessel revascularization, or BARC type 2,3 or 5 bleeding at 12 months. The 3-month DAPT was non-inferior to 12-month DAPT for the primary endpoint (8.2% vs. 8.4%, pnon-inferiority<0.001). Major bleeding rates were similar (2.5% vs. 3%, p=0.54), however, a trend towards increased rates of all-cause mortality (1.9% vs. 0.8%, p=0.07), MI (2.3% vs. 1.9%, p=0.57), or stent thrombosis (1.2% vs. 0.4%, p=0.08) were seen in 3-month DAPT. DAPT STEMI evaluated only for STEMI patients undergoing primary percutaneous coronary intervention (PCI) with second generation DES. In this trial, 870 patients who were event-free after a course of 6-month DAPT following the primary PCI were randomly allocated to continue DAPT for further 12-months or to monotherapy with aspirin. The primary endpoint was a composite of all-cause death, MI, any revascularization, stroke, and thrombolysis in myocardial infarction (TIMI) major bleeding. At 18-months after randomization, event rates of the primary endpoint were similar (4.8% vs. 6.6%, pnon-inferiority=0.004). Interestingly, in this study, numerically all-cause mortality (0.7% vs. 1.4%, p=0.33), stent thrombosis (0.7% vs. 0.9%, p=0.72), and target lesion failure (1.2% vs. 1.8%, p=0.42) was lower in patients with 6-month DAPT.

In conclusion, the summary of evidence suggests that prolonging DAPT in patients with ACS reduces the risk of ischemic events but increases the risk of bleeding and bleeding-related death. On the basis of these findings, a personalized approach is advisable when deciding upon the optimal duration of DAPT after DES in patients with ACS.

TCTAP Workshops
ACS & Pharmacotherapy
›› Sunday, April 29, 3:40 PM - 4:30 PM
›› Room 104, Level 1

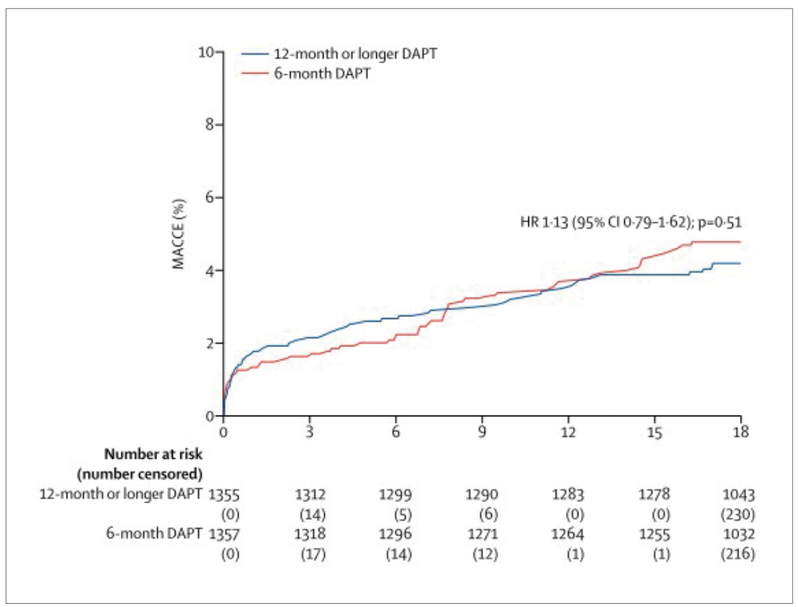


Figure 1. Kaplan-Meier curves for primary endpoint of major adverse cardiac and cerebrovascular events (MACCE)

Aspirin Plus P2Y12 Still Remains as a Key Player in the Secondary Prevention of MI

Dominick J. Angiolillo
University of Florida College of Medicine, USA

Antiplatelet therapy represents the cornerstone of short- and long-term prevention of atherothrombosis risk. So far, several observational and randomized trials have clearly demonstrated that dual antiplatelet therapy (DAPT) reduced the ischemic risk for a year after an acute event in the setting of the acute coronary syndrome (ACS) compared to aspirin alone therapy. Subsequent studies have shown even greater benefit with the more potent agents, prasugrel, and ticagrelor, as compared with clopidogrel.

The DAPT trial enrolled 9,961 patients treated with aspirin and a thienopyridine after percutaneous coronary intervention (PCI). Patients who were event-free from a major adverse cardiovascular (CV) or cerebrovascular event, repeat revascularization, or moderate or severe bleeding at 12 months were randomized to continued thienopyridine or placebo for an additional 18 months. Continuation of clopidogrel or prasugrel with aspirin for more than 12 months was associated with a significant reduction in nonfatal ischemic events (4.3% vs. 5.9%, p<0.001), but increase in Global Use of Strategies to Open Occluded Arteries (GUSTO) defined moderate or severe bleeding (2.5% vs. 1.6%, p=0.001). Similar to the CHARISMA trial, the reduction of major adverse CV and cerebrovascular events for continued thienopyridine was greater for patients with myocardial infarction (MI) (3.9% vs. 6.8%; p<0.001) compared with those without MI (4.4% vs. 5.3%; p=0.08; p for interaction=0.03). The PEGASUS-TIMI 54 trial hypothesize that long-term therapy with ticagrelor (90 mg or 60 mg twice daily) added to low-dose aspirin would reduce the risk of major adverse CV events in stable patients with prior MI before randomization. In contrast to DAPT, patients were randomized to either treatment at their index procedure. A total of 21,162 patients were randomized, and after a median follow-up of 33 months, both doses of ticagrelor resulted in 15% of relative reduction in the risk of CV death, MI and stroke, as compared with placebo (90 mg of ticagrelor vs. placebo, HR 0.85, p=0.008; 60 mg of ticagrelor vs. placebo, HR 0.84, p=0.004). Rates of TIMI major bleeding, but not intracranial hemorrhage or fatal bleeding, were higher with ticagrelor than with placebo (2.60% with 90 mg and 2.30% with 60 mg and 1.06% with placebo, p<0.001).

In light of available data, a recent consensus by the American College of Cardiology/American Heart Association assigned a class IIb recommendation for continuation of DAPT beyond 12 months; this strategy may be considered for patients at higher ischemic risk. Since the guideline was published, emerging data have begun to characterize key subgroups that derive robust absolute benefit from intensive strategies.

Morning Roundtable Forum:
Meet the Experts over Breakfast
Antithrombotic Therapy
›› Monday, April 30, 7:00 AM - 8:00 AM
›› Room 105, Level 1

Hot Topics

Valve Symposium

TAVI: How Minimalistic Can We Become?

Thierry Lefèvre, MD

Institut Hospitalier Jacques Cartier, France

Since the first successful procedure was carried out in 2002, transcatheter aortic valve implantation (TAVI) has gradually been established as an alternative to conventional surgery in patients with severe aortic stenosis contra-indicated to surgery or at high surgical risk. In 2017, during the last ESC meeting, TAVI indications were extended to intermediate risk patients when the transfemoral approach (TFA) is feasible. Improvements in technique, devices, operator's experience and patient selection have contributed to a dramatic decrease in procedural complications, thus allowing further technical simplification at every step of the procedure. In this session, our aim is to describe how to simplify the technique at each stage of the procedure in order to turn it into a "PCI-like" procedure and to discuss how this may improve TAVI outcomes.

Though the first case of TAVI was performed on conscious sedation, general anesthesia is also used as well. However, analyses of TAVI registries demonstrated feasibility, safety and cost-effectiveness of local anesthesia with conscious sedation in comparison to general anesthesia, with potential advantages in terms of bleeding and hospitalization length.

The percutaneous approach via transfemoral access is an essential component of TAVI's simplification process allowing early discharge. Percutaneous transfemoral access is as safe as the surgical approach and feasible in the majority of cases with a very high rate of success after the learning phase. Most vascular complications can be managed percutaneously.

Using the transradial access (TRA) as a secondary access appears to be very promising. By reducing contralateral vascular complications and simplifying the procedure, TRA will probably follow the predominant tendency observed in other interventional cardiology settings and become the gold standard contralateral approach for TAVI.

During balloon valvuloplasty (BAV) or balloon expandable TAVI procedures, rapid ventricular pacing is mandatory. Recently, rapid ventricular pacing through the left ventricle guide wire has been described as a way of simplifying the procedure by eliminating the need for additional vascular access during TAVI.

Although BAV was considered a mandatory step in the early days of TAVI, it is no longer essential during TAVI procedures. As a result, many centers routinely implement TAVI without predilation. Avoiding balloon predilatation may reduce complication rates, decrease the need for permanent pace-maker and reduce procedural time.

TAVI without subsequent ICU admission has been evaluated and has been shown to be feasible and safe in selected patients after rigorous evaluation. Indeed, this new strategy adopted in our center in 2017 may obviate ICU admission in up to one third of cases.

According to the literature demonstrating safety in patients with hospitalization duration shorter than 48 hours, the median length of hospitalization was 1 day in the early discharge group with no differences between early discharge and discharge after 48 hours in terms of 1-month mortality, stroke and readmission **(Figure 1)**. Shortening hospital stay is also an essential components of the TAVI simplification process with a potential reduction in procedural costs and need for rehabilitation.

TAVI simplification has already been adopted in routine practice in experienced centers, resulting in a low rate of complications, shorter procedural time, improved patient comfort, as well as decreased costs and staff workload. However, rigorous patient selection and risk stratification are key factors in ensuring successful "PCI-like" procedures. On-going randomized trials may confirm preliminary results, thus leading to a "simple" but not "simpler" procedure in the near future.

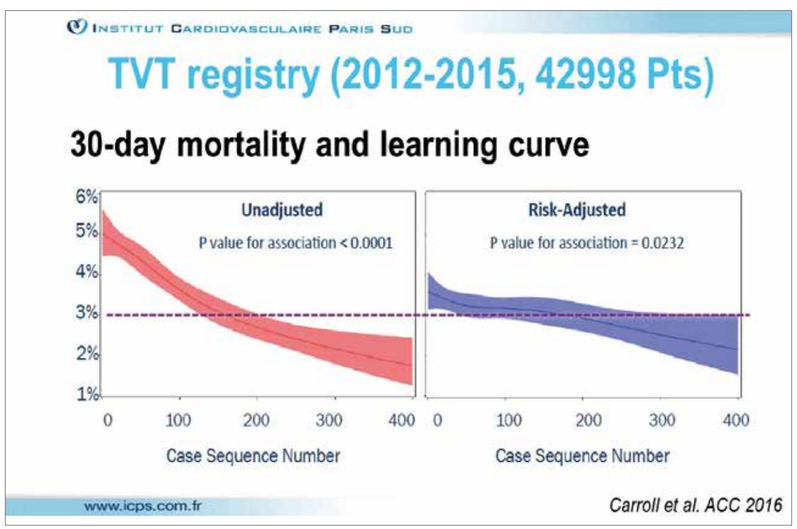


Figure 1. 1-month mortality evaluation

Transcatheter Tricuspid Valve Repair

Horst Sievert, MD

CardioVascular Center Frankfurt CVC, Germany

The tricuspid valve has long been described as the "forgotten valve" and for a good reason. In the United States, it is estimated that approximately 1.6 million individuals have severe tricuspid regurgitation (TR). Despite a clear association with TR severity and mortality, fewer than 8,000 patients undergo surgical tricuspid repair or replacement. Most patients with severe TR are managed medically with suboptimal therapies, resulting in modest amounts of clinical improvement.

The current transcatheter approaches for treating TR can be grouped by mechanism of action, including annuloplasty systems, coaptation devices, leaflet devices, caval valve implantation, and tricuspid valve replacement. All of the devices discussed in the following are in the early phases of development in the TR space, and only one has completed an early feasibility trial.

The Trialign system (Mitralign, Inc.) was originally developed for treatment of functional mitral regurgitation. Two pledgets are usually placed at the septoposterior and anteroposterior commissure; the two pledgeted sutures are then cinched together using a dedicated plication lock device to produce effective obliteration of the posterior leaflet.

The TriCinch system (4Tech Cardio Ltd.) is a catheter-based device that anchors to the tricuspid annulus to reduce septolateral dimensions while preserving the native anatomy. It is performed via the femoral vein with a steerable delivery system. The device consists of a corkscrew anchor and a nitinol stent delivery system that is connected to the corkscrew using the Dacron band.

The Cardioband system (Edwards Lifesciences) is a direct, surgical-like annuloplasty device originally designed for the mitral valve and inserted through a 24-F sheath placed in the femoral vein. Approximately 16 anchors are implanted in the posterior annulus on the beating heart to fixate the device, which is then cinched. As a result, the annulus diameter is restricted, and the regurgitation diminished.

The MitraClip system (Abbott Vascular) is now an established treatment option for the treatment of both organic and functional mitral regurgitation. Given the ability for off-label use, MitraClip has been the most frequently used device in the tricuspid space. To accommodate approaching the tricuspid valve, most centers have adopted "miskeying" the delivery system in order to achieve an orthogonal orientation.

The Forma system (Edwards Lifesciences) is a spacer that occupies the regurgitant orifice area and provides a platform to enable the coaptation of the native valve leaflets. The device consists of a balloon "spacer" filled with a polycarbonate-urethane foam, and a rail that is anchored at the right ventricle apex using a 20-F sheath introducer.

Caval aortic valve implantation (CAVI) is an alternative approach to directly treating the tricuspid valve by implanting a transcatheter valve in the inferior vena cava, or the inferior vena cava and superior vena cava, with a goal to reduce symptoms of right heart failure by decreasing venous congestion.

WATCHMAN: Data Synthesis and Ongoing Trials

David R. Holmes, MD

Mayo Clinic, USA

During the recent past years, oral anti-coagulant (OAC) alternatives have emerged, and nowadays some new options are available with at least the same efficacy and safety profile, more reliable anticoagulation level, and without the need of frequent monitoring. Despite all pharmacological evolution, 30 to 50% of atrial fibrillation (AF) patients do not receive chronic anticoagulation, due to relative or absolute contraindications, or patient or physician barriers, including the fear of treatment-induced bleeding, thus limiting the use of OAC. Device-based therapies are currently being developed for stroke prevention in AF to potentially offer an alternative approach to this problem.

The dedicated WATCHMAN device (Boston Scientific-Atritech) is approved in the United States and Europe, and the Amplatzer Cardiac Plug (ACP) (St. Jude Medical Inc.) device is approved in Europe. The recently published PROTECT AF trial is currently the only randomized trial to evaluate the safety of this technology.

For the PREVAIL trial, the ischemic stroke/SE rate was numerically higher with left atrial appendage (LAA) closure, but this difference did not reach statistical significance (HR: 1.71; p = 0.080). However, differences in hemorrhagic stroke, disabling/fatal stroke, cardiovascular/unexplained death, all-cause death, and post-procedure bleeding favored LAA closure (HR: 0.20; p = 0.0022; HR: 0.41; p = 0.03; HR: 0.59; p = 0.027; HR: 0.73; p = 0.035; HR: 0.48; p = 0.0003). The 5-year outcomes of the PREVAIL trial, combined with the 5-year outcomes of the PROTECT AF trial, demonstrate that LAA closure with WATCHMAN provides stroke prevention in nonvalvular atrial fibrillation comparable to warfarin, with additional reductions in major bleeding, particularly hemorrhagic stroke, and mortality **(Figure 2)**.

For the EWOLUTION trial, LAA occlusion with WATCHMAN has emerged as viable alternative to vitamin K antagonists in randomized controlled trials. EWOLUTION was designed to provide data in routine practice from a prospective multicenter registry. LAA closure with the WATCHMAN device has a high implant and sealing success. This method of stroke risk reduction appears to be safe and effective with an ischemic stroke rate as low as 1.1%, even though 73% of patients had a contraindication to and were not using oral anticoagulation.

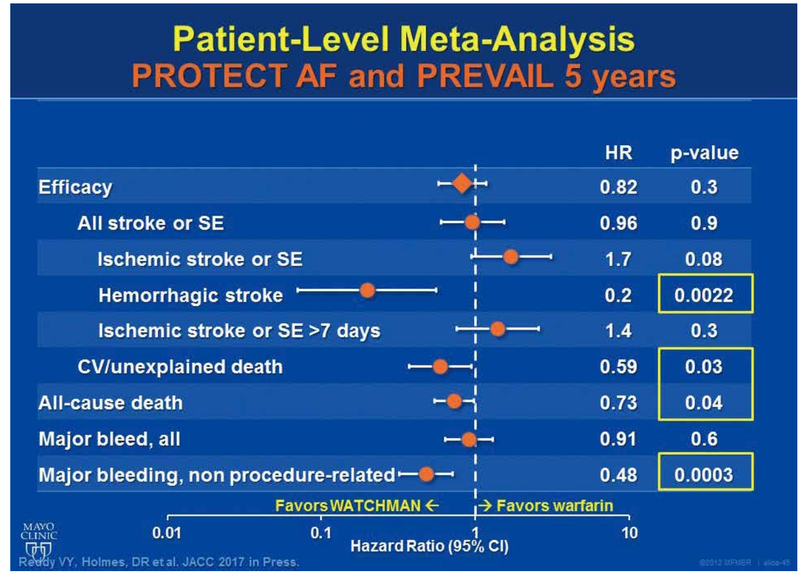


Figure 2. Results of PROTECT AF and PREVAIL 5 years

For the AMULET trial, to investigate the safety, feasibility, and efficacy of LAA occlusion with the ACP for stroke prevention in patients with AF. The annual rate of systemic thromboembolism was 2.3% (31/1,349 patient-years), which is a 59% risk reduction. There were 15 major bleedings (1.5%) during follow-up. The annual rate of major bleeding was 2.1% (28/1,349 patient-years), which is a 61% risk reduction. In this study, LAA occlusion with the ACP showed high procedural success and a favorable outcome for the prevention of AF-related thromboembolism. Modification in antithrombotic therapy after LAA occlusion may result in reduction of bleeding events.

Valve Symposium
Live Case & Lecture Session I, II

›› Monday, April 30, 2:00 PM – 6:00 PM
›› Valve Theater, Level 1

TCTAP 2018 Wrap-up Interview: PCI vs. CABG in Left Main and MVD

Moderator: Patrick W. Serruys
Interviewees: Gregg W. Stone, Seung-Jung Park, Marie-Claude Morice

The current guideline does not recommend percutaneous coronary intervention (PCI) for complex lesion of left main coronary artery disease (LMCAD) and multi-vessel disease (MVD), and rather, it is classified as class III. But recently, there were two large-scale randomized controlled trials - EXCEL and NOBLE trials, which showed conflicting results. Such findings spark debates and more discussion points in the field of intervention.

In the EXCEL trial, a large-scale randomized trial examining PCI versus coronary artery bypass graft surgery (CABG) in patients with LMCAD and low or intermediate SYNTAX scores revealed that there was no significant difference in the 3-year outcomes and a reduction in 30-day major adverse events with PCI. The study involved 1,905 patients (mean age 66 years; 76% male) with LMCAD and low- or intermediate-risk SYNTAX scores (≤32) assessed by the local heart team who were randomly assigned to PCI with a second-generation fluoropolymer based cobalt-chromium everolimus-eluting stent (Xience, Abbott Vascular) or CABG with or without pulmonary bypass at the discretion of the operator. The composite primary endpoint of all-cause death, stroke, or myocardial infarction (MI) at 3 years occurred in 15.4% of patients treated with PCI and in 14.7% of patients undergoing CABG. The difference was significant for noninferiority (p=0.018), but not for superiority (hazard ratio [HR], 1.00; 95% CI, 0.79–1.26; p =0.98). At 30 days, there was a significant 39% reduction in the composite of death, stroke, or MI among the PCI patients (HR, 0.61; p=0.008), driven largely by fewer large MIs in the PCI group.

Another large RCT, the NOBLE trial showed that the MACCE event rate was higher in the PCI group, which suggested CABG might be better than PCI for LMCAD. For this study, a total of 1,201 patients (mean age 66 years; 79% male) with LMCAD were enrolled. The primary endpoint was major adverse cardiac or cerebrovascular events (MACCE), a composite of all-cause mortality, non-procedural MI, any repeat coronary revascularisation, and stroke. Noninferiority of PCI to CABG required the lower end of the 95% CI not to exceed a hazard ratio of 1.35 after up to 5 years of follow-up. MACCE was 28% in PCI and 18% in CABG group (HR, 1.51; p=0.0044). Comparing PCI with CABG, 5-year estimates were 11% versus 9% (1.08, 0.67–1.74, p=0.84) for all-cause mortality, 6% versus 2% (2.87, 1.40–5.89, p=0.0040) for non-procedural MI, 15% versus 10% (1.50, 1.04–2.17, p=0.0304) for any revascularisation, and 5% versus 2% (2.20, 0.91–5.36, p=0.08) for stroke.

