A comparative study to assess fusion rate differences between titanium and polyethereherketone (PEEK) cages in lumbar TLIF procedure.

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• Titanium and polyetheretherketone (PEEK) are commonly used materials in cages when interbody fusion procedures are performed.

• The objective of the present study was to compare fusion rate and lumbar alignment between PEEK and titanium cages used in TLIF procedures based on x-ray and CT at least two year after the surgical procedure.
Material and methods

✓ 162 patients were retrospectively reviewed
✓ Single level TLIF procedure was performed using PEEK or titanium cages filled with autologous iliac crest graft.

✓ Pre and Post-operative x-ray in order to assess lumbar lordosis, segmental lordosis, anterior and posterior disc height.

✓ Post-operative CT scan at least 24 months after surgery to determine fusion rate according to bone bridges inside and outside the cage and presence of osteolysis and/or lucent lines
68 men and 94 women
52 patients titanium cage
110 patients PEEK cage

Mean age: 49 years (23-76)

Average follow-up: 5 years (2-9)
results

• No significant differences in terms of lumbar alignment could be found, only segmental lordosis was significantly higher in titanium group (p 0.041)
• No significant differences in fusion rate were found between both groups (p 0.566).
• PEEK group showed an increased number of patients having a radiolucent gap in inferior endplate of the superior vertebra (P 0.023)
Kepler\textsuperscript{1} published and increase of 3,6\textdegree{} of lumbar lordosis and 4,5 mm of disc height after PEEK cages

Rousseau\textsuperscript{2} concluded no significant variations in lumbar alignment comparing before and after the surgical procedure when PEEK cages were used.
Lee et al.\textsuperscript{3,4} published two studies analyzing separately fusion rate and lumbar alignment depending on the usage of PEEK or titanium cages:

- They found similar fusion rates than our study data
- Similar to our results, they found a fusion area ratio of the local bone inside the cage was higher on the lower surface of the cage than on the upper surface.
Both PEEK and titanium cages showed high fusion rates without significant differences between them in TLIF procedure.

PEEK seems to have less stability because an increased number of osteolysis in the inferior endplate of the superior vertebra was found with this material.

No significant differences in lumbar alignment were found between materials.


No conflict of interest declared