coronary intervention (PCI). There is limited data on the safety and efficacy of BVS in contemporary clinical registries. We evaluated the safety and efficacy of BVS in our unselected South-east Asian patients and report on the clinical outcomes.

Methods: Between May 2012 to October 2013, 79 patients (83.5 % male, mean age 52 ± 10 years) with 83 coronary lesions were treated with a total of 116 BVS. The primary endpoint was in-hospital major adverse cardiac events (MACE) i.e. a composite of cardiovascular death, target vessel related myocardial infarction (MI) and target lesion revascularization (TLR). Secondary endpoints included individual components of MACE and scaffold thrombosis at 6 months follow up.

Results: The majority of patients presented with acute coronary syndrome (50.6 %). Transradial PCI was performed in 98 % of cases. Intracoronary imaging and cutting balloons were used as adjunctive PCI tool in 46 % and 52 % of cases respectively. The mean number of BVS implanted per patient was 1.4 ± 0.7, mean BVS diameter was 3.1 ± 0.3 mm and total BVS length was 30 ± 19 mm.

BVS was implanted in de novo lesions in 95 % of cases with the left anterior descending artery being the most common target vessel (52%). 4 BVS were implanted in non de novo lesions (1 saphenous vein graft, 1 left internal mammary artery and 2 instant revascularisation).

There was no MACE observed in-hospital. However, there were 2 cases of subacute scaffold thrombosis within 30 days of PCI which required re-intervention. There were no further ischaemic events at 6 months follow-up.

Conclusion: Early experience with BVS in our unselected South-east Asian patients reveals a promising result with a low incidence of ischemic events. Longer clinical follow-up is necessary to prove its long term efficacy and safety.

TCTAP A-080
Patient-specific Cardiovascular Models for Educational and Training Purposes
Ashok Ilangovan1, Peter Verschueren2
1Materialise Malaysia, Kuala Lumpur, Malaysia, 2Materialise NV, Leuven, Belgium

Background: Structural heart defects affect 8 out of 1000 newborns and while a large percentage of these defects have no serious consequences for the child’s life, some patients present life-threatening conditions that need to be carefully understood and treated.

Methods: We are exploring the manufacturing of heart models used for educational purposes. Nevertheless, these models are often generic representations of the anatomy and do not account for an array of congenital heart defects, offering physicians superior training and planning possibilities.

Results: Rigid models of the heart were obtained for educational and communication purposes, where each cardiac structure was represented in a different color for better understanding of the patient’s pathologies. Flexible, translucent hollow models of the congenital heart defects were 3D printed for the simulation of the intended procedure, aimed at offering better insight to the surgical outcome.

Conclusion: 3D printed patient-specific models of the cardiovascular anatomy from medical image data hold great promise to improve clinical understanding of congenital heart defects, offering physicians superior training and planning possibilities.

Invasive Coronary Imaging: IVUS, OCT, Spectroscopy, and Other
(TCTAP A-081 to TCTAP A-086)

TCTAP A-081
Efficacy of the Comparison Catheter: Intravascular Ultrasound(IVUS) with a Balloon
Shujo Ishihara, Chasu Ka, Hiroyoshi Nishiyama, Tesom Yano, Tasuku Koizumi Mihinsha General Hospital, Osaka, Japan

Background: VIBE RX catheter is the world’s first catheter that combines intravascular ultrasound (IVUS) with a balloon in one device. We evaluated the efficacy of the novel catheter.

Methods: 50 patients who underwent percutaneous coronary intervention (PCI) in our hospital between July 2012 and October 2012 were enrolled in this study. They were randomly divided into two groups: using IVUS with a balloon (n=25), and using ordinary IVUS (n=25). Patients with distal lesions, chronic total occlusion (CTO) and acute myocardial infarction (AMI) were excluded. We assessed procedure time, fluoroscopy time, contrast volume, the device crossability.

Results: Procedure time were 67.7+.24.7 minutes in VIBE group and 79.1+.23.3 minutes in EagleEye group (p=0.06). Fluoroscopy time were 20.7+.0.10 minutes in VIBE group and 25.5+.11.7 minutes in EagleEye group (p=0.21). Contrast volume were 120.2+34.8ml in VIBE group and 119.9+.34.1ml in EagleEye group (p=0.81). 3 patients in both groups had difficulties of the device crossability.

Conclusion: Our study suggests that using VIBE RX catheter may contribute to reduce procedure time and fluoroscopy time. Further studies about the economic efficacy and the usefulness for more complex situations are needed.

