Clinical and Angiographic Features of Small Vessel Stenting in the Drug-Eluting Stent Era

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Objectives: This study was designed to investigate the clinical and angiographic features and procedural outcomes of small-vessel stenting in a real-world experience during the transition era between drug-eluting stents (DES) and bare-metal stents (BMS).

Methods: Using one of the largest single-institutional cohorts, this study evaluated all patients who underwent percutaneous coronary intervention (PCI) from 2002 through-2005. Analysis was restricted to patients receiving a single stent or undergoing balloon-only angioplasty in a single anatomic site. Small-vessel stents (SVS) were defined as 2.00-2.75mm and large-vessel stents (LVS) as 3.00-4.00mm in diameter.

Results: A total of 19,580 stents were placed in 10,396 patients. Of 6,208 patients fulfilling inclusion criteria, 1,630 (26.3%) received SVS, and 4,578 (73.7 %) received LVS. The SVS group had more female (35.5% vs. 26.3%, $p<0.001$) and diabetic (27.9% vs. 24.2%, $p=0.003$) patients than the LVS group. Compared to LVS, SVS lesions were shorter (14.5±5.8mm vs.15.7±6.4mm, $p<0.0001$) and more complex (66% vs. 53% Class B2/C lesions, $p=0.041$). Indicators of procedural difficulty, including: greater contrast volume, number of devices, total inflation time, and fluoroscopy time, were more commonly observed in the SVS group. After adjustment for confounding factors, the incidence of small treatment-vessel diameter was significantly higher amongst the DES versus the BMS group (OR=1.94, 95% CI:1.56-2.36).

Conclusions: In addition to identifying distinct patient, lesion, and procedural performance characteristics, our study, one of the largest single-center experiences in small-vessel PCI, suggests that the availability of DES substantially increased the use of SVS, as opposed to balloon-only angioplasty, in this anatomically challenging setting.