In multi-vessel disease, there was a large-scale meta-analysis with 11,518 patients in 11 RCTs. In the subgroup analysis, especially in patients with diabetes or multi-vessel disease, there was higher rate of death in the PCI group compared with the CABG group.

The current ongoing study, the results of the FAME 3 trial will be published within a few years. In this study, a total of 1,500 patients with three vessel disease without left main disease will be enrolled and randomly assigned to fractional flow reserve (FFR) guided PCI with drug-eluting stent (DES) or CABG. The primary endpoint is death, MI, stroke, or any revascularization.

For more details, ensure to check out the in-depth discussion.

TCTAP 2018 Wrap-up Interview:
PCI vs. CABG in Left Main and MVD

›› Monday, April 30, 2:30 PM ~ 3:00 PM

Left Main, Bifurcation PCI

Bifurcation PCI with Physiologic Index: FFR, Contrast FFR, Pd/Pa, and iFR - When, How, and What?

Bon-Kwon Koo, MD
Seoul National University Hospital, Korea

In this session, he introduced fractional flow reserve (FFR), a gold standard invasive physiologic index with a new resting index, instantaneous wave-free ratio (iFR). Recent studies including 2 large randomized studies demonstrated the similarities and differences among resting (resting Pd/Pa, iFR) and hyperemic physiologic indices (FFR) **(Figure 1)**. Contrast FFR is a Pd/Pa measured after intracoronary contrast injection.

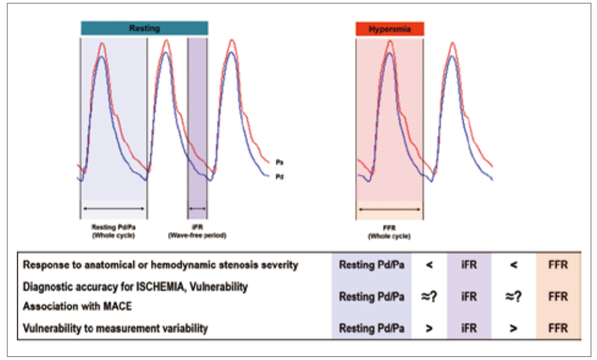


Figure 1. Similarities and differences among resting and hyperemic physiologic indices

Despite the introduction of new physiologic indices, penetration rate of those indices in daily practice is still low. Therefore the question should be, how can we improve the penetration rate of physiologic indices rather than determining which index is superior? As iFR-SWEDEHEART and DEFINE FLAIR studies demonstrated the non-inferiority of iFR-guided approach compared with FFR-guided approach in patients with intermediate stenosis, physicians can use any physiologic index in the assessment of bifurcation lesions. However, physicians should understand the strength and weakness of each index.

It is well-known that angiographic evaluation is relatively inaccurate and overestimates the functional significance of bifurcation lesions. Invasive physiologic assessment can simplify the complex procedure for the bifurcation lesion, especially for the jailed side branch after main vessel stenting. Several studies have consistently shown that the limitations of angiographic percent diameter stenosis in identifying functionally significant jailed side branches can be overcome by FFR interrogation. Invasive physiology-guided treatment for bifurcation lesions has consistently shown comparable outcomes to angiography-guided treatment with less intervention.

However, clinical application of physiologic indices in bifurcation lesions needs comprehensive understanding of coronary physiology and its pitfalls. In addition, the measured value should be interpreted as an integrated unit of each component of bifurcation lesions along with considerations for dynamically changing parameters rather than simple constant. Finally, it should be kept in mind that what is most important is the ischemic burden rather than the presence of ischemia itself. The operators should perform invasive physiologic assessment only when the benefit of revascularization is greater than the risk of intervention process and medical treatment.

Bifurcation PCI with Invasive Imaging: IVUS, 3D-OCT and More

Takashi Akasaka, MD
Wakayama Medical University, Japan

Bifurcation lesion percutaneous coronary intervention (PCI) perhaps accounts for 15-20% of all PCI cases in our daily clinical practice and complex procedure may be required sometimes. Higher risk for complications such as side branch occlusion, stent thrombosis, restenosis, etc. have been reported more frequently in bifurcation lesion PCI, although the improvement of PCI results in simple lesion in main branch has been demonstrated in the SYNTAX II trial with the development of new generation drug-eluting stents (DES), physiology-guided PCI and imaging-guided stent optimization. Intravascular ultrasound (IVUS)-guided PCI demonstrated that minimal stent area (MLA) of 5, 6, 7 and 8 mm^2 in ostial left circumflex (LCx), ostial left anterior descending (LAD) arteries, polygon of confluence (POC) and left main coronary arteries (LM), respectively, may significantly reduce in-stent restenosis and major adverse cardiac event (MACE) rates and improvement of clinical outcomes could be expected if these MLA criteria would be applied for optimization. Recent development of frequency domain optical coherence tomography (OCT) may represent stent struts and guidewire position three dimensionally. The relations among stent cell, rink position and guidewire in jailed side branch could also be demonstrated clearly using this 3D-OCT system. Using this 3D-OCT, further improvement of long-term results in bifurcation lesion PCI could be expected if ideal strut cell on jailed side branch could be selected by the guidewire. A pilot study in Japanese registry of 3D-OCT guide bifurcation PCI has reported that re-wiring to side brunch may be performed again in about 30% of the cases and total strut metal volume on side branch may be reduced significantly if the side branch wire could be in ideal position. Furthermore, OCT could predict side branch occlusion by carina shift based on the findings of the angle of carina tip more than 50° and if the length from bifurcation to carina tip is less than 1.7 mm. Thus, the possibility of improvement in the long-term results of bifurcation lesion PCI could be expected by the guidance of 3D-OCT, and the usefulness of 3D-OCT guided PCI in bifurcation lesion was demonstrated in this presentation. Prospective randomized study using 3D-OCT guided bifurcation PCI should be planned in the near future.

TCTAP Workshops
Left Main and Bifurcation PCI
›› Sunday, April 29, 8:30 AM - 10:30 AM
›› Room 104, Level 1

Excel and Noble Trials: What Is the Impact on Clinical Practice Two Years Later?

The optimal revascularization strategy for patients with left main stenosis (coronary artery bypass graft [CABG] surgery or percutaneous coronary intervention [PCI]) is a topic of continuing debate. The advent of newer generation of drug-eluting stents (DES) with improvements reported in both safety and efficacy has promoted again dedicated randomized trials comparing CABG and PCI: the NOBLE (Coronary Artery Bypass Grafting vs. Drug Eluting Stent Percutaneous Coronary Angioplasty in the Treatment of Unprotected Left Main Stenosis) and EXCEL (Evaluation of XIENCE Everolimus Eluting Stent Versus Coronary Artery Bypass Surgery for Effectiveness of Left Main Revascularization) trials which have been published in 2016. Surprisingly the conclusions were not similar. In this session, he will review the NOBLE and EXCEL trials. And also, he will introduce several meta-analyses updated with the NOBLE and EXCEL trials. Here is the key message from Dr. Imad Sheiban.

Imad Sheiban, MD
Pederzoli Hospital/ University of Torino, Italy

In the last two years, several meta-analyses were updated, adding nearly 3,000 patients included in the NOBLE and EXCEL trials. Analyzing the results of these meta-analyses, it seems that the new data from EXCEL and NOBLE have not altered too much of the previous state-of-the-art. In fact, the Achilles' heel of PCI for LM disease remains the target vessel revascularization (TVR), but more importantly, death, spontaneous myocardial infarction (MI) or stroke is not significantly different between PCI and CABG both at 1 year and >3 years. However, longer follow up data (10 years?) are still warranted. Since in EXCEL, the Kaplan-Meier curves for the primary endpoint of death, MI or stroke separated early in favor of PCI tend converge up to 3 years.

In conclusion, EXCEL and NOBLE trials have not strongly impacted the clinical practice for the optimal management of LM disease. Low and intermediate risk patients are still considered good candidates for PCI with the latest DES generation, while high risk patients are good candidates for CABG. Strategy selection should be based on Heart Team approach.

Morning Roundtable Forum: Meet the Experts over Breakfast
Left Main & Bifurcation PCI
›› Monday, April 30, 7:00 AM - 8:10 AM
›› Coronary Theater, Level 1

Hot Topics

2018 New Data from AMC; Novel and More with Expert Commentary

Continued from page 1

Routine Use of Fractional Flow Reserve in Clinical Practice: 5 Years Outcomes

Mineok Chang, MD

The Catholic University of Korea, Seoul St. Mary's Hospital, Korea

Fractional flow reserve (FFR) quantifies hyperemic coronary blood flow reduction due to an epicardial coronary artery stenosis and indicates the potential of a specific stenosis to induce myocardial ischemia. Randomized trials have demonstrated that FFR-guided percutaneous coronary intervention (PCI) produces more favorable outcomes than angiographic selection for coronary stenting. Subsequently, practical guidelines recommend FFR measurement prior to revascularization in the absence of objective evidence of ischemia. However, the generalizability of findings from clinical trials and guideline recommendations is only possible by evaluating clinical practice.

In this session, Dr. Mineok Chang will introduce the study of FFR-guided PCI from the ASAN-PCI registry, which evaluated the clinical impact of a paradigm shift from anatomical to functional revascularization in a contemporary, real-world population. This prospective registry contained two distinct periods separated by routine FFR use. The rate of FFR during PCI increased from 1.9% between 2008 and 2009 (cohort before routine FFR use) to 50.7% between 2010 and 2011 (cohort after routine FFR use) **(Figure 2)**. At 1 year, the risk of cardiac events was significantly reduced along with less use of coronary stents in the cohort after the routine FFR use. In addition, no early warning signal was observed in outcomes among deferred lesions assessed by FFR. In this study, the previous analysis was extended to examine whether the early beneficial effect of routine FFR use in daily practice persisted up to 5 years of follow-up.

At 5 years, the primary endpoint occurred in 17.8% before routine FFR use and in 15.8% after routine FFR use (hazard ratio [HR], 0.81; 95% confidence interval [CI], 0.69-0.95; p=0.01) **(Figure 3)**. The risk of death and myocardial infarction was significantly lower in the cohort after routine use of FFR (11.8% versus 9.5%; HR, 0.79; 95% CI, 0.65-0.97; p=0.021). No significant difference was seen between cohorts in the occurrence of any repeat revascularization (7.5% versus 8.1%; HR, 0.99; 95% CI, 0.78-1.26; p=0.95). The early risk (≤1 year) of target lesion revascularization in the cohort before routine FFR use (HR, 0.53; 95% CI, 0.33-0.84; p=0.008) was offset by the late risk (>1 year) of new lesion revascularization in the cohort after routine FFR use (HR, 1.93; 95% CI, 1.23-3.02; p=0.004). During the entire study period, overall stent number per patient was reduced after routine FFR use (2.20±1.41 and 1.61±1.30, p<0.001).

