Clinical and radiological outcome after anterior cervical discectomy and fusion with stand-alone empty polyetheretherketone (PEEK) cages.

To evaluate long-term results after one-, two-, and three-level anterior cervical discectomy and fusion (ACDF) with stand-alone empty polyetheretherketone (PEEK) cages. We performed a retrospective review of a consecutive patient cohort that underwent ACDF with stand-alone empty PEEK cages between 2007 and 2010 with a minimum follow-up of 12 months. Radiographic follow-up included static and flexion/extension radiographs. Changes in the operated segments were measured and compared to radiographs directly after surgery. Clinical outcome was evaluated by a physical examination, pain visual analog scale (VAS), and health-related quality of life (HRQL) using the EuroQOL questionnaire (EQ-5D). Analysis of associations between fusion, subsidence, cervical alignment, and clinical outcome parameters were performed. Of 407 consecutive cases, 318 met all inclusion criteria. Follow-up data were obtained from 265 (83 %) cases. The mean age at presentation was 55 years and 139 patients were male (52 %). In the sample, 127, 125, and 13 patients had one-, two-, and three-level surgeries, respectively; 132 (49 %) presented with spondylotic cervical myelopathy and 133 (50 %) with cervical radiculopathy. Fusion was achieved in 85, 95, and 94 % of segments in one-, two-, and three-level surgeries, respectively.
Non-fusion was associated with higher VAS pain levels. Radiographic adjacent segment disease (ASD) was observed in 20, 29, and 15 % in one-, two-, and three-level surgeries, respectively. ASD was associated with lower HRQL. Subsidence was observed in 25, 27, and 15 % of segments in one-, two-, and three-level surgeries, respectively. However, this had no influence on clinical outcome. Follow-up operations for symptomatic adjacent disc disease and implant failure at index level were needed in 16 (6 %) and four (1.5 %) cases, respectively. Younger age was associated with better clinical outcome. Multilevel surgery favored better myelopathy outcomes and fusion reduced overall pain. ASD worsened EuroQOL-Index values. Worsening of the cervical alignment induced arm pain. One- and two-level ACDF with stand-alone empty PEEK cages achieved very high fusion rates and a low rate of follow-up operations. The rate of good clinical outcome is highly satisfactory. Younger age was the single most influential factor associated with better clinical outcome.