Structural Heart Disease, Other
(TCTAP A-117 to TCTAP A-119)

TCTAP A-117
Combined Transcatheter Aortic Valve Implantation (TAVI) and Stenting of the Coronary Arteries in Patients with Severe Aortic Stenosis
David G. Inselheim, Djamil Asadov, Igor Arabadzhyan, Vladislav Kriukov, Elena Kovalova, Anna Rogatova
City Center of Intervent. Cardiologics, Moscow, Russian Federation

Background: To study the effectiveness and safety of combined PCI and aortic valve implantation in patients at high surgical risk.

Methods: Combined correction of aortic stenosis and PCI were performed in 15 patients. The average age of patients was 76.3 ± 3.9 years. Mean area of aortic valve orifice was 0.53 ± 0.13 mm. Maximal transvalvular gradient was 99.7 ± 20.2 mm Hg. Four patients had single-vessel disease, the remaining patients had multivessel disease, in two cases – with the lesion of the left main coronary artery. EuroScore>20%, STS>10%, Syntax score = 18.3 ± 11.5.

Results: The first stage of procedure was coronary stenting (2.2 ± 0.75 stents per patient), followed by TAVI. Mean duration of the procedure was 126.3 ± 31.3 min. The average volume of the contrast medium was 322.3 ± 74.6 ml, the time of scopy - 36.6 ± 9.6 min. Post-TAVI maximal transvalvular gradient was 15.4 ± 5 mm Hg, regurgitation – 1.2 ± 0.3. There were no major intra- and perioperative complications.

Conclusion: Transcatheter aortic valve implantation combined with percutaneous coronary interventions can be successfully used for the management of patients at extremely high risk for open-heart surgery and is the only method of treatment for them.

TCTAP A-118
Improvement of LV Systolic and Diastolic Function 6-month After Successful Transcatheter Aortic Valve Replacement (TAVR)
William K. F. Kong, Michael Liang, Kyu Kyo, K. K. Poh
The National University Heart Centre, Singapore, Singapore

Background: We prospectively evaluate the hemodynamic consequences of transcatheter aortic valve replacement (TAVR) with the Edward Sapien XT prostheses and its effect on left ventricular systolic and diastolic function.

Methods: From April 2011 to April 2013, symptomatic patients with severe aortic stenosis (aortic valve area <1cm2) and underwent TAVR were included. Aortic valve prostheses was implanted via transfemoral, transapical and transaortical methods. All procedures were guided by transesophageal echocardiography. Clinical evaluation and evaluation of LV systolic and diastolic function was performed at baseline and at six months after TAVR. Echocardiography included standard 2D and Doppler analysis of global systolic and diastolic function as well as Tissue Doppler echocardiography.

Results: Thirty patients successfully underwent TAVR (66% were male). The mean age was 79.

Conclusion: After successful TAVR for severe AS, LV systolic and diastolic function was remarkably improved in most patients after 6 months. These changes will have relevant clinical prognostic value.

TCTAP A-119
Catheter-based Patent Foramen Ovale Closure Eliminated Post-dive Arterial Bubbles in Scuba Divers
Jakub Honed1, Martin Sramek1, Luděk Sež1, Jaroslav Januška1, Jiří Fiedler2, Martin Borovský1, Alex Tomek1, Stepan Novotný1, Tomas Honek1, Josef Veselka1
1Motol University Hospital, Prague, Czech Republic, 21st Faculty of Medicine, Prague, Czech Republic, 3Trinec Podlesí Hospital, Trinec, Czech Republic, 4Kladno Regional Hospital, Kladno, Czech Republic

Background: Patent foramen ovale (PFO) is a risk factor of decompression sickness (DCS) in divers due to paradoxical embolization of bubbles. It has been suggested that catheter-based PFO closure might prevent the arterialization of bubbles and reduce the risk of DCS. However, there are currently no data concerning its effect on post-dive reduction of arterial gas emboli. The aim of this study was to test the effect of catheter-based PFO closure on the occurrence of arterial bubbles after simulated dives.

Methods: A total of 183 consecutive divers were screened for PFO at our center. From April 2011 to April 2013, symptomatic patients with severe aortic stenosis (aortic valve area <1cm2) and underwent TAVR were included. Aortic valve prostheses was implanted via transfemoral, transapical and transaortical methods. All procedures were guided by transesophageal echocardiography. Clinical evaluation and evaluation of LV systolic and diastolic function was performed at baseline and at six months after TAVR. Echocardiography included standard 2D and Doppler analysis of global systolic and diastolic function as well as Tissue Doppler echocardiography.

