Conclusions: The risk of side branch (SB) occlusion is the most important consideration affecting the selection of an optimal intervention strategy in patients undergoing coronary bifurcation intervention. We aim to establish a scoring system to evaluate the risk of SB occlusion.

Methods: 1545 consecutive patients undergoing percutaneous coronary intervention for bifurcation lesions (1601 lesions treated with a single stent technique or main vessel (MV) stenting first strategy) were studied. 1200 lesions were used for the construction of the risk model and score system, 401 lesions were used for validating the model. A multivariable risk score was constructed with incremental weights attributed to each component variable according to their estimated coefficients. SB occlusion after MV stenting was defined as any decrease in TIMI flow grade or absence of flow in SB after MV stenting.

Results: SB occlusion occurred in 118 (7.37%) of 1601 bifurcation lesions. In multivariable analyses, 6 variables (Table 1) were independently associated with the risk of SB occlusion (model C-statistic=0.80 (95% confidence interval [CI]: 0.75 to 0.85) with good calibration). Lesions divided into groups according to the quartile of RESOLVE score: quartile I was determined as low risk group (score: 0-2); quartiles II and III were combined into an intermediate risk group (score: 3-9); and quartile IV described high risk group (score: ≥10). For the 401 lesions included in the validation cohort, the RESOLVE score had a C-statistic=0.77 (95% CI: 0.69 to 0.86), with good calibration. SB occlusion rates in the validation cohort increased significantly across different risk groups from 0.0% in low risk group (67, 10.1%) than low angle group (21, 3.9%) (p=0.0001). Rate of SB occlusion increased significantly across different quartiles of BA: from 3.63% in the first quartile of BA, to 4.71% in quartile II, to 8.14% in quartile III to 12.97% in quartile IV. Multivariable analysis showed that high angle was an independent predictor of SB occlusion (OR: 1.026, 95% confidence intervals [CI]: 1.004-1.043), 5 other angiographic and procedural factors were also significant and independent predictors of SB branch occlusion (Table 1).

Conclusions: High BA was significantly associated with SB occlusion after MV stenting. Plaque distribution at the same side of SB, MV TIMI flow grade before stenting, pre-procedural diameter stenosis of bifurcation core, diameter ratio between MV/SB and diameter stenosis of SB before MV stenting were also independent predictors of SB occlusion.

Predictors | Level | Point | Predictors | Level | Point
--- | --- | --- | --- | --- | ---
1. Plaque distribution | the opposite side of SB | 0 | <50 | 0 | 
| the same side of SB | 1 | [50,70] | 2 | 
2. MV TIMI flow grade before stenting | TIMI III | 0 | ≥70 | 0 | 
| TIMI II | 6 | <70 | 0 | 
| TIMI I | 11 | [70,90] | 4 | 
| TIMI 0 | 17 | ≥90 | 6 | 
3. Diameter ratio between MV/SB | <1.0 | 0 | <50 | 0 | 
| [1.0,1.5) | 2 | [50,70] | 4 | 
| [1.5,2.0) | 6 | [70,90] | 6 | 
| ≥2.0 | 9 | ≥90 | 7 | 

TCT-180
How Bifurcation Angle Impact The Fate Of Side Branch After Main Vessel Stenting: Results From A Large Center
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Background: Bifurcation angle (BA) was thought to impact the risk of side branch (SB) occlusion in coronary bifurcation patients undergoing percutaneous coronary intervention (PCI). We aim to investigate the effect of BA on SB occlusion after main vessel (MV) stenting.

Methods: 1171 consecutive patients undergoing PCI for bifurcation lesions (1200 lesions treated with a single stent technique or MV stenting first strategy) were studied. Lesions were divided into low angle and high angle groups using the median BA (52°): 600 lesions in low angle group (<52°) and 600 lesions in high angle group (>52°). Clinical characteristics, coronary angiography findings, PCI procedural factors and quantitative coronary angiographic analysis data were collected. Multivariate logistic regression analysis was performed to identify independent predictors of SB occlusion.

Results: SB occlusion occurred in 88 (7.33%) of 1200 bifurcation lesions treated with one stent technique or MV stenting first strategy. Rate of SB occlusion was significantly higher in high angle group (67, 10.1%) than low angle group (21, 3.9%) (p=0.0001). Rate of SB occlusion increased significantly across different quartiles of BA: from 3.63% in the first quartile of BA, to 4.71% in quartile II, to 8.14% in quartile III to 12.97% in quartile IV. Multivariable analysis showed that high angle was an independent predictor of SB occlusion (OR: 1.026, 95% confidence intervals [CI]: 1.004-1.043). 5 other angiographic and procedural factors were also significant and independent predictors of SB branch occlusion (Table 1).

Conclusions: High BA was significantly associated with SB occlusion after MV stenting. Plaque distribution at the same side of SB, MV TIMI flow grade before stenting, pre-procedural diameter stenosis of bifurcation core, diameter ratio between MV/SB and diameter stenosis of SB before MV stenting were also independent predictors of SB occlusion.

Independent predictors | p value | OR | 95% CI for OR
--- | --- | --- | ---
High bifurcation angle (°) | <0.0001 | 1.026 | 1.014-1.037
Plaque distribution at the same side of SB | 0.0045 | 1.988 | 1.237-3.194
MV TIMI flow grade before stenting | 0.0001 | 4.204 | 2.099-8.420
Pre-procedural diameter stenosis of bifurcation core (%) | 0.0037 | 1.013 | 1.004-1.021
Diameter ratio between MV/SB | <0.0001 | 5.901 | 2.933-11.872
Diameter stenosis of SB before MV stenting (%) | <0.0001 | 1.029 | 1.018-1.040

TCT-181
A Comparative Prospective Analysis of Drug Eluting Stent with Biodegradable Polymer versus Drug Eluting Stent with Permanent Polymer in Bifurcation Lesions
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Background: Clinical outcomes of percutaneous coronary intervention (PCI) in coronary bifurcation lesions are in general inferior compared to non-bifurcation lesions even when treated using drug eluting stents (DES). Our aim was to compare performance of new Ultimaster DES with bioresorbable polymer with Xience DES with permanent polymer, in this complex clinical setting.

Methods: In the frame of a large (1123 patients), randomized, intercontinental CENTURY II study, 194 patients (269 lesions) had at least one bifurcation lesion treated and randomly assigned to either Ultimaster (95) or Xience DES (99). The study had 100% on-site monitoring and all events were adjudicated by an independent clinical event committee.

Results: There were no significant differences in demographic characteristics, approximately 28% of the patients were female, 30% of the patients had diabetes mellitus, 73% hypertension and 32% had previous MI. Most of the patients were admitted with stable angina (50%). Patients treated with Ultimaster DES had significantly more multivessel disease and consequently multivessel treatment: 57.9% vs. 34.7% (p=0.04); and 43.4% vs. 20.2% (p=0.02), respectively. Most of the bifurcation lesions were classified as 1.1.0 (20%), followed by 1.1.1 (22%) and 0.1.1 (16%) according to “Medina” and most frequent vessel treated was left anterior descending (48%), with no significant differences between the study arms. The number of stent implanted and the total stent length per patient were significantly higher in Ultimaster...