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Impact of Residual Stenosis of Side Branch on Clinical Outcomes in Patients treated with 1-stent technique for Coronary Bifurcation Lesions

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Background: In coronary bifurcation lesions, little is known about the effect of residual side branch (SB) stenosis after main vessel (MV) stenting on long-term clinical outcomes.

Methods: A total of 2,897 consecutive patients who underwent percutaneous coronary intervention using a drug-eluting stent for a coronary bifurcation lesion with a SB ≥ 2.3 mm were enrolled from 18 centers in South Korea. Of these, we analyzed data from 1,563 patients who were treated with 1-stent technique for non-left main coronary bifurcations. We compared bifurcation lesions that survive the 30-day angiographic follow-up of the main stent to those that required a kissing balloon in the residual SB.

Results: In patients treated with 1-stent technique for non-left main coronary bifurcations, residual SB DS ≥50% was associated with a higher risk of cardiac death or myocardial infarction (1.4 versus 3.3%, p < 0.001) and high incidence of target lesion revascularization (TLR), and stent thrombosis. The multivariate analysis revealed a higher risk of cardiac death or myocardial infarction (hazard ratio [HR], 2.52; 95% confidence interval [CI], 1.20; 5.28; P = 0.02) in the residual SB DS ≥50% group compared to the residual SB DS < 50% group.

Table. Clinical Outcomes.

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>%</th>
<th>residual SB DS ≥50%</th>
<th>residual SB DS &lt; 50%</th>
<th>Unadjusted HR</th>
<th>p Value</th>
<th>Adjusted HR</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All cause death</td>
<td>25</td>
<td>2.6</td>
<td>1.48 (0.83-2.66)</td>
<td>0.19</td>
<td>1.14 (0.61-2.12)</td>
<td>0.88</td>
<td></td>
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<tr>
<td>Cardiac death</td>
<td>2</td>
<td>0.2</td>
<td>2.31 (0.45-12.37)</td>
<td>0.17</td>
<td>1.40 (0.68-5.01)</td>
<td>0.32</td>
<td></td>
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</tr>
<tr>
<td>MI</td>
<td>9</td>
<td>0.9</td>
<td>2.26 (1.35-3.81)</td>
<td>0.03</td>
<td>2.00 (1.27-3.20)</td>
<td>0.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiac death or MI</td>
<td>14</td>
<td>1.4</td>
<td>2.83 (1.32-5.62)</td>
<td>0.01</td>
<td>2.52 (1.20-5.26)</td>
<td>0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stent thrombosis</td>
<td>2</td>
<td>0.2</td>
<td>1.87 (0.36-9.50)</td>
<td>0.44</td>
<td>1.44 (0.27-7.69)</td>
<td>0.67</td>
<td></td>
<td></td>
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<tr>
<td>TLF</td>
<td>62</td>
<td>6.3</td>
<td>2.82 (2.43-13.93)</td>
<td>0.33</td>
<td>1.26 (0.53-2.94)</td>
<td>0.59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*T-adj covariates included history of chronic renal failure, bifurcation location, true bifurcation, and SB DS before procedure.

*Define or definite stent thrombosis. TLF = cardiac death or MI; CI = confidence interval; HR = hazard ratio; MI = myocardial infarction; TLF = target lesion failure; TLR = target lesion revascularization.

Conclusions: In patients treated with 1-stent technique for non-left main coronary bifurcations, residual SB DS ≥50% may be associated with a worse clinical outcome compared to residual SB DS < 50%. These findings need to be confirmed in randomized controlled trials.

TCT-186

Clinical and angiographic outcome of mini-crush stenting for the treatment of true coronary bifurcation lesions

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Background: To evaluate the clinical and angiographic outcome of mini-crush stenting for the treatment of true coronary bifurcation lesions. Percutaneous treatment of coronary bifurcations lesions (CBL) is associated with a low procedural success rate and high incidence of target lesion revascularization (TLR), and stent thrombosis. The provisional single-stenting technique was used in 76 bifurcation lesions. Systematic double stenting technique was applied in 18 bifurcations with double BVS in 13 lesions and mixed BVS-DES in 5 lesions (T-stenting in 11 lesions; Mini-crush technique in 6 lesions; V-stenting technique in one lesion). Meticulous lesion preparation with dedicated devices was needed in 19 lesions. Angiographic success was achieved in 99.0%. At median follow-up of 231 days after the procedure, the overall rates of cardiac death, MI, TLR, TFR, and MACE were 0%, 1.2%, 5.9%, 7.1%, and 8.2%, respectively. Definite stent thrombosis occurred in one case after discontinuation of antithrombotic therapy.