Results: There were 250 patients in the study. The radial sheath was inserted and flushed with one of the following cocktail regimens along with 50 units/kg of unfractionated heparin diluted in 10 ml of saline.

Conclusion: The present study is the first study to demonstrate the effect of catheter-based PFO closure on the occurrence of post-dive arterial bubbles. In our study, no difference was found in the occurrence of venous bubbles between the PFO and closure groups. However, in the closure group no arterial bubbles were detected. Therefore, we suggest that i) the presence of a PFO plays a key role in paradoxical embolization of venous bubbles after scuba dives, ii) closure strategy should have a role in the prevention of unprovoked DCS recurrence in divers.

Transradial Intervention
(TCTAP A-120 to TCTAP A-124)

TCTAP A-120
Intra-arterial Anti-spasm Regimens to Prevent Radial Artery Spasm During Transradial Coronary Angiography
Babu Eshumali1, Santhosh Satheesh1, Balachander Jayaraman2
1Sri Venkateshwara Medical College Hospital and Research centre, Puducherry, India, 2Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry, Puducherry, India

Background: The development of spasm of radial artery is a critical problem encountered during transradial catheterization often leading to switching over to transfemoral route. Various operators have used different kinds of regiments to prevent the occurrence of radial artery spasm. This study was done to analyze the effect of different anti-spasm regimens in preventing the development of radial artery spasm during transradial coronary angiography.

Methods: Patients undergoing transradial coronary angiography were included in this study. The radial sheath was inserted and flushed with one of the following cocktail regimens along with 50 unit/kg of unfractionated heparin diluted in 10 ml of saline.

Results: A total of 1250 patients were included in this study. There were 250 patients in each group. All the groups were age and sex matched. Compared to saline, the occurrence of clinical and angiographic radial artery spasm was significantly low with all cocktail regimens along with 50 units/kg of unfractionated heparin diluted in 10 ml of saline.

Conclusion: Venous bubbles were assessed by pulse wave Doppler in the right ventricular outflow tract from the parasternal short axis view and their detection was performed for 1 min. Arterial bubbles were detected by means of transcranial color-coded sonography in the middle cerebral artery, bubbles were detected for 1 min during native breathing and subsequently three times for 40 s after a Valsalva maneuver. Tests were considered positive if one or more bubbles were detected.

Results: After the 18-m dive, venous bubbles were detected in 74% of divers in the PFO group vs. 80% in the closure group (p=0.1), and arterial bubbles were detected in 32% vs. 0%, respectively (p=0.02). After the 50-m dive, venous bubbles were detected in 88% vs. 100%, respectively (p=0.01) and arterial bubbles were detected in 88% vs. 0%, respectively (p=0.01). The typical appearance of post-dive venous bubbles in the right heart chambers and no arterial bubbles in the left heart chambers in a diver with a PFO closure device is shown in Figure 1.

Figure 1. Transthoracic echocardiography: post-dive venous bubbles in right heart chambers in a patient after catheter-based patent foramen ovale closure.

Conclusion: Venous bubbles were assessed by pulse wave Doppler in the right ventricular outflow tract from the parasternal short axis view and their detection was performed for 1 min. Arterial bubbles were detected by means of transcranial color-coded sonography in the middle cerebral artery, bubbles were detected for 1 min during native breathing and subsequently three times for 40 s after a Valsalva maneuver. Tests were considered positive if one or more bubbles were detected.

Results: Intra-arterial Anti-spasm Regimens to Prevent Radial Artery Spasm During Transradial Coronary Angiography
Babu Eshumali, Santhosh Satheesh, Balachander Jayaraman
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regimens except for Nicorandil. There was not much hemodynamic alteration with 200μg Nitroglycerin. The incidence of side effects of Nitroglycerin such as headache was also rare. In general, the combination of Nitroglycerin and Calcium Channel Blocker was better than either Nitroglycerin or Nicorandil in preventing the spasm of radial artery. Verapamil 2.5mg used in combination with Nitroglycerin 200μg is better in preventing radial artery spasm than combination of Diltiazem 5mg and Nitroglycerin 200μg. Rashles and vasovagal phenomenon was seen to occur more commonly with Diltiazem.

**Conclusion:** The occurrence of radial artery spasm during transradial coronary angiography is prevented by intrarterial injection of Nitroglycerin with or without calcium channel blocker. The best regimen to prevent spasm of radial artery in an ideal angiography is prevented by intraarterial injection of Nitroglycerin with or without Calcium channel blocker.

