Wednesday, April 26, 2017

22nd CARDIOVASCULAR SUMMIT
TCTAP2017

DAILY NEWS

Today's Highlights

Opening of TCTAP 2017
9:30- AM - 9:35 AM
Main Arena, Level 3

TCTAP Award 2017 "Master of the Masters"
9:35 AM - 9:55 AM
Main Arena, Level 3

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

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

Left Main and Bifurcation PCI
2:00 PM - 4:00 PM
Presentation Theater, Level 1

BRS & DES
4:00 PM - 6:00 PM
Presentation Theater, Level 1

Satellite Symposia
Morning Roundtable Forum
@7:00 AM - 8:10 AM
Satellite Meeting
@10:00 AM - 11:00 AM
Lunchtime Activities
@12:45 PM - 1:45 PM

Moderated Abstract & Case Competition
2:00 PM - 6:00 PM
Abstract & Case Zone, Level 3

Inside this Issue

Hot topics

Left Main Bifurcation Multi-Vessel PCI

EXCEL Trial: Rethinking LM Disease and Clinical Implications

Seung-Jung Park, MD
Asan Medical Center, Korea

LMB

In October 31, 2016, we already had the results of EXCEL trial in TCT 2016 and in NEJM, simultaneously. A large-scale randomized trial examining percutaneous coronary intervention (PCI) versus coronary artery bypass graft surgery (CABG) in patients with left main coronary artery disease (LMCAD) and low-intermediate SYNTAX scores revealed that there was no significant difference in 3-year outcomes, with 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 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.

In this session, Dr. Seung-Jung Park will present the detailed findings of the EXCEL trial. In particular, he will show the clinical impact of peri-procedural MI on the long-term prognosis (**Figure 1**). In the EXCEL trial, patients treated with PCI had 3.6% of peri-procedural MI while patients treated with CABG had 5.9% of peri-procedural MI. These patients had higher 3-year mortality, compared to those without peri-procedural MI (HR 3.04 in the PCI group and HR 2.44 in the CABG group). In addition, will also compare the EXCEL trial to the NOBLE trial, which demonstrated conflicting results, pointing out the differences in the study designs, population devices and outcome variables (**Figure 2**).

He will conclude that the three-year follow-up results from EXCEL suggest that PCI with EES is an acceptable or even preferred alternative to CABG in selected patients with LMCAD, but longer-term follow-up is needed to examine whether additional differences between the two treatments emerge over time.

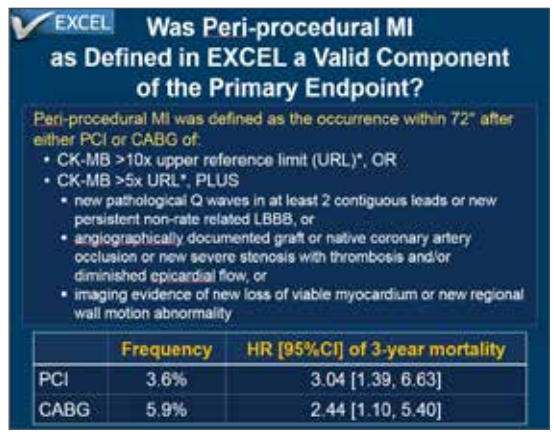


Figure 1. Clinical impact of peri-procedural MI

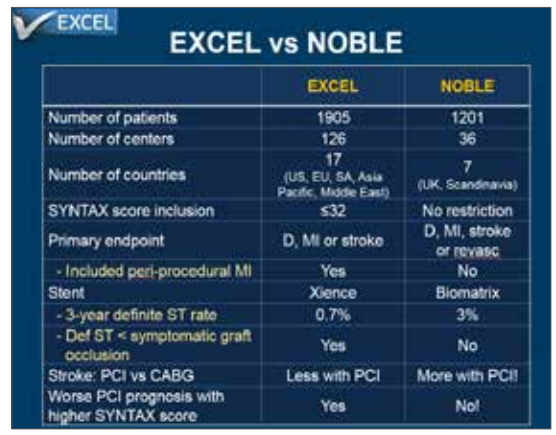


Figure 2. Major differences of EXCEL and NOBLE trials

Continued on page 11

Left Main, Bifurcation, and Multi-Vessel PCI | Valves | TCTAP 2017 Wrap up Interview | CTO Live 2017
BRS & DES | The 9th Chien Foundation Award | Hot Abstract | Hot Case

General information

Shuttle Bus

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

Certificate of Attendance

Certificate of Attendance for TCTAP 2017 will be distributed along with the badge.

- Registration Booth, Level 3

Cyber Station / Free Mobile Recharge

- Lounge, Exhibition Hall, Level 3
- Lounge, Grand Ballroom Lobby, Level 1

Lost and Found / Coat Room

Hours: **8:00 AM - 6:00 PM**

- Coat Room (next to Room 1A), Level 3

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

Invitation to the ACT Tour
at CARDIOVASCULAR SUMMIT-TCTAP 2017

We would cordially invite you to the ACT Tour to experience ACT Program at Asan Medical Center.

Pick-up place
ACT Banner next to Information Desk (Lobby, 1F, Coex)

Participants
12 persons per section

Program (For 2 hours)
- Move to ther Asan Medical Center (Curation: 30 min)
- Presentation and Q&A (Duration: 20 min)
- Cathlab, CCU Tour & the Other Facilies (Duration: 40 min)
- Return to the Coex (Duration: 30 min)

Time Table

Date	Section	Departure Time
April 26 (Wed.)	Tour 1	10:00 AM
	Tour 2	4:00 PM

How to Register *First Come, First Served Basis
On-site Registration: ACT Desk at CVRF Booth (3F, Coex)
For more Information about ACT Program,
Please visito http://www.cvrf.org/act/

Program at a Glance: Wednesday, April 26, 2017

	Main Arena *Level 3*	Valve Theater *Level 1*	Coronary Theater *Level 1*	Presentation Theater Room	Room 105 *Level 1*	Other Session Rooms	Abstract Zone I, II *Level 3*	Case Zone I, II, III *Level 3*
07:00		Satellite Symposia - Morning Roundtable Forum						
07:30								
08:00								
08:30	Live Case Session USA							
09:00								
09:30	Opening							
10:00	Master Award							
10:30		VIVA @ TCTAP	TCT @ TCTAP					
11:00								
11:30								
12:00								
12:30		Satellite Symposia - Lunchtime Activitie						
13:00								
13:30								
14:00								
14:30	Heart Keeper * Korean Session	Valve Symposium Live Cases & Lectures	Coronary Symposium Live Cases & Lectures	Hot Topics Complex PCI: LM & Bifurcation / BVS	ACC-i2 @ TCTAP		Moderated Abstract Competition	Moderated Complex Case Competition
15:00								
15:30					CCT @ TCTAP			
16:00								
16:30								
17:00								
17:30								
18:00								
18:30								
19:00						Gala Evening * Invitation Only		
19:30								
20:00								
20:30								
21:00								

Partnership Sessions with International Societies and Meetings

VIVA Highlights @ TCTAP 2017
- 10:00 AM ~ 12:30 PM
  @ Valve Theater, Level 1

TCT @ TCTAP 2017
- 10:00 AM ~ 12:30 PM
  @ Coronary Theater, Level 1

ACC-i2 @ TCTAP 2017
- 2:00 PM ~ 3:00 PM
  @ Room 105, Level 1

CCT @ TCTAP 2017
- 3:00 PM ~ 4:30 PM
  @ Room 105, Level 1

TCTAP Wrap up Interview

Wednesday, April 26

Bioresorbable Vascular Scaffolds: Current Status & Future Perspectives
11:00 AM - 11:30 AM
Moderator: David J. Cohen
Interviewees: Alan C. Yeung, Adnan Kastrati, Ashok Seth

Left Main Disease: PCI vs. CABG
1:20 PM - 1:50 PM
Moderator: David R. Holmes
Interviewees: Cheol Whan Lee, Imad Sheiban, David Paul Taggart

Here, the most debated issues will be discussed in an interactive way. TCTAP 2017 Wrap-up Interviews are 30-minute moderated interview sessions in 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 2017 will be able to watch the interview during the meeting not only in designated spots but also via TCTAP Webcast (webcast.summitmd.com) and TCTAP mobile application in real-time.

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

The 5th TCTAP Best Young Scientist Award Ceremony

Thursday, April 27, 12:18 PM / Presentation Theater

TCTAP is rooting for young interventional cardiologists.

The award is annually bestowed to one of the young physicians to encourage their academic and clinical work experience with the amount of **5,000 USD**.

Submission Opens on July 17, 2017

Apply if you
- Have career within 5 years of the start of their fellowship or training period under the age of 40.
- Share your own patient care experience with knowledge and understanding in the clinical practice in TCTAP
- Introduce new, advanced solutions to complicated issues in TCTAP

* Applicants who were selected as best abstract/ case presenters by the scientific committee in one of the CVRF meetings will get extra points.

Contact: Emilie Cho (emliecho@sumitmd.com)

Live Case Transmission from World-Renowned Medical Centers

Asan Medical Center, Seoul, Korea
- 2:00 PM ~ 3:30 PM @ Coronary Theater, Level 1
- Operator(s): (Case #1) Duk-Woo Park
  (Case #2) Corrado Tamburino, Pil Hyung Lee
- 2:00 PM ~ 4:00 PM @ Valve Theater, Level 1
- Operator(s): (Case #1) Jung-Min Ahn, Eberhard Grube
  (Case #2) Horst Sievert
- Echo Interpreter: Ran Heo
- 4:45 PM ~ 6:00 PM @ Coronary Theater, Level 1
- Operator(s): (Case #3) Maurice Buchbinder
  (Case #4) Chiung-Jen Wu

The Catholic University of Korea, Seoul St. Mary's Hospital, Seoul, Korea
- 4:00 PM ~ 4:45 PM @ Valve Theater, Level 1
- Operator(s): Kiyuk Chang, Yoon Seok Koh, Byung-Hee Hwang
- Echo Interpreter: Woo-Baek Chung

Seoul National University Hospital, Seoul, Korea
- 4:45 PM ~ 5:30 PM @ Valve Theater, Level 1
- Operator(s): Hyo-Soo Kim, Han-Mo Yang, Jung-Kyu Han

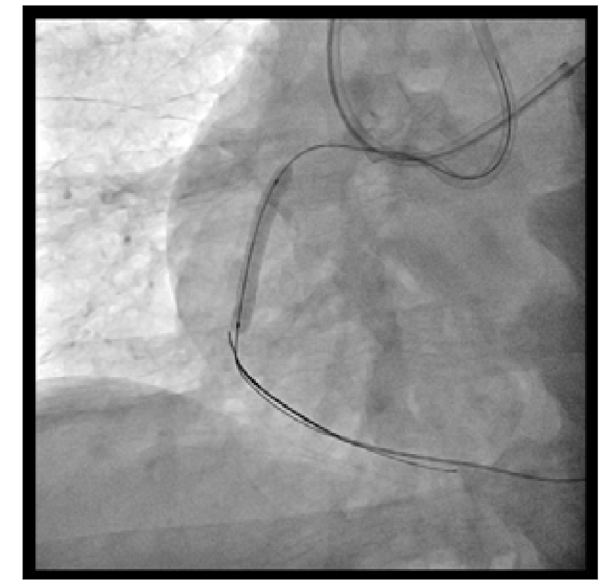
Fu Wai Hospital, Beijing, China
- 3:30 PM ~ 4:45 PM @ Coronary Theater, Level 1
- Operator(s): Yue-Jin Yang, Shubin Qiao, Jie Qian

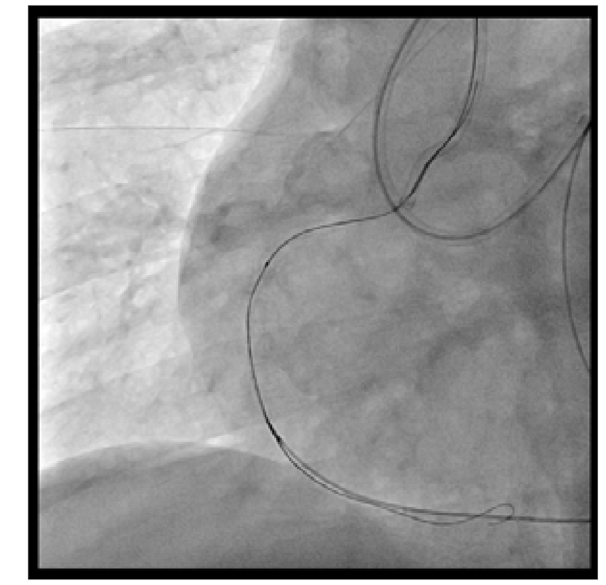
Columbia University Medical Center, New York, USA
- 8:15 AM ~ 9:30 AM @ Main Arena, Level 3
- Operator(s): Dimitrios Karmpaliotis, Jeffrey W. Moses

