Comparison of polyetheretherketone cges with femoral cortical bone allograft as a single-piece interbody spacer in transforaminal lumbar interbody fusion

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OBJECT: Transforaminal lumbar interbody fusion (TLIF) is an accepted alternative to circumferential fusion of the lumbar spine in the treatment of degenerative disc disease, spondylolisthesis, and recurrent disc herniation. To maintain disc height while arthrodesis takes place, the technique requires the use of an interbody spacer. Although titanium cages are used in this capacity, the two most common spacers are polyetheretherketone (PEEK) cages and femoral cortical allografts (FCAs). The authors compared the clinical and radiographic outcomes of patients who underwent TLIF with pedicle screw fixation, in whom either a PEEK cage or an FCA was placed as an interbody spacer. METHODS: The charts and x-ray films obtained in 39 patients (age range 33-68 years, mean 44.7 years) who underwent single-level TLIF between October 2001 and April 2004 and in whom either a PEEK cage (18 patients) or FCA (21 patients) was placed as an interbody spacer were evaluated in a retrospective study. Radiological outcome was based on fusion rate and a comparison of the initial postoperative lordotic angle on standing lateral radiographs with that at long-term follow up (mean follow up 15.1 months, minimum 12 months). To control for variations in radiographic magnification, the authors used lordotic angle as an indirect measure of disc space height. Clinical outcome was assessed using the Oswestry Disability Index (ODI). There were no major complications in either group. Radiographically documented fusion occurred in all patients in the PEEK group and 95.2% of those in the FCA group. Pseudarthrosis developed in one patient in the FCA group, and this patient underwent additional surgery. In both groups, the mean lordotic angle changed by less than 2.20 degrees during the postoperative period, and the mean postoperative ODI score was more than 40 points lower than the mean preoperative score. There was no significant difference between the two groups in mean change in lordotic angle ($p = 0.415$) and mean change in ODI score ($p = 0.491$).

CONCLUSIONS: Both PEEK cages and FCAs are highly effective in promoting interbody fusion, maintaining postoperative disc space height, and achieving desirable clinical outcomes in patients who undergo TLIF with pedicle screw fixation. The advantages of PEEK cages include a lower incidence of subsidence and their radiolucency, which permits easier visualization of bone growth.
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