TCTAP A-082
Optical Frequency Domain Imaging Guidance for Coronary Stent Implantation in Comparison with Intravascular Guidance
Tomoko Kobayashi, Satora Sasaki, Munemitsu Otsugaki, Hideaki Tahakuishi, Toshifumi Hino, Masahiro Mizobuchi, Atsushi Fanatsu Kyoto Katsura Hospital, Kyoto, Japan

Background: Intravascular ultrasound (IVUS) has been used as a guidance of stenting. Optical Frequency Domain Imaging (OFDI) has high resolution and superimposed technology on circular polarization. The aim of this study was to assess the feasibility of OFDI-guided stent implantation.

Methods: Total of 25 de novo, consecutive, elective stenting lesions (22 patients) were enrolled in this study. OFDI and IVUS images were recorded before intervention. IVUS images were blinded for operators. Stent implantation was performed under OFDI-guidance alone. IVUS confirmation was performed after the procedure and further treatment was permitted based on IVUS results. One-month after the procedures, strategy of stent deployment was re-built by the same operator with the IVUS records before intervention.

Results: Selected stent length and diameter were equal between OFDI-guidance and IVUS-guidance (O;23.8mm vs I;23.3mm;p=0.53, O;3.38mm vs I;3.33mm;p=0.41). The selected landing point difference of OFDI-guidance and IVUS-guidance were 1.8mm at proximal edge and 0.8mm at distal edge. Distal protection device was deployed 4 cases according to OFDI images. Additional inflation was performed after final IVUS in 2 cases. There was no complication (perforation, slow-flow/no-flow, dissection to need additional stenting) during procedure and no in-hospital MACE (death, QMI/nonQMI, subacute scaffold thrombosis).

Conclusion: OFDI-guidance is comparable to IVUS-guidance for elective stent implantation.

TCTAP A-083
Impact of Diabetes on Heavily Calcified Plaque in Extremely Late In-stent Restenosis Lesions After Bare-metal Stent Implantation
Takahiro Watamabe, Kazuhiko Yamoto, Yoshiyasu Takeda, Yuchi Hamaki, Yasutoshi Shinoda, Tatsuhiko Murase, Tagayasu Anzai, Tomoyuki Fuksawa, Yoshihisa Naruse, Seigen I, Junji Kawagoe, Hajime Aoki, Shinya Kowase, Kenji Kurokochi, Kenichi Katou Yokohama Rosai, Yokohama, Japan

Background: In-stent neatherosclerosis is a major concern of late in-stent restenosis after either drug-eluting stent or BMS implantation. Patients with DM increase requiring target lesion revascularization (TLR) at long-term follow-up. The characteristics of lesions with extremely late in-stent restenosis after BMS implantation remain unclear.

Methods: Median follow-up duration after BMS implantation was 10.0±2.8 years (range 4-16 years). Consecutive 35 late in-stent restenosis lesions required the first TLR beyond 4 years after BMS implantation were estimated with IVUS measuring the calcium arc and length.

Results: All patients (67.5±5.0 yo; 28 male) presented ischemic symptoms (18 ACS incidences, 11 PCI, 17 stable ischemia). All in-stent lesions contained various calcified plaque. The mean calcium arc was 138±100 degree and length 8.2±11.0 mm respectively. In DM patients, calcium arc was significantly greater than those of non-DM (195±83 vs 83±79 degree; p<0.01). The rate of severely calcified lesion defined as calcium arc over 180 degree was higher in DM than those in non-DM (63.1% vs 12.5%; p<0.001). There was no difference in the period between the index procedure and TLR (DM 9.8±3.0 years, non DM 10.6±2.1 years).

Conclusion: Various calcified plaque are contained in the late in-stent restenosis lesions regardless of DM. However DM is correlated with heavily calcified plaque in in-stent lesions with late in-stent restenosis. We should pay attention to treatment of late in-stent restenosis with DM patients because of existence of heavily calcified plaque.

TCTAP A-084
Impact of Pre-dilation Strategy on Vessel Response Following Stent Implantation in Patients with De Novo Coronary Artery Lesion
Kazuyuki Maeda, Katsuhisa Waseda, Hiroaki Takashima, Masanobu Fujimoto, Yasuo Kuroda, Takashi Kosaka, Akiyoshi Kurita, Hirohiko Ando, Soichiro Kumagai, Shinichiro Sakurai, Daiki Kato, Akihiro Suzuki, Shigeko Sato, Tomofumi Mizuno, Yasutoshi Shinoda, Tatsuhiko Murase, Tagayasu Anzai, Hirohiko Ando, Soichiro Kumagai, Yokohama Rosai, Yokohama, Japan

Background: In-stent restenosis is a major concern of late in-stent restenosis after either drug eluting stent or BMS implantation. Patients with DM increase requiring target lesion revascularization (TLR) at long-term follow-up. The important to achieve better stent expansion. The Lacrosse non-slip element (NSE)