Reviewer's report

Title: Comparison and Prediction of Pullout Strength of Conical and Cylindrical Pedicle Screws within Synthetic Bone

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Reviewer: Guy R Fogel

Reviewer's report:

The authors present an interesting mathematical improvement to the Chapman formula to predict pull-out strength. The Chapman formula measures the tearing surface between bone and screw. Chapman may have up to 42% variability error in predicting pullout strength. The authors find there are at least three other factors that affect pullout strength beyond the tearing surface between the bone and the screw in pull out testing. The improved formula addresses the effects of the ratio of inner and outer diameter of the screw, squeezed bone chip left in the thread, and the diameter of the pilot hole. This study shows a greatly improved coefficient of determination, R2 (the proportion of variability in a data set) with the modified Chapman formula and their Integral formula in evaluation of pullout strength of cylindrical and conical shaped pedicle screws.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

'I declare that I have no competing interests'