because it records all the informations about the patient's oral situation when it comes to the visit. This tool consists of three sections. The first contains the personal data of the patient and a specific medical history questionnaire. The second contains the characteristics of the detected lesions (type, size, location). The third contains a decision table to guide the patient's management.

Results: Consider etiological factors and document the amount of wear is the key to a successful management of the tooth wear. The TWM folder is a simple and useful tool that can be used in the day-to-day practice. All information gathered joined together make it really easy to draw up a diagnosis and therefore a treatment plan. Because tooth wear is typically a dynamic condition this tool is also useful to monitor the patient and subsequently decide whether to formulate a treatment plan or establish a customized prevention program.

Conclusion: Often dentists don't pay attention to non-carious lesions, so they don't take them into account in the treatment plan. However wear lesions are extremely frequent because they can have different etiology. Understand the etiology is necessary to understand how to find the best solution.

Preprosthetic Ortodontics

Effect of occlusal-loading on microgap of implant abutment connection

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Objective: Failure of implant-abutment connections are relatively frequent clinical problems. During chewing and biting, the prosthetic restoration and the implant abutment connection is affected by various physiological forces, e.g on a single molar implant this might be about 120 N in the axial direction. Microgaps between implant and abutment can produce biological and mechanical problems such fatigue failures or adverse biologic responses. Penetration of oral microorganisms through gaps between these components may add to risk of soft tissue inflammation or be responsible for the failure of peri-implantitis treatment. The formation of a marginal gap between the implant and abutment might lead to increased loss of a marginal bone because of the penetration of bacteria into the implant-abutment interface. A literature review of Goodacre in 1999 of clinical complications of osseointegrated implants showed that screw loosening or screw fracture varied between 2% and 45% of the implant restorations, with the highest amount in single crown. A recently published meta-analysis of Pjetursson in 2004 on implant-related complications calculated a cumulative incidence of connection-related complications (screw loosening or fracture) of 7.3% after 5 years of clinical service. Purpose of the study in vitro is to valuate the marginal adaptation of implant abutment Ankylos (Dentsply, Manheim Germany) and Anyone (Megagen, Korea) after mechanical loading (Chewing simulator CS4, Mechatronik, Feldkirchen-Westerham Germany) for 1.200.000 cycles.

Materials: Twelve implants (Anyone Megagen diameter 4.5 mm length 10 mm n=6) and six implant (Ankylos Dentsply diameter 3.5 mm length 11 mm n=6) were embedded perpendicularly in an acrylic resin (Palapress, Heraeus Kulzer, Armonk, NY, USA) with custom-made stainless teflon ring form. The implants were mounted in the resin to mimic oral conditions, where the bone may absorb some forces transmitted to the implant-abutment screw connection. All standard abutments (EZ Plus Megagen diameter 4.5X5.5 mm and Abutment Ankylos regular diameter 4.5X5.0 mm) and were restored with identical single molar crowns. A calibrated electronic implant torque controller (Intrasurg, KAVO, Biberach, Germany) was used to ensure proper seating torque for all abutments following the manufacturer's instruction (35 N/cm for Anyone; 25 N/cm for Ankylos). The crowns were casted in a metal alloy and luted to the abutments with a self-adhesive cement (RelyX Unicem, 3M ESPE, St Paul, MN, USA) to minimize the risk of losing crown retention as comparing to conventional cement. After the implant were embedded, the abutment-crown combination were assembled to the implant with an abutment screw according to the manufacturer's protocol. A calibrated electronic implant torque controller (Intrasurg, KAVO, Biberach, Germany) was used to ensure proper seating torque for all abutments. Occlusal loading and thermocycling of specimens were performed in a CS-4.4 equipment (SD Mechatronik GmbH, Germany) (fig. 1) using a stainless steel antagonist (6 mm diameter), 3.5 mm away from the crown's occlusal center on the tapered occlusal area, for 1.200.000 cycles at 50 N at a frequency of 1 HZ. This dynamic loading contained an additional horizontal sliding motion 2mm rectangular to the implant axis to induce bending moments at the implant-abutment interface. Because of various occurrences of unexpected abutment-screw loosening during the dynamic loading test, the implant-abutment connections were controlled for mechanical integrity at intervals 10.000 chewing cycles. After dynamic loading the abutment-implant connections were analysed with SEM (Quanta 250; FEI, Hillsboro, OR, USA). For evaluation of the microgaps, the implant-abutment systems were embedded in a glycol methacrylate resin. After polymerization, each specimen was sectioned along its longitudinal axis with a low-speed