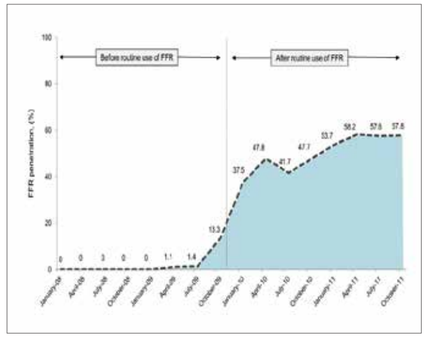


Figure 2. The rate of FFR during PCI from 2008 to 2011

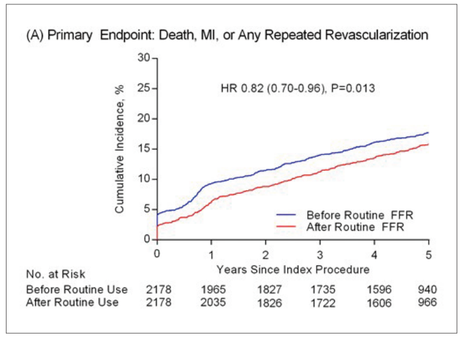


Figure 3. Primary endpoint at 5 years

In this large, prospective, real-world registry, it was demonstrated that early benefit of FFR-guided PCI was maintained over long-term. At 5 years, the cohort after routine FFR use was associated with a significantly lower risk of major adverse cardiac events compared with those before routine FFR use. In addition, the rate of cardiac death and myocardial infarction was significantly lower after routine FFR use. This benefit was achieved with 26% reduction in overall stent use. Although the long-term risk of any repeated revascularization was similar between the two periods, the temporal pattern was significantly different. An early increased risk of target lesion revascularization was observed in the cohort before routine FFR use, which was offset by a late increased risk of new lesion revascularization in the cohort after routine FFR use.

Dr. Mineok Chang will share the results of the study and reiterate on the usefulness of the routine FFR-guided PCI in daily practice, which was associated with a reduction in cardiac events at 5 years, as well as less use of coronary stents.

OPTIMA Trial: P2Y12 Dose Adjustment for East-Asian ACS Patients

Duk-Woo Park, MD

Asan Medical Center, Korea

Ticagrelor is a reversible non-thienopyridine oral P2Y12 antagonist that provides faster, more potent, and consistent platelet inhibition than clopidogrel. In the large multi-national, randomized controlled trial, the Platelet Inhibition and Patient Outcomes (PLATO) trial, ticagrelor was shown to be superior to clopidogrel in reducing the rate of death from vascular causes, myocardial infarction, or stroke.

Despite its therapeutic benefits, this potent antiplatelet agent tends to be related with bleeding complications, which are associated with unfavorable short- and long-term outcomes in acute coronary syndrome (ACS). This is of particular concern for East Asian patients who tend to have lower body mass index and high prevalence of renal failure, both of which are associated with bleeding complications.

Because of different risk profiles and genetic backgrounds, East Asian populations are regarded as more susceptible to bleeding events but relatively resistant to atherothrombosis compared with Western populations (the so-called "East Asian paradox").

In this context, a recent prospective, randomized controlled study, called the OPTIMA (Optimal anti-Platelet Therapy In Management of Asian patients with acute coronary syndromes) trial was designed to elucidate whether the relative safety and efficacy margin with the more potent P2Y12 antagonist (ticagrelor) is identical between Asian and Western patients with ACS and to explore the potential applicability of a reduced dose of ticagrelor in East Asian patients with ACS.

Patients were randomly assigned (1:1:1) to low-dose ticagrelor (120 mg loading dose, 60 mg twice daily), standard-dose ticagrelor (180 mg loading dose, 90 mg twice daily), or standard-dose clopidogrel (600 mg loading dose, 75 mg once daily) added on to aspirin. Study drugs were loaded at the time of coronary angiography and were maintained at least 30 days after randomization. Platelet reactivity was assessed by the P2Y12 function assay (PFU). Pharmacokinetic parameters of ticagrelor and its active metabolite were assessed.

As a primary endpoint, both ticagrelor therapies showed significantly lower mean PRU values than clopidogrel therapy at 8 hours after loading and at 30 days **(Figure 4)**. There was no statistical difference in PRU values between low- and standard-dose ticagrelor at any time point. The maximal plasma concentrations and the area under the curve from time zero to the last measurable time point of ticagrelor and its metabolite were ~1.5-fold higher with standard-dose versus low-dose ticagrelor, suggesting linear dose-exposure relationship.

The overall pharmacodynamic and pharmacokinetic findings of this trial are similar to those of a substudy of the PEGASUS-TIMI 54 (Prevention of Cardiovascular Events in Patients with Prior Heart Attack Using Ticagrelor Compared to Placebo on a Background of Aspirin-Thrombolysis In Myocardial Infarction 54) trial, along with the findings in the large PEGASUS-TIMI 54 clinical trial that a 60 mg dose of ticagrelor might offer a more attractive risk–benefit profile than a 90-mg dose.

In conclusion, the key findings of the OPTIMA trial assume that ticagrelor 60 mg might provide better safety and tolerability than ticagrelor 90 mg with similar efficacy in East Asian patients with ACS. However, a larger, adequately powered trial is required to definitively assess the efficacy and safety of this approach.

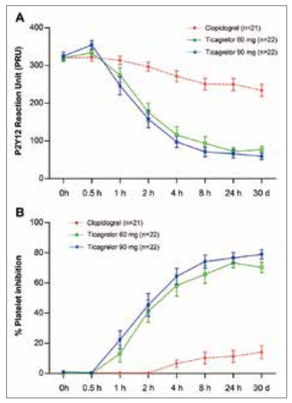


Figure 4. PRU values and platelet inhibition rate at 8 hours after loading and at 30 days

Hot Topics
2018 New Data from AMC; Novel and More with Expert Commentary

›› Monday, April 30, 3:06 PM - 4:56 PM
›› Room 104, Level 1

TCTAP Award

Prof Bernhard Meier for Chien Foundation Award for Outstanding Lectureship & Lifetime Achievement in PCI to be Presented at TCTAP 2018

Bernhard Meier, MD

Swiss Cardiovascular Center, Switzerland

Professor Bernhard Meier was selected as the recipient of the Chien Foundation Award for Outstanding Lectureship & Lifetime Achievement in PCI at TCTAP 2018 and the presentation of this honored award took place at 12:25 pm on April 29th (Sunday) in Room 104, Level 1, COEX.

Prof Meier served from 1992 to his retirement in 2015 as full Professor of Cardiology and Chairman of the Department of Cardiology at the Swiss Cardiovascular Center of University of Bern, Switzerland. Since 2016, he has been serving as the Senior Consultant at this institution.

Prof Meier was the personal assistant to Andreas Gruentzig, who at the time introduced coronary angioplasty into clinical medicine. He was closely involved in the world's first coronary angioplasty patient, treated in Zurich in September 16th, 1977, and therefore has been involved in PCI since the very beginning.

He has performed thousands of coronary angioplasty and other catheter-based cardiac procedures. He also contributed in the development of a simple and effective technique to close the patent foramen ovale and the left atrial appendage.

Prof Meier has also written countless articles, reviews, and chapters in textbooks on the subject of interventional cardiology and associated topics, and has been involved in teaching and training in this field for almost 40 years. He has delivered keynote lectures at prestigious meetings and has also received a number of acclaimed awards. Prof Meier is personally acquainted with all leaders in the field of interventional cardiology.

TCTAP Award
Chien Foundation Lectureship Award

›› Sunday, April 29, 12:25 PM – 12:30 PM
›› Room 104, Level 1

Hot Topics

Endovascular Symposium

Thrombectomy Using Jetstream/Rotarex/ AngioJet etc. is Essential

Lawrence A. Garcia, MD

St. Elizabeth's Medical Center, USA

In the endovascular space, there are now several devices that are available for thrombectomy that can safely aspirate occlusive thrombus. The simplest device remains aspiration through an end hole catheter. In this approach simple suction pressure tends to capture thrombus into the catheter for removal. The limitations of this are principally, if the thrombus is organized, it may not fully enter the catheter, thereby creating some shear forces that allow loose thrombus the chance to become dislodged and embolize.

One of the first devices used in the past has been rheolytic thrombectomy with the AngioJet device (Boston Scientific, USA). This device uses a high-pressure jet within the catheter to deliver a low-pressure zone (Bernoulli Effect), causing a vacuum effect for the aspirating debris into the effluent and retrieve in a receiving bag outside the body. The device has several versions from small to large to allow either small or large vessel, as well as small or larger thrombotic burden aspiration ranging from 6F to 8F in size. The key element with use of this device is to choose the device size and aspiration well. In some cases where the aspiration is too great or in a smaller vessel than desired, the aspiration pressure may aspirate against the arterial wall and not have an effective aspiration. This can be noted with the effluent being clear (mostly saline) and not bloody. In this case, either stopping to allow the arterial wall to release or choosing a smaller device may be best.

Some devices use an Archimedes screw for access to and aspiration of the thrombus (Rotarex, Straub Medical, Switzerland). Here the device is advanced and rotated, and the screws engage and remove the thrombus. Because the motor drive is moving the screws, as long as the device is in contact with the thrombus, desiccated thrombus should become entrapped in the housing and withdrawn. Like many devices, agitation and movement tend to ensure that the device remains in contact with the thrombus and even if non-continuous, such as in DVT work, it can likely remove the majority and not have directed embolic showers. The device comes in 6F, 8F and 10F catheter sizes.

Others use pure suction either with an infusion and aspiration through a rotational motor unit (Jetstream, Boston Scientific, USA) or simple vacuum pump system (Indigo System, Penumbra, USA). The Jetstream device obtained FDA clearance for thrombectomy, in addition to atherectomy in its IFU's. The device is 7F compatible. In its RX mode, it aspirates without atherectomy. The aspiration is 80% of the infusate, thereby suggesting that slow movement of the device is more effective than rapid movements with the device to avoid embolization. The Indigo system uses a housed vacuum pump that attaches to the catheter, and through various aspirations force, engages the thrombus. This device is unique in that the distal position is obtained from the thrombus, then this tip can be used as a separator or agitator to return the thrombus to the aspiration catheter proximally for removal. There are various categories for use ranging from 5F to 8F.

