

implant. This technique will be modified by the quality of the X-ray image, the range of the optical system of humans, subjective interpretation and the problem of quantifying. The X-ray is not enough.

Digital X-ray systems provide some advantages such as lower exposure to radiation, the possibility of modifying images, measuring lengths and angles, and densitometric studies.

The resonance frequency analysis system (Osstell) is a technique that evaluates the stability of the interface bone-implant. Used when connecting the abutments, it shows us the degree of osseointegration (protocols of early loading).

70. Research into the Retention Force of Electroformed Secondary Bar

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INTRODUCTION: Electroformed metals are known to present good adaptability and biocompatibilities, but it is not yet known if the retention force of the electroformed secondary bar frame (ESBF) can endure long use. To clarify this point, the retention force between the primary cast bar and ESBF were measured.

MATERIAL AND METHODS: An edentulous model was prepared and four implants (Frialit 2) were embedded. The fabrication of the primary bar was cast from pure titanium. We coated the completed titanium bar with silver lacquer and applied 0.3mm thick electrodeposite. The ESBF was attached to the cast titanium primary bar, cyclical tests performed for 15000 cycles and the retention force measured each time. The retention forces were measured in 37°C distilled water .

RESULTS: The retention force value dropped as the number of reseating increased. It was 22N after 1000, 19N after 5000, 18N after 10000 and 16N after 15000 cycles. The hysteresis curve indicated that the resistance during cyclical testing was constant and stable up until the completion of 15000 cycles.

CONCLUSION: The results confirmed that the retention force dropped gradually as the number of cycles increased, but that the stress imposed on the implants

due to attaching and removal was low. This may be due to the excellent adaptation accuracy. In the case when repetition of attaching and removing for a long period is considered, we need an attachment to enable the provision of a stable retention force Supported by Wieland Edelmetalle.

71. Implanto-Prosthetic Rehabilitation of the Mandible by Means of Two Implants

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Edentulousness is a considerable problem in Croatia. So far prevention has not become the most important part of the dental profession. On the other hand, poor medical knowledge, reduced rights concerning health insurance costs as well as an increasing number of impoverished people in Croatia has resulted in postponed prosthetic rehabilitation. For the above mentioned reasons the Croatian people suffer from premature loss of their teeth. Also lower jaw atrophy occurs, which makes prosthetic rehabilitation even more difficult to achieve.

In spite of some disadvantages, the double-implant borne prosthetic suprastructure has proved to be a simple and good solution to the patient's problem, mainly because it is cost-effective. This particularly applies to Croatian patients.

Over the last five years we have placed double-implants in 26 patients, in the anterior region of the mandible. The implants were placed in the region of the lower canine or slightly more mesially. Severe atrophy was determined in 13 patients (50%) which impeded their complete denture wearing even before the implant placement started. However, we made up for the loss in two patients by placing the implants again. This time we placed them slightly more mesially.

We made one borne implant complete denture for one patient because the examination revealed severe atrophy in one segment of his mandible. In addition since the osseointegration prognosis for this patient was questionable we decided against any additional surgical treatment. Since the belts of the attached gingiva in our patients were

wide enough and the diameters of the implants were not very long, no vestibuloplasty was necessary. We installed ITI, IMZ, ASTRA and Ankylos implants. All systems proved to be equally functional.

72.

Electromiograph Study of Patients Treated with Overdentures Retined with Implants

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INTRODUCTION: Long Term edentulous patients present severe bone loss in their alveolar ridges, as a consequence there is serious compromise in esthetics and function.

A therapeutic alternative which we can offer to these patients is an overdenture retined with dental implants, in order to improve retention and stability.

AIM OF THE WORK: The aim of the study was to determine by electromiography whether the muscular groups involved in masticatory function present any special activity in patients treated with overdentures retined with dental implants.

MATERIAL AND METHODS: We selected ten complete edentulous patients with inferior overdentures retined with two implants and a bar. Myotronics K6-I with eight channels, and registration of anterior and posterior temporalis muscle masseter and dygastric muscles.

We performed recordings in rest positions and maximum force bite.

RESULTS AND CONCLUSION: The results obtained indicate an increase in activity in the rest position of the posterior temporalis group.

73.

ITI Implant-Supported Dentures: Assessment of Peri-Implant Bone Changes

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Mandibular overdentures, supported by osseointegrated implants, is a well established, successful treatment of partially edentulous patients. The aim of the study was to analyse the bone mineral density (BMD) in the implant site of the mandibles with ITI implant-supported overdentures when compared with the same site of the edentulous mandibles in complete denture wearers. Eight patients (4 males, 4 females) with 16 ITI implants and overdentures in the mandible and 8 complete denture wearers (4 males, 4 females) who had approximately the same body mass index and the same age participated. The BMD measurements were performed on digitised periapical radiographs with a 10 steps copper stepwedge attached to each film. 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 film. The BMD values of each measured region of interest (ROI) were expressed in the copper stepwedge thickness equivalents. BMD values of the ROIs close to the implant were statistically compared to the same ROIs in the edentulous mandible using t test for independent samples. BMD values were significantly higher in ITI implant ROIs compared to the matching edentulous mandible sites ($p < 0.05$). We concluded that an increased function after the implant-overdenture treatment caused a load-related bone formation which minimizes the physiologic age-related mandibular BMD loss.

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