One fusion device (CJ cage system, WINNOVA) and three different cervical artificial discs (Prodisc-C Nova (DePuy Synthes), Discocerv (Scient'x/Alphatec), Baguera C (Spineart)) were inserted at C5-6 disc space inside the FE model and analyzed. Hybrid loading conditions, under bending moments of 1 Nm along flexion, extension, lateral bending and axial rotation with a compressive force of 50 N along the follower loading direction, were used in this study. Biomechanical behaviors such as segmental mobility, facet joint forces, and possible wear debris phenomenon inside the core were investigated.

The segmental motions as well as facet joint forces were exaggerated after ADR regardless of type of the devices. The Baguera C mimicked the intact cervical spine regarding the location of the center of rotation (COR) only during the flexion moment. It also showed a relatively wider distribution of the contact area and significantly lower contact pressure distribution on the core compared to the other two devices. A 'lift off' phenomenon was noted for other two devices according to the specific loading condition.

The mobile core artificial disc Baguera C can be considered biomechanically superior to other devices by demonstrating no 'lift off' phenomenon, and significantly lower contact pressure distribution on core [1].

1)
Lee JH, Park WM, Kim YH, Jahng TA. A biomechanical analysis of an artificial disc with a shock-absorbing core property by using whole-cervical spine finite element analysis. Spine (Phila Pa 1976). 2016 Jan 27. [Epub ahead of print] PubMed PMID: 26825785.