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LETTER TO THE EDITOR

Accuracy of peri-implant bone thickness and validity of assessing bone augmentation material using cone beam computed tomography—is this correct?

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We were interested to read the paper by Wang D and colleagues published in the Oct 2012 issue of *Clinical Oral Investigations*. The authors assessed the accuracy of measuring bone thickness surrounding dental implants and the reliability of assessing existence and completion of osseous integration of augmentation material using a cone beam computed tomography (CBCT) system [1]. They reported that the mean and the standard deviation of the differences between radiological and histological measurements of peri-implant bone thickness were −0.22 and 0.77 mm, respectively. Sensitivity and specificity were 0.77 and 0.60 for existence of bone augmentation materials (BAM), 0.59 and 0.74 for completed integration and 0.39 and 0.71 for full covering of the implant surface [1].

As the authors point out in their conclusion, the PaX Duo3D® CBCT system allows measurements of peri-implant bone thickness at an accuracy of half a millimeter and—within limits—the assessing of the existence and integration of BAM. The common practice is to employ relevant well-known statistical tests for assessing accuracy and reliability of a test, and it is unclear why the authors did consider employing only sensitivity and specificity. The authors did not apply positive and negative predictive value likelihood ratio positive and negative (LR+ and LR−) as well as odds ratio (true/false), which are among the tests to evaluate the validity (accuracy) of a single test compared to a gold standard [2–4]. Applying these tests would have added value to the study. They also did not apply any of the well-known statistical tests for reliability analysis such as intraclass correlation coefficient and weighted kappa for quantitative and qualitative variables, respectively [2–5].

Reliability and validity are two completely different methodological issues in researches. As a take-home message, for reliability and validity analysis, appropriate tests should be applied; otherwise, we will face misinterpretation of the results leading to mismanagement of our patients.

Conflict of interest None.

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