Cage subsidence

Progression of settling with endplate collapse is defined as subsidence.

Several strategies to improve the surface of contact between an interbody device and the endplate have been employed to attenuate the risk of cage subsidence. 3D-printed patient-specific cages have been presented as a promising alternative to help mitigate that risk, but there is a lack of biomechanical evidence supporting their use. We aim to evaluate the biomechanical performance of 3D printed patient-specific lumbar interbody fusion cages in relation to commercial cages in preventing subsidence.

Methods: A cadaveric model is used to investigate the possible advantage of 3D printed patient-specific cages matching the endplate contour using CT-scan imaging in preventing subsidence in relation to commercially available cages (Medtronic Fuse and Capstone). Peak failure force and stiffness were analyzed outcomes for both comparison groups.

Results: PS cages resulted in significantly higher construct stiffness when compared to both commercial cages tested (>59%). PS cage peak failure force was 64% higher when compared to Fuse cage ($P < .001$) and 18% higher when compared to Capstone cage ($P = .086$).

Conclusions: Patient-specific cages required higher compression forces to produce failure and increased the cage-endplate construct' stiffness, decreasing subsidence risk [1)].

Cervical Cage Subsidence

see Cervical Cage Subsidence.

Lumbar Cage Subsidence

see Lumbar Cage Subsidence.

1)
Fernandes RJR, Gee A, Kanawati AJ, Siddiqi F, Rasoulinejad P, Zdero R, Bailey CS. Biomechanical Comparison of Subsidence Between Patient-Specific and Non-Patient-Specific Lumbar Interbody Fusion Cages. Global Spine J. 2022 Oct 19:21925682221134913. doi: 10.1177/21925682221134913. Epub ahead of print. PMID: 36259252.

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Last update: **2024/06/07 02:53**