

Bone thickness determines the detection accuracy of buccal bone level at implants in CBCT – An ex vivo study

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Aim

To investigate the impact of buccal bone thickness (BBT) on the detection accuracy of buccal bone level (i.e., depth of a buccal bone dehiscence) at implants in CBCT.

Methods

Two implant beds (narrow- and standard diameter) were prepared in 36 bone blocks of dry pig jaws. The implant beds were positioned at variable distance from the buccal bone surface (3 BBT groups: >0.5-1.0; >1.0-1.5; >1.5-2.0mm). In half of the blocks, a buccal bone dehiscence was created. Implants were mounted with a titanium abutment and metal-ceramic crown or with a zirconia abutment and crown. The extent of the buccal bone dehiscence was measured on CBCT and directly at the blocks.

Results

Abutment/crown material and implant diameter had no effect on the detection accuracy of the buccal bone level. In contrast, BBT was a significant parameter. When buccal bone was thin (>0.5-1.0mm), presence/absence of buccal bone dehiscence was judged wrongly in 48.5% of the cases. The average measurement error for the buccal bone dehiscence was 1.6mm.

Conclusion

BBT has a major impact on the detection accuracy of the buccal bone level at dental implants in CBCT; when buccal bone is ≤ 1 mm thick, detection of the buccal bone level is largely inaccurate.