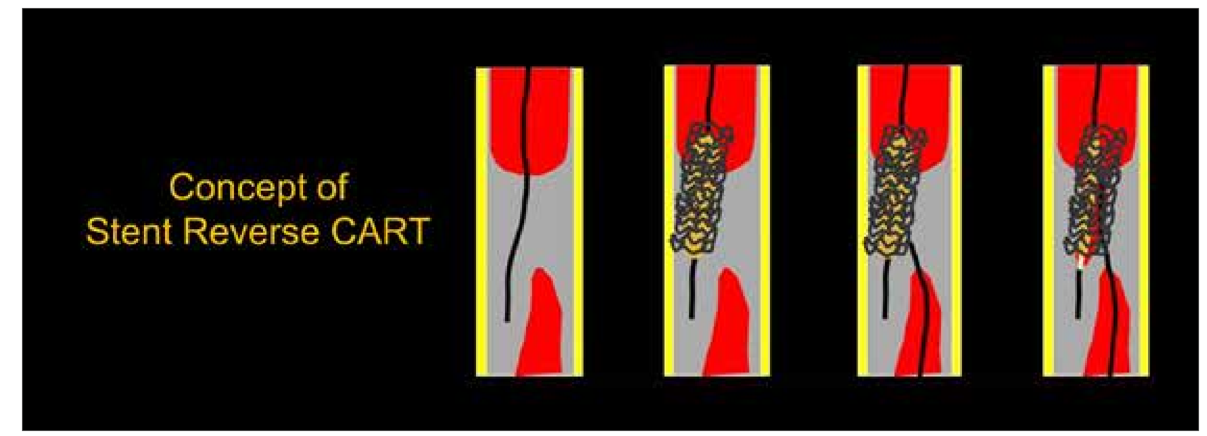
1. Patel M.R., Mahaffey K.W., Garg J. *et al.* Rivaroxaban versus warfarin in nonvalvular atrial fibrillation. *N Engl J Med.* 2011;365(10):883–91.
2. Tamayo S., Peacock F., Patel M. *et al.* Characterizing major bleeding in patients with non-valvular atrial fibrillation: A pharmacovigilance study of 27,467 patients taking rivaroxaban. *Clin Cardiol.* 2015;38(2):63-68.
3. Camm J., Amarenco P., Haas S. *et al.* XANTUS: A Real-World, Prospective, Observational Study of Patients Treated with Rivaroxaban for Stroke Prevention in Atrial Fibrillation. *European Heart Journal.* 2015 [Epub ahead of print]doi:10.1093/ eurheartj/ehv466.

Yesterday's Hot Lives

A 49 year-old male was admitted for the evaluation of an abnormality on coronary CT angiography. The coronary angiography was performed, which revealed significant stenosis in the LM to the proximal LAD, and a CTO lesion in the proximal RCA. The LM-to-pLAD lesion was already stented. The right coronary artery was engaged with a 7F AL1 guiding catheter, and the left coronary artery was positioned with a 7F XB 3.5 guiding catheter through the bi-femoral approach. At first, we tried the anterograde approach using Fielder XT-A, Gaia second with Corsair 135cm catheter, but it was not successful. After that, we tried the retrograde approach using SUOH, Gaia second, Fielder XT-R wire with Corsair 150 cm catheter. After careful subintimal tracking of the retrograde guidewire directed to the tip of the antegrade guidewire, the subintimal space was dilated with PCI balloons (IKAZUCHI 2.5 x 15 mm and TREK 3.5 x 15 mm) in the antegrade direction. After the true lumen was confirmed by IVUS, a stent (Xience Alpine 4.0 x 28 mm) was implanted to secure the lumen for the reverse CART. Finally, the retrograde guidewire was successfully advanced into the space dilated with a drug-eluting stent, and the retrograde wire was externalized through the RCA guiding catheter. Thereafter, the CTO lesion was treated with the usual IVUS-guided coronary intervention methods. Four Xience Alpine (2.75 x 28, 3.0 x 38, 4.0 x 38 mm) stents were sequentially deployed from the distal to the proximal end with some overlap. The final angiogram showed a well-positioned and expanded stent with a good distal run-off flow.

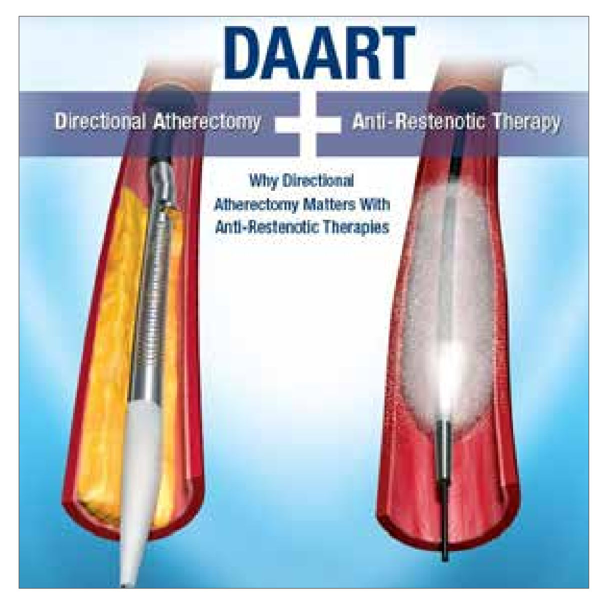


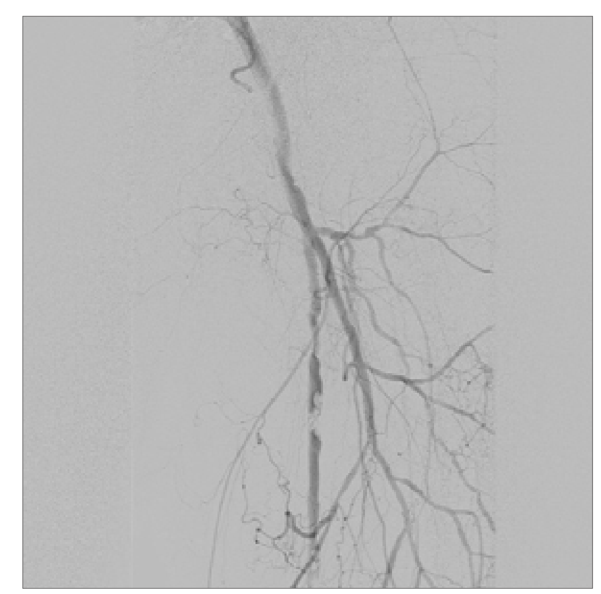


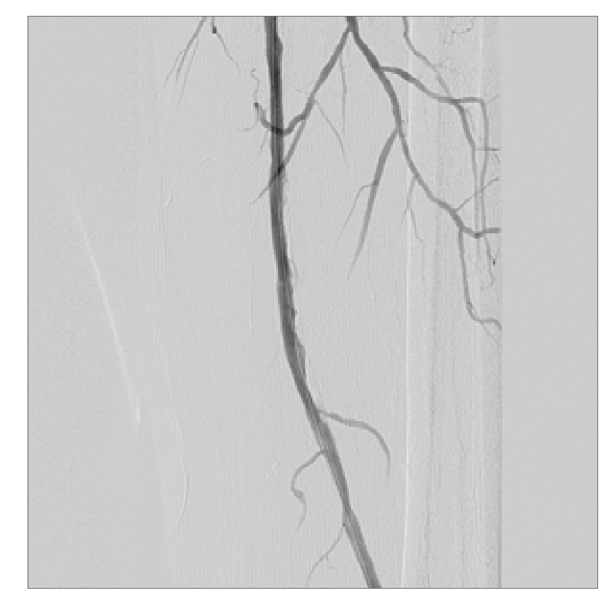


A 62 year-old man was admitted for the management of claudication of 1 year in bilateral lower limbs. Ankle-Brachial Index finding was Rt 0.72/ Lt 0.69. The CT angiography of the lower extremity showed moderate to severe stenosis in bilateral SFA. We planned to treat the left SFA first.

The left SFA showed critical stenosis due to an oval-shaped, heavy calcified atheroma. The stenosis was diffuse and severe. A 5F 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. For protection from an embolic event, a Spider FX 5.0mm protection device was placed at the proximal popliteal artery. And then, with the use of Turbohawk LX-C, anterograde directional atherectomy was performed several times. Lots of plaque debris were removed from the atherectomy and the protection device. After the atherectomy, the size of the focal atheroma was reduced to half of its original size. The SFA was dilated using a Mustang 5.0 x 150 mm balloon, and minimal dissection was seen on post-angioplasty finding. Subsequently, the proximal SFA was sequentially dilated using an IN PACT Admiral 5.0 x 150 mm (drug-coated balloon). The final angiogram showed a successful result and good blood supply to the left leg.







Yesterday's Highlights

Valves

TAVI: A 15 Years Clinical Experience from FIM

- Helene Eltchaninoff, MD (C Nicolle, France)

VAL On 16th April 2002, the first-in-human transcatheter aortic valve replacement (TAVR) was performed on a 57-year-old patient with severe aortic stenosis and multiple comorbidities who presented with cardiogenic shock with major left-ventricular dysfunction. The procedure was successfully performed using a challenging approach: the antegrade trans-septal approach via the femoral vein. After deployment, the patient's hemodynamic and echocardiographic status improved remarkably.
Since the first-in-man TAVR, the number of procedures performed worldwide has dramatically increased, reaching approximately 200,000 patients around the world. Based on the recommendations of the European Society of Cardiology, TAVR is currently indicated in inoperable patients, and is considered as an alternative to conventional surgery in high-risk patients.
The first evidence-based evaluation of TAVR was obtained with the Edwards SAPIEN valve in the multicenter pivotal randomized trial "Placement of Aortic Transcatheter Valves" (PARTNER) in the USA. From 2007, 1,056 high surgical risk patients were enrolled in 26 centers in the USA. The results confirmed the high superiority of TAVR over medical treatment in non-operable patients with an absolute increase in survival of 20% at 1 year, and the non-inferiority of TAVR versus SAVR in high-risk operable patients in terms of all-cause mortality and repeat hospitalization at 1 year, with equal improvement in quality of life. These data were obtained using first-generation balloon-expandable valves (Edwards SAPIEN; Edwards Lifesciences, Irvine, CA, USA), requiring 22F and 24F sheaths for the 23 mm and 26 mm valves, respectively.

The SAPIEN XT featured a lower profile delivery system, compatible with the new 18-20F e-Sheath designed to treat a broader population of patients and to reduce vascular complications. The valve consisted of an enhanced designed trileaflet bovine pericardial valve with a polyethylene terephthalate fabric cuff, sutured into a cobalt-chromium balloon-expandable stent with a modified geometry. Valves sizes were 23 mm, 26 mm and 29 mm. SAPIEN 3 is the newest member of the SAPIEN family. The main improved features were a lower profile (compatible with 14-16F e-Sheath) allowing TAVR in about 90% of cases, an improved delivery system for more accurate positioning, and an external skirt to reduce paravalvular regurgitation. The performance of transfemoral procedures using local anaesthesia is constantly increasing, with 90% of patients treated via the transfemoral approach in 2013. The simplification of procedures is a key element in the management of an often elderly population, in whom shorter hospital stay is known as a major determinant for fast recovery.
Since 2002, 30-day mortality has dramatically decreased and is less than 2% with the SAPIEN 3 prosthesis. Transfemoral procedures are feasible in almost 95% of cases. There is no alarm signal on >5 year durability of balloon-expandable valves, even though data are currently very limited. Obviously, competing risk of mortality is an important limitation to assess structural valve degeneration, and upcoming years will allow us to evaluate the durability in larger populations and lower risk patients.

