

ARTICLE IN REVIEW:

Greater risk of pseudarthrosis using PEEK spacers vs structural allografts in 1-level ACDF

PUBLICATION: Journal of Neurosurgery Spine, January 2019

TITLE: Five-fold higher rate of pseudarthrosis with polyetheretherketone interbody device than with structural allograft used for 1-level anterior cervical discectomy and fusion.

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STUDY DESIGN: Retrospective, single center, multisurgeon, 127 patients.

SUMMARY: Anterior cervical discectomy and fusion (ACDF) is one of the most common treatments for cervical degenerative disc disease (CDDD). Long term success depends on the placement of an interbody spacer to provide support and promote fusion. Structural bone allografts and synthetic polyetheretherketone (PEEK) are two of the most common interbody spacers used in ACDF. This retrospective study evaluated the rates of pseudarthrosis and the need for revision surgery in 127 patients who had undergone a 1-level ACDF surgery using either structural allograft bone (n=71) or PEEK (n=56) interbody spacers. After at least 1 year follow-up, 29 out of 56 (52%) patients with PEEK implants demonstrated radiographic evidence of pseudarthrosis, which was 5-fold greater than that seen in patients with structural allografts (7 out of 71; 10%). Of these, 7 patients with PEEK implants (out of 29; 24%) required reoperation versus 1 patient with structural allografts (out of 7; 14%). This study demonstrates a significantly greater risk of pseudarthrosis ($p < 0.001$) and increased rate of revision surgery ($p = 0.01$) with the use of PEEK interbody spacers in 1-level ACDF procedures compared to structural allografts, supporting the use of structural allografts in cervical fusion procedures.

Five-fold greater risk of pseudarthrosis with PEEK:

52% of patients with PEEK implants had radiographic pseudarthrosis, compared to 10% of those with structural allografts.

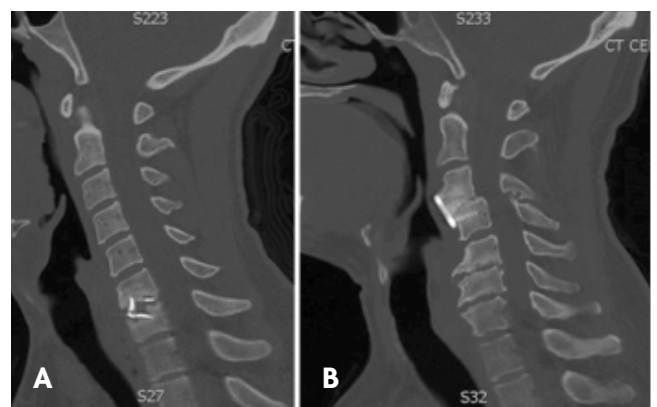
Rate of subsequent revision nearly doubled with PEEK:

Of those with pseudarthrosis, only 1 patient with a structural allograft (14%) required revision surgery, compared to 7 patients in the PEEK group (24%).

No significant differences between patient demographics:

Patients' age, sex, BMI, and tobacco use were similar between the two groups ($p > 0.05$).

Greater risk of pseudarthrosis with use of PEEK vs structural allograft



Radiographs showing use of (A) PEEK interbody spacer and pseudarthrosis and (B) structural allograft bone and fusion after 1 year.

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68-20-287.00

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