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## Abstracts

### **Evaluating the Effectiveness of Dental Restorative Materials for Clinical Service**

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#### SUMMARY

This paper reviews the way in which modern dental restorative materials are evaluated for use in clinical dentistry and how the evidence for their efficacy is collected. Laboratory tests are reviewed and the variety of types of clinical evidence is considered. Clinical evidence ranges in scientific rigour from the published experiences of “opinion formers” within the profession to full clinical trials, involving *post hoc* statistical analysis. At first sight, the latter appear more satisfactory because of the high reliability of the data, but they have the disadvantage that they are time-consuming to carry out. If trials run for several years, there is the strong likelihood that the material may no longer be on the market at completion. This is because of pressure on manufacturers to maintain their commercial position through continual innovation.

This review concludes that there is a considerable body of evidence to show that modern materials are reliable in clinical service. However, it points out that this reliability may be threatened by market forces that are pressuring manufacturers into replacing established and satisfactory materials with materials which may be eventually prove to be less satisfactory.

**Key Words:** Dental Materials; Resin Composites; Compomers; Glass-Ionomers; Testing; Clinical Trials

# **The Use of Modern Biomaterials in the Reconstruction of Orbital Wall Defects**

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## **SUMMARY**

While repair of orbital wall defects requires accurate diagnosis and surgical skills, knowledge on the properties of the available biomaterials is equally important. These are classified according to their origin as biological and synthetic. Their degree of biocompatibility, physical properties and indications for use in orbital wall reconstruction are presented. It is concluded that in small orbital wall defects, that do not cause or will not provoke an increase in orbital volume, one of the available absorbable biomaterials are indicated for use. In large orbital wall defects, where reduction of the orbital volume and simultaneous support of the orbital contents is required, bone autograft or titanium should be used. Late enophthalmos can be corrected with biomaterials that retain their volume augmentation, such as hydroxyapatite or porous polyethylene.

Even if research advances have increased the alternatives to autografts, the ideal reconstructive biomaterial has not been found yet. Until the release of third-generation biomaterials, the surgeon should bear in mind that justification for use of a biