**Title: ACC 23: RENOVATE-COMPLEX-PCI: IVUS Vs OCT Optimisation in Complex PCI**

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**Dr Joo-Yong Hahn**

"- I'm Joo-Yong Hahn from Samsung Medical Centre, Seoul, Korea. I'm an interventional cardiologist, and my main research topic is myocardial infarction, antiplatelet therapy, and intravascular imaging, and other many subsets.

What was the rationale behind this trial?

Several trials have shown lower rates of adverse clinical events after IVUS-guided PCI, compared with angiography-guided PCI, however, none of them have been considered to be definitive, owing to limited sample size, relative short follow-up duration, and the inclusion of highly specific lesion subsets. Several years ago, our group have already reported that, among patients undergoing complex PCI, the use of IVUS was significantly associated with lower rates of cardiac death and other adverse cardiac events. However, to confirm the benefit of intravascular imaging, large randomised trial is needed. Therefore, we conducted the RENOVATE-COMPLEX-PCI to investigate intravascular imaging-guided PCI would improve clinical outcomes compared with angiography-guided PCI in patients with complex coronary artery lesions.

What was the study design and patient population?

The current trial was an investigator-initiated, prospective, randomised, multicenter, open-label study. Patients with complex coronary artery lesions were randomly assigned in two-to-one fashion to undergo either intravascular imaging-guided PCI or angiography-guided PCI. Complex coronary artery lesions included unprotected left main, true bifurcation, CTO, diffuse long lesions, et cetera. We had minimal exclusion criteria to enrol a broader spectrum of patients with complex coronary artery lesions. PCI and the imaging acquisition were performed with the use of a standard technique. In the intravascular imaging group, the choice between IVUS or OCT were at the operators' discretion. The primary end point was target vessel failure, defined as a composite of cardiac death, target vessel-related MI, or clinically-driven target vessel revascularization.

What are the key findings presented at ACC 23?

From May 2018 to May 2021, a total of 1,639 patients underwent randomization, with 1,092 assigned to the intravascular imaging group and 547 assigned to the angiography-guided PCI group. At three years, the cumulative instance of the primary end point was significantly lower in the intravascular imaging-guided PCI group, compared with the angiography-guided PCI group, 7.7% versus 12.3%. The difference was statistically significant. One of the important secondary endpoints, a composite of cardiac death or target vessel-related MI, occurred less frequently in the intravascular imaging group, compared with angiography-guided PCI group. There were no apparent group difference with regard to procedure-related safety event.

How should we translate these findings into practice?

Our trial demonstrated intravascular imaging reduced the risk of target vessel failure compared with angiography-guided PCI in patients with complex coronary artery lesions. All over the world, the penetration of intravascular imaging is quite low, less than 15% in the US. I hope the use of intravascular imaging can be increased in patients with complex coronary artery lesions. Currently, major guidelines recommend IVUS or OCT be considered in patients with special lesions, Class 2A, but after publication of our trial, I hope the class would be upgraded as Class 1.

What are the next steps?

One of the limitations of our trial is that we exclusively enrolled Korean patients, which might limit the generalizability of the trial results, and the use of intravascular imaging adds cost to the PCI procedure, so the analysis for cost effectiveness is warranted.