

## Impact of pre-existing conditions on peri-procedural coronary diameters

Cameron McClaine<sup>1</sup>, Keyur Vora<sup>1</sup>, Rohan Dharmakumar<sup>1</sup>

<sup>1</sup>Krannert Cardiovascular Research Center, Indiana University School of Medicine

**Background:** Reperfusion therapy for acute myocardial infarction (AMI) by percutaneous coronary intervention (PCI) with stent implantation is associated with a significant reduction in immediate mortality. A long-term critical complication of PCI is in-stent restenosis (ISR). However, the factors leading to restenosis remain unclear, albeit changes in coronary diameters post-PCI have been suggested to be important in stent restenosis. We hypothesize that pre-existing conditions such as hypertension, diabetes, dyslipidemia, and smoking can affect the coronary artery diameters after PCI and contribute to in-stent restenosis.

**Project Methods:** We recruited 26 AMI patients (age: 50-70 years; male 22) who were revascularized with PCI and studied whether pre-existing hypertension (HTN; n=10), type II diabetes mellitus (DM; n=5), dyslipidemia (DLP; n=3), and smoking (n=8) had independent contribution to changes in coronary artery diameter pre- and post-PCI. We measured segment-wise end-diastolic luminal cross-sectional diameter of left main (LM), left anterior descending (LAD), left circumflex (LCx), and right coronary arteries (RCA) from invasive coronary angiograms before and after PCI.

**Results:** We found that the LM showed insignificant change in cross-sectional diameter in HTN, DM, and smoking groups. However, DLP group of patients showed an increase in diameter post-PCI. Proximal segment of LAD in HTN patients and all LAD segments in DM group were significantly increased in diameter. Proximal LCx was reduced in diameter in DLP group. RCA distal and PDA segments in HTN group as well as PDA segment in DM group were reduced in diameter post PCI.

**Potential Impact:** Although following PCI, proximal and mid segments increase in diameter by 5-20%; and distal segments by 20-30%, our early findings indicate that changes in cross-sectional diameter of the coronary segments can fall outside these ranges when pre-existing conditions are present. Follow-up studies are needed to evaluate the relation between changes in coronary diameters and in-stent restenosis.