With any of these devices, the retrieval of the debris and thrombus is critical to the safe completion of the procedure. When an embolism occurs, the inability to aspirate can take a potentially salvageable case to non-successful and potentially hazardous to the patient. Therefore, the essential need for the lab to possess the tools to include a thrombectomy device is not a debatable fact. The infrequent need or the rarity of complications notwithstanding, the essential need for any one or all these devices in part or on standby is critical to salvage a potentially bad outcome to a successful one.

Renal Artery Stenosis: Nothing to Do?

Robert Bersin, MD

Swedish Heart and Vascular, USA

Renal artery stenosis (RAS) is common among patients with atherosclerosis and the rate of progression is 7% per year. Atherosclerotic RAS generally progresses overtime and is often related with loss of renal mass and worsening of the renal function.

Evidence from the most recent prospective, randomized trial suggests renal artery stenting (RASt) is no better than medical treatment (MT). The ASTRAL trial was a multicenter, prospective, randomized study comparing RASt and MT versus MT alone. This study included RAS of >50% with the treating interventionist uncertain on whether or not there would be a potential benefit from revascularization. Therefore, some groups of patients including those who may have benefited from intervention were excluded. Overall, 22% of the patients did not receive an intervention, but the trial was still analyzed by intention-to-treat analysis. There was no significant differences in the renal function and blood pressure between the two groups. It was concluded that there was no meaningful clinical benefit from renal artery revascularization.

The cardiovascular outcomes in renal atherosclerotic lesions (CORAL) trial is the most recent update in the world of renal artery revascularization. This study was a randomized controlled trial that compared MT alone with RASt and MT in patients with RAS. No statistical differences were observed for the 931 enrolled patients. However, there was a significant 2.3 mmHg lower systolic blood pressure in the RASt group. The severity of stenosis (>80%) did not seem to impact the outcome, but the study was not designed to evaluate this correlation. This trial had limitation due to lack of enrollment, so patients with controlled blood pressure were included, and the study period was increased from 2 to 3 years to allow for reaching predictive statistical number of patients.

Recently, RASt is the preferred method of revascularization for RAS and is favored over simple balloon angioplasty alone. Treatment using stent in RAS is recommended for atherosclerotic RAS according to the American College of Cardiology (ACC) and American Heart Association (AHA) guidelines. However, paradox exists between the very high procedural success rate (>95%) and the moderate clinical response rate (60-70%) after RASt, which seems to be a result of inadequate selection of patients, poor angiographic assessment of lesion severity, and the presence of renal parenchymal disease. To overcome these barriers, physiologic lesion assessment using translesional pressure gradients could enhance the selection of patients and improve clinical response rate. However, the value of absolute threshold pressure gradients has been questioned. Only expert consensus panel of the AHA recommended that a peak systolic gradient of at least 20 mmHg, or a mean pressure gradient of 10 mmHg, be used to identify candidate patients that can benefit from RASt.

Routine stenting of non-critical lesions (>60% and peak systolic velocity >300 cm/sec) is no longer supported by data. However, we still have "Something To Do". The critical RAS (>80%) causing loss of renal mass and/or function and refractory hypertension (systolic blood pressure >160 mmHg on 3 or more drugs) probably could benefit from RASt. Further, RASt may also be effective on patients with clinical events, such as acute pulmonary edema, congestive heart failure, myocardial infarction or acute renal ischemia.

Endovascular Symposium
TCTAP Endovascular Symposium
›› Monday, April 30, 10:30 AM - 12:30 PM
›› Valve Theater, Level 1

ERCAO - Carotid Occlusion Recanalization Trial

Paul Hsien-Li Kao, MD

National Taiwan University Hospital, Taiwan

Endovascular revascularization for chronic carotid artery occlusion trial (ERCAO) is a prospective, randomized control trial (RCT) to investigate the clinical efficacy of endovascular revascularization for chronic carotid artery occlusion (CAO). Carotid artery stenosis is known to be an important cause of stroke, and carotid artery stenting (CAS) provides non-inferior clinical outcome compared to carotid endarterectomy (CEA). However, revascularization for CAO remained controversial, owing to the failed extracranial-to-intracranial (EC-IC) artery bypass trials, anatomical hindrance for CEA, and technical limitation for CAS.

Our study group devoted ourselves in endovascular therapy for CAO and published innovative and pilot study results regarding feasibility of CAS for CAO, neurocognitive function (NCF) improvement after successful CAS for CAO, and predictors for CAS success in CAO. Moreover, successful CAS for CAO would lead to lower mortality and stroke rate during long-term follow-up, according to our preliminary analysis. However, there is no prospective, RCT regarding CAS in CAO patients, and in fact, most of the CAS trials excluded CAO. Our study group, with the largest volume and experience in CAO recanalization in the world, felt obliged and responsible to propose the following RCT to evaluate endovascular revascularization for chronic CAO.

Continued on page 19

TCTAP Workshops

BRS & New DES

Rethinking DAPT Duration with Smarter DES: Personalized vs. Generalized Strategy

Davide Capodanno, MD

Ferrarotto Hospital, Italy

Nearly all stent patients are expected to take dual antiplatelet therapy (DAPT) using the combination of aspirin and a second antiplatelet medication to prevent the formation of blood clots. Exactly how long patients should receive DAPT has been debatable.

The evidence derived from randomized controlled trials (RCT) addressing different DAPT strategies after newer generation drug-eluting stent (DES) implantation has been recently combined in several large meta-analyses. Shorter (3–6 months) DAPT courses have been associated with similar rates of major adverse cardiac event (MACE), all-cause death, cardiovascular (CV) death, myocardial infarction (MI), stent thrombosis (ST), or repeat revascularization, but with reduced rates of major bleeding compared with 12-month DAPT. Conversely, extended (18–48 months) DAPT durations have been associated with similar rates of MACE, all-cause death, CV death, and repeat revascularization, significantly reduced rates of MI and ST, and increased rates of major bleeding compared with shorter (6–12 months) DAPT durations.

In terms of patients with acute coronary syndrome (ACS), current guidelines recommend DAPT combining long-term, low-dose aspirin (75–100 mg/day) and a P2Y12 receptor inhibitor therapy for at least 12 months in patients with ACS undergoing PCI, irrespective of the stent type (bare-metal stent [BMS] or DES) (class I). In patients with low bleeding risk who have tolerated DAPT during 12 months without bleeding complications, long-term continuation of DAPT may be considered (class IIb).

A personalized approach considering the balance between the ischemic benefit and the bleeding risk according to the patient's clinical profile is currently advocated **(Figure 1)**. To help for personalized decision, several scoring systems such as PRECISE-DAPT or DAPT score have been developed. The DAPT score successfully identified the two groups of patients internally within the DAPT study, in whom DAPT continuation beyond one year provided benefit of ischemic protection and in whom it caused harm from bleeding.

In conclusion, for most of patients with stable coronary artery disease (CAD) receiving contemporary DES, a short-term DAPT strategy (≤6 months) seems a reasonable approach and may be considered the default therapy in the absence of an increased ischemic risk. The clinical decision to extend DAPT duration beyond 1 year (18–48 months) after stent implantation requires a personalized evaluation to weigh up ischemic benefits (lower risk of MI and ST) and risks (increased risk of major bleeding and non-CV death) **(Figure 2)**. However, further research is warranted to determine the optimal selection of patients who may derive benefit from extended DAPT duration after stent implantation.

TCTAP Workshops
DES & New BRS
›› Sunday, April 29, 10:30 AM - 12:25 PM
›› Room 104, Level 1

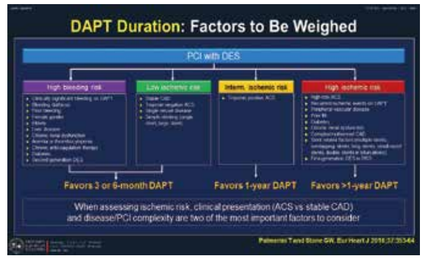


Figure 1. Factors to be weighed in determining DAPT duration

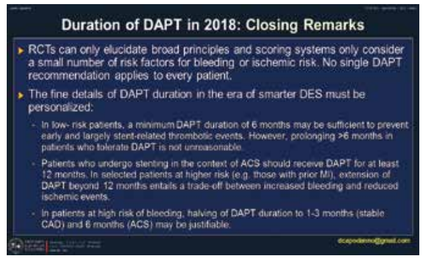


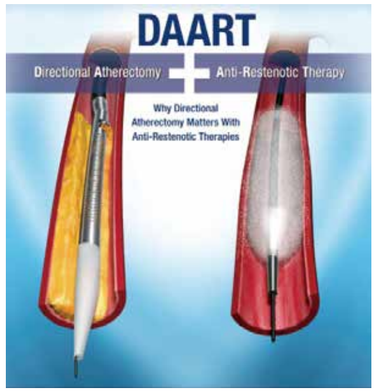
Figure 2. Personalized evaluation for duration of DAPT

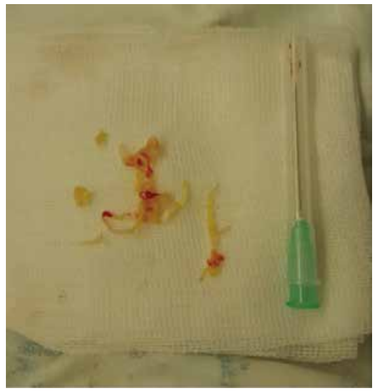
Live Cases

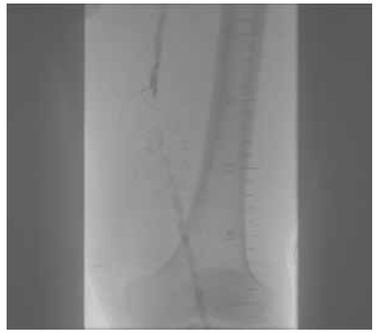
Yesterday's Hot Lives

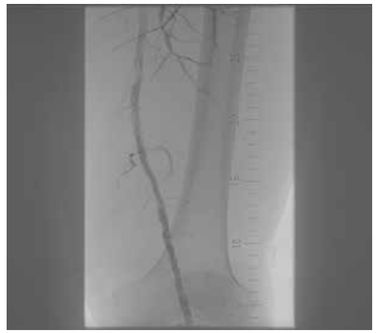
A 65 year-old male was referred to the outpatient clinic for claudication dominantly in the left leg. His ankle-brachial index (ABI) value was 0.70 / 0.44 (Rt/Lt). Computed tomography (CT) angiography showed multifocal significant stenosis at left superficial femoral artery (SFA), and both anterior tibial artery (ATA) and posterior tibial artery (PTA). We planned to treat the left SFA first.