diamond saw (Micromet; Remet, Italy) under water irrigation. The non-parametric Krustal-Wallis test and the Bonferroni test were used.
Results: A loss of retention between abutment-implant and fracture was assed as a failure.
All specimens no mechanical failure occurred during dynamic loading. The microgap of the implant-abutment connection after mechanical loading were found similar for two systematic implant under Scanning Electron Microscopy (P>0.05).
Conclusion: The marginal quality of implant-abutment after mechanical cycling showed no significant differences between two conical implant abutment. Further clinical research is essential to evaluate if different conical implant-abutment connection designs exhibited significant differences in survival and microgaps under dynamic loading.

Dental Technology and Technical Procedures

The prototype concept in a full digital implant workflow

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Objective: The aim of this study is to describe the innovative concept of the prototype in the digital implant workflow. The prototype was necessary to evaluate the accuracy of the impression, and aesthetic and functional parameters, prior to final framework realisation.
Materials: Three digital impressions were obtained to create a master file, which contained information on the three-dimensional position of the implant, the gingival architecture, and the aesthetic/functional features of provisional restorations. A stereolithographic master model (SMM) featuring implant analogues was 3D-printed. A resin prototype (A) lacking implant connections was produced using the Straumann Digital Workflow process. Standard metal connections were luted into the SMM and tested on the patient. Inaccuracies in prototype A could be attributable to either the impression or to the model. To ascertain where the error lay, a prototype (B) with milled implant connections was produced. The try-in procedure and radiography were repeated but the transparency of the resin compromised accurate investigation. A third uncertified radiopaque resin prototype (C) was prepared using uncertified scanbody and implant libraries, but the accuracy was poor.
Results: Use of a prototype allows the clinician to simultaneously test implant positions and aesthetic/functional parameters. However, a single radiopaque prototype is preferable to determine if an impression is inaccurate even if an uncertified workflow step exerts a negative impact on accuracy.
Conclusion: When inaccuracy is present, only a one-piece radiopaque prototype allows for localisation of the error. The use of uncertified scanbodies and implant analogues is associated with poor accuracy.

Implantology Research

Radiological and histomorphometric outcomes of homologous bone graft in post-extractive implant sites. A 6 years prospective analysis

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Objective: The aim of the present study was to investigate the in vivo efficacy of a cancellous particulate allograft bone in the regeneration of post-extractive atrophic sites.
Materials: 10 patients with 12 molar or premolar teeth to be extracted were selected. After a minimally invasive extraction of the teeth (T0), a TC Cone-Beam was performed (T1). Seven days after extraction, Puros® cancellous particulate homologous graft was inserted into the elected sites together with a membrane (T2). After 4 months, a TC Cone-Beam of the sites was performed (T3). After 5 months, samples of the regenerated sites were taken contextually to implant insertion (T4). The samples were histologically and histomorphometrically analyzed. Intraoral periapical radiographs were accomplished to assess interproximal bone levels at the time of implant placement (T4) and at the 6-year follow-up appointment (T5).
Results: Mean vertical bone augmentation was of 4.1 mm (range 1.9-5 mm) in the lower jaw and of 3.35 mm (range 2.3-4 mm) in the maxilla at T3 appointment. The mean horizontal bone augmentation in the lower jaw was 2.02 mm (range 1.5-2.8 mm) and 2.15 mm (range 1.6-2.8 mm) in the maxilla. According to histomorphometric analysis, at T4 mean total bone was 60.01% (range 25.69-88.49%), the mature bone was 98.41 (range 94.48-99.98). At the 6-year follow-up visit mean peri-implant bone resorption was 0.14 mm (range 0-0.5 mm).
Conclusion: Cancellous particulate allograft bone demonstrated excellent bone regeneration behavior both in terms of quantity and quality, and stable results over a 6 years period.