TCTAP Workshop: Valve

›› Tuesday, April 25, 4:30 PM ~ 5:30 PM
›› Presentation Theater, Level 1

Hot Topic

Valves

TAVR for Low-Risk and Younger Patients

Horst Sievert, MD
CardioVascular Center Frankfurt CVC, Germany

VAL Aortic valve stenosis is the most prevalent heart valve disease in the western world, and it has a poor prognosis after symptom onset. Previously, surgical aortic valve replacement (SAVR) was the only effective treatment, but after being introduced in 2002, transcatheter aortic valve replacement (TAVR) became an option for certain patients with severe symptomatic aortic valve stenosis that was considered inoperable or those at high risk for surgical complications. TAVR has been associated with lower all-cause mortality than best medical therapy in patients who were ineligible for SAVR. In patients at intermediate risk, TAVR has been reported non-inferior to SAVR regarding death from any cause or disabling stroke. Although the Society of Thoracic Surgeons Predicted Risk of Mortality risk score of the patients included in these randomized trials ranged from a high of 11.6% to a low of 3.0%, their mean age was around 80 years. Whether TAVR is an alternative to SAVR in patients with low surgical risk is the next question. One way is to use the Society of Thoracic Surgeons score of <4%. However, patients with low surgical risk and of younger age have already been offered TAVR at many institutions. Thus, it may be more logical to pursue the role of TAVR patients with aortic stenosis who are not only at low surgical risk, but also of a younger age.
The NOTION (Nordic Aortic Valve Intervention) trial is an all-comers trial evaluating the benefits and harms of TAVR using a self-expanding prosthesis versus SAVR in patients with severe aortic valve stenosis (**Figure 1**). A procedure was attempted in 276 patients (142 TAVR and 134 SAVR, the as-treated population). The primary outcome was the composite rate of all-cause death, stroke, or MI 1 year post-procedure. When calculating the Society of Thoracic Surgeons Predicted Risk Of Mortality (STS-PROM) and EuroSCORE I and II estimates for 30-day predicted surgical mortality risk, 81.8% were considered low-risk patients, and mean logistic EuroSCORE I and II values were 8.6 and 2.0, respectively.
In the intention-to-treat analysis, the composite rate of death from any cause, stroke, or MI at 1 year (the primary outcome) was similar between the 2 groups. The result did not change in the as-treated analysis. Post-procedure, transcatheter patients compared with surgical patients had lower rates of major or life threatening bleeding, cardiogenic shock, and acute kidney injury. Although TAVR was not superior to SAVR for the primary outcome, which was the composite rate of death from any cause, stroke, or MI after 1 year, the trial showed that TAVR appeared safe and effective in low- and intermediate-risk patients. The mortality rate post-TAVR in the NOTION trial was one of the lowest ever reported for transcatheter therapy, and stroke rates after both treatments were also low compared with any previously reported series. As the NOTION trial was initiated only 2 years after TAVR was widely introduced, experience with the procedure was limited. Furthermore, because this trial was designed in 2009, numerous improvements to the TAVR procedure were subsequently introduced.

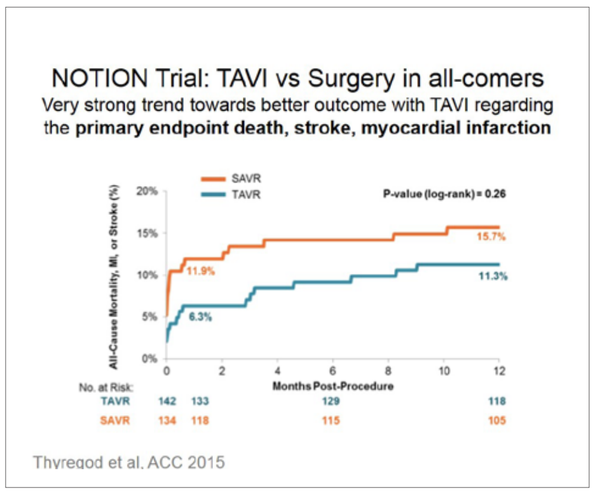


Figure 1. NOTION Trial: TAVI vs. Surgery in all-comers

Stroke in Aortic Valve Interventions

E. Murat Tuzcu, MD
Cleveland Clinic Abu Dhabi, United Arab Emirates

Although there have been many advances in TAVR, stroke is still an important complication of TAVR. The risk of CVA is inherently related to both patient-based and procedure-related risks. Previous studies showed comparable risk of stroke between SAVR and TAVR (**Figure 2**). Multiple studies have shown that CVA incidence after TAVR peaks in the immediate postoperative period, with a steady decline over the following months. Strokes occurring in the acute (<24 hours) and subacute early (<30 days) post-TAVR period are strongly related to procedural factors, whereas late events (1 to 12 months) are mostly connected to patient and disease factors. History of stroke, atrial fibrillation, and balloon dilatation have been identified as an important predictor for stroke. Stroke has been consistently associated with increased mortality in patients undergoing TAVR. There is controversy about the impact of clinically silent cerebral embolism after TAVR on cognitive and daily function. As more than 50% of post-procedural strokes are likely to be of a thromboembolic nature, antithrombotic treatment is believed to be a cornerstone for the prevention of ischemic CVAs during and after TAVR (**Figure 3**). A better understanding of responsible pathophysiologic mechanisms will lead to improved preventive measures, and optimal medical treatment during and after TAVR must be further studied.
TAVR has become a safe and effective therapy for selected patients with severe aortic stenosis (AS). Newer devices, better procedural planning and performance, as well as improved post-procedural treatment have led to a safe and effective therapy for patients with aortic stenosis. In recent trials, the hemodynamic performance and clinical outcomes of the latest generation of TAVR devices demonstrated at least parity with surgical outcomes in patients of similar risk. Patient selection, procedural planning, and device implantation have been refined and optimized through a multidisciplinary approach, such that clinical outcomes are generally predictable and reproducible. In the current era of TAVR systems, valve positioning accuracy has improved dramatically due to both design enhancements, which have improved valve stability during deployment, and the availability of retrievable and repositionable delivery systems with newer versions of self-expanding TAVR devices. Future research will focus on the durability of TAVR devices, further enhancements in clinical outcomes, and adjunctive therapies. Predictions for future TAVR systems include even lower-profile devices, further refinements of design attributes, and novel technologies, such as tissue-engineered heart valves. On the basis of initial results from ongoing clinical trials, it appears that the indication for TAVR may expand to lower-risk patients in the future.

Valve Symposium

›› Wednesday, April 26, 2:00 PM ~ 6:00 PM
›› Valve Theater, Level 1

Percutaneous Mitral/Tricuspid Repair; State-of-the Art and Future Directions

Ted Feldman, MD
Evanston Hospital, USA

The field of atrioventricular valve repair has progressed slowly and steadily over the last decade, during which hundreds of thousands of patients with aortic stenosis have been treated with TAVR. In contrast, only tens of thousands have been treated with percutaneous mitral repair using the MitraClip device, and tricuspid repair approaches are just beginning to develop in human clinical trials. There are several percutaneous mitral repair devices that are approved or in commercial use. The MitraClip leaflet repair system has the largest use and experience with over 40,000 treated patients worldwide. Recently the Valtech Cardioband, the Cardiac Dimensions Carillon, and the Mitralign system had been approved for use in Europe and internationally.
One of the great challenges in the field of mitral therapy is defining populations that have some benefit from catheter or even surgical therapy. Mitral regurgitation (MR) can be classified as either degenerative, involving primary leaflet abnormalities, or functional, where the valve leaflets are normal, but geometric distortion of the mitral annulus or the left ventricle leads to regurgitation. It is well accepted that, for good surgical candidates with degenerative MR, surgical mitral repair is the standard of care. Higher risk for surgery patients with degenerative MR can be successfully treated with the MitraClip device, and this represents the only approved indication in the United States.
Functional MR creates a much greater challenge. There is no literature to clearly support the use of surgery for functional MR. Guidelines recommend surgery for functional MR only in association with other planned cardiac operations such as bypass surgery.
The group of patients who were poor candidates for surgery with functional MR are being studied intensively. This group has been the predominant population treated with MitraClip internationally. Many registries report an excellent safety profile for MitraClip, with a high degree of symptomatic improvement in treated patients. These are typically very elderly patients, and despite their age and disability, the length of hospital stay is generally short, and almost 90% of patients are discharged to home rather than to some kind of rehabilitation facility.
A large, randomized surgical comparison of mitral repair and replacement showed MR recurrence after annuloplasty for functional ischemic MR of about 30% at 1 year and almost 60% at 2 years. An important question is, why might we expect percutaneous annuloplasty devices to perform differently than surgical annuloplasty? The indirect and direct annuloplasty catheter devices have shown durable improvement in MR at 1 and even 2 years after treatment. It is possible that these stable late results are due to the ability to modulate the therapy at the time of the implant procedure compared to the severity of MR in the beating heart. The deleterious effects of cardiopulmonary bypass are not part of the catheter-based therapies, which may also contribute to this sustained durable 1 year result.
Many tricuspid repair devices have appeared on the horizon and are now in the early stages of development. Some of the largest experience reported is with the Trialign device. Other approaches include the Cardioband annuloplasty device, the Millipede annuloplasty device, the Edwards Forma spacer, MitraClip for tricuspid repair, and several systems that involve valve implantation in the inferior or superior vena cava or both.
There are numerous other mitral and tricuspid valve repair devices under early development. Many have little or no human implant experience but show great promise in terms of the technical approaches and device types.

Valve Symposium

›› Thursday, April 27, 08:30 AM ~ 12:30 PM
›› Valve Theater, Level 1

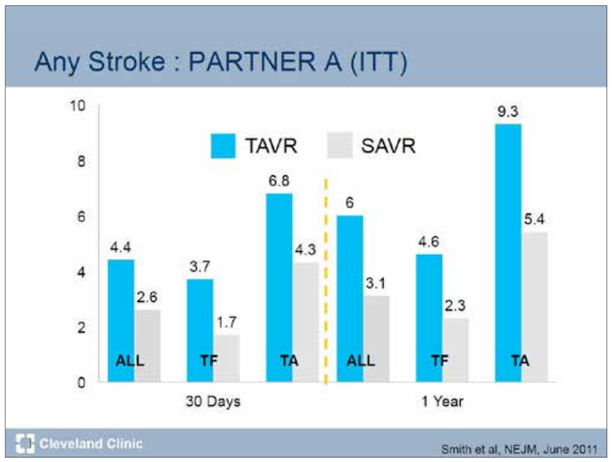


Figure 2. Stroke incidence after transcatheter or surgical aortic valve replacement

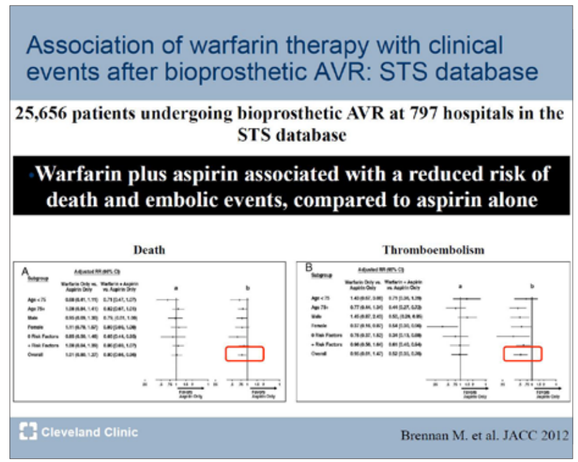


Figure 3. Protective effect of warfarin against post-AVR death and thromboembolic event

Yesterday's Highlights

TCTAP 2017 Wrap-up Interview: Transcatheter Aortic Valve Replacement

Moderator: Eberhard Grube
Interviewees: Helene Eltchaninoff, E Murat Tuzcu, Darren L. Walters

Transcatheter aortic valve replacement (TAVR) has been incorporated into the treatment strategy for high-risk and intermediate-risk patients with severe aortic valve stenosis (AS). 2017 AHA/ACC guideline recommends TAVR in patients with severe AS and high or prohibitive risk for surgical AVR (I,A), and intermediate surgical risk (IIa, B-R). In the PARTNER II (Placement of Aortic Transcatheter Valve II) landmark trial (Leon MB, et al. New Engl J Med 2016), which enrolled symptomatic patients with severe AS at intermediate risk (STS score ≥4%), there was no difference between TAVR and surgical AVR for the primary endpoint of all-cause death or disabling stroke at 2 years (HR: 0.89; 95% CI: 0.73 to 1.09; p=0.25, p for non-inferiority=0.001). In an observational study of the SAPIEN 3 valve (Thourani VH, et al. Lancet, 2016), transfemoral TAVR for intermediate-risk patients with severe symptomatic AS, TAVR was superior to surgical AVR for the primary composite endpoint of mortality, strokes, and moderate or severe aortic regurgitation. Recently published SURTAVI trial (Reardon MJ et al., N Engl J Med 2017), TAVR with Corevalve classic and Evolut R showed non-inferiority to Surgical AVR (95% credible interval [Bayesian analysis] for difference, −5.2 to 2.3%; posterior probability of non-inferiority, >0.999) of a composite of death from any cause or disabling stroke at 24 months. Indication of TAVR is expanding to low surgical risk patients. Durability issue needs to be solved to expand the indication of TAVR to younger patients.