TCTAP A-121

**Transradial Versus Transfemoral Intervention in ST-segment Elevation Myocardial Infarction Patients Undergoing Primary Percutaneous Coronary Intervention with Drug-eluting Stents**

Byung Ok Kim11, Min Soo Hyun12, Won Yong Shin13, Hyunmin Choe14, Keum Soo Park7, Kyoo Rok Han8, Byung Ryul Cho9, Kwang Soo Cha10, Chuncheon, Korea (Republic of), 10Pusan National University Hospital, Busan, Korea (Republic of).

**Background:** Transradial access (TRA) for percutaneous coronary intervention and diagnostic coronary angiography has become an emerging trend in the routine practice in most catheterization laboratory as it reduces the incidence of major access site complications such as bleeding and haematoma. Radial artery spasm and perforation are the main reasons for converting a procedure to femoral access. We prospectively investigate the use of Sheathless EauCath (Asahi Intecc, Aichi, Japan) in cases of radial artery spasm and perforation.

**Methods:** From Jan 2011 till Oct 2013, all patients with angiographically documented radial artery spasm with or without perforation and failure of conventional 5 or 6 Fr diagnostic or guiding catheters to cross the artery despite of repeated intra-arterial nitroglycerin and/or verapamil were elected to attempt for Sheathless EauCath. The procedural success, angiography of the forearm post procedure and access site outcomes were evaluated.

**Results:** 36 patients, a mean age of 61±9 years with 64% male, had significant radial artery spasm (n=25, 69%) or perforation (n=11, 31%) fulfilled the criteria for the use of Sheathless EauCath. Procedural indications were stable angina in 18%, unstable angina in 3%, non-ST elevation myocardial infarction (NSTEMI) in 54%, ST-elevation myocardial infarction (STEMI) in 15% and 10% for other diagnostic procedures. 6.5 Fr Sheathless EauCath was used in 34 patients (94%) and 7.5 Fr was used in the remaining 2 patients (6%). The Sheathless EauCath was able to overcome the radial spasm with or without perforation in all cases with all patients achieved a successful procedural outcome. Of the 11 patients who had perforation of the radial artery, 10 patients (91%) had no post-procedural complications. There was no case of haematoma or access site related bleeding issues.

**Conclusion:** The Sheathless EauCath can be used safely to overcome the radial artery spasm and perforation during transradial coronary intervention or diagnostic procedures.

TCTAP A-122

**The Use of Sheathless Eaucath to Overcome Radial Artery Spasm and Perforation**

Michael Liang1, Sonia Burgess2, Andrew Aitken3, Phil Matissi4, Mark Simmons4, Anil Ranchord5, Scott Harding5

1Wellington Hospital, Wellington, New Zealand, 2Liverpool Hospital, Sydney, Australia.

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TCTAP A-123

**Feasibility of Transradial Coronary Intervention in Patients with Cardiac Arrest Caused by Acute Coronary Syndrome**

Yukio Mizuguchi, Akihiko Takahashi, Takeshi Yamada, Norimasa Taniguchi, Shun'uke Nakajima, Tetsuya Hata

Sakurakai Takahashi Hospital, Kobe, Japan

**Background:** The latest European Society of Cardiology guidelines for the management of acute myocardial infarction (AMI) in patients with ST-segment elevation recommend transradial coronary intervention (TRI) to reduce the risk of vascular complications. We evaluated the feasibility of TRI in patients with AMI complicated by cardiac arrest.

**Methods:** We retrospectively evaluated 20 consecutive patients with AMI who required an extracorporeal membrane oxygenator (ECMO) because of cardiopulmonary arrest resistant to conventional cardiopulmonary resuscitation. Percutaneous access sites and evaluation criteria, including onset-to-ECMO time, door-to-balloon time, and 30-day survival, were investigated.

**Results:** TRI was performed in 13 patients, whereas the other 7 patients underwent transfemoral coronary intervention (TFI). No significant differences in onset-to-admission time (mean ± SD: 26.8 ± 14.6 vs. 17.0 ± 13.3 min), onset-to-ECMO time (41.8 ± 18.8 vs. 39.0 ± 16.6 min), and door-to-balloon time (61.4 ± 19.1 vs. 79.3 ± 20.7 min) were observed between TRI and TFI groups.

**Conclusion:** The feasibility of TRI in patients with cardiac arrest due to acute coronary syndrome with ECMO support was similar to that of transfemoral intervention.