The left SFA showed total occlusion at the middle part with diffuse stenosis. A 6F sheath was inserted into the left femoral artery through the contralateral retrograde approach. After angiography, the sheath was exchanged to the 7F Ansel guiding sheath. A Command ES wire supported by CXI successfully penetrated the lesion. For protection from an embolic event, a Spider FX 5.0 mm protection device was placed at the proximal popliteal artery, Initially, The SFA was dilated using a Coyote 3.0X60 mm balloon, and then, with the use of Hawkone-LX, antegrade directional atherectomy was performed several times. Lots of plaque debris were removed from the atherectomy and the protection device. After the degree of stenosis was reduced, an Armada 18 4.0X200 mm was inserted. Subsequently, two drug-eluting balloons (Lutonix), 5.0X150 and 5.0X100, were implanted and minimal dissection was seen. Thus, an Armada 18 4.0X200 mm was applied again. The final angiogram showed a successful result and good blood supply to the left leg.



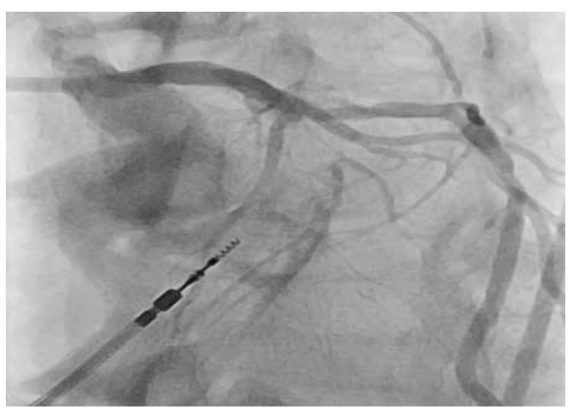


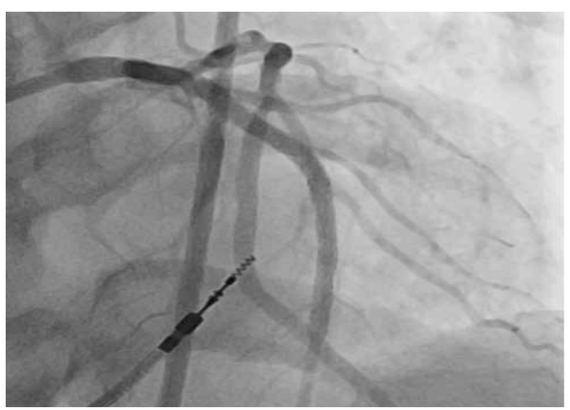




A 66 year-old male was admitted for dyspnea on exertion 2 months ago. He had already failed percutaneous coronary intervention (PCI) of the mid left anterior descending (LAD) artery coronary total occlusion (CTO) lesion 12 years ago at another hospital. The coronary angiography was performed, which revealed CTO of proximal to mid LAD artery. SYNTAX score was 26.5 and J-CTO score was 1. Left coronary artery was engaged with a 7F XB 3.5 guiding catheter and anterograde wire-ring was attempted first. At first, Dr. Nae Hee Lee tried to pass the wire to septal branch with Fielder FC and Caravel. And then, with Crusade Micro-Guide catheter, Gaia 2 followed by Sion BLACK, SUOH 3, Fielder XT-R finally passed the CTO lesion and to the diagonal branch. He confirmed the true lumen by angiography. Angioplasty was done by Emerge 1.5 x 15 mm up to 1.72 mm (16 atm), Euphora 2.0 x 15 mm up to 2.17 (12 atm).

And again with Crusade Micro-Guide catheter and keeping the wire in the diagonal branch, Fielder FC was entered to the mid LAD CTO lesion. He convinced that it was a true lumen because wire-ring was smooth and confirmed by angiography from a different angle. So, pre-ballooning was performed with IKAZUCHI zero 2.5 x 15 mm up to 2.57 (8 atm), and afterwards, a stent (Synergy 3.0 x 28 mm) was implanted at mid LAD artery. Another stent (Synergy 3.5 x 38 mm) was implanted from proximal to mid LAD artery. High-pressure ballooning was performed at in-stent lesion with Powered Lacrosse 3.5 x 15 up to 3.6 (20 atm). The final angiogram showed well-positioned and expanded stent with good distal run-off flow.





TCTAP Award

The 6th TCTAP Best Young Scientist Award Given to Dr. Ho Lam

Ho Lam, MD

Tuen Mun Hospital, China

Dr. Ho Lam is an energetic, diligent and unbeatable interventional cardiologist craving for innovative and practical approaches that lead to better outcomes in cardiovascular interventions. As soon as he completed his fellowship in Hong Kong, he won the sponsorship of The Ho Hung-Chiu Medical Foundation to go abroad to broaden his experience at Aarhus University Hospital in Denmark, Centre Hospitalier Universitaire Vaudois (CHUV) in Switzerland, and Semmelweis University Heart Center in Hungary, as well as Asan Medical Center in South Korea via CardioVascular Research Foundation (CVRF).

He currently serves as consultant interventional cardiologist and director of cardiac catheterization laboratory in Tuen Mun Hospital. Dr. Lam received the Young Achiever Award in 2018 awarded by the Hospital Authority for his contribution in cardiac service development for New Territory West Cluster (NTWC) public hospitals in Hong Kong and Exemplary Teacher Award by faculty of medicine, Chinese University of Hong Kong for his teaching. In cardiac intervention, he has been invited as faculty, speaker and panelist in various international conferences and won numerous best case awards, including TCTAP 2015, ECC 2015, ECC 2017, and many more. He was elected as chairman for Tuen Mun Hospital Doctor's Association in 2017 and 2018.

Q1) Everyone would be impressed with your ample experience of studying abroad. Would you tell us about how you have gained such great experience abroad?

My road is too hard and non-reproducible. I'd like to thank everyone who has helped me in the past and encouraged my heart to go on, especially Dr. Anshul Kumar Jain, Dr. Evald Hoj Christiansen, Dr. Eric Eeckhout and Dr. Yam PW. The key is in this quote by Dr. Anshul. "In the age of dreaming, it is not the time to choose comfortable life or money and Never, Never, Never give up!"

Q2) You have given great support to the TCTAP meetings. Which aspect of this meeting keeps on attracting your attention?

TCTAP allows you to learn the most updated knowledge through presentations and LIVE demonstrations, to share your most interesting work and to network with giants and fellows at the same time. Complex PCI is also a good meeting, too.

Q3) Your works have won many awards in various competitions. What do you think is the most important thing in giving an award-winning presentation?

The panelists and judges are very experienced physicians. You should focus on clearly presenting the innovative idea or learning points behind your case that could help to solve challenging clinical scenarios or dilemma instead of the case itself, so that everyone will be inspired by your presentation.

Q4) Your reformed program reduced the mortality in acute myocardial infarction (AMI) patients. What important modifications of the program brought such a good result?

First of all, this is the work of the whole team including all doctors and nurses in cardiac, A&E and medical, as well as supporting staff and administration.

The medical system in Hong Kong is very efficient but complicated. AMI service is currently underdeveloped due to lack of resources and manpower, and system defects. Issues on resources are particularly problematic in NTWC.

The most important things in reform are the correct direction and strategy in execution. Our directions are:

1. Settle non-ST-elevation myocardial infarction (NSTEMI) and STEMI at the same time, as the mortality is the same and NSTEMI patients are more common than STEMI patients.

2. Face reality to build a tailor-made system based on available resources. For execution strategy, we believe the dual approach of "system and skill" is the key to making difference in terms of mortality rate. We used the system-and-skill dual approach to improve PCI coverage, centralization, and coordination via EDIC team.

The road is still long. We will work hard for better care and cure for patients. I'd like to extend my gratitude again for the unconditional support from all seniors, juniors, nursing, medical and A&E.

Q5) Which areas of interventional cardiology are you pursuing in the future?

I will pursue teaching the younger generation cardiologist as it is the key to sustainability and advancement in service, which needs effort from generations to generations. After all these years, I found that "system and skill" were the most important in interventional cardiology. I will further polish the system and at the same time, I will improve my skills continuously so that all crazy cases and complications can be settled uneventfully. Finally, I want to develop new tools in cardiovascular interventions and collect data to prove some new ideas.

TCTAP Award 2018
"Best Young Scientist Award"

›› Monday, April 30, 5:51 PM – 6:00 PM
›› Room 104, Level 1

TCTAP Workshops

Imaging & Physiology

[Vulnerable Plaque Detection: What Is New in 2018?] OCT

Takashi Akasaka, MD
Wakayama Medical University, Japan

Pathological studies have reported that plaque disruption such as plaque rupture (PR), erosion (PE) and calcified nodule (CN) might be the main mechanisms of acute coronary syndrome (ACS). Similar morphological findings have been demonstrated in the culprit lesion in ACS by optical coherence tomography (OCT), and 60-70%, 20-30% and about 5% of PR, PE and CN, respectively, have been observed in ACS in daily clinical practice.

Furthermore, thin cap fibro-atheroma (TCFA), which is thought to be a main precursor of ACS, has been demonstrated more frequently in PR compared to PE. Moreover, red or white thrombus has been seen in culprit sites in almost all cases as protrusion mass with or without OCT signal attenuation, respectively. TCFA has been demonstrated to be thick cap fibroatheroma (ThCFA) by statin, and the degree of thickness of it has been thicker in proportion to the dose of statin. Furthermore, cap thickness of TCFA in ACS has been observed to be much thinner in the early period after ACS without statin. Also, in the ESCORT study, it has been demonstrated that plaque vulnerability may continue during early period after ACS attack.