The role of neuroprotective devices is in debate. CLEAN-TAVI trial (Haussig S, et al. JAMA 2016) showed that the use of a cerebral protection device reduced the frequency of ischemic cerebral lesions in potentially protected regions (4.00 [interquartile range {IQR}, 3.00-7.25] vs 10.00 [IQR, 6.75-17.00], p<0.001). However, In the SENTINEL trial (Kapadia SR, et al. JACC 2017), the routine use of the Sentinel transcatheter cerebral embolic protection device did not result in a significant reduction of new lesion volume on MRI (102.8 vs. 178.0 mm3, p=0.33) and the rate of a composite of death, stroke and acute kidney injury was not statistically different (7.3% vs 9.9, p=0.41), although it captured embolic debris in 99% of patients. Further study is required to confirm the clinical benefit of neuroprotective device.

TCTAP 2017 Wrap-up Interview: Transcatheter Aortic Valve Replacement
›› Tuesday, April 25, 3:30 PM – 4:00 PM

Figure 1.

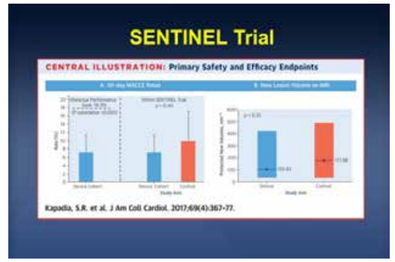
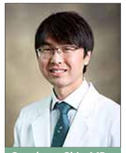


Figure 2.

11th CTO Live 2017

CT: Dissection and Digestion for CTO Lesions



Sanghoon Shin, MD
National Health Insurance Service Ilsan Hospital, Korea

CTO

Coronary computed tomography angiography (CTA) is uniquely suitable to visualize the anatomical features of both the occluded and distal vessel segments in chronic total occlusion (CTO). The ability of coronary CTA in visualizing and characterizing coronary atherosclerotic plaque, as well as obtaining 3-dimensional coronary vessel trajectories, has generated considerable interest in the context of preprocedural planning for revascularization of CTOs. Coronary CTA can characterize features that influence the success rate of percutaneous coronary intervention (PCI) for CTOs, such as the extent of calcification, vessel tortuosity, stump morphology, presence of multiple occlusions, and lesion length. 'CT-guided CTO PCI' would be defined as 1) characterization of CTO segment, such as assessment of CTO lesion length and distribution of calcification, and 2) anatomical information, for instance, identification of the location of CTO segment and related side branches, and the presence of collateral channel. Based on these information and the approach method (antegrade or retrograde), the choice of CTO device would be decided. Recently, the Computed Tomography Registry of Chronic Total Occlusion Revascularization (CT-RECTOR) score, which is a new and accurate noninvasive tool for predicting time-efficient guidewire (GW) crossing, was proposed and it yielded a higher predictive value for successful GW crossing compared with the Multicenter Chronic Total Occlusion Registry of Japan (J-CTO) scoring system, which is based on invasive coronary angiography. In addition, the procedure itself may be facilitated by the real-time integration of 3-dimensional CTA data and fluoroscopic images in the catheterization laboratory. Further research is clearly needed, whether preprocedural coronary CTA would improve the success rates of PCI for CTOs.

11th CTO Live 2017
›› Tuesday, April 25, 8:30 AM ~ 6:10 PM
›› CTO Theater, Level 1

Left Main Bifurcation Multi-Vessel PCI

Continued from page 1

New Meta-Analysis of RCTs in LM Revascularization

Tullio Palmerini, MD
Policlinico S. Orsola, Italy

Some studies have suggested that percutaneous coronary intervention (PCI) with drug-eluting stents (DES) may be an acceptable alternative to coronary artery bypass graft (CABG) surgery for the treatment of unprotected left main coronary artery (ULMCA) disease. However, the two largest and most recent trials, EXCEL trial and NOBLE trial, reported conflicting results, adding uncertainty more than clarity on the optimal strategy of revascularization for the treatment of ULMCA stenosis.

On this background, a meta-analysis including six trials and 4,686 patients was performed to investigate the relative safety and efficacy of PCI versus CABG for the treatment of ULMCA stenosis. Clinical outcomes were analyzed at 30 days and at the latest follow-up available. The endpoint definitions as applied in each trial were incorporated. For most of the trials, the definitions of death and stroke were similar. The trials did vary, however, in the definitions of MI, and one trial did not routinely collect data on periprocedural MI. The pooled hazard ratio (HR) and 95% confidence interval (CI) was calculated using both fixed effect and random effect models.

After a median follow up of 39 months, there were no significant differences in the risk of mortality or cardiac mortality between PCI and CABG. Similarly, no significant differences were apparent between the two strategy of revascularization in the risk of MI or stroke. PCI, however, was associated with higher rates of unplanned revascularization compared to CABG. Of note, PCI was associated with lower 30-day rates of all-cause death, MI or stroke compared to CABG, but higher rates of these events from 30 days onward.

A significant interaction was apparent between the SYNTAX score and the treatment strategy such that cardiac mortality tended to be lower with PCI compared to CABG in patients in the low SYNTAX score tertile (≤22), similar among patients in the intermediate SYNTAX score tertile (23-32), and higher among patients in the upper SYNTAX score tertile (≥33). Finally, patients treated with PCI had higher long-term rates of unplanned revascularization and the composite measure of all-cause death, MI, stroke or unplanned revascularization compared to CABG, irrespective of the SYNTAX score. A significant interaction was also apparent between SYNTAX score tertile and unplanned revascularization, such that the magnitude of the benefit in reducing UR with CABG compared to PCI was greater in patients in the upper SYNTAX score tertile compared to the lower two tertile.

In conclusion, a new meta-analysis including six randomized trials and more than 4,600 patients suggested that in patients undergoing revascularization for unprotected left main coronary artery disease, PCI was associated with similar rates of mortality compared to CABG at a median follow-up of 39 months, but with an interaction effect suggesting relatively lower mortality with PCI in low SYNTAX score patients and relatively lower mortality with CABG in high SYNTAX score patients. Both procedures resulted in similar long-term composite rates of death, MI or stroke, with PCI offering an early safety advantage and CABG demonstrating greater durability.

Trends and Outcomes of Non-LM and LM Bifurcation PCI

Duk-Woo Park, MD
Asan Medical Center, Korea

Understanding the changes in bifurcation PCI may be important for helping clinical decision-making and planning future medical progress toward improved management of bifurcation disease. Therefore, using pooled data from two large-scaled observation registries, we evaluated secular changes of characteristics, PCI patterns, and long-term clinical outcomes in a real-world population with coronary bifurcation lesions. The study population were pooled from two large-scaled, independent, multicenter, observational studies of the Interventional Cardiology Research Incorporation Society-Drug-Eluting Stents (IRIS-DES) registry (NCT01070420) and the Interventional Research Incorporation Society-Left MAIN Revascularization (IRIS-MAIN) registry (NCT01341327). Of the 17,196 patients enrolled in the IRIS-DES registry and the 5,833 patients enrolled in the IRIS-MAIN registry, 7,282 patients with bifurcation lesions were included in the current analysis. Among them, 5050 patients (69.3%) had non-LM bifurcation lesions and 2232 (30.7%) had LM bifurcation lesions.

Over the time from the first-generation DES to the second-generation DES, there was an increase of age, less patients with a previous history of MI or PCI, and more patients with peripheral vascular disease and presentation with unstable angina or MI. Ejection fraction trended lower, and the use of β-blocker, ACE inhibitor/ARB, or statin has significantly increased. Over the time from the first-generation DES to the second-generation DES, more patients have been treated with simple 1-stent strategy than complex 2-stents strategy.

The primary clinical outcome of the current analysis was target-vessel failure (a composite of cardiac death, target-vessel myocardial infarction [MI], or clinically-indicated target-vessel revascularization [TVR]). As shown in **Figure 3**, the 3-year rate of target-vessel failure was significantly lower in patients treated with second-generation DES than in those treated with first-generation DES, mainly driven by lower rates of non-Q wave MI and TVR. The rate of target-vessel failure during the 3-year follow-up period was significantly lower in patients treated with simple 1-stent strategy than in those with complex 2-stent strategy. This difference was largely attributable to the significant reduction in the incidence of non-Q wave MI and TVR associated with simple strategy.

After multivariable adjustment, the adjusted risk of target-vessel failure was significantly higher with complex stenting strategy for all time frames. However, the adjusted hazard ratios for the risk of target-vessel failure with complex strategy relative to simple strategy gradually decreased over time from the first-generation DES to the second-generation DES, suggesting that the gap in the treatment effect between simple vs. complex strategy has been narrowed with second-generation DES (**Figure 4**).

In summary of the current analysis, simple stenting strategy has been more frequently used, and clinical outcomes have been improving over time. Overall, simple strategy compared with complex strategy was associated with a lower rate of target-vessel failure, but this treatment gap has progressively narrowed with contemporary second-generation DES.

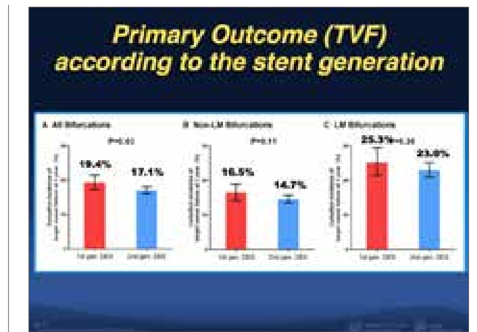


Figure 3. Primary outcomes (TVF) according to the stent generation

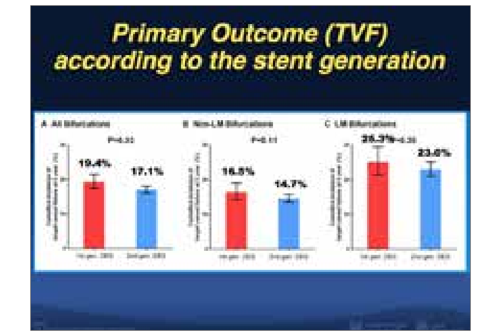


Figure 4. Adjusted Hazard Ratio for clinical outcomes of bifurcation PCI

Hot Topics:
Left Main and Bifurcation PCI: Prospects and Challenges
» 2:00 PM - 4:00 PM
» Presentation Theater, Level 1

Yesterday's Highlights

Left Main, Bifurcation, and Multi-Vessel PCI

New CABG trials: insights from ART and CORONARY

David Paul Taggart, MD
University of Oxford, United Kingdom

LMB

The 5-year follow-up of both the ART and CORONARY trials were published in the New England Journal of Medicine in 2016. They addressed 2 of the most important questions concerning performance of coronary artery bypass grafting (CABG), the role of using more arterial grafts and the role of off-pump CABG.

The ART Trial (Arterial Revascularization Trail) was a 3,102 patient trial performed in 27 centers in 7 countries, randomizing patients to single or bilateral Internal Thoracic Arteries (ITA) grafts. Over the last decade considerable circumstantial evidence has suggested a long-term prognostic benefit in CABG patients of receiving two rather than a single ITA graft. However, the interim 5-year analysis of the ART Trial (the primary outcome is 10-year survival) showed no difference in overall mortality or the composite of mortality, stroke, or MI at 5 years (**Figure 1**). This has led to a surprise in the cardiovascular community that there appeared to be no benefit at 5 years of two ITA grafts. However, the PI of the Trial, Prof. David Taggart from the University of Oxford, explained that there may be several potential reasons for these findings. The first is simply that a 5-year interim analysis is too early to know about the true potential long-term benefits of both ITA (whose angiographic patency is over 90% at 10 years versus 50% for vein grafts). Other possibilities are that because of a particularly high use of guideline based medical therapy (90% receiving Aspirin, Statins and Beta-blockers at 5 years) may have reduced vein graft failure over this time period. Another consideration is that 20% of all patients in both groups received a radial artery graft and this is known to have superior angiographic and clinical outcomes at 5 years in comparison to vein grafts. Finally, 14% of the bilateral ITA group crossed to single ITA whereas only 4% of single ITA crossed to bilateral ITA. It was also of note that at 5 years, there was a trend towards the significant reduction in MACE in patients under 70 years of age receiving bilateral ITA grafts. The final results of this Trial will be available in December 2017 and we anticipate the 10 year outcomes being ready for presentation in early 2018.

