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ONLINE ISSN : 1881-1361

PRINT ISSN : 0287-4547

Dental Materials Journal

Vol. 28 (2009) , No. 1 p.75-81

[\[PDF \(1035K\)\]](#) [\[References\]](#)**Application of haptic device to implant dentistry — accuracy verification of drilling into a pig bone**

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(Received December 12, 2007)

(Accepted June 19, 2008)

Abstract:

To enable accurate implant placement and precise drilling following preoperative simulation, we developed the BoneNavi system. To realize more precise drilling when the holes are upsized, two methods of surgical guiding were attempted in the present study. One involved using multiple surgical guides with titanium tubes of different diameters, and the other involved using a single surgical guide but employing titanium drill guide tubes with different diameters. Drilling accuracy of the two newly developed methods was examined and compared with the results of drilling into a pig bone using only the initial surgical guide. Deviations of the position and angle with the two novel methods were similar: 0.17 mm and 1° respectively. As for the control group whereby drilling was done using only the initial surgical guide, the deviations were 0.25 mm and 3.50° — which were significantly larger than those achieved with the two novel methods. In light of the results obtained, our newly developed BoneNavi system is especially applicable for severe clinical cases that require precise implant placement.

Key words:

[Computer-assisted surgery](#), [Dental implant](#), [CAD/CAM](#)

To cite this article:

Takafumi OHTANI, Naoki KUSUMOTO, Kazumichi WAKABAYASHI, Shinichi YAMADA, Takashi NAKAMURA, Youichi KUMAZAWA, Hirofumi YATANI and Taiji SOHMURA. Application of haptic device to implant dentistry — accuracy verification of drilling into a pig bone . Dent. Mater. J. 2009; 28: 75-81 .

doi:10.4012/dmj.28.75

JOI JST.JSTAGE/dmj/28.75

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