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PRINT ISSN: 0040-8891

The Bulletin of Tokyo Dental College

Vol. 48 (2007), No. 1:27-35

[PDF (564K)] [References]

Pre-operative Drilling Simulation Method for Dental Implant Treatment

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(Received December 27, 2006) (Accepted March 30, 2007)

Abstract: The position, depth and direction of implant placement are often planned based on evaluation of radiographs and study casts. Insertion planned in such a manner may not be adequate for precise and safe surgery in some cases due to inadequate working clearance in the oral cavity. In order to obtain high initial stability and ensure osseointegration at the implant-bone interface, careful and precise drilling must be performed at the implant placement site. Therefore, we propose the necessity of evaluating the operability of implant treatment-devices prior to surgery. The amount of handling space needed during implant placement surgery was determined. The results showed that for implants with a length of 7-18 mm, a vertical distance of as much as 50-60 mm was required, depending on the implant platform. These results suggest the necessity of pre-operative drilling simulation in each individual. Handling space was measured with angled heads and probes fabricated on a trial basis for pre-surgical drilling simulation in the oral cavity. We believe that these instruments may be clinically useful in estimating the amount of handling space required prior to surgery and ensuring precise implant placement. Evaluation of the intra-oral environment for handling of treatment devices should be included in the pre-surgical intra-oral evaluation of dental implant cases to avoid changes in treatment planning due to intra-oral interference during the course of surgery.

Key words: Dental implant, Intra-oral examination, Implant placement, Handling space,

Drilling simulation

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To cite this article:

Tomohiko Arataki, Yoshitaka Furuya, Taichi Ito, Yuko Miyashita, Ichiro Shimamura and Yasutomo Yajima: "Pre-operative Drilling Simulation Method for Dental Implant Treatment". The Bulletin of Tokyo Dental College, Vol. 48: 27-35 (2007).

doi:10.2209/tdcpublication.48.27

JOI JST.JSTAGE/tdcpublication/48.27

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