thrombus without evidence of ascending aortic pathology has rarely been reported.

While thrombi in the right and left sinus of Valsalva have been reported in the literature, our case is the first of acute myocardial infarction caused by a non-embolic NCS thrombotic mass.

The absence of a possible predisposing factor leading to thrombus formation (e.g. aortic valve and/or aortic root abnormalities, inflammatory disease or coagulation dysfunction) should be considered unusual.

The free floating extremity of the thrombus prolapsed into the right coronary ostium during diastole, causing intermittent occlusion and the consequent inconstant ST segment elevation and the A-V block.

The coronary perfusion was immediately restored by the right coronary artery selective cannulation using a side hole guiding catheter (JR4) and the coronary wiring. So far the patient could be transferred to the operating room in a stable hemodynamic status.

Conclusion: The key point of this case report is that a multidisciplinary approach to such a challenging clinical scenario has been successful.

A diagnostic critical mind represents the main step for a quick and correct diagnosis and once again emphasizes the role of the heart team in the decision making algorithm.

Legends:

Disclosures:
Giuseppe Vadala: This author has nothing to disclose.
Antonio Micari: This author has nothing to disclose.
Daniela Guttila: This author has nothing to disclose.

A-023

Title: Optimal Site of Inflow Cannula Placement for Temporary Mechanical Circulatory Support in Acute Post-Infarction Ventricular Septal Defect – A Computer Simulation Study

Category: Acute Coronary Syndromes, Myocardial Infarction, Thrombectomy and Vulnerable Plaque

Authors: Matija Jelen, Department of Cardiovascular Surgery, University Medical Center Ljubljana, SI, Slovenia; Blaž Jelen, Faculty of Mathematics, University of Ljubljana, Slovenia; Bojan Vrtovec, Department of Cardiology, University Medical Center Ljubljana, Slovenia; Ivan Knežević, Department of Cardiovascular Surgery, University Medical Center Ljubljana, SI, Slovenia

Catheterization and Cardiovascular Interventions DOI 10.1002/ccd. Published on behalf of The Society for Cardiovascular Angiography and Interventions (SCAI).

Background: Post-infarction ventricular septal defect (VSD) is a rare complication of acute myocardial infarction. A subgroup of these patients present with cardiogenic shock refractory to medical therapy and in need of immediate percutaneous mechanical circulatory support.

The two most common approaches are placement of femoral veno-arterial ECMO and placement of percutaneous left ventricular assist such as TandemHeart with the inflow cannula in the left atrium.

Methods: A computer model of the cardiovascular system with VSD was developed where influence of VSD size, location of the inflow cannula (right atrium or left atrium) and degree of mechanical circulatory support on shunt flow, pulmonary to systemic blood flow ratio and unloading of both ventricles was analyzed.

Results: The model showed significantly higher flow through VSD when right atrial cannula was used. The flow increased with higher pump flow, whereas with the cannula in the left atrium the flow through VSD decreased with increasing support (figure 1). Despite the differences in shunting, there were no significant differences in pulmonary to systemic flow ratio and the workload of both ventricles between the two modalities. Right atrial pressure was slightly lower with right atrial cannula, whereas left atrial pressure was lower with left atrial cannula.

Conclusion: Mechanical circulatory support with inflow cannula in the left atrium significantly reduces flow through VSD and slightly reduces left atrial pressure as compared to inflow cannula placed in the right atrium. However, in terms of pulmonary to systemic flow ratio and the workload of both ventricles, there are no significant differences between the two modalities.

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Bojan Vrtovec: This author has nothing to disclose.
Ivan Knežević: This author has nothing to disclose.

A-027

Title: Correlation of Pressure Drop and Lesion Flow Coefficients with Epicardial and Microvascular Disease Indices in Humans

Category: Acute Coronary Syndromes, Myocardial Infarction, Thrombectomy and Vulnerable Plaque

Authors: Srikara Viswanath Pechukha, University of Cincinnati, United States; Krunth Kumar Kolli, University of Cincinnati, United States; Bojan Vrtovec, Department of Cardiovascular Surgery, University Medical Center Ljubljana, SI, Slovenia; Ivan Knežević, Department of Cardiovascular Surgery, University Medical Center Ljubljana, SI, Slovenia

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States; Mohamed Effat, University of Cincinnati College of Medicine, United States; Imran Afzil, University of Cincinnati College of Medicine, United States; Rupak K Banerjee, University of Cincinnati, United States

**Background:** During cardiac catheterization, coronary diagnostic parameters are used to assess the functional severity of blockages. For the detection of epicardial stenosis (%AS), hyperemic stenosis resistance index, hSRv, defined as the ratio of pressure drop across the stenosis (Ap) to averaged peak velocity (APV), was proposed. For assessing the microvascular resistance, hyperemic microvascular resistance index, hMRv, defined as the ratio of distal pressure to APV, was proposed. However, in order to simultaneously assess the %AS and the microvascular resistance, based on fundamental fluid dynamic principles, we have defined two parameters, Pressure Drop Coefficient (CDP), based on both pressure and flow (functional measurements), and Lesion Flow Coefficient (LFC), that combines area stenosis (%AS) and functional measurements. We hypothesize that the CDP will correlate better when hSRv and hMRv are combined and the LFC will correlate when hSRv, hMRv and %AS are combined.

