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Ryan Nachwalter
Thomas Jefferson University, ryan.nachwalter@jefferson.edu

Parthik Patel, MD
Thomas Jefferson University, parthik.patel@jefferson.edu

Alexander R. Vaccaro, MD, PhD
Thomas Jefferson University, Alex.Vaccaro@rothmaninstitute.com

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Static vs. Expandable PEEK Interbody Cages: A Comparison of One-Year Clinical and Radiographic Outcomes for One-Level TLIF

Ryan Nachwalter[1], Parthik Patel MD[1], Alexander Vaccaro MD, PhD[1]*

[1]Rothman Institute, Thomas Jefferson University, Philadelphia, PA

Introduction

Degenerative spine disease is a disabling condition affecting many worldwide. Transoforaminal lumbar interbody fusion (TLIF) procedures help stabilize the spine, while improving back and/or leg pain. With the introduction of new implant designs and modifications, focus has shifted to optimizing spinopelvic alignment, fusion rates, and more. This study aims to explore the effect of static versus expandable polyetheretherketone (PEEK) cages on patient-reported outcomes (PROMs) and radiographic outcomes (subsidence, disk height, and alignment parameters).

Materials/Methods

A retrospective cohort study was conducted using a database of patients in a single, high volume academic center. Patient outcomes were obtained from charts and radiographic outcomes were measured using standing, lateral radiographs. Data were analyzed using mean sample t-tests or categorical chi-squared tests, and multiple linear regression where appropriate.

Results

Our results showed improved Oswestry Disability Index (ODI) scores perioperatively in the expandable cage group compared to the static cage group at the three-month and one-year time periods. In addition, there were a significantly greater proportion of patients that reached minimal clinically important difference (MCID) in the expandable group compared to the static cage group. There were no significant changes in subsidence or alignment parameters between the two groups at the one-year time period.

Conclusion

Overall, our results show that TLIF patients treated with expandable PEEK cages had significantly greater improvement in one-year outcomes compared to patients with static cages. Expandable cages confer the advantage of more precise insertion into the intervertebral disk space, while providing a way to tailor the cage height for better distraction and spinal alignment. Further prospective studies are warranted to get a better idea of the impact of interbody design on clinical/radiographic outcomes.