Conclusions: Our results suggest that the treatment with BVS is feasible and effective in a real life setting of bifurcation lesions, despite thick strut (> 150 μm) scaffolds and limitation of side-branch access. Improvements in scaffold design may reduce the need for meticulous lesion predilatation with dedicated devices and increase the spectrum of lesions amenable to treatment with BVS.

TCT-187

Procedural Feasibility and Clinical Effectiveness of Bioresorbable Vascular Scaffold in the Treatment of Bifurcation Lesions: Results from a Single Center Experience

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Background: The strut thickness and deliverability of biodegradable vascular scaffold (BVS) may lead to more challenging for bifurcation lesions. Furthermore, all data concerning BVS feasibility for bifurcation lesions are still limited.

Methods: We analyzed clinical outcome data of patients treated with BVS between May 2012 and May 2014. The measured end-points were cardiac death, follow-up myocardial infarction (MI), target lesion revascularization (TLR), target-vessel revascularization (TVR), and major adverse cardiac events (MACE) defined as combination of cardiac death, follow-up MI and TVR.

Results: A total of 100 consecutive bifurcation lesions were successfully treated in 85 patients. The mean age was 62.8 ± 11.6 years, and 88.6% were male. PCI of bifurcation lesions (Medina classification 0,1,1,0, [0,0,1]) were observed in 64 lesions. Provisional single-stenting technique was used in 76 bifurcation lesions. Systematic double stenting technique was applied in 18 bifurcations with double BVS in 13 lesions and mixed BVS-DES in 5 lesions (T-stenting in 11 lesions; Mini-crush technique in 6 lesions; V-stenting technique in one lesion). Meticulous lesion preparation with dedicated devices was needed in 19 lesions. Angiographic success was achieved in 99.0%. At median follow-up of 231 days after the procedure, the overall rates of cardiac death, MI, TLR, TVR, and MACE were 0%, 1.2%, 5.9%, 7.1% and 8.2%, respectively. Definite stent thrombosis occurred in one case after discontinuation of antithrombotic therapy.

Conclusions: Our results suggest that the treatment with BVS is feasible and effective in a real life setting of bifurcation lesions, despite thick strut (> 150 μm) scaffolds and limitation of side-branch access. Improvements in scaffold design may reduce the need for meticulous lesion predilatation with dedicated devices and increase the spectrum of lesions amenable to treatment with BVS.

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2-year outcomes and angiograms from the bifurcation subgroup of the e-BioMatrix registry

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Background: PCI of bifurcation lesions is associated with higher rates of restenosis and stent thrombosis compared to non-bifurcation lesions. In the e-BLS registry we compared the 2-year outcomes of bifurcation and non-bifurcation lesions treated with one or more BioMatrix™ or BioMatrix Flex™ drug-eluting stents (BES). These stents have an abluminal biodegradable polymer coating that releases Biolimus A910. The polymer is fully absorbed within 6–9 months of implantation.

Methods: A total of 504 patients had PCI of at least one bifurcation lesion, 4968 patients were in the non-bifurcation subgroup. The primary endpoint was Major Adverse Cardiac Events (MACE) defined as a composite of cardiac death, myocardial infarction (MI) and clinically-indexed target vessel revascularization (c-TVR) at 12 months. Secondary endpoints were MACE at 30 days, 6 months, 2 years, and 3 stent thrombosis (ST), major bleeding (MB) and total revascularization rates at 30 days, 6 months, 12 months, 2 and 3 years. Dual anti-platelet therapy (DAPT) treatment was mandatory for 6 months and recommended up to 12 months.

Results: Clinical follow-up at 2 years was obtained in 95.2% of the bifurcation subgroup and 93.7% of the non-bifurcation subgroup. DAPT compliance at 2 years was 30.9% vs. 30.5% respectively (p = NS). A single stent strategy was employed in 79.9% of patients. MACE rates at 2 years were 10.9% vs. 6.4% (p < 0.001) in the bifurcation and non-bifurcation groups, respectively. This difference was driven principally by MI (4.7% vs. 2.2%, p < 0.001) and c-TVR (8.1% vs. 3.9%, p < 0.001) with no difference in cardiac death (1.2% ± 1.5%, p = 0.6). Both peri-procedural (1.6% vs. 0.4%, p = 0.002) and spontaneous MIs (2.3% vs. 1.1%, p = 0.2) were