BACKGROUND Previous studies have demonstrated that functional percutaneous coronary intervention (PCI) result is suboptimal in the majority of patients treated with long drug-eluting stents, and a significant proportion of patients remain ischemic (fractional flow reserve [FFR] <0.80) after PCI. We sought to investigate whether the use of intravascular ultrasound (IVUS) has an impact on the stent length and functional PCI result in treating long (>30 mm) coronary artery lesions.

METHODS A total of 154 patients with stable angina or non-ST-segment elevation acute coronary syndrome with a functionally significant coronary artery lesion (FFR <0.8) requiring stent length ≥30 mm were enrolled in the study; 74 patients underwent angiography and FFR-guided PCI (angiography/FFR group), and in 80 patients PCI was guided with the use of IVUS (IVUS group). IVUS was performed before PCI and was used to select stent implantation sites (optimally with a plaque burden <50%) and stent diameter (distal external elastic membrane diameter ~0.25 mm). Operators were trying to reach optimal PCI results according to IVUS of 1) good stent position, 2) good stent expansion (minimal stent area [MSA] >90% of distal reference lumen area and/or MSA >5.5 mm²); 3) plaque burden 5 mm proximal and distal to the stent <50%; and 4) no stent edge dissection.

RESULTS Results are presented in the Table. Baseline clinical characteristics were similar in both groups. The target vessel in the majority of patients treated with long drug-eluting stents, and a significant proportion of patients remain ischemic (fractional flow reserve [FFR] <0.80) after PCI. We sought to investigate whether the use of intravascular ultrasound (IVUS) has an impact on the stent length and functional PCI result in treating long (>30 mm) coronary artery lesions.

CONCLUSION The use of IVUS in treating diffuse coronary artery disease resulted in longer stented segments and less ischemic burden after PCI.