

**Predictors of Side Branch Occlusion after coronary stenting:
an Intravascular ultrasound study**

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Purpose: Previous studies have indicated that side branch occlusion(SBO) remains a significant problem in coronary bifurcation lesion during percutaneous intervention.

Methods: To evaluate the predictors of SBO by intravascular ultrasound(IVUS), 37 patients(31 males, mean age 56 ± 11 years) were studied at left anterior descending artery(LAD)-diagonal branch(DB) bifurcation lesions before coronary intervention for measurement of plaque characteristics, total plaque area(PA), PA of branch-side semicircle, % area stenosis(%AS) of LAD, the presence of bull's eye in DB, the diameter of LAD and DB, and LAD-DB angle. SBO was defined as persistent reduction of TIMI flow to ≤ 1 at the end of the procedure. Results: Immediately after intervention, SBO occurred in 6/37(16.2%). PA of branch-side semicircle, diameter of DB, ratio of DB to LAD diameter, and ostial diameter of DB significantly affected SBO. Total PA and %AS of LAD were not related to SBO. Multivariate analysis identified that PA of branch-side semicircle was the only predictor of SBO(odds ratio 3.3, 95% confidence interval 1.3 to 8.6, $p=0.014$).

	Non-SBO group (n=31)	SBO group	p value (n=6)
Total PA(mm ²)	8.03 ± 3.07	8.93 ± 3.02	0.514
%AS of LAD(%)	59.87 ± 16.53	58.58 ± 6.71	0.854
PA of branch-side semicircle(mm ²)	2.63 ± 1.12	4.68 ± 1.76	0.001
DB diameter(mm)	2.47 ± 0.43	2.04 ± 0.47	0.033
DB ostial diameter(mm)	2.59 ± 0.45	2.12 ± 0.47	0.027
LAD/DB angle(°)	58.3 ± 4.9	58.7 ± 4.9	0.085

Conclusion: It appears that plaque distribution of LAD is major determinant of SBO. These findings support the theory that plaque shift("snow plow effect") may be the mechanism of SOB following stenting.