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**Dilating side struts of open cell stents - an in vitro study**

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Background: Open cell stents are frequently used in interventional therapy of congenital heart disease. Overstenting of vessel branches may lead to the need of stent strut dilation.

Methods: In vitro we tested the strut size achievable in Bard Valeo and Cook Formula stents, and the pressure necessary to achieve strut rupture. Balloon position was either perpendicular to the stent or through the lumen through one side strut only.

Results: With the original balloon at nominal pressure, in Valeo stents the side struts could be dilated to ca. 90% of the stent diameter, in Formula stents to ca. 80%. With bigger high pressure woven balloons, strut size increased to ca. 125% of the stent diameter in Valeos, and to ca. 105% in the Formulas. Strut rupture can connect two adjoining struts leading to even bigger diameters. These are dependent on the size of the balloon utilized. Pressures were depended on the balloon utilized.

Discussion: Dilation and overdilation of side struts in open cell stents can be achieved. Dependent on the clinical context, the original balloon used to place the premounted stent can be used to achieve strut dilation, but woven high pressure balloons offer higher security. Should a larger diameter be required, these high pressure woven balloons can achieve bigger diameters and even strut rupture.