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The study of coronary dilatation mechanism by Angiosculpt balloon.

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Bachground: The coronary stenotic lesions have been dilated by cutting balloon with 63% plaque compression. The angiosculpt consist of a minimally compliant balloon encircled by a low profile attached spiral nitinol cage. This angiosculpt may be expected the coronary dilatation mechanism as same as cutting balloon. **Objectives**: We clarified the dilatation mechanism of angiosculpt balloon angioplasty for de novo coronary stenotic lesions by the angiography and IVUS. **Methods & Results**: The 63 coronary de novo lesions were enrolled and dilated with nominal pressure. & 30 sec. by angiosculpt, the QCA of angiography and IVUS-findings were analyzed at pre/post intervention, beside these lesions were classified into 2 groups by the extent of dense calcium on Virtual histology, Calcified group;N=25, White>10%, Non-Calcified group;N=38, White<10%. The QCA results at pre/post dilatation in all lesions were 2.7±0.6/2.6±0.6(NS) in RD(mm), 62.5±10.9/30.2±14.6($p<0.0001$) in %DS. The IVUS findings presented at pre/post intervention, Vessel area(mm^2):11.8±4.9/11.8±4.7(NS), Lumen area(mm^2):3.2±0.8/4.5±1.3($p<0.0001$), Plaque area(mm^2):8.5±4.7/7.3±4.1($p<0.0001$). The stenotic lumen was mainly dilated by the compression of the plaque. Concerning with the influence of calcified plaque, plaque area of Calcified group in pre/post was 8.7±3.7/7.2±2.9($p<0.001$), and plaque area of Non-Calcified group was 8.6±5.4/7.5±4.8($p<0.0001$). There were no significant differences in plaque reduction rate between two groups. **Conclusions**: The dilatation mechanism of angiosculpt balloon with nominal pressure was suggested by the plaque compression without vessel expansion or plaque shift.