The second important CABG Trial published in the NEJM in 2016 was the CORONARY trial led by Dr. Andre Lamy and Dr. Salim Yusuf from Canada and Prof. David Taggart as the principle European investigator. Over the last decade it has been repeatedly suggested that off-pump CABG (OPCABG) results in inferior clinical medium to long-term clinical outcomes compared to on-pump CABG. However, this has been disputed by experts in OPCABG who have argued that the results in earlier, smaller randomized trials such as ROOBY were confounded by the fact that many of the participating surgeons were not experienced in OPCABG surgery. The CORONARY trial that recruited 4,752 patients reported that OPCABG did not result in inferior 5 year outcomes (**Figure 2**). Indeed, the results were almost superimposed in terms of death, MI, and repeat revascularization in comparison to on-pump CABG. The major difference between Coronary and previous trials was that the surgeons' participation in CORONARY were highly experienced, having had to perform at least 100 OPCABG cases prior to participation. What CORONARY, however, has not addressed is the potential for superior clinical outcomes where OPCABG is combined with a no-touch aortic technique based on composite arterial grafts. As up to 20% of patients undergoing CABG are now over 80 years of age, an OPCABG approach, including a no-touch aortic technique, offers the potential to significantly reduce the risk of stroke in this population.

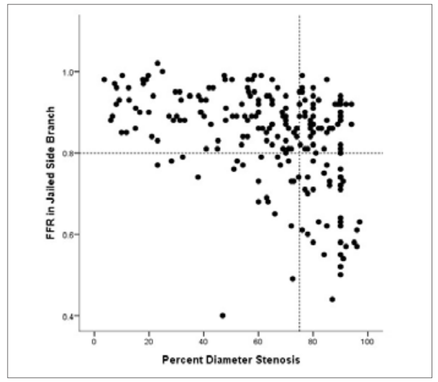


Figure 3. Agreement between FFR and percent diameter stenos

Bifurcation PCI: Why imaging and Functional Guidance?

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

The bifurcation lesion possesses unique anatomic and physiologic characteristics. The amount of myocardium supplied by side branch is relatively small and variable, the side branch narrowing is usually accompanied by eccentric distribution of plaque and negative remodeling, the mechanism of luminal narrowing of jailed side branch is very heterogeneous and the coronary flow patterns through the main vessel, and side branch is dynamically changed during the intervention.

Previous studies have shown that angiographic evaluation is relatively inaccurate and overestimates the functional significance of bifurcation lesions. Fractional flow reserve (FFR) is an epicardial stenosis-specific physiologic index and can be used in a catheterization laboratory to assess the presence of myocardial ischemia. FFR 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 percentage (%) diameter stenosis in identifying functionally significant jailed side branches can be overcome by FFR interrogation (**Figure 3**). FFR-guided treatment for bifurcation lesions has consistently shown comparable outcomes to angiography-guided treatment with less intervention.

However, planning the treatment strategy and evaluation of the procedure, especially after complex intervention should be guided by imaging, such as intravascular ultrasound and optical coherence tomography. Several previous studies showed the limitation of angiography in the assessment of procedural success after complex intervention for bifurcation lesions.

Therefore, imaging- and functional-guidance or the adequate application of the concepts derived from the previous imaging and functional studies on bifurcation lesions is the key to success of bifurcation PCI.

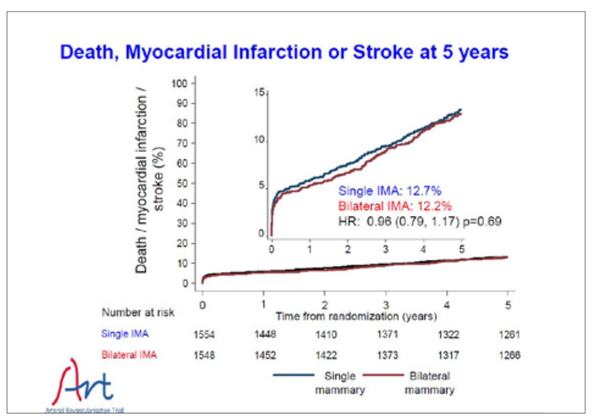


Figure 1. Death, myocardial infarction or stroke at 5 years of the ART trial

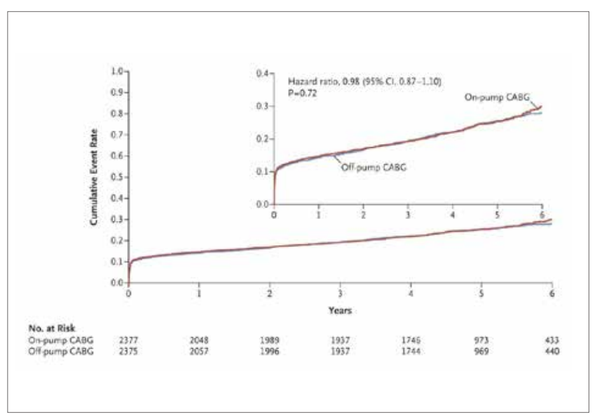


Figure 2. Primary outcome of the CORONARY trial

Generalizability of EXCEL and NOBLE; Comparison with IRIS-MAIN Registry

Duk-Woo Park, MD
Asan Medical Center, Korea

The results of the two long-awaited randomized trials, EXCEL (Evaluation of XIENCE Everolimus Eluting Stent Versus Coronary Artery Bypass Surgery for Effectiveness of Left Main Revascularization) and NOBLE (Nordic-Baltic-British Left Main Revascularization Study) have been finally published. However, two trials showed opposing comparative results of percutaneous coronary intervention (PCI) and coronary-artery bypass surgery (CABG); EXCEL found PCI to be comparable to CABG, while NOBLE suggested CABG to be still better than PCI. It might intensify the confusion for clinical decision-making between PCI and CABG in patients with left main coronary artery (LMCA) disease.

Assessing the generalizability and the applicability of the findings from the EXCEL and NOBLE trials to the real-world population is likely to be of considerable interest, which could help the health care and scientific community understand the relevance and effect of the clinical trial results. We compared the baseline clinical and procedural characteristics of patients who were enrolled in EXCEL and NOBLE with those of patients who were enrolled in unrestricted, "all-comers" IRIS-MAIN (Interventional Research Incorporation Society-Left MAIN Revascularization) registry involving PCI and CABG for unprotected LMCA disease. We also compared the relative treatment effect of PCI and CABG in EXCEL and NOBLE with results from our real-world registry.

IRIS-MAIN is a nonrandomized, multinational, multicenter observational registry, and the study patients were recruited from 50 academic and community hospitals in Asia. The study had an "all-comers" design, involving consecutive enrollment of patients with unprotected LMCA disease, who were treated with medical therapy, PCI, or CABG.

Comparison of Baseline Characteristics

The baseline clinical and angiographic characteristics of the randomized trials and real-world registry stratified by treatment strata are summarized in **Table 1**. In IRIS-MAIN, patient cohort was divided into the second-generation DES era (late cohort) and first-generation DES era (early cohort). Patients enrolled in EXCEL and NOBLE were slightly older than those in the late IRIS-MAIN cohort, but substantially older than those in the early IRIS-MAIN cohort. Approximately one-third of the patients in EXCEL and IRIS-MAIN had diabetes, but the proportion of diabetes was substantially lower in NOBLE. In addition, the proportion of acute coronary syndrome was substantially lower in NOBLE than in other studies.

Procedural characteristics are shown in **Table 2**. In IRIS-MAIN, more than half of the patients were treated with everolimus-eluting stent and one-third were treated with zotarolimus-eluting stents in the second-generation DES cohort. In the first-generation DES cohort, sirolimus-eluting stents were used in more than 80%. Overall, the total number and total length of stent per patient seem to be similar between the randomized trials and registry. In EXCEL and NOBLE, more than 70% of the patients received PCI with intravascular ultrasound (IVUS) guidance, which was similar to IRIS-MAIN.

Table 1. Baseline characteristics of EXECL, NOBLE and IRIS-MAIN

Baseline Characteristics

	PCI Cohort				CABG Cohort			
	EXCEL (n=948)	NOBLE (n=592)	IRIS-MAIN (2nd DES) (n=1,707)	IRIS-MAIN (1st DES) (n=1,055)	EXCEL (n=957)	NOBLE (n=592)	IRIS-MAIN (2nd DES) (n=774)	IRIS-MAIN (1st DES) (n=564)
Age, yrs	66.0	66.2	64.4	62.4	65.9	66.2	65.2	63.7
Male sex, %	76.2	80.4	77.7	72.8	77.5	76.4	79.6	74.4
BMI, kg/m²	28.6	27.9	24.5	24.5	28.8	28.1	24.5	24.6
DM, %	30.2	14.5	33.7	33.4	28.0	15.7	42.2	38.4
HTN, %	74.5	66.2	63.6	55.7	73.9	65.7	66.7	64.8
Current smoker, %	24.1	118.2	23.8	25.1	20.8	21.4	26.6	27.2
HL, %	71.5	81.5)	49.0	37.8	69.3	78.4	52.5	34.6
Previous MI, %	18.1	NA	6.6	8.8	16.9	NA	11.5	13.3
Previous stroke, %	5.6	NA	8.7	7.9	7.0	NA	9.2	7.0
Previous PCI, %	18.4	19.6	15.4	19.9	15.9	19.9	12.9	12.3
Previous HF, %	7.1	NA	2.6	2.4	6.2	NA	3.1	3.8
PVD, %	10.3	NA	4.5	2.8	8.8	NA	7.1	7.1
CLD, %	8.9	NA	2.4	2.7	8.5	NA	3.4)	3.6
CKD*, %	17.6	NA	4.4	2.9	15.4	NA	4.9	3.6

Table 2. Procedural characteristics of the PCI cohort

PCI characteristics
PCI cohort

	EXCEL (n=935)	NOBLE (n=580)	IRIS MAIN (2nd DES) (n=1,707)	IRIS MAIN (1st DES) (n=1,055)
Stent technique				
Left main standing only or simple crossover	NA	396 (69.7)	1,332 (78.0)	803 (76.1)
Two-stent technique	NA	181 (31.4)	375 (22.0)	252 (23.9)
Final kissing balloon	NA	277 (54.5)	507 (29.7)	406 (38.5)
Total stent number per patient	2.4±1.5	2 (IQR: NA)	2.2±1.2	2.2±1.3
Stent number in LMCA	NA	1 (IQR 1-2)	1.7±0.9	1.5±0.8
Total stent length per patient	49.1±35.6	52 (IQR: NA)	52.3±34.1	45.6±33.0
IVUS-guided PCI	722 (77.2)	430 (74.1)	1,309 (76.7)	832 (78.9)
Hemodynamic support	53 (5.2)	NA	85 (5.0)	37 (3.5)
DES type, %				
CoCr-EES	98.4	–	36.7	–
BES	–	89.1	8.4	–
PtCr-EES	–	–	22.1	–
Re-ZES	–	–	26.9	–
PC-ZES	–	–	1.9	–
Other 2nd DES	–	–	4.0	–
SES	–	10.9	–	82.6
PES	–	–	–	17.4

Surgical characteristics are shown in **Table 3**. In the CABG stratum, the proportion of patients who underwent off-pump surgery was substantially lower in EXCEL and NOBLE than in IRIS-MAIN, in which off-pump CABG was more frequently used over time. The number of total conduits was higher in IRIS-MAIN than in EXCEL and NOBLE. Internal mammary artery was used in more than 90% in both randomized trials and registry, while radial artery was used in less than 10% in the randomized trials, but more commonly used in the real-world registry.

Comparison of Outcomes

Comparative event rate and risk of relevant clinical outcomes between EXCEL, NOBLE, and matched cohorts of IRIS-MAIN are summarized in **Figure 4**. The risk for serious composite of death, MI, or stroke, which was defined as the primary comparative outcome between studies in the current analysis, was similar between PCI and CABG in EXCEL and matched cohort of IRIS-MAIN. However, this composite outcome was significantly higher in the PCI group than in the CABG group in NOBLE.

In this analysis, we tried to assess the generalizability and applicability of the findings from EXCEL and NOBLE to the real-world population, as compared with the data from large-scaled, all-comer registries. Our explorative study suggests that EXCEL patients are less likely to be substantially different at baseline and have similar outcomes (propensity adjusted for the registry), therefore EXCEL is more generalizable than NOBLE in terms of inclusion and outcomes.

