branches with >50% stenosis, 19 (28.4%) had FFR<0.80 and among 163 side branches with ≤50% stenosis, 22 (13.5%) had FFR≥0.80 after stent implantation in main vessels. Using receiver-operating characteristic curve, the optimal cutoff value of diameter stenosis of side branch was 54.9% and area under the curve was 0.64 (95% CI 0.58-0.71, p<0.001) with a 41.5% sensitivity, an 83.1% specificity, a 34.7% positive predictive value, an 86.3% negative predictive value and a 75.7% accuracy. Multivariate binary logistic regression analysis identified diameter stenosis (odds ratio [OR] 1.04, 95% CI 1.02-1.06, p<0.001) and reference vessel diameter (OR 0.28, 95% CI 0.10-0.77, p=0.014) of side branch before stent implantation as independent predictors of the side branches with FFR<0.80 after stent implantation.

Conclusion: Most side branch lesions do not have functional significance after stent implantation in the main vessel and quantitative coronary angiography is unreliable in assessing the functional severity of these lesions.

TCT-704
Improving SYNTAX Score with Fractional Flow Reserve
Marcio Novara1, Marco Bollati1, Fabrizio D’Ascenzo1, Anna Gonella1, Giuseppe Biondi-Zoccai2, Claudio Moretti2, Pierluigi Omedè1, Giuseppe Gaita1, Imad Shehbat1
1Interventional cardiology, Department of Cardiology, S. Giovanni Battista Molinette Hospital, Torino, Italy; 2Division of Cardiology, University of Modena and Reggio Emilia, Modena, Italy

Background: SYNTAX score (SS) predicts clinical outcome after percutaneous coronary intervention (PCI), basing on data from coronary angiograms alone. However, in clinical setting, decision-making on myocardial revascularization should be guided by the presence of inducible ischemia. Fractional flow reserve (FFR) is a functional test that estimates the haemodynamic significance of a single lesion. We aimed to investigate the relationship between the SYNTAX and a functional SYNTAX score guided by FFR (FSS).

Methods: FFR was collected in all the stenosis in the 50% to 90% angiographic category of severity of 39 consecutive patients with stable multivessel CAD. SS was calculated as usual. A functional SYNTAX score (FSS) was determined by only considering ischemia producing lesion (FFR ≤ 0.80). A comparison between two groups, in which patients were divided according to their tertiles redistribution, was performed.

Results: FFR was totally obtained in 97 lesions, with a mean value of 0.82±0.10. Of the stenosis in the 50%-70% and 70%-90% angiography category, FFR was ≥ 0.80 in 68% and 16% of cases, respectively. In all patients, SS was 20.8±4.4 and FSS 12.4±8.7 (p=0.001). FSS was significantly inferior to the SS, with a mean deviation of 8.4±7.4 (p=0.05). The correlation between the two methods was globally weak (r=0.62, rho=0.563; p<0.001), particularly in the 3-vessels and in the medium/high SS groups. After determining FSS, more than 30% of patients moved to a lower risk group in the following way: from 61% to 87% in the low (0-22) group, from 26% to 10% in the medium (23-32), and from 13% to 3% in the high risk (>32) group (p<0.003). No differences were found between patients whether or not reclassified in lower tertiles group. No MACCE were detected at 30 days follow-up.

Conclusion: In patients with multivessel CAD, angiography alone is not able to identify ischemia-inducing lesion. Implementation on conventional SS with FFR seems to be a more rational approach to guide revascularization. FSS decreases the number of functionally significant lesions and reclassifies a significant portion of high risk patients in a lower risk profile.

TCT-705
Intravascular Ultrasound Characteristics in Patients with Intermediate Coronary Lesions and Borderline Fractional Flow Reserve Measurements
Hyoang-Mo Yang, Hong-Seok Lim, Seung-Joo Tahk, So-Young Choi, Myeong-Ho Yoon, Byoung-Joo Choi, Dai-Yeol Joe, Xieng Jie Jin, Jin-Sun Park, Gyo-Seung Hwang, Joon-Han Shin
Ajou University School of Medicine, Suwon, Republic of Korea

Background: The fractional flow reserve (FFR) between 0.75 and 0.80 has been established as a borderline. Revascularization of borderline FFR is controversial and it is not known for morphologic characteristics of borderline FFR lesion. The objective of this study is to find out intravascular ultrasound (IVUS) characteristics in intermediate coronary lesions with borderline FFR (0.75 ≤ FFR < 0.80).

Methods: Both IVUS and FFR were performed in 137 left anterior descending artery (LAD) in patients with intermediate coronary artery stenosis (40%-70% diameter stenosis). We divided lesions into 3 groups according to FFR value; ischemic (IS, n=16, FFR<0.75), borderline (BD, n=36, 0.75 ≤ FFR<0.80) and non-ischemic (NI, n=85, FFR ≥0.80). We compared IVUS parameters including minimal luminal area, lesion length, plaque burden and volumetric parameters among 3 groups.

Results: There was no difference in reference vessel diameter among 3 groups. Diameter stenosis is more severe (63.2±8.5 vs 58.3±8.5 vs 52.8±8.3, p=0.001) and minimal luminal diameter is smaller (1.2±0.3 vs 1.4±0.3 vs 1.6±0.3 mm, p=0.001) in IS and BD group than NI group, respectively. On IVUS analysis, minimal luminal area is smaller (2.3±0.9 vs 2.6±1.0 vs 3.6±1.6 mm², p<0.001), IVUS lesion length is longer (27.3±9.9 vs 26.9±7.6 vs 17.8±7.2 mm, p=0.001), plaque burden is larger (79.7±4.7 vs 74.7±2.7 vs 69.9±2.4, p=0.001), plaque volume is larger (207.1±89.9 vs 195.0±79.6 vs 134.4±83.6mm³, p<0.001) and percent atheroma volume is larger (61.4±8.5 vs 59.2±5.1 vs 54.5±8.0, p<0.001) in IS and BD group than NI group, respectively. However, post-hoc analyses showed there were no significant differences between IS and BD group in all IVUS parameters.

Conclusion: In intermediate coronary lesions, there were no differences in IVUS characteristics between borderline and functionally significant FFR, but the stenosis and amount of atheromatous plaque are more severe in these 2 groups than non-ischemic lesions. FFR cut-off point of 0.80 seems to be appropriate criteria for coronary revascularization in intermediate lesion of LAD.