Comparison of drug-eluting stent cell size using micro-CT: important data for bifurcation stent selection.

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AIMS: The size of stent cells is an important design parameter influencing the resulting wall coverage and strut positioning of several bifurcation stenting techniques. Therefore, we report accurate geometrical information on stent cell size of five different stents with the key purpose to assist with stent selection for bifurcation lesions.

METHODS AND RESULTS: We developed an innovative technique to assess cell size with high accuracy based on micro-CT images. In addition, the size of the ostium was calculated for several idealised bifurcations with a cylindrical main and side branch. The cell circumferences of the investigated stents vary substantially, with values between 9.5 and 19.8 mm (or an equivalent maximal cell diameter between 3.0 and 6.3 mm). Comparison of these cell circumferences with the calculated ostium circumferences shows which stents should preferably be used for which bifurcations, as these stents have cells that can be sufficiently enlarged by dilating through the side.

CONCLUSIONS: The cell sizes of the investigated stents differ considerably. This should be taken into account when applying a particular bifurcation stenting technique. The risk on limited main or side branch patency due to obstructing stent struts can be minimised by using the reported data for stent selection.