TCTAP Workshops:
Left Main, Bifurcation, and Multi-Vessel PCI: Technical Forum

›› Tuesday, April 25, 8:30 AM - 10:42 AM
›› Presentation Theater, Level 1

Table 3. CABG characteristics

PCI characteristics
PCI cohort

	EXCEL (n=936)	NOBLE (n=580)	IRIS-MAIN (2nd DES) (n=1,707)	IRIS-MAIN (1st DES) (n=1,055)
Stent technique				
Left main stenting only or simple crossover	NA	396 (69.7)	1,332 (78.0)	803 (76.1)
Two-stent technique	NA	181 (31.4)	376 (22.0)	252 (23.9)
Final kissing balloon	NA	277 (54.5)	807 (29.7)	408 (38.5)
Total stent number per patient	2.4±1.6	2 (IQR, NA)	2.2±1.2	2.2±1.3
Stent number in LMCA	NA	1 (IQR 1–2)	1.7±0.9	1.5±0.8
Total stent length per patient	49.1±36.8	52 (IQR, NA)	52.3±34.1	48.5±33.0
IVUS-guided PCI	722 (77.2)	430 (74.1)	1,309 (76.7)	852 (78.9)
Hemodynamic support	53 (5.2)	NA	85 (5.0)	37 (3.5)
DES type, %				
CoCr-EES	98.4	–	36.7	–
SES	–	89.1	8.4	–
PtCr-EES	–	–	22.1	–
Re-ZES	–	–	26.9	–
PC-ZES	–	–	1.9	–
Other 2nd DES	–	–	4.0	–
SES	–	10.9	–	62.6
PES	–	–	–	17.4

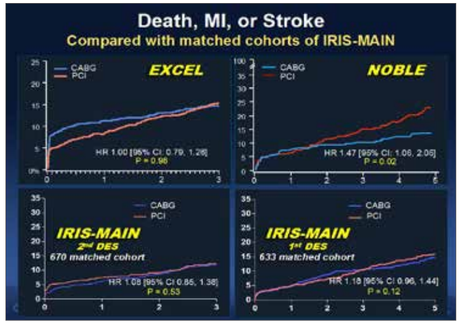


Figure 4. Comparison of clinical outcomesstenos

Heart Keeper 2017 Event

The Heart Keeper 2017 event will be co-hosted 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.

• Wednesday, April 26, 2:30 PM - 5:25 PM
• Main Arena, Level 3

* Session in Korean

Time	Session
Opening	
2:30 PM	Opening
2:35 PM	Video: Cardiovascular treatment, the changes and challenges
Talk Concert: Heart Talk I	
2:40 PM	Standard treatment
Talk Concert: Heart Talk II	
3:20 PM	State-of-the-art techniques
Talk Concert: Special Performance	
4:00 PM	Special performance: SUPER STICK
Lecture: Healthy 100 years	
4:30 PM	Guest speaker: "Accidentally Grown-up"
Closing	
5:20 PM	Closing

Hot Topic

BRS & DES: Current Status, Future Perspectives, Data, Practical Tips and Tricks

How Do We Optimize BRS-PCI?: Expert Knowledge

Corrado Tamburino, MD
Ferrarotto Hospital University of Catania, Italy

BD

Available clinical data, mostly derived from studies with Absorb bioresorbable scaffolds (BRS), have shown that current generations of BRS devices are associated with an increased risk of scaffold thrombosis. In most cases of scaffold thrombosis, the intravascular imaging revealed several underlying mechanisms related to the procedure, which could be corrected by optimizing the BRS-PCI. This has led us to define standardized protocols of BRS implantation, focusing on achieving a correct BVS expansion and apposition to the vessel wall. The optimal implantation technique for BRS is commonly indicated with the "PSP" acronym, which stands for Preparation, Sizing and Post-dilatation (**Figure 1**). While the strategies entailed by the PSP are evolving and have multiple variations, general guidelines for an optimal BRS implantation could be reasonably advocated.

A key step for BRS implantation is the lesion preparation with an optimal pre-dilatation, which is useful for improving BRS crossability, allowing for an optimal BRS expansion and helping in the device sizing assessment. The objective of an optimal pre-dilatation is to achieve a residual stenosis of <30% or stent-like results. General rules for lesion preparations could include the following: 1) pre-dilate with whatever it takes until a balloon of nominal scaffold size (vessel-balloon ratio 1:1) is achieved; 2) gradually upgrade your balloon; a non-compliant (NC) balloon is preferred when vessel-balloon ratio is 1:1; 3) if residual stenosis is >30% with NC balloon, consider high-pressure OPN balloons, angiosculpt, or cutting; 4) respect vessel diameters to avoid media dissections.

An accurate sizing should be performed by administering nitrates before diameter assessment, by using NC balloon and assessing dilatation in two orthogonal views, and by using imaging in case of doubt for complex lesions or bifurcations; a slight oversizing (inferior to 0.5) could reasonably be accepted.

The post-dilatation is recommended in all cases to optimize BRS expansion and minimize eccentricity. Finally, intravascular imaging for BRS-PCI could help in defining plaque characteristics and guiding lesion preparation strategy, in assessing the BRS implantation results, and guiding

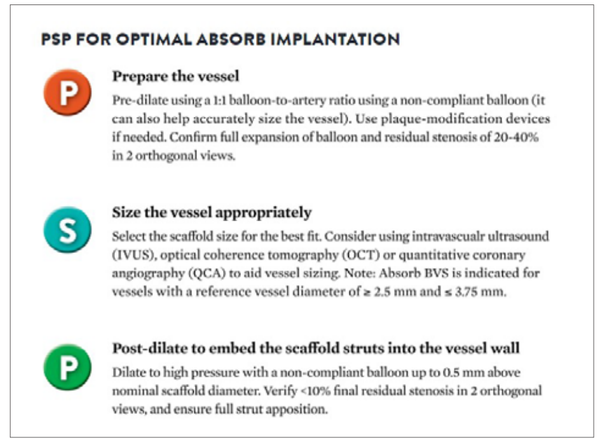


Figure 1. PSP technique (from the website of Abbott)

further procedural steps to optimize those results,An intravascular imaging could be recommended in case of complex lesions (i.e. bifurcations, chronic total occlusions, multiple overlapping etc.) or in case of doubts at angiography.
In conclusion, the common criteria of different BRS implantation strategies is the avoidance of structural abnormalities leading to flow disturbance, which are caused by procedure-related mechanisms underlying scaffold thrombosis.

All Contemporary DES Comparison; Worldwide Clinical Trial Summary

Tullio Palmerini, MD
Policlinico S. Orsola, Italy

The availability of several drug-eluting stents (DES) poses the question on their relative safety and efficacy. Although it is unlikely that there are significant differences in mortality among latest generation DESs, it is not possible to exclude significant differences in other endpoints, such as myocardial infarction or stent thrombosis. Unfortunately, all randomized controlled trials (RCT) performed so far had a non-inferiority design, and combined heterogeneous endpoints such as death, myocardial infarction and target vessel revascularization were based sometimes on unrealistic statistical assumptions, or had disproportionately high non-inferiority margin.
In addition, some trials turned out to be underpowered because observed event rates were lower than expected, with non-inferiority margins sometimes exceeding the observed event rates. In order to address the limited statistical power inherent to all randomized trials reported in this context, several meta-analyses have been performed. In a network meta-analysis including 49 RCTs and 50,844 patients, the Xience cobalt chromium everolimus-eluting stent (CoCr-EES, Abbott, Santa Clara CA) was associated with significantly lower 1-year rates of definite stent thrombosis compared not only to Cypher (Cordis, Cordis Corp., Miami Lakes, FL), Taxus (Boston Scientific, Natick, MA), Resolute (Medtronic, Santa Rosa, CA), and Endeavor (Medtronic), but even bare metal stents (**Figure 2**). The difference was apparent in as early as 30 days, and was still significant after a 2-year follow-up for the comparison between Xience and either Taxus or bare metal stents. The reduced thrombogenicity of the Xience stent is likely related to the fluoropolymer coating.

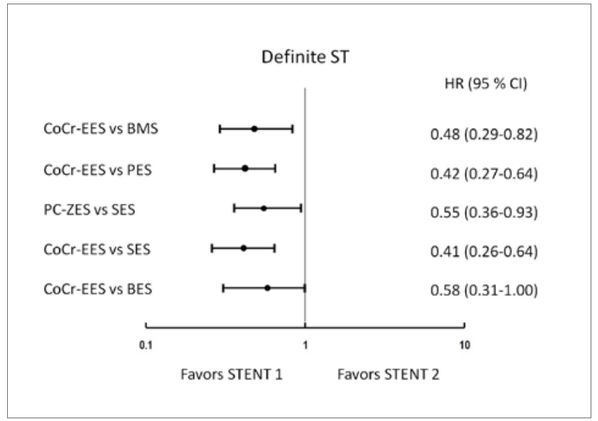


Figure 3. Risk of stent thrombosis after a median follow-up of 4 years

Several bench studies have in fact suggested that fluoropolymers have thromboresistant properties, generating less platelet activation and thrombus formation compared to other kinds of polymers. New DES with bioabsorbable polymers have reached the clinical arena raising the question on their safety and efficacy relative to new generation permanent polymer DES. A network meta-analysis including 51 RCTs and 52,158 patients followed for a median of 4 years reported lower rates of definite stent thrombosis with the Xience stent compared to the Nobori (Terumo, Kakamigahara Japan) or Biomatrix (Biosensors, Newport Beach, CA) biolimus-eluting stent (**Figure 3**). However, a new generation of bioabsorbable polymer-based DES has been developed which has thinner struts, alternative drugs, and a faster kinetic of polymer bioabsorption.
Again, all these new DES have been investigated in non-inferiority RCTs, so it is not possible to draw definitive conclusions on their relative safety and efficacy. Specifically, in the Bioscience trial, the Xience stent was associated with a non-significant 66% relative risk reduction in stent thrombosis compared to the Orsiro stent (Biotronik AG, Bulach, Switzerland), leaving undetermined whether the finding was real or the play of chance. In the CENTURY II trial comparing the Ultimaster stent (Terumo) versus the Xience stent, observed event rates were 60% lower than expected, and the non-inferiority margin even exceeded the observed event rates. The EVOLVE II trial, comparing the SYNERGY bioabsorbable polymer-based everolimus-eluting stent versus the Promus stent (both Boston), enrolled only 1,864 patients and therefore was not powered for stent thrombosis.
Finally, the Bio-Resort trial, comparing the SYNERGY stent versus the Orsiro stent versus the Resolute stent, enrolled only 44% of the eligible population, and it was again underpowered because observed event rates were lower than expected. In conclusion, no randomized trial performed so far had enough power to exclude significant differences in stent thrombosis or myocardial infarction between new generation DES. Assuming an event rate of 1% at 1 year and a 50% relative risk reduction, 13,000 patients would be needed to demonstrate a statistically significant difference in stent thrombosis between two stents with α=0.05 and β=0.90. Only a trial of that size, which is unlike to ever be performed, would definitely answer the burning question on the relative safety and efficacy of new generation DES.

INDIAN BRS (MERIS 100)

Upendra Kaul, MD
Escorts Heart Institute & Research Centre, India

The first generation BVS from Abbott Vascular has demonstrated its utility as well as its shortcomings such as very thick struts, limited track ability, low radio-opacity of markers, and concerns of thrombosis.
The second generation BVS from India has obviated several of these limitations. Strut thickness is reduced to 100 microns with a special architecture which maintains a good radial strength, side branch access, and very visible markers. The drug used is sirolimus (**Figure 4**).
The first in man study, which will be presented, has demonstrated its safety and efficacy.
This study of 108 low-risk patients showed a 100% success rate in deployment, and 6 months' follow-up data showed no major adverse cardiovascular events including stent thrombosis. Larger studies will follow and put things in proper perspective for this technology.

BRS & DES: Current Status, Future Perspectives, Data, Practical Tips and Tricks
›› Wednesday, April 26, 4:00 PM ~ 6:00 PM
›› Presentation Theater, Level 1

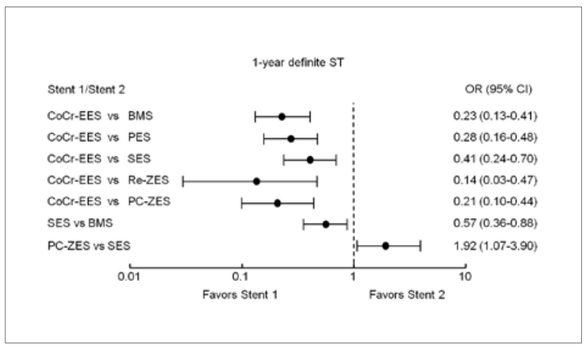


Figure 2. Risk of 1-year stent thrombosis with different drug-eluting stents

Figure 4. MERIS 100

Yesterday's Highlights

BRS & DES

Which DES Do You Prefer Based Upon Your Pathologic Findings?

