

MATERIAL AND METHODS: The tooth germs were gently removed from mice under the microscope by means of micropreparation techniques. All of the germs were embedded in agar, positioned on Millipore Filters and cultivated over 14 and 21 days in a chemically defined medium. For microscopic examination the germs were fixed, cut and stained with Giemsa-Romanowski and HE.

RESULTS: A cell layer on the Millipore Filters formed, which originated either from dental pulp or from the outer enamel epithelium. Cells from the cell periphery appeared oblong with broad intermembranous areas. In the cell center the closely closed-up cells exhibited cubic cell form.

After 14 days the cell nucleus appeared round and light blue after staining with Giemsa-Romanowski. In contrast, after 21 days a dark stained nucleoplasm was identified in the cells.

CONCLUSION: The results agree with previous studies on which tooth germs can be cultivated successfully *in vitro*. After the first observations the tooth germs did not show temporally co-ordinated growth and no differentiation as under *in vivo* conditions. A substantial reason for this lies in the lack of knowledge of the accurate environmental conditions necessary *in vitro*. With the cell layer on the Millipore Filters described here, the possibility of further investigations of cell differentiation exists.

79. Temporary Composite Bonding Fixed Bridges

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Esthetic composite bonding technique has had a great impact in the area of fixed prosthodontics, following the conservative techniques that are proving mainly successful in the replacing of a single tooth.

In this way single anterior missing teeth are usually replaced.

Further developments included efforts to increase the resistance of the bonding materials to cohesive fracture by the use of class III type preparations at the proximal surfaces of abutment teeth.

With the current availability of visible - light - cured composite materials, these can be used efficiently to fabricate any of the all - resin bonded prostheses.

To use a bonded pontic in such applications a number of conditions must be met. First, the patient must understand the limitation of the restorations: lack of strength, and inability to function as a natural tooth. Second, the patient's occlusion must be favorable: positive posterior occlusal support, absence of parafunctional habits and eccentric pattern of movement that permits the sharing of guidance responsibility by teeth not involved in the units of the bridge, particularly with respect to protrusive and lateral protrusive mandibular movements.

The materials and techniques required to prepare and insert an all - resin bonded bridge are described and illustrated in the paper.

80. Two Years Retrospective Study of Metalceramic Crowns with Nickelchromium Alloy

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Crown and bridge stability in the human mouth is not easy to evaluate. The structure and quality of crown materials are directly connected with the hardness and composition of the surface.

The aim of the study was to evaluate the long-term stability of 52 crowns (19 patients) made from ceramic material (Vita Omega, Vita) and nickelchromium ceramic bonding metal alloy (Wiron, Bego) in clinical practice. In accordance with the US Public Health Service System changes in occlusal anatomy, occlusal relief, marginal adaptation, material break age, changes of shape and color, were checked. Another objective of the study was to observe the two year clinical progress of attrition of crowns. Replica casts (Epoxy-die (Ivoclar) were prepared. A scanning electron microscope (JEOL ; JMS-5500 LV (JEOL) and standard model (Ivoclar - Williams) were used to evaluate the quality of restoration.

No changes in the shape and color were found, post-op sensitivity was present in 1.9 %, and caries presence has been detected in 1.9 %. After two years the labial or buccal coronal margin was recorded as being at the level of the adjacent gingiva for 34.6 % of the 52 crowns placed and above the gingival margin for 65.4% of the crowns. Marginal adaptation was rated as contiguous with the existing anatomic form in 71.2 %. Gingival health varied from 0 to 2 CPITN index.

Abrasion in fissures was visible in the scanning electron microscope. The cusps were well formed. Two fractures of the ceramic layer were observed. A significant increase in the position of the gingival margins was found, and varied from 45.0 μm to 108.3 μm vestibular 89.1 (SE 12.1) to 63 μm oral (SE 7.0).

81.

Estimation of Wear Resistance in Acid Solution of Dental Ceramics by Neural Network

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It is known that exposure to acid causes damage to the glass surface. The aim of this study was to examine wear resistance, measuring the mass change of dental ceramics after contact with 10-3 mol dm⁻³ HCl at temperature of 50°C. Four samples of dental ceramics were analyzed: feldspatic ceramic, hydrothermal ceramic, glass ceramic for staining and glass ceramic for layering. The mass concentrations of eluted Na⁺, K⁺ and Ca²⁺ were determined by ion chromatography (IC) and mass concentrations of Si⁴⁺ and Al³⁺ by UV/VIS spectrometry. Measurements were conducted after 1, 2, 3, 6 and 12 months of emersion.

For the subject issue, using experimental data, the feedforward backpropagation neural network for estimation of wear resistance of dental ceramics was modelled. The results of 1, 2 and 12 months of emersion were used for the training 13-20-5 model of neural network. Comparison of experimental data and data obtained by estimation (results of 3 and 6 month intervals) of neural network shows that the applied network model provided a very good prediction of wear behavior of dental ceramics with high correlation coefficient (R) and low sum of squared error (SSE) between measurement and estimated output values.

82.

A Clinical Report of the Shaping of a Lateral Metal-Free Bridge Made of Vita In-Ceram Zirconia

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Because of some aesthetic imperfections and because metal is unsuitable for some patients, metal-free ceramic has been developed. A patient, 50 years old, is presented with a 6 year old faceted bridge on teeth 24, 25, 26, 27. The patient complained of thermal irritation in the cervical region. A clinical examination showed gingivitis and lack of hygiene. Between the toothsegment 26 and the crown on 27 was a fracture, and the patient decided to have a new bridge made. A metal-free ceramic bridge made of Vita In-ceram zirconium was suggested as well as treatment of the periodontium by the Durr Vektor method. The teeth region 24 and 27 were anesthetized with local infiltration anesthetic. Silicone impression for a temporary bridge was taken. Using the separatory bur in the red contra angle Titan TE 200 crowns 24 and 27 were separated and pulled with special dental forceps. Before beginning the preparation it is necessary to put the retraction thread in two levels circularly round the stump in the gingival sulcus to prevent bleeding. The 2 mm of the tooth crown depth is marked by a diamond bur. Labial and palatal it is done with a special grooved diamond point LVS-1 with 1.2 mm grooves. The tooth is treated in the following order - occlusally, labially, approximately and palatally. At the same time a 0.5 mm rectangular step inside the sulcus is prepared. Finally the rims of the step and the stump are treated with Titan Eva-head TK 14 with 0,4 working amplitude and a maximum of 6000 r.p.m. The final treatment with Arkansas stone follows. The thread is removed and the impression in the additional silicone or polyether is taken. The relation between the jaws is estimated with the silicone key. The acrylic temporary bridge is made directly in the mouth and is cemented with temporary cement. The ceramic-free construction is cemented by adhesional technique.