PREDICTORS AND MECHANISM OF LESION PROGRESSION AT THE SIDE BRANCH OSTIUM AFTER MAIN VESSEL STENTING: SERIAL INTRAVASCULAR ULTRASOUND ANALYSIS

i2 Poster Contributions
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Background: The majority of bifurcation lesions are treated with 1-stent technique nowadays. However, the predictors and mechanism of lesion progression at the side branch (SB) ostium after 1-stent technique have not been fully elucidated.

Methods: We studied 72 bifurcation lesions with post-procedural and 9-month follow-up intravascular ultrasound (IVUS) images for both main vessel (MV) and SB. All lesions were treated with drug-eluting stents by MV stenting with or without kissing ballooning. Lesion progression at the SB ostium was defined as decrease of the minimum lumen area (MLA) at follow-up compared with immediately after procedure. Plaque area was calculated as external elastic membrane (EEM) area - lumen area. Percent plaque area was calculated 100 x plaque area/EEM area. Percent plaque area was calculated 100 x plaque area/EEM area.

Results: True bifurcation was noted in 23 lesions (32%) and left main lesions were observed in 29 lesions (40%). Final kissing ballooning was performed in 57 lesions (79%). At the SB ostium, follow-up MLA significantly correlated with post-procedural MLA (4.0±1.9 mm² and 4.3±2.3 mm², r=0.82, p<0.001), but lesion progression at the SB ostium developed in 37 lesions (51%). Left main lesions were significantly associated with lesion progression at the SB (69% in the left main versus 40% in the non-left main lesions, p=0.01). However, true bifurcation, angle between the MV and SB, and final kissing ballooning were not associated with lesion progression at the SB. Among IVUS parameters, change of the EEM area (-1.1±2.2 mm² versus 0.5±0.9 mm², p<0.001), but not change of the plaque area (0.1±1.6 mm² versus -0.2±0.9 mm², p=0.40), was associated with lesion progression at the SB ostium. Although the post-procedural and follow-up plaque area was significantly larger in the SB with lesion progression than those without lesion progression, percent plaque area was not significantly different between 2 groups.

Conclusions: The SB lesion progression seems to be more frequent in the left main lesions than in the non-left main lesions. Serial IVUS analysis suggests that the negative remodeling be associated with the SB lesion progression.