Conclusions: In small coronary arteries (<2.7 mm in diameter), QCA underestimates lumen diameters compared with IVUS, especially in long, calcified lesions located within the mid and distal LAD and distal RCA segments.

TCT-655
Evaluation of Aortocoronary Saphenous Vein Graft Disease Using Serial Intravascular Ultrasound Imaging. Insights From The Cardiac Catheterization For Bypass Graft Patency Rate Optimization (CABG-PRO) Study

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Background: Aortocoronary saphenous vein grafts (SVG) are widely used for coronary surgical revascularization but have high rates of early and late failure. We sought to examine the pathogenesis of early saphenous vein graft failure using serial intravascular ultrasound imaging (IVUS).

Methods: IVUS was performed in 11 SVGs in 10 patients at 4-7 days and at 12 months post surgery. None of the grafts examined showed any angiographic abnormalities either at baseline or at follow up. Minimum lumen diameter (MLD), lumen cross-sectional area (LCSA) and vessel cross-sectional area (VCSA) were measured. Intimal area (IA) was calculated as the difference of LCSA and VCSA while %IA was defined as the ratio of IA and VCSA. Intima thickness (IT) was calculated by the difference of average vessel lumen diameter and average lumen diameter divided by two. Echoplaque 4 software (Indec, Mountain View, CA) was used for all IVUS analyses.

Results: Between the early postoperative period and 12 months post CABG significant decreases were observed in mLĐ (4.06±1.02 vs. 3.20±1.77 mm, p<0.001), LCSA (14.92±4.55 vs. 9.58±4.92 mm2, p=0.002) and VCSA (22.71±5.77 vs. 18.90±5.29 mm2, p=0.04). Conversely, significant increases were observed in IT (0.51±0.29 vs. 0.73±0.15 mm, p<0.003), IA (7.78±1.86 mm2 vs. 9.32±1.78 mm2, p=0.09) and percent IA (35±6% vs. 51±1%, p<0.0001).

Conclusions: Lumen loss in SVG is evident during the first postoperative year and is due to a combination of wall thickening and negative remodeling. These findings have important implications on the pathogenesis of early SVG failure and potential treatment targets.