more severe and a lot of microform clefts of the palate have been observed, especially in females with type I; so that a close examination of the palate is required in all kind of facial dysmorphy. Some of these microforms could be called 'clefting without cleft'.

Changes in the Therapeutic Management of Patients with Malignant Tumours of the Maxillofacial Region Induced by Positron Emission Tomography

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Fifty patients with biopsy-proven cancers of the maxillofacial region were investigated by whole body positron emission tomography (PET) using 2-[^{18}F]-fluoro-2-deoxy-D-glucose (FDG) in addition to the conventional staging procedures (clinical investigation, ultrasound, computed tomography, and magnetic resonance imaging of the head and neck, and X-ray of the thorax). In 34 patients the therapy was not altered by the PET (concordant results). In 8 cases with advanced or recurrent disease, PET imaging detected distant metastases and we decided not to perform surgery on these patients. In one case a second primary tumour could be localised in the larynx and was removed surgically. Concerning local lymph node metastases a prospective histologically controlled study demonstrated a higher sensitivity (89%) and accuracy (75%) of PET as compared to the other staging procedures. Downstaging by PET only occurred when lymph nodes were small and rather near to the primary. Based on these results we decided to perform only a suprahyoid dissection (instead of a neck dissection) in 6 patients with stage two disease of the oral cavity as PET did not demonstrate any nodal involvement. In two patients with small T1 carcinomas we did no lymph node dissection at all. Due to the high sensitivity of PET-FDG imaging and the possibility of detecting even small metastases the PET leads to therapeutic sequelae in a number of cases, and in our experience is a useful part of the staging routine.

Virtual Reality and Real Virtuality in Cranio-Maxillofacial Surgery

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The modelling of natural objects based on magnetic resonance imaging (MRI) or computed tomography (CT) data, as for example a human skull, is essentially a reverse engineering process. It involves the implementation of procedures and tools for the acquisition. transmission, filtering, reconstruction, editing, and visualization of natural objects in three dimensions (3-D).

Models of natural objects can be placed into a virtual reality (VR) based simulation and visualization environment for immersive and interactive exploration by end-users that make use of position tracked special purpose peripheral devices. It will be shown that this new technology has much potential for application in science, technology and medicine. Yet, prior to successful introduction into clinical usage, many open questions with respect to human factors – practicality, operating speed and cost – need to he solved.

In contrast to VR, real virtuality (RV) is defined as an environment where a user interacts with physical 3D models of natural objects. Three-dimensional copies are produced using rapid prototyping (RP) procedures such as the technique of stereolithography (SL). It will be shown how RV 3D models of skulls are currently being fabricated for a clinical test in which they are used for surgical rehearsal and intervention al planning prior to cranio-maxillofacial surgery.

Quantitative Measurement of Volume Changes Using Three-Dimensional Free Surfaces in Esthetic Surgery: Validation of an Optical Method

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Dimensional effects of plastic surgical methods should be determined on a quantitative basis allowing the comparison of different operation methods. For this reason, an optical measurement method was developed to quantitate several soft tissue augmentation procedures for the correction of localized alveolar ridge defects. The purpose of this study was to determine the effect of defect size on the validity of results obtained with the optical Moiré-technique (MT), (Newport Instruments). The standard used for comparison was the mechanical 3-D co-ordinate measuring machine (CMM), which measures with a reproducibility of 1.5 µm/m (Leitz PMM 864) and calculates the volume integral. Five pairs of test objects (T1 to T5) were fabricated. Each pair consisted of: (i) one concave 3-D free surface form, determined by a mathematical algorithm and mimicking the ridge defect and (ii) of one convex 3-D surface form, again determined by a mathematical algorithm and representing the augmented ridge. The concave 3-D free surface forms of T1 to T5 imitated different ridge defect sizes. The volume differences within these five pairs of specimens were determined by CMM and MT. The effect of defect size on the results of volume determinations was assessed by comparing CMM and MT within T1 to T5. ANOVA ($p < 0.05$) was used to determine significant differences between CMM and MT results for the various defect sizes. Volumes between CMM and MT differed not more than 6.8 mm^3 (SD ± 7.9). In larger defects the validity of the Moiré-technique seems to be better than in smaller defects.

Cylindroma: The Sialogenic Tumour of Insidious Malignancy. Report of Twenty-five Cases

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The aim of this paper is to analyse 25 patients (17 female (68%) and 8 male (32%), aged 54.7 years on average with adenoid cystic carcinoma, treated in our department from 1975–1995. Localization of the tumours: palate (6), max-