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Comparison of in vivo longitudinal strength and conformability following Promus Premier and Promus Element implantation in rabbit iliac artery

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Background We previously reported that the Element stent with fewer connector and offset peak-to-peak design showed the least longitudinal strength compared with other stent platforms, whereas it demonstrated the best conformability among the tested stents, thus suggesting that there may be a trade-off between high conformability and high longitudinal strength. Although the new Promus Premier design had additional connectors linking the proximal 3 hoops, the longitudinal strength and conformability have not been investigated in an in vivo setting.Methods We compared the longitudinal strength and conformability of both Promus Element and Promus Premier stent. To investigate the longitudinal strength, constant axial force was applied to the stent edge by a guiding catheter after deployment in the rabbit iliac artery and the amount of longitudinal stent deformation was calculated by measuring stent length. In order to evaluate conformability, stents were deployed crossing over the iliac bifurcation and the bifurcation angles were measured before and after the stent implantation. If the change in the angle was small, the stent was considered to be more conformable.Results The Element demonstrated significantly greater longitudinal compression (Omega 17.4±9.3%, Premier 2.8±2.3%, p=0.0036), but conformability of both stents was not significantly different evidenced by the change in the bifurcation angle (Omega 12.7±0.8%, Premier 25.7±2.4%, p=0.0347). Conclusions In this rabbit model, Promus Premier has high conformability but better longitudinal strength compared with Promus Element.