Aloke V. Finn, MD
CVPath Institute, Inc., USA

BD

Yesterday, Dr. Aloke V. Finn gave an excellent lecture regarding current status and future perspectives of DES. Since their first clinical use in the early 2000's, metallic drug-eluting stents (DES) have become the primary device used for the treatment of symptomatic coronary artery disease. Although they have dramatically reduced the rates of restenosis compared to bare metal stents (BMS), their use has been associated with untoward side effects which diminish their long-term success. Initially, 1st generation DES were plagued by problems with stent healing, which caused a continued rate of late thrombotic events as far out as 10 years, as documented by the recent SORT OUT II data. Better backbone stent design and polymers characterized later generations of DES, which had remarkably improved healing and resulted in lower rates of late stent thrombosis. However, pathologic studies have documented the accelerated development of neoatherosclerosis within the stented segment compared to BMS and late catch up, such that initially low target vessel failure rates at one year slowly increase over time to approach 20% at 5 years (**Figure 1**). Recent OCT studies document neoatherosclerosis as the 2nd most frequent cause of late thrombotic events within DES. In his lecture, Dr. Finn pointed out several qualifications for the ideal DES: 1) prevent restenosis; 2) heal very rapidly; 3) not develop neoatherosclerosis; 4) return the endothelial lining of the blood vessel to its normal function; 5) disappear over time to allow for normal arterial remodeling. Of course, at the current moment, we do not have a device that can do all of these things, but, with the multiple approaches being tried in DES these days, we are working towards this type of device (**Figure 2**). Important developments have occurred in polymer science such that the polymers used in some DES such as Xience are truly anti-thrombotic and anti-inflammatory. Other approaches, such as absorbable polymer technologies on metallic DES offer the possibility of improving long-term outcomes, especially if the endothelium can be shown to be fully functional. In addition, non-polymeric approaches such as that employed on Bio-Freedom and drug filled stents may offer distinct advantages over polymeric stents. Lastly, approaches using totally bioabsorable stents offer the possibility of allowing normal arterial remodeling and vasomotion, which would likely reduce long-term rates of lesion revasculaization and failure. None of the approaches has yet shown clinical superiority over others, but we await more data. Dr. Finn wrapped up the lecture with the remark "I have no doubt that we will reach the goal of improving stent design to maximize and improve long outcomes in our patients, but how we do so remains unresolved."

TCTAP Workshops: BRS and DES
›› Tuesday, April 25, 10:42 AM ~ 12:15 PM
›› Presentation Theater, Level 1

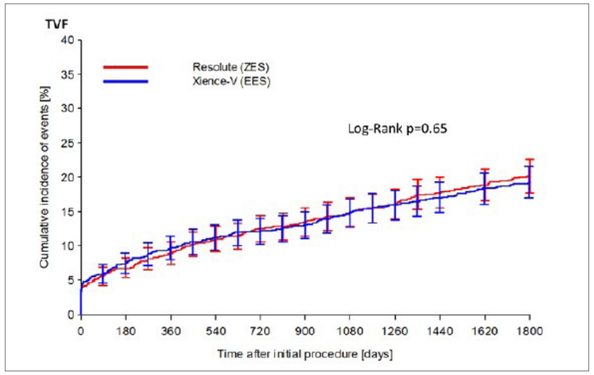


Figure 1. Kaplan-Meier curves comparing zotalolimus- and everolimus-eluting stents for TVF (Circ Cardiovasc Interv. 2015)

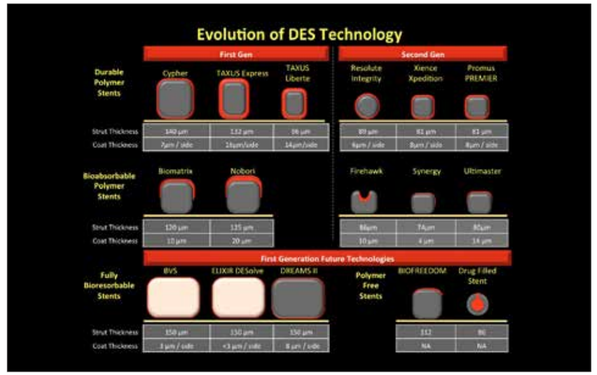


Figure 2. Evolution of DES technology

The 9th Chien Foundation Award for Outstanding Lectureship and Lifetime Achievement in PCI Awarded to Prof. Takeshi Kimura

Chien Foundation Award for Outstanding Lectureship & Lifetime Achievement in PCI Presented at TCTAP2017

Takeshi Kimura, MD
Kyoto University, Japan

ChienA

Dr. Takeshi Kimura graduated from Kyoto University School of Medicine in 1981 and achieved his postgraduate PhD in medicine in 1998. He commenced his cardiology training in 1982 at Kokura Memorial Hospital Department of Cardiology as a resident until 1991, and, in 2002, he was promoted to be the director. From 2003, he was appointed Associate Professor in the Department of Cardiovascular Medicine at Graduate School of Medicine, at Kyoto University.
From 2009 until now, Dr. Kimura has been the Professor of the Department of Cardiovascular Medicine at Kyoto University. Dr. Kimura has achieved an outstanding cardiology career, with his main achievements in 3 areas: 1) Teaching – Prof. Kimura is known for his distinguished academic and teaching talent. He has been rapidly promoted to be on a fast track to be Professor in cardiovascular medicine in Kyoto University since 2009. 2) Clinical expertise – He is also admired for his technical skills in cardiovascular intervention, especially in complicated and complex PCI. It is no wonder that he, together with Prof. S Saito and Prof. SJ Park, has embarked on a niche PCI teaching course called "Complex PCI made simple". Many of us from Asia Pacific countries have admired his outstanding skills in the cath lab during his live PCI courses with Dr. Nobuyoshi at Kokura Hospital, as well as his dedicated approach to patient care.
3) Academic research - Perhaps the most admirable of Prof. Kimura's career is his brilliant and wide range of scientific publications in peer-reviewed world-renowned journals. He has written or co-written 387 scientific papers in English with topics ranging from basic science research to PCI long-term follow ups, clinical trials and registries in stents and angioplasty.

Chien Foundation Award for Outstanding Lectureship & Lifetime Achievement in PCI
›› Tuesday, April 25, 12:24 PM ~ 12:30 PM
›› Presentation Theater, Level 1

Three-dimensional Printing Creates Models for Individualized Planning of Endovascular Repair for Aortic Pathology

Zhi Zheng, MD
Tongji Hospital, Huazhong University of Science and Technology, China

Hot Ab

Three-dimensional (3D) printing was first described in the early 1980s. This manufacturing process is unique because an object is built up layer-by-layer rather than being cut from a larger block of material, as is done using subtractive manufacturing techniques such as machining. This technology enables building accurate patient-specific 3D-printed anatomic models that can be used for new surgical instrument development, physical measurements, diagnosis, surgical planning, and presentation to patients. This afternoon, Zhi Zheng, *et al.* (from Tongji Hospital, Huazhong University of Science and Technology, China) will show 3D-printing technique in the individualized planning of endovascular repair for aortic pathology including aortic dissection (AD) and abdominal aortic aneurysm (AAA). Four cases were recruited in their study, including two cases of acute type B AD with an involvement of the distal arch, one retrograde type A AD with a primary entry tear located in the descending aorta, and one infrarenal AAA with complex neck anatomy. The 3D-printing models were attempted using data from the patient's computed tomography scan, special software, and a 3D-printing device. Morphological details were analyzed through 3D-printed models, and individualized planning of endovascular repair was made accordingly. According to the 3D-printed model, endovascular repair with physician-modified fenestrated endograft (including fenestration for the left subclavian artery and the left common carotid artery in one case and fenestration for the left common carotid artery in the other one) was done in the two type B AD patients (**Figure 1**). Endovascular stenting in the descending aorta was applied instead of open surgery in the retrograde type A AD patient. A full-sized 3D-printed replica model demonstrated the feasibility of endovascular repair in the infrarenal AAA patient with a short neck, though the extremely tortuous AAA had a sharp angulation of 90° with the normal abdominal aorta and right iliac artery, respectively (**Figure 2**). In all cases, intra-operative angiography and postoperative follow-up showed no endoleak and preservation of neck blood flow with fenestration. All patients lived well and were free from aortic diseases during the follow-up period. Dr. Zhi Zheng suggested that, *"For complex aortic pathology, 3D-printing helps the individualized planning of endovascular repair in the following ways: (1) it helps to determine its feasibility before the operation; (2) it helps to choose the correct devices; (3) it helps to make an accurately sized fenestration according to 3D measurement." However, he also said that "further large-scale studies are required to verify its long-term efficacy (**Figure 3**)."*

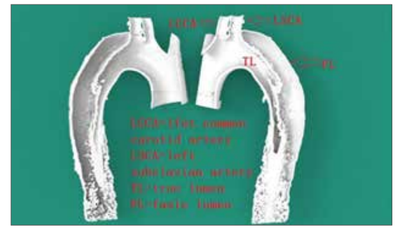


Figure 1. 3D-printing model for aortic dissection

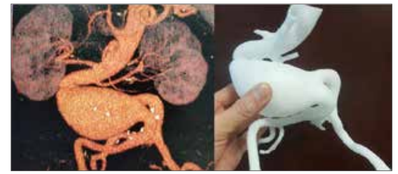


Figure 2. CTA and 3D-printing model for abdominal aortic aneurysm

Figure 3. 3D-printing model of aortic dissection for individualized TEVAR planning

Moderated Abstract Competition II

›› Wednesday, April 26, 4:50 PM ~ 6:00 PM
›› Abstract Zone II, Level 3

Pharmacomechanical Thrombectomy (PMT) with AngioJet Solent Omni Compared with Catheter Directed Aspiration Thrombectomy (CDAT) for Treatment of Acute Deep Vein Thrombosis (DVT)

Jang Yong Kim, MD
Seoul St. Mary's Hospital, Korea

Hot Ab

Conventional anticoagulation for acute deep vein thrombosis (DVT) can cause post-thrombotic syndrome (PTS). Therefore, early thrombus removal strategies for acute DVT are widely appreciated across different societies. Pharmacomechanical thrombectomy (PMT) is a recently-established therapy to manage acute DVT when experts and resources are available. In Korea, catheter directed aspiration thrombectomy (CDAT) is a popular option for the treatment of acute DVT because PMT devices are limited by reimbursement issues. Today, in the abstract zone, Jang Yong Kim from Seoul St. Mary's Hospital, Korea, will show the comparison data on the results of PMT with Angiojet with CDAT and evaluate risk factors affecting patients' outcome. This data is from a retrospective study from a prospectively registered database of the patients who underwent interventional procedures due to acute DVT in Seoul St. Mary's Hospital from 2013 to 2015. PMT with AngioJet and Solent Omni catheter was compared to CDAT for acute DVT. Fifty-eight patients were enrolled. 22 patients were treated by PMT and 36 by CDAT. There was no procedure-related or in-hospital mortality in both groups. There were 3 additional thrombolysis in PMT group and 6 in CDAT group. There was no difference in the technical success rate between PMT and CDAT regardless of thrombolysis (p=0.4183, p=9.205). The limitation of PMT with Angiojet was a short operating time of AngioJet (less than 5 mins) with residual thrombus while large thrombus embolization in CDAT. Dr. Jang Yong Kim summarized that *"PMT with AngioJet and DCAT are a safe and effective strategy for early thrombus removal of patients with acute DVT with different pitfalls. This study is limited by the small number of subjects and the fact that it is a retrospective study."*

Moderated Abstract Competition II

›› Wednesday, April 26, 5:20 PM ~ 5:30 PM
›› Abstract Zone II, Level 3

"PTRA" with Stenting for Recurrent Flash Pulmonary Edema in a Patient with Bilateral Totally Occluded Renal Arteries

Prakas Chandra Mondal, MD
Apollo Gleneagles Hospital, India

Hot Ca

The renal ischemia evokes strong neuro-hormonal activation, which plays a central role in the pathogenesis of flash pulmonary edema as well as hypertensive emergencies. Patients with resistant hypertension, especially with hypertensive urgencies and emergencies, can also benefit from renal revascularization. Dr. Prakas Chandra Mondal from Apollo Gleneagles Hospital, India, will show a successful PTRA case. A 67 year-old diabetic, hypertensive male patient presented in a gasping state with dyspnea and sweating of one hour duration. He underwent CABG 12 years prior to presentation. He was intubated and ventilated with other supportive therapies then was clinically stabilized and extubated on the 3rd day. Despite continuing medical therapy, he developed flash pulmonary edema again on the same day. Oliguria and renal failure were ongoing. Echocardiography showed concentric LVH and grade II diastolic dysfunction with normal systolic function. US of his abdomen revealed bilateral renal parenchymal disease (right size: 8.9 cm. left size: 8.4 cm). The renal vascular Doppler study showed spectral broadening with a parvus tardus wave pattern in the intrarenal arteries of both kidneys, suggestive of bilateral renal artery stenosis with very poor flow. Coronary Angiography showed native triple vessel coronary artery disease and patent bypass grafts (LIMA-LAD, RSVG-D1/OM1/PDA). Renal angiography showed total occlusion of both renal arteries at their origins. "PTRA" with stent to the left renal artery via right femoral access was performed with a 7F sheath and RDC guide catheter. Coronary intermediate wire was attempted but failed. 5F IMA catheter was used as the child catheter. The wire crossed the hard lesion, and then pre-dilated with 3.0 x 12 mm sprinter legend coronary balloon. A 6 x 18 mm stent was the implanted (**Figure 1**). Diuresis improved from the 3rd post-procedure day, and serum creatinine improved. Hemodialysis was stopped after one month and, for the last 9 months, he has been off dialysis. His blood pressure has been well controlled, and there has been no recurrence of pulmonary edema. Dr. Prakas Chandra Mondal summarized that *"Intervention in totally occluded, stumpless renal arteries is highly challenging. Sometimes, hard coronary 'CTO' wires can safely be used for this purpose, warranting high success rate."*

