

From the case history and a clinical examination, it was established that the boy had craniofacial dysmorphism/dysostosis and hypertelorism with lower positioned and poorly formed ears. He had diagnosis of thickening of the right ventriculus. Karyotype normal. Also presented adactyly of digits II and III manus et pedis, clinodactyly of digit I, and syndactyly of digits IV and V was surgically treated.

By examining the oral cavity, angulus infectiosus oris was diagnosed caused by lowered vertical dimension of occlusion and candidiasis lingue, and consequently the boy was referred to an oral pathologist for appropriate therapy.

Special attention is required when fabricating a complete denture in a child's mouth in order not to compromise any prosthetic principle. Thus, we were faced with several problems including how to find impression trays of adequate size, and how to explain to the patient the procedure of functional movements, achievement of rest position, and the artificial teeth selection.

Because of the small and narrow dental arches we decided for the smallest size of artificial teeth (D28) and reduced occlusion. The artificial teeth were modified and reduced. The second molar took the place of the first molar. With color and shape we tried to imitate deciduous teeth.

After insertion of the complete dentures and control examination, the patient was given an appointment for making new dentures in six months, because of the growth and development of the maxilla and mandible.

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## Evaluation of Direct and Indirect Methods of Repairing Fractured

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**INTRODUCTION:** The most common technology used in producing a fixed partial denture is firing porcelain to metal. The fracture of veneering material rarely occurs, although it is one of the most striking problems in daily practise.

**PURPOSE:** The purpose of this study was to evaluate the shear bond strength of composite to porcelain and metal by using two intraoral repair methods: direct and indirect.

**MATERIAL AND METHODS:** The direct method was performed by using Ceramic Repair System (Ivoclar,

Lichtenstein) with and without sandblasting. The indirect method involved Co-Jet system (ESPE, Germany) and Rely X ARC (3M, USA) as luting agents. 180 specimens fabricated with feldspathic porcelain and Ni-Cr alloy were divided into 3 groups: CR/0 (direct method of repair without sandblasting), CR/S (direct method of repair with sandblasting) and CJ (indirect method based on Co-Jet system). Each of them was divided into 3 subgroups of 20: porcelain (P), porcelain and metal (P/M) and metal (M). The 10 specimens were then subjected to a shear test in a mechanical testing machine at a crosshead speed of 0.5 mm/min. Mode of failure was recorded. Means and standard deviations of loads were calculated.

**RESULTS:** Tested groups exhibited the following values in megapascals: CR/0-P =  $20.36 \pm 3.05$ ; CR/0-P/M =  $19.45 \pm 3.49$ ; CR/0-M =  $10.86 \pm 4.1$ ; CR/S-P =  $18.21 \pm 2.62$ ; CR/S-P/M =  $19.34 \pm 1.76$ ; CR/S-M =  $9.54 \pm 2.48$ ; CJ-P =  $19.85 \pm 1.94$ ; CJ-P/M =  $19.78 \pm 3.60$ ; CJ-M =  $13.56 \pm 3.82$ . The mean fractured loads were significantly lower for metal subgroups than for porcelain and porcelain/metal subgroups.

**CONCLUSION:** Higher shear bond strength is expected when porcelain was fractured without extensive metal exposure.

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## Multidisciplinary Therapy of Upper and Lower Jaws Defects

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The aim of this study was to evaluate the possibility of multidisciplinary therapy of injury and other defects of the upper and lower jaws. The imperfections originate primary (cleft, oligodontia) or secondary (cysts, accidents, tumors, inflammation etc.). The incidence in the Czech Republic is criminal in 28 %, sports in 12 %, and home accidents in 9 %. The cleft genetic register includes at the present time more than 4500 families from Bohemia. The multidisciplinary therapy involves the following disciplines: prosthodontics, maxillofacial surgery, plastic surgery, orthodontics, speech pathology, psychology, otorhinolaryngology, genetics, and social work.

Dental care of adult patients is not simple. The five case reports demonstrate the prosthetic treatment of adult patients by multidisciplinary therapy: surgeon, orthodontist and prosthodontist. The aim of our therapy is to receive the integration of orthodontic treatment or surgi-

cal preresorative therapy with prosthodontic restoration, to enable esthetic harmony and functional efficiency of dental arches.

The case reports describe:

- unfitting orthodontic treatment with central incisor extrusion,
- bone defect after implant disintegration,
- polytrauma after traffic accident,
- status post partial resection of the right upper jaw after fibrosarcoma - rest oroantral communication and total bilateral cleft,
- hypertelorism, hands and feet malformation, left side oronasal communication from palate to fornix.

The methods of reconstruction are unusual and some of them are presented in the 5 clinical cases.

## 100. Measurement of the Electromagnetic Field in Dentistry

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The aim of this study was to measure the magnetic field in dentistry together with simultaneous subtraction of direct ground component of the magnetic field. The research instrument used to measure the power of the magnetic field was of our own design. It measures the magnetic field by the Hall sensor that is powered with 5 to 10 V and is integrated in one chip together with pre-amplifier. The sensor output is differential (Q1-Q2) and proportionate to measurement values of magnetic induction. As the values of alternate fields in a laboratory setting are small the differential output voltage should be increased by about 100 times. Our study samples consisted of instruments currently available in dentistry: halogen lamps, polymerizing lamps, amalgam mixers, micro-motors and dental chairs. On the basis of our study results and statistical analysis the following conclusions are made magnetic field spreads through space in ISOTROPIC manner. The greatest frequency obtained at the smallest distance was 100 kHz. The sensitivity of the measurement instrument was 0.0001  $\mu$ T and the majority of instruments produce magnetic radiation higher than 40 G. The power of the magnetic field decreases with increasing distance from the source. The investigated instruments produce a

relatively mild magnetic field. The instruments with stronger magnetic fields are located far enough from the persons on whom they act. The newly produced instrument acts on their environment by smaller magnetic fields.

## 101. Surface Modification of an Experimental Silicone Rubber Maxillofacial Material to Improve Wettability

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**OBJECTIVES:** Good wettability of maxillofacial prosthetic materials is important so that a lubricating layer is formed with supporting tissues thus reducing patient discomfort. The purpose of the study was to surface modify an experimental silicone rubber material in order to improve wettability.

**METHODS :** Samples of experimental silicone rubber were surface modified by first argon plasma treatment followed by chemisorption of ethyleneoxy functional silanes. These were compared with the same silicone rubber which had ethyleneoxy functional surfactants incorporated into the polymer matrix. In all cases contact angles, tear strength and water uptake were measured.

**RESULTS:** Surface modified materials had comparable contact angles to surfactant modified silicone rubber, all being significantly lower than the unmodified material. Surface modified materials however had a significantly higher tear strength and lower water uptake in comparison to surfactant modified materials.

**CONCLUSION:** Argon plasma treatment followed by chemisorption of ethyleneoxy functional silanes proved an effective way of improving the wettability of an experimental silicone rubber maxillofacial prosthetic material without altering bulk properties.