**Methods:** The protocol for this clinical study was approved by the IRB at the University of Cincinnati and Veteran Affairs Medical Center. 20 Patients with reversible perfusion defects as per rest and stress single photon emission computed tomography (SPECT) scan were consented and enrolled in the study. Simultaneous pressure and flow readings were obtained using a 0.014" dual sensor Combowire® (Volcano Therapeutics Inc.). As an extension to our previous study (Circulation 2012;126: 21 supplement): A19944), the data was re-assessed to calculate the parameters, based on their formulae, %AS was obtained from quantitative coronary analysis using edge detection technique (GE Centricity). Regression analysis was done using SAS software. p < 0.05 was used for statistical significance.

**Results:** The correlation coefficient (r) of CDP with hSRv (r = 0.88) and hMRv (r = 0.56) increased when the parameters were combined (r = 0.93, p < 0.05). The combined correlation of LFC with hSRv, hMRv and %AS was higher (0.93, p < 0.05) in comparison to its individual correlations (hSRv + %AS, r = 0.88; hMRv + %AS, r = 0.87).

**Conclusion:** Functional parameter, CDP correlated significantly when hSRv and hMRv are combined. LFC, a combined functional and anatomical parameter, correlated significantly when hSRv, hMRv, and %AS are combined.

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- Srikara Viswanath Perukhanna: This author has nothing to disclose.
- Kranthi Kumar Kollu: This author has nothing to disclose.
- Mohamed Effat: This author has nothing to disclose.
- Imran Afzil: This author has nothing to disclose.
- Rupak K Banerjee: This author has nothing to disclose.

**A-031**

**Title:** Time to Treatment and Outcomes of Patients who Develop ST Elevation Myocardial Infarction While In-Hospital

**Category:** Acute Coronary Syndromes, Myocardial Infarction, Thrombectomy and Vulnerable Plaque

**Authors:** Ross Gerberich, Minneapolis Heart Institute Foundation at Abbott Northwestern Hospital, United States; Anil Poulse, Minneapolis Heart Institute Foundation at Abbott Northwestern Hospital, United States; Ivan Chavez, Minneapolis Heart Institute Foundation at Abbott Northwestern Hospital, United States; Stephanie Rutten-Ramos, Minneapolis Heart Institute Foundation at Abbott Northwestern Hospital, United States; Gabriel Rodriguez, Minneapolis Heart Institute Foundation at Abbott Northwestern Hospital, United States; Michael Claussen, Minneapolis Heart Institute Foundation at Abbott Northwestern Hospital, United States; Marc Newell, Minneapolis Heart Institute Foundation at Abbott Northwestern Hospital, United States; Timothy Henry, Minneapolis Heart Institute Foundation at Abbott Northwestern Hospital, United States

**Background:** Time to treatment for STEMI patients presenting to PCI hospitals has improved dramatically over the last 10 years, in particular for patients using EMS. Basingly no data exists regarding time to treatment or outcomes for patients who develop STEMI while already in-hospital. Our goal was to evaluate the clinical characteristics and clinical outcomes of who develop STEMI while in-hospital compared to those admitted via EMS or self/family driven.

**Methods:** Using a comprehensive prospective regional STEMI program database, we evaluated the outcomes of STEMI patients based upon arrival mode, with categories consisting of EMS, self/family, or in-hospital presentation.

**Results:** Of the 3,732 consecutive STEMI patients who presented to the Minneapolis Heart Institute at Abbott Northwestern Hospital regional STEMI system from 4/03 to 10/12, 950 (25.5%) were admitted directly to the PCI facility. The baseline characteristics and outcomes for the arrival groups are shown in Table 1. Patients in-hospital presentation of STEMI (n = 77) were older with high BMI and were more likely to present with pre-PCI cardiac arrest and cardiogenic shock. When adjusted for differences in baseline characteristics, longer door to balloon times were associated with in-hospital presentation (83 minutes) than those who arrive via EMS (52 minutes) or self/family driven (71 minutes). The in-hospital STEMI patients had increased length-of-stay as well as increased mortality at 1 year (18.2% vs. 10.1% vs. 6.9%; p < 0.001). These patients frequently had high risk and complex presentations including 28.6% who were already admitted with ACS which later developed into STEMI, 24.7% post-surgery, 13% admitted with respiratory failure, 9% following ventricular fibrillation, 6.5% with in-stent thrombosis, and 6.5% following clinical stress testing.

**Conclusion:** Patients who develop STEMI while in-hospital represent a unique and high risk subset of patients. These patients have longer time to treatment and length-of-stay and higher mortality than those who present via EMS or are self/family driven.

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- Ross Gerberich: This author has nothing to disclose.
- Anil Poulse: This author has nothing to disclose.
- Ivan Chavez: This author has nothing to disclose.
- Stephanie Rutten-Ramos: This author has nothing to disclose.
- Gabriel Rodriguez: This author has nothing to disclose.
- Michael Claussen: This author has nothing to disclose.
- Marc Newell: This author has nothing to disclose.
- Timothy Henry: This author has nothing to disclose.

**A-032**

**Title:** The Prevalence and Role of Angiographic Characteristics in Angiographically Determined Stent Thrombosis

**Category:** Acute Coronary Syndromes, Myocardial Infarction, Thrombectomy and Vulnerable Plaque

**Authors:** Ryan R. Reeves, UCSF, United States; Mittal P. Patel, UCSF, United States; Rhim J. Armstrong, UC Davis Medical Center, United States; Stephen W. Waldo, UCSF, United States; Khung-Keng Yeo, UC Davis Medical Center, United States; John S. MacGregor, UCSF, United States; Kendrick A. Shunk, UCSF & San Francisco VA Catheterization and Cardiovascular Interventions DOI 10.1002/ccd. Published on behalf of The Society for Cardiovascular Angiography and Interventions (SCAI).