Figure 1. Pre-PTRA and post-PTRA

Moderated Complex Case Competition III

›› Wednesday, April 26, 5:10 PM ~ 5:20 PM
›› Case Zone III, Level 3

Yesterday's Highlights

Glorious Best Presenters from Competition Session

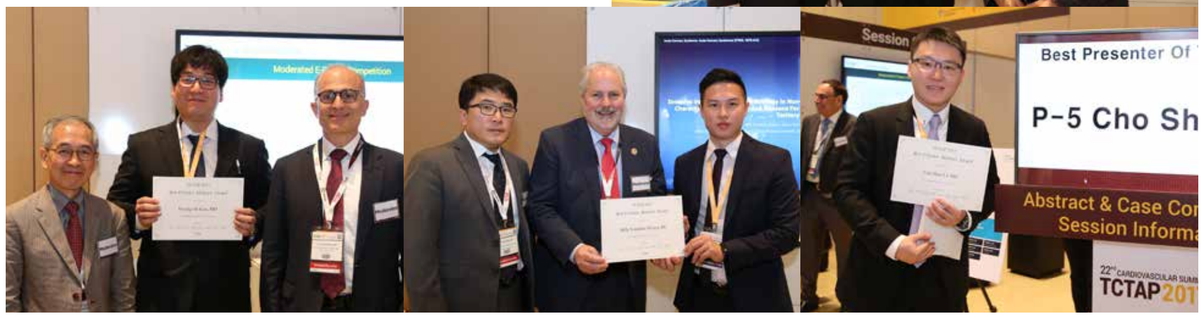
A number of interesting abstracts were submitted from all over the world to TCTAP 2017 this year, and then a few E-posters, abstracts, and cases were selected to be presented in Moderated Competition after being strictly reviewed by the scientific committee. Approximately 140 authors made presentation in in Moderated E-Poster, Abstract, and Case Competition Session and only 29 presenters were selected as the Best Presenters by evaluation. Here is the list of the glorious best abstract presenters.

Best E-Poster Presenter from E-Poster Zone

P-1. DES & BVS: **Yi Xu, MD** (China)
P-2. AMI & ACS: **Hyung Oh Kim, MD** (Korea)
P-3. AMI & ACS: **Billy Yonathan Wijaya, MD** (Singapore)
P-4. Miscellaneous: **Rajeev Bhardwaj, MD** (India)
P-5. Structural Heart Disease: **Cho Shan Li, MD** (China)

Best Abstract Presenter from Abstract Zone

1-1. DES & BVS: **Upendra Kaul, MD** (India)
1-2. DES & BVS: **Luca Testa, MD** (Italy)
1-3. Complex PCI: **Luca Testa, MD** (Italy)
2-1. Complex PCI: **Dae-Won Kim, MD** (Korea)
2-2. Complex PCI: **Wojciech Wojakowski, MD** (Poland)
2-3. Imaging & Physiology: **Il Park, MD** (Korea)



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Share your vision at Abstract & Case Competition!

April 25-27 Abstract & Case Zone, in Exhibition Hall, Level 3

Which Study Did You 'LIKE' the Most?

Give a thumbs-up to the best study and find out the **Best Presenter!**

E-Science Station or **TCTAP App**

Best Case Presenter from Case Zone

1-1. Complex PCI: **Liang-Ting Chiang, MD** (Taiwan)
1-2. AMI & ACS: **Tamiruddin A. Danwade, MD** (India)
1-3. Structural Heart Disease: **Yi Lin Tsai, MD** (Taiwan)
1-4. Complex PCI: **Ching Ju Wu, MD** (Taiwan)
1-5. Complex PCI: **Takahiro Kusume, MD** (Japan)
1-6. Complex PCI: **Ching Tsai Hsu, MD** (Taiwan)
2-1. Imaging & Physiology: **Takamasa Tanaka, MD** (Japan)
2-2. Structural Heart Disease: **Akimitsu Tanaka, MD** (Japan)
2-3. AMI & ACS: **Alfonso Ielasi, MD** (Italy)
2-4. Complex PCI: **Nor Halwani Habizal, MD** (Malaysia)
2-5. Complex PCI: **Prem Nathan Arumuganathan, MD** (Malaysia)
2-6. DES & BVS: **Indulis Kumsars, MD** (Latvia)
3-1. Structural Heart Disease: **Ungjeong Do, MD** (Korea)
3-2. Complex PCI: **Chong Aik Goh, MD** (Malaysia)
3-3. AMI & ACS: **Swee Hien Yap, MD** (Malaysia)
3-4. Complex PCI: **Madjid Boukantar, MD** (France)
3-5. Complex PCI: **Haeng Nam Park, MD** (Korea)
3-6. Complex PCI: **Wei-Chun Huang, MD** (Taiwan)

The Voices of TCTAP 2017

Robert Bersin, MD
Swedish Heart and Vascular, USA

I have been attending the TCTAP for 4-5 years running. I am particularly interested in the international perspective that the TCTAP offers. There is a lot going on in coronary stenting and related products. On the endovascular front, we are seeing a lot of debates on not only the clinical outcomes but also the cost-effectiveness of the drug delivery systems, such as drug-coated balloons or DES. I think the TCTAP can benefit from having better interaction between the different tracts, instead of having the structural, coronary, and endovascular tracts in segregated areas. This is because there are participants, such as myself, who engage in clinical practice in more than one of these areas. Even though this conference is specific to the Asia-Pacific region, I find that it still helps with clinical practice in my own country because sometimes you are limited by what is approved, available, or insured in your own country and forget what is the most effective. So, having these international perspectives is always helpful. The TCTAP is a great, well-organized conference. I would like to see it continue.

Johan Rizwal Ismail, MD
Universiti Teknologi MARA, Malaysia

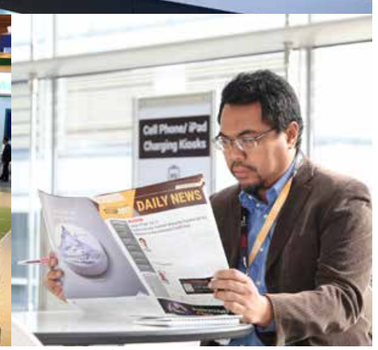
I am very happy to be here for the third year now. The topics and cases shown are very interesting, and there are new techniques and devices coming in every year. I am particularly interested in the retrograde technique in crossing CTO. I would like to congratulate the TCTAP for the very good program, especially the Asia-specific endovascular cases.

Vinay K. Bahl, MD
All India Institue of Medical Sciences, India

I am giving a lecture on a second-generation bioabsorbable scaffold developed in India. It has already completed clinical studies in India and now is enrolling patients in Europe and Asia. It is exciting because it is only 100 micron. There are a few studies on the currently available bioabsorbable scaffolds and the issues regarding their safety and efficacy, especially in-stent thrombosis. We have therefore tried to reduce the stent strut size. It has an innovative architecture with a closed-cell structure at the ends and an open-cell design in the middle, which achieves a lower profile but maintains the same radial strength. Initial 6 months data are very encouraging. Apart from my lecture, I am particularly interested in the live case sessions because you can see the tips and tricks from the operators from different regions.

Liang-Ting Chiang, MD
National Taiwan University Hospital, Yunlin Branch, Taiwan

This is my fourth time at the TCTAP. I enjoy coming here because it's the biggest interventional conference in Asia, and the discussions and the newest publications here are very interesting. This year, I am quite interested in the new stents launched around the world. Discussions on various approaches to a problem by different masters are also very useful for young interventionists.
I find the TCTAP Daily Newspaper and the conference itself very efficient. The newspaper is particularly useful because, if I miss some topics, I can find them inside the newspaper and check the schedule and read the summaries. One drawback of this year's TCTAP is that my presentation schedule was changed quite a few times.



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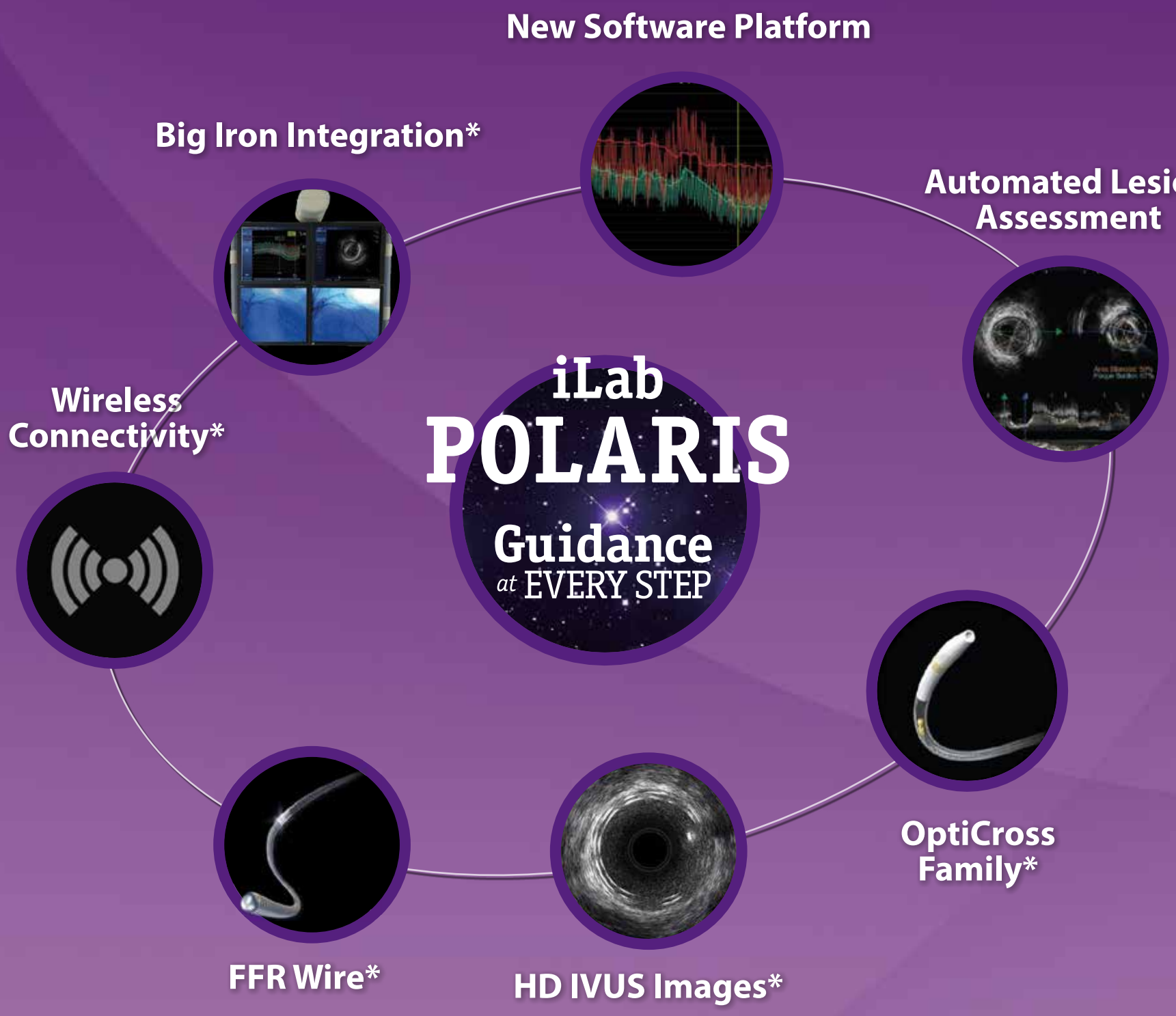

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