Not only the presence of TCFA, but also lipid length, maximum lipid arc and percent area stenosis have been reported to be associated with prediction of future major adverse cardiac event (MACE). Recently, small amount of thrombus with intact fibrous cap has been reported as definite or probable PE by OCT and resolution of thrombus and increase of lumen area have been demonstrated by OCT under the treatment of anti-thrombotic drugs without in ERROSION study. PE with white thrombus has been frequently identified at the site of vasospasm by OCT, and vasospasm is thought to be a cause of PE. Further development in the field of OCT, such as near infrared spectroscopy (NIRS)-OCT, etc., and much more information would be required to predict future MACE and identify vulnerable plaque by the findings of OCT.

Implications of Hospital-Level Variation in FFR Severity on Cost-Effectiveness

Nils Johnson, MD
McGovern Medical School at UTHealth, USA

Variations exist among hospitals for many aspects of medicine, from the rate of antibiotics for upper respiratory infections to the frequency of surgery for low back pain. Some of this variation reflects underlying differences in the populations being treated by different hospitals. However, a substantial amount of the variation reflects a complex mixture of supply, preferences, cost, and administration.

Fractional flow reserve (FFR) has become the invasive standard for making decisions regarding epicardial revascularization on the combined evidence from mechanistic studies, observational data, and randomized trials. Despite national and international guidelines on when to use FFR, largely drawn from the inclusion criteria used in randomized trials, clinical studies show marked variations in the severity of FFR values studied. Such variations exist even within a single study. For example, in a diagnostic accuracy study called CONTRAST (clinicaltrials.gov NCT02184117), which asked hospitals to enroll standard patients undergoing FFR evaluation, substantial variation existed in the average FFR value between the most severe and least severe center despite uniform inclusion and exclusion criteria **(Figure 1)**.

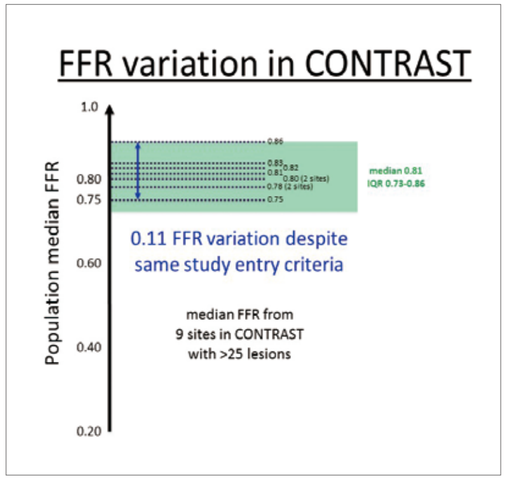


Figure 1. FFR data from the CONTRAST trial

Conceptually, if a diagnostic test – like FFR – is always positive or almost always positive, then it becomes unnecessary to perform the test. Clinicians can simply assume a positive result. Conversely, if a diagnostic test is always negative or almost always negative, it similarly becomes a waste of time and resources to perform it. Therefore an optimal frequency for each diagnostic test can be found, balancing the costs of performing the test versus its potential impact on treatment.

The implications for the cost-effective use of pressure wire assessment is another important consideration. In the FAME trial, the FFR-guided approach significantly reduced costs both at the time of the procedure and during follow-up. Although the coronary pressure wire and adenosine cost approximately $800, by decreasing the number of stents for revascularization, the FFR-guided approach resulted in roughly $700 savings in procedural costs and $2,400 savings in one-year costs, by lowering the rate of adverse events. However, in the FAME 2 trial, the performance of FFR-guided PCI resulted in a roughly $6,000 initial cost increase as compared to best medical therapy. More attempts are needed to estimate the cost-effectiveness of performing FFR based on the evidence.

TCTAP Workshops
Imaging & Physiology
›› Sunday, April 29, 2:00 PM - 3:40 PM
›› Room 104, Level 1

Endovascular Symposium

Continued from page 14

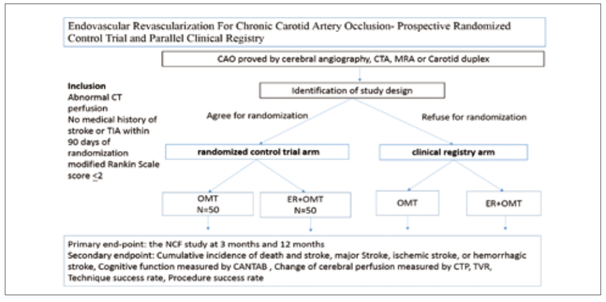


Figure 1. Study design

For this prospective superiority trial, which will be a rater-blinded, 1:1 randomization design **(Figure 1)**, eligible candidates for CAO revealed by CT, ultrasonography, angiography, or magnetic resonance imaging (MRI), with abnormal brain perfusion demonstrated by CT perfusion study (CTP) or MRI, will be enrolled in the study. The participants will be randomized into (1) the optimal medical therapy (OMT) group and (2) the endovascular revascularization plus optimal medical therapy (ER+OMT) group. The primary endpoint of the trial will be NCF improvement at 3 months and thereafter up to 12 months.

Endovascular Symposium
Endovascular Session IV. Carotid Intervention
›› Sunday, April 29, 5:00 PM - 6:00 PM
›› Endovascular Theater, Level 1

Hot Topics

The 1st CE Program for Nurses

At the TCTAP 2018, continuous education program for nurses will be held on April 30th in Room 202 for the very first time.

The continued education program is for nurses as well as a wide range of practitioners who works in the cardiovascular field. The program will focus on the following three topics: What was I curious about when I first started working in the cardiovascular department? What am I now curious (with 7-8 years of experience)? In addition to these two questions, a topic on interacting with nurses from other fields, such as on what to and how in-depth to share with them, will be discussed.

The lectures will focus on topics from the basics to the most important subjects. It will be an opportunity for the nurses working in the cardiovascular field to be refreshed with the history of cardiovascular diseases, results and interpretation of imaging, and the future treatment direction in cardiovascular diseases.

For nurses from non-cardiovascular field, it will be an opportunity to acquire basic knowledge on what is most important for patients with cardiovascular diseases, how to approach them, administration methods and the reasons for following such methods.

First session will be on the need for antiplatelet, the most basic yet important drug in patients with coronary artery disease, and the correct method of administration will be presented through past studies and hemostasis mechanism.

Second session will be on the latest trend in coronary artery intervention, where the difference of treatment methods from the past to present and the evolving techniques will be presented. As the purpose of this presentation is to increase the understanding of coronary angioplasty, it will be an opportunity acquire the tips and tricks on how the intervention will look like in the future.

Third session will be an educational lecture regarding coronary artery intervention, from both the patients' and nurses' perspectives, including what type of care patients receive and what nurses should be cautious, as well as things to be aware of after discharge, and what kind of care should be provided to prevent cardiovascular diseases and reduce complications after coronary artery intervention.

Fourth session will be a lecture on electrocardiogram, discussing on the typical results seen in patients with ischemic heart diseases and on the interpretation of the results. Thus, it will provide valuable information on interpreting EKG of patients with chest pain and the type of nursing that is needed in such patients.

Lastly, a session on cardiac imaging will be provided, covering on what information can be obtained from techniques such as CT, MRI, SPECT, and ECHO, as well on how to interpret the results.

We hope that this 8-hour program will be a chance to not only acquire knowledge on diagnosis, treatment and drugs related to heart diseases, and interpretation of imaging results and prescriptions, but also a chance to further exchange individual's expertise.

This program will be held from 8:00AM ~ 5:10PM on April 30th in Room 202, Level 2. See you at the program.

CE Program for Nurse
Nurse Continuous Education Course

›› Monday, April 30, 8:00 AM – 5:10 PM
›› Room 202, Level 2

Heart Keeper 2018 Event

The Heart Keeper 2018 event will be cohosted with Seoul Asan Heart Institute to raise public awareness on the treatment and prevention of cardiovascular disorders. Join us for informative talk concerts and special performance.

• Monday, April 30, 2:30 PM – 5:30 PM
• Main Arena, Level 3

* Session in Korean

Time	Session
Opening	
2:30 PM	Opening
2:35 PM	Special performance: Electric violin trio
Talk Concert: Heart Talk	
3:00 PM	Session 1: Knowing it right! Heart diseases
3:45 PM	Talent donation: Vocal performance
4:00 PM	Session 2: Doing it right! Heart health rules
Closing	
4:45 PM	Closing

Moderated Abstract & Complex Case Competition

Hot Abstracts & Cases

Transcatheter Aortic Valve Implantation of a Self-expandable Valve for Pure Aortic Regurgitation without Aortic Valve Calcification

Wei-Hsien Yin, MD
Cheng Hsin General Hospital, Taiwan

Over the last decade, the transcatheter aortic valve implantation (TAVI) has transformed the treatment of patients with calcific aortic stenosis (AS) and showed favorable clinical outcomes. Unlike patients with calcific AS, the large majority of patients with pure aortic regurgitation (AR) have concurrent aortic root pathology. Thus, TAVI for patients with pure AR is more complex and difficult than the setting of calcific AS. This afternoon, Dr. Wei-Hsien Yin from Cheng Hsin General Hospital, Taiwan, will be sharing his team's experience of using TAVI using the self-expandable CoreValve® in patients with pure AR without aortic valve calcification, based on a series of 14 transfemoral CoreValve® implantations performed for pure AR without aortic valve calcification between April 2016 and September 2017.

In this study, the patients were determined for TAVI by heart team's decision based on high surgical risk. Procedural and clinical outcomes at a median follow-up period of 9 months were recorded. Overall, the mean age was 74.3 ± 16.5 years, mean left ventricular ejection fraction 55.2 ± 11.0% and mean Logistic EuroSCORE 16.4± 8.5. The procedural success rate was high (100%; 14/14). However, the procedures were associated with a high device failure rate of 42.8% (6/14) due to the need for a second valve implantation or post-procedural paravalvular AR moderate. When a second valve implantation wass needed in the setting of low deployment of CoreValve® with severe paravalvular AR, insertion of a second balloon-expandable Sapien XT® valve resulted in a better reduction of residual AR (no or trivial residual AR in 2/2 patients underwent Sapien-in-CoreValve® vs. 0/3 with CoreValve®-in-CoreValve®). Two patients (14.3%) died at a median follow up of 9 months, while all remaining 12 patients were in good functional status.

Dr. Wei-Hsien Yin explains that "[the] data highlighted the importance of careful patient and device selection in performing TAVI with the self-expandable CoreValve® for pure AR without aortic valve calcification".

