

Lumbar Interbody Fusion Status does not Correlate with Patient Reported Outcomes: Data Analysis from a Prospective Multi-center Study of Circumferential Lumbar Arthrodesis

Bart Thaci MD; Chris Ferry MS; Brieta Ventimiglia; Tom Glorioso MS; Kim Martin; Sarah Martineck; Ripul Panchal DO; Paul Arnold MD; Peter Passias MD; Alex De Moura MD; Brandon Streng; Clint Hill; Ryan Peter Denhaese MD MS; Kee Duk Kim MD



Introduction

Interspinous posterior fixation (ISPF) or pedicle screw fixation (PSF) with interbody graft led to similar fusion rates and patient reported scores in our prospective multi-center RCT.

Although commonly used as surrogates of each other it remains unclear whether the fusion scores correlate with patient reported outcomes.

Methods

Prospective multi-center study of 101 patients receiving single-level '360 fusion, ISPF or PSF.

Patient reported outcome indices (ODI, SF-36) were collected at each follow-up time point.

Lumbar x-ray were taken at 12 and 24 months.

Interbody fusion Brantigan-Stefee Fraser criteria:

- BSF-1: pseudarthrosis;
- BSF-2: radiographic locked pseudarthrosis;
- BSF-3: radiographic fusion.

Statistical analysis:

Logistic regression model used to determine relationship between fusion (BSF-3 vs. BSF-1&2) and clinical index improvement at 12 and 24 months.

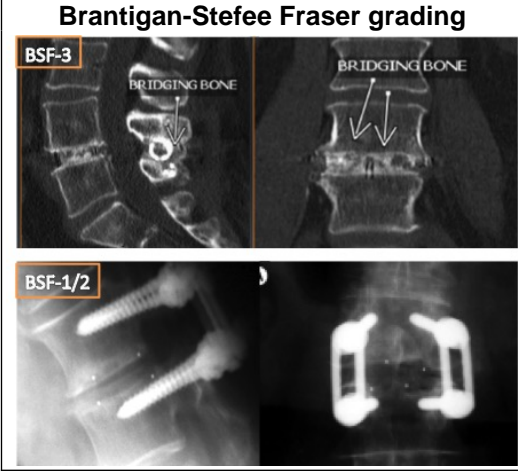
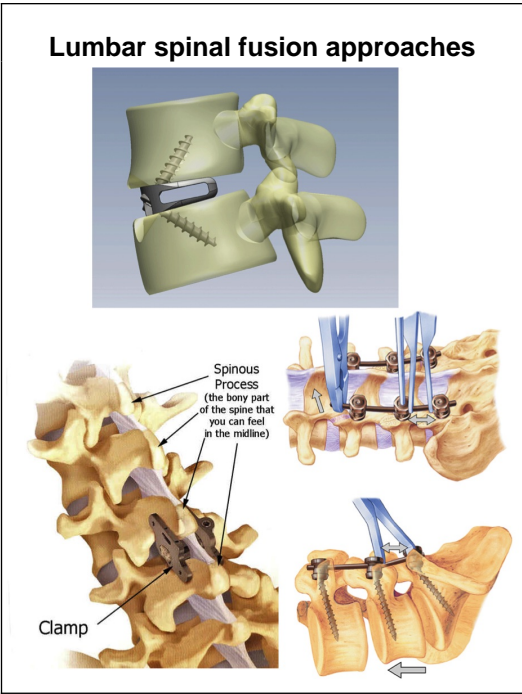
Results

Change in ODI/SF-36 scores at 12 and 24 months was not significantly associated with BSF score

Lumbar fusion approaches:

Antero-Lateral: ALIF, XLIF

Posterior: Interspinous, pedicle screws



BSF grading via CT and X-ray.

Figure A.

At 12 months, BSF-3 had on average 1.4 greater reduction in ODI compared to BSF-1&2 (95% CI: -8.61, 11.41).

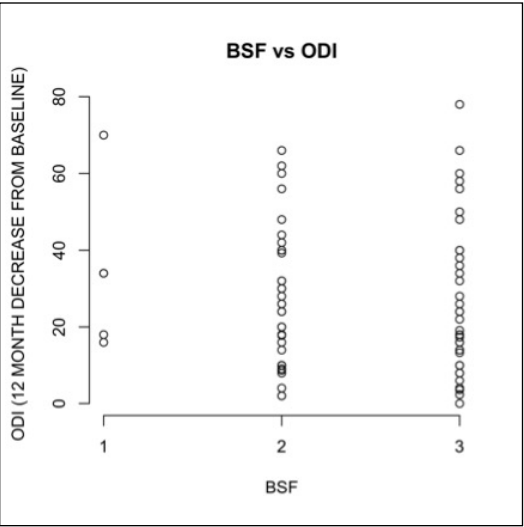


Figure B

For SF-36 Mental, BSF-3 patients had a 2.21 greater increase compared to BSF-1&2 (95% CI: -6.7, 11.13).

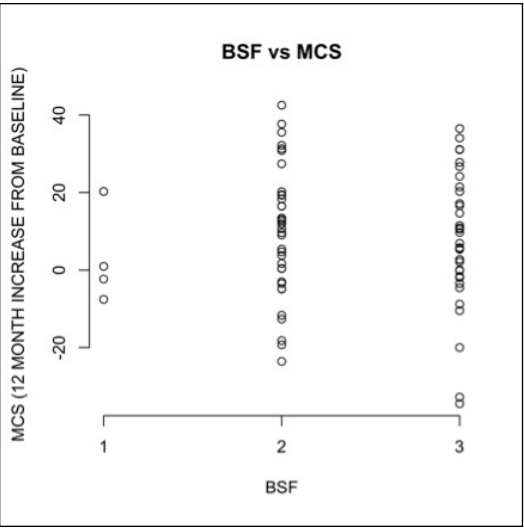
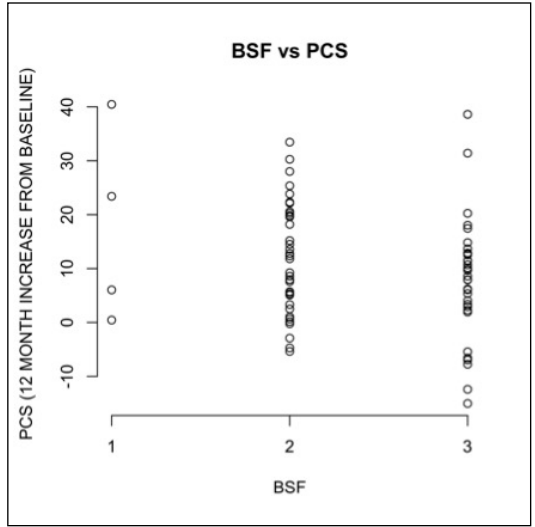


Figure C

In SF-36 Physical, BSF-3 patients had a 4.14 lesser increase compared to BSF-1&2 (95% CI: -10.15, 1.88)



Conclusions

Radiological lumbar interbody fusion grading using BSF scale do not correlate with patient reported outcome.

Learning Objectives

- 1) Distinguish between different posterior fusion approaches
- 2) Able to score fusion rates as per Brantigan-Stefee criteria
- 3) There is no correlation between fusion score at 12 or 24 months and patient reported outcomes

References

Brantigan et al. Spine J. 2008 Jul-Aug;8(4):570-7
Kim KD et al. Interspinous Process Fixation versus Pedicle Screw Fixation in Circumferential Arthrodesis: Outcomes from a Prospective Randomized Multicenter Trial. NASS Proceedings/Abstract 2016