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INCIDENCE AND CLINICAL RELEVANCE OF CAGE SUBSIDENCE IN ANTERIOR CERVICAL DISCECTOMY AND FUSION

Introduction/Aim

The placement of intervertebral cages in anterior cervical discectomy and fusion (ACDF) is alleged to provide maintenance of foraminal height. The most common reported cage related complication is subsidence, although whether a correlation between subsidence and clinical outcome exists is controversial. By assessing the available literature, we aimed to solve this controversy.

Materials and Methods

A literature search was performed in PubMed, MEDLINE, Embase, Web of Science, COCHRANE and CENTRAL. Inclusion criteria: ≥ 20 patients, ADCF with cage, subsidence assessed, primary data, paper in English/Dutch. Risk of bias was assessed using adjusted Cochrane checklists.

Results:

Although 85 studies matched the inclusion criteria, 44 of these were excluded due to a (very) high risk of bias. Subsidence was generally defined as ≥ 3 mm loss of height comparing the direct postoperative intervertebral height with the height at last follow-up. Mean incidence of subsidence was 23.6% (range 0-82%). Of all patients, 51% received PEEK cages, 28% received titanium cages, 10% received cage-plate constructions (CPC) and 11% received various other implants. No significant difference in subsidence was found between patients treated with PEEK or titanium cages or CPC (24.2% vs. 22.3% vs. 20.8%; $p=0.333$). Only 9 studies correlated subsidence to clinical outcome; no correlation was established. Only 4 studies correlated subsidence to cage size and/or height; no correlation was established.

Discussion:

Subsidence is a substantial side-effect of cage implantation. Neither a correlation between subsidence and cage material, size or height, nor between subsidence and clinical outcome was established. However, evaluation of these correlations was scarcely performed, and information is so limited that no sound conclusions can be drawn. Since cages are introduced to maintain foraminal height, subsidence of ≥ 3 mm is likely to cause clinical symptoms. If not, the favourable effect of a cage on foraminal height is debatable.

Conclusion:

Subsidence in ACDF with a cage occurs in 24% of patients, but has not been reported to influence clinical outcome. Future studies on this correlation are warranted, in order to establish the additional value of the interposition of a cage in ACDF.