Moderated Abstract Competition I
1-4. Structural Heart Disease

›› Monday, April 30, 2:00 PM - 3:30 PM
›› Abstract Zone I, Level 1

Retrograde PCI via Occluded Saphenous Vein Graft for LCX Chronic Total Occlusion

Shozo Ishihara, MD
Mimihara General Hospital, Japan

Percutaneous coronary intervention (PCI) of chronic total occlusion (CTO) is technically challenging and requires familiarity with advanced interventional techniques, as well as specialty equipment. The choice of strategy and material is based on clinical features and coronary anatomy; the correct choice is essential to improve the probability of success. This afternoon, Dr. Shozo Ishihara from Mimihara General Hospital, Japan will present a successful case of PCI via occluded saphenous vein graft (SVG) for left circumflex (LCX) CTO.

A 71-year-old man had a history of diabetes and hyperlipidemia. He underwent coronary artery bypass graft (CABG) (SVG-LAD, SVG-LCX) 10 years ago and PCI for right coronary artery (RCA) lesion 1 year ago. Follow-up coronary angiography (CAG) after RCA-PCI showed total occlusion from SVG to LCX. His stress RI test revealed ischemia of the LCX territory. Three months later, he was hospitalized to receive PCI for LCX CTO. His CAG findings were as follows: 1) LAD: total occlusion, 2) LCX: total occlusion, 3) SVG to LAD: patent, and 4) SVG to LCX: total occlusion. The procedure was performed by bi-radial approach (antegrade: 7Fr EBU-3.75 SH, retrograde: 7Fr AL-1 via SVG). An antegrade guide wire crossing seemed too difficult that the retrograde approach was initiated. There was no suitable collateral channel for distal LCX, and therefore, the team tried to cross the occluded SVG. Fortunately, the guidewire reached to the distal end of CTO and reverse CART was performed. After successful externalization with guide extension catheter, two drug eluting stents were implanted. Good antegrade coronary flow was obtained without any complications.

Dr. Shozo Ishihara explains that "in a situation of no suitable collateral channel, occluded bypass graft might be a good option for retrograde approach".

Moderated Complex Case Competition I
1-4. Complex PCI

›› Monday, April 30, 2:00 PM - 3:20 PM
›› Case Zone I, Level 1

Endovascular Treatment of Thoracic Aortic Arch Aneurysm: Using Window Shaped Fenestrated Stent Graft

Han Cheol Lee, MD
Pusan National University Hospital, Korea

Endovascular procedure is a safe and minimal invasive treatment method for aortic aneurysm, but there is a risk of cerebral infarction by eliminating the carotid artery. Today, Dr. Han Cheol Lee from Pusan National University Hospital, Korea, will present a case of using fenestrated stent graft for protection from cerebral ischemic event.

A 79-year-old male patient had a history of hypertension and diabetes. He suffered severe dyspnea 3 days prior and visited a local hospital, and was eventually transferred to Pusan National University Hospital. Initial blood pressure was 80/40 mmHg, heart rate was 105 bpm and respiratory rate was 26 per minute. Initial chest PA showed mediastinal widening and massive pleural effusion. CT angiography revealed the ruptured thoracic aortic aneurysm. The size of the aneurysm was 8.4 cm and its origin was just distal segment of the left common carotid artery (LCA). Aortography revealed that dissection flap was located at the distal portion of the LCA. Right brachiocephalic artery and LCA were preserved in aortic dissection. Left femoral artery and left brachial artery were punctured. The femoral artery was dilated up to 18 Fr. Stent graft of 48 x 180 mm was implanted from LCA. But the flap of dissection was too close to cover it with the stent. More landing zone would have led to obstruction of LCA. Thus, the team decided to use a fenestrated stent graft. The stent graft had a side hole to preserve the blood flow to supra-aortic arteries. After the insertion of the stent, the team checked for endo-leak using digital subtraction angiography (DSA). The blood flow of the left common carotid was well. Then, a stent of 14 x 80 mm was inserted into the innominate artery. There was no endo-leak in the final angiography and DSA.

Dr. Han Cheol Lee explains that "fenestrated stent graft can preserve the blood flow of supra-aortic arch artery, [so it] can be a good choice for patients of aortic arch aneurysm".

Moderated Complex Case Competition III
3-6. Endovascular

›› Monday, April 30, 4:30 PM - 5:40 PM
›› Case Zone III, Level 1

Glorious Best Presenters from Competition Session

A number of interesting abstracts were submitted from all over the world to TCTAP 2018, and then, a few E-posters, abstracts, and cases were selected to be presented at the Moderated Competition after being strictly reviewed by the scientific committee.

Approximately 116 authors made presentation at the Moderated E-Poster, Abstract, and Case Competition Session and only 19 presenters were selected as the Best Presenters after evaluation.

Best E-Poster Presenters from E-Poster Zone

P-1. AMI & ACS: **Walid Jomaa** (Tunisia)

P-2. AMI & ACS: **Doo Sun Sim** (Korea)

P-3. Complex PCI: **Kochamarj Boonyarattaphun** (Thailand)

P-4. Miscellaneous: **Weon Kim** (Korea)

Best Abstract Presenters from Abstract Zone

1-1. Complex PCI: **Kyusup Lee** (Korea)

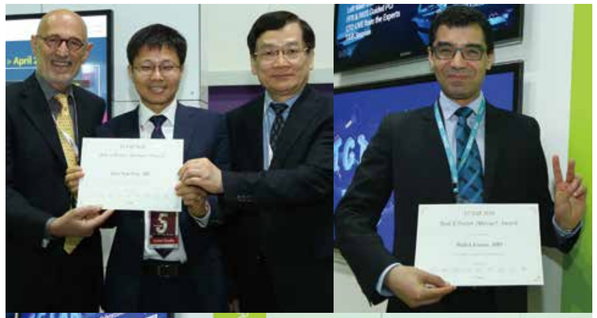
1-2. Complex PCI: **Jeehoon Kang** (Korea)

1-3. Basic Science, Animal Models and Preclinical Studies: **Bin Zhang** (China)

2-1. Miscellaneous: **Sameer Dani** (India)

2-2. Complex PCI: **Sun Hack Lee** (Korea)

2-3. Complex PCI: **Sun Hack Lee** (Korea)



Best Case Presenters from Case Zone

1-1. Complex PCI: **Katsuyuki Hasegawa** (Japan)

1-2. Complex PCI: **Weon Kim** (Korea)

1-3. Complex PCI: **Satoshi Yamamoto** (Japan)

2-1. Complex PCI: **Pang Shuo Huang** (Taiwan)

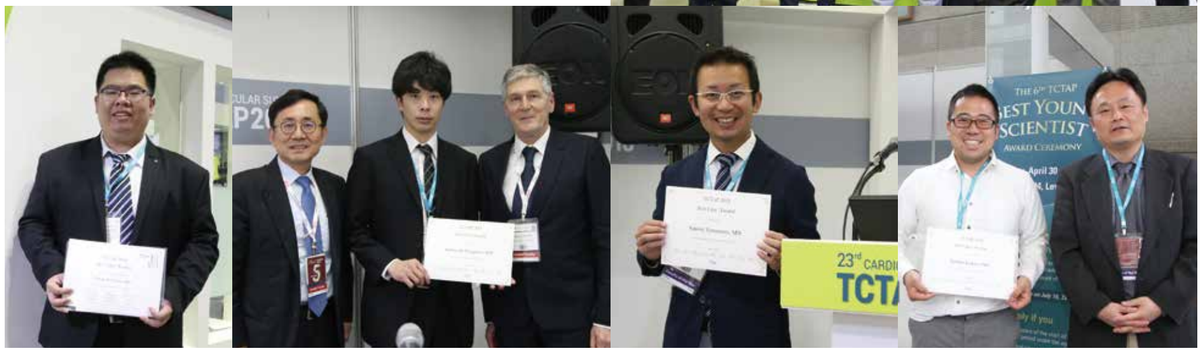
2-2. Complex PCI: **Kota Tanaka** (Japan)

2-3. Complex PCI: **Ka Hei Ho** (Hong Kong)

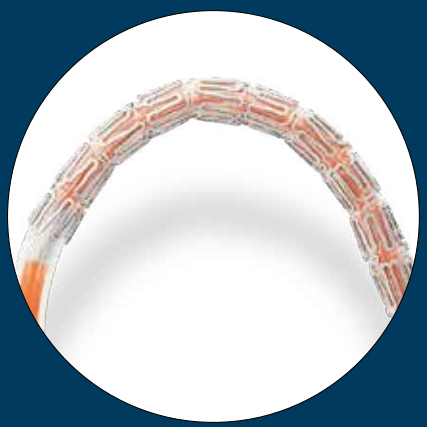
3-1. Endovascular: **Zheng-Wei Chen** (Taiwan)

3-2. Endovascular: **Chi-Yen Wang** (Taiwan)

3-3. Endovascular: **Yoshito Kadoya** (Japan)



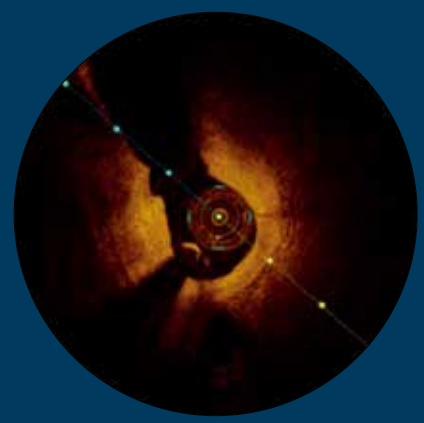
Unlock the POTENTIAL OF PCI



UNRIVALLED OUTCOMES

Proven 'real-world' experience, even in complex PCI*

DES



ENHANCED STRATEGIES

High-resolution visualisation to optimise complex PCI treatment

OCT

IMPROVED ACCESS

Wide range; expanding reach, designed to reduce time, contrast, and complications for patients

GUIDEWIRES

GREATER ACCURACY

Unique FFR wireless system proven to reduce mortality and myocardial infarction by 34% vs angio-guided PCI[1]

FFR

* Xience has demonstrated reduced event rates of stent thombosis and MI as compared to SES, PES, ZES and BMS in diabetic, and STEMI population in large meta-analyses of randomsied clinical trials. Sources: Bangalore et al BMJ. 2012; 345:e5170. doi:10.1136/bmj.e5170. Bangalore S et al. Circ Cardiovasc Interv. 2013;6(4):378-90. Palmerini T et al. J Am Coll Cardiol. 2013;62(6):496-504.

1. Tonino P, et al. Fractional Flow Reserve versus Angiography for Guiding Percutaneous Coronary Intervention. NEJM. 2009;360(3):213-24.

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