25.

Intra-Examiner Reliability of Disposable Gnathometers

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In vivo test methods using the expensive methods of gnathodynamometry for assessing maximum bite-force, revealed objective improvement of retention of maxillary dentures using denture adhesives. Since the introduction of the disposable gnathometer (Procter & Gamble), facilitating simple measurement of bite-force at dislodgement of the denture, it seems relatively easy to measure the maximum bite-force of maxillary dentures. The gnathometer has a scale ranking from 1 to 10. It measures the pressure which a patient can apply to the front teeth until dorsally dislodgement of the maxillary denture. The aim of the present study was to test the intra-examiner reliability of gnathometers. In each of 5university dental clinics (Rotterdam, Groningen, Athens, Gent, and Istanbul) 5 patients who had received a new conventional complete maxillary denture less than one month previously, were selected. These patients had a stable natural dentition or prosthetic appliance in the mandible, e.g. an overdenture attached on natural or implant abutments, a partial natural dentition with a stable partial chromcobalt denture, etc. In the first session the maximum bite-force was measured by one experienced prosthodontist for each patient using three different gnathometers, successively three times with each gnathometer. If the result was between 2 ranking points, the lowest was registered. The 9 measurements were conducted with three-minute breaks in order to enable the patient to reposition the dentures comfortably and habitually. One week later at the same time of the day, these measurements were repeated with the same three gnathometers, respectively for each patient, as used in the first session. Intra-examiner reliability was very good. Paired sample correlations were 0.91, with overall measurement error of 0.7 on the ranking scale.

26.

Mandibular Bone Mineral Density Changes Dependet on the Denture Support. A Six Month Follow up Study

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Reduction in the height of the alveolar edentulous ridge in denture wearers is a well documented problem which depends on various local and systemic factors. Changes of bone mineral density (BMD) in denture wearers have not yet been documented in follow-up studies. The aim of this study was to determine the changes in BMD of the mandible in complete (CD) and removable free-end saddle denture wearers (RPD) during a six month period (both groups had complete dentures in the maxilla).

Twenty RPD patients (5 male, 15 female) and 20 CD wearers (7 male, 13 female) participated. The BMD measurements were performed on digitised dental panoramic radiographs (DPR) with a 5 step copper stepwedge attached to each film cassette. Grey levels of each step of the stepwedge were transformed to optical density values and using the 3rd degree polynomial the regression formula was calculated for each digitised image to express BMD values of the measured region of interest (ROI) in the copper stepwedge thickness equivalents.

The results revealed that the BMD values of the examined ROIs under the distal end of the CD decreased, and in contrast, the matching BMD values under the distal end of the RPD increased, during the six month period, although the changes did not reach a statistically significant level ($p>0.05$). The BMD values on gonion increased significantly in both examined groups ($p<0.05$), which was attributed to the increased load of the strain forces of the masseter muscle at gonion after the denture delivery.

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