

The perfect osseointegration process of the dental implants depends among other factors on the surface characteristics of the titanium. In this study enlarged mechanical roughness was produced by a laser-based technique, in order to decrease the healing period of the implant.

There are different ways of forming laser induced surface structures. In the case of mask projection techniques the surface can be modified in larger areas and surface patterns. An ArF nanosecond excimer laser was used in the experiments because of the advantageous properties of the excimer beams. Effective polishing by homogeneous laser illumination in the 3-5 J/cm² fluence range was performed as confirmed by SEM and AFM studies. Holes of about 20 mm diameter and 10 mm in depth, with high aspect ratio and protrusions around the edges were ablated into the titanium surface with subsequent pulses of ns ArF excimer laser. To avoid easily breakable protrusions we applied excimer pulse durations of 0.5 picoseconds. In this case we obtained melting- and ridge-free ablation of titanium. The laser treatment influenced the chemical composition of the surface in two respects. On the one hand it removed carbonaceous contamination as indicated by XPS and XRD measurements, demonstrating that cleaning of the surface does not alter the original crystalline structure. On the other hand, XPS measurements proved that pulsed laser oxidation in air increased the thickness of the surface oxide layer, promoting better osseointegration.

40. Porcelain-Fused-to-Titanium Restorations From Implant Level - - Preliminary Observations

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Until a few years ago use of the abutment was necessary for making fixed restorations retained on Brånemark implants. For multiple-unit restorations, abutments served as a "misfit eliminating zone" for the framework cast with gold alloy. Single crowns were made as restorations cemented on prefabricated abutments. Thanks to the use of modern laboratory methods, it is now possible to produce multiple-unit restorations retained directly on implants with the metal part made of titanium alloy. One such method is the All-in-One system, in which the metal part of the restoration is made of one piece of titanium, with the use of a computer aided milling machine. Thanks to the development in porcelain fusing to titanium, it is also possible to make single crowns as a screw-retained

restoration seated directly on an implant. For this purpose, TiAdapt abutments were used with own modification of UCLA-type crown production.

The paper describes some advantages and disadvantages of the above mentioned systems and basics of their use.

The study group consisted of 22 restorations (12 bridges and 10 crowns) made for 14 patients. Most of them (18) were made for the lower jaw. All bridges were two- or three-unit restorations. The observation period was from three months up to two years. Complications were observed in two cases. Both of them consisted of cracks in the porcelain. Due to the design of the restorations, the complications were eliminated without any problems. A possible cause of the porcelain cracking was the excessive bulk of the porcelain in areas where there had been lack of metal support for the veneering layer.

Due to the easy application and positive aesthetic and functional results the described methods seem to be worth recommending, with some clinical limitations.

41. Three-Year Clinical Evaluation of in Ceram Zirconia Bridges.

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INTRODUCTION: The demand for esthetic restorations has led to the development of materials that are metal free. These materials must have adequate strength to be an alternative for the fabrication of fixed partial dentures in posterior segments of the dental arches.

PURPOSE: The aim of the present study was to investigate in a long-term perspective whether the strength of the In Ceram Zirconia material is sufficient for use in posterior bridges.

MATERIAL AND METHODS: Sixteen patients, who were between 23 and 50 years of age, with indications for a fixed denture replacing premolar or molar, were examined for participation in the study. Eighteen bridges were constructed with one or two pontics and two abutments, one on each side of the pontic. The patients were informed about risks of, and alternatives to, the proposed therapy. The supporting teeth were prepared with chamfer finish line and lack of sharp line angles. Impressions were made with a rigid standard tray with an A-silicone putty soft and light-body materials (Aquasil, Dentsply). The laboratory procedures were performed by a laboratory autho-

rised by the Vita supplier. Ten of the bridges were cemented permanently with zinc phosphate cement and eight with glass ionomer cement. Clinical evaluation of the bridges were performed according to the California Dental Association's quality evaluation system.

RESULT: After three year evaluation all eighteen bridges were without signs of or any change in colour, and marginal integrity.

CONCLUSION: In Ceram Zirconia is a potential alternative for full ceramic bridges in the posterior segments.

42.

Intraoral Repair of Metal Ceramic Restorations Following Preparation of the Endodontic Access Cavity (Case Reports)

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The Manufacture of dental crowns and bridgework of porcelain fused to metal, a technique that results in highly functional and esthetic restorations, has been widely used for about 45 years. Bonded porcelain is exceptionally strong. However, the reasons for porcelain fracture may be multifactorial, and include where the bridge or crown substructure has been weakened by excessive occlusal adjustment or by the introduction of an endodontic access cavity. An esthetic and functional repair, wherever possible, has many advantages over time-consuming and expensive remakes of crowns and/or bridges.

This report is a presentation of a simple method for both the dentist and the patient to repair a tooth with root canal treatment. In cases where the fracture is due to an endodontic access cavity, intraoral repair was performed using various porcelain repairing kits.

The patients were recalled for follow up on a 3-month basis after treatment. This technique can be considered as a treatment of choice regarding the successful results.

43.

In vitro and *In vivo* Evaluation of Different Gingival Retraction Cords

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Modern impression techniques used in restorative dentistry require displacement of gingival tissue to expose the subgingival finish lines on the tooth preparation. Many different medications are used on gingival retraction cords in order to minimize hemorrhage from the gingival sulcus during impression making. A common method of accomplishing gingival displacement is by packing cord into the gingival crevice. This is especially critical when using hydrophobic impression materials such as polyvinyl siloxanes.

The purpose of this study was to determine whether any of the commonly used gingival retraction medications could inhibit the polymerization of polyvinyl siloxane impression materials when they are in direct contact with the setting material and to evaluate the clinical performance of retraction cords.

Many gingival retraction cords in various shapes, sizes and medications are available on the market. The literature is replete with reports on the effects of medicated and non-medicated cords on impression and gingival tissue. In this study, the number of the criteria of evaluation was increased and both *in vitro* and *in vivo* studies were conducted together by three prosthodontists.

44.

The Potential of Plasma Screen Technology in Small Group Teaching for Dental Undergraduates

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AIM: This study was devised to ascertain the opinion of dental undergraduate students as to whether they preferred observing a live demonstration as a group directly at the workbench or indirectly on a remote Plasma Screen.