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Letters to the Editor

Response to letter to the editor entitled "Prediction of mechanical complications in adult spinal deformity surgery: methodological issues"

To the editor:

First, we thank the editor for giving us an opportunity to respond to the letter written by Dr Abassi et al. [1]. We thank the authors for critically appraising our manuscript on the ability of the GAP score and the Schwab classification to predict mechanical complications after adult spinal deformity surgery [2]. We wholeheartedly agree that the development of (multivariable) prediction models should be accompanied by either an external validation in a cohort independent from the development cohort or, if no such data are available, an internal validation step should be performed. Statistical methods for internal validation, such as the bootstrap method in particular resonate strongly with our group, exemplified by our recent effort to develop a prediction model for the probability of a surgical site infection after instrumented thoracolumbar spine surgery [3].

However, the current manuscript does not aim to develop multivariable prediction models based on either the GAP score or the Schwab classification. We do not present any model of our own, such as a logistic regression formula, a nomogram, or a digital implementation of any sort. We use our data that are independent from the data that were used to develop the GAP score and the Schwab classification and show how well these two methods discriminate between patients who develop radiographic mechanical complications and those who do not. Even though the authors of the GAP score and the Schwab classification do not explicitly present their methods as prediction models, we did feel the need for externally validating the GAP score and Schwab classification on our independent data. Results from bootstrapping, such as a shrinkage factor to multiply regression coefficients, would be meaningless, as we do not propose the use of coefficients to weight individual components of either of the two methods. Moreover, as both logistic regression models are based on one determinant only, irrespective of statistical significance, measures of optimism (another result from bootstrapping validation) are unlikely to differ to such an extent that our conclusion (i.e., that the GAP score would be the better choice to predict mechanical complications than the Schwab classification) would change. Naturally, this does not negate the fact that our results should preferably be replicated in other cohorts, such as those of any similar study.

References

[1] Abbasi M., Saleh Saleh Z., Naderi M. Letter to the editor: 'Prediction of mechanical complications in adult spinal deformity surgery: methodological issues', Spine J In press.

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[3] Janssen D.M.C., van Kuijk S.M.J., d'Aumerie B., Willems P. A prediction model of surgical site infection after instrumented thoracolumbar spine surgery in adults. Eur Spine J. https://doi.org/10.1016/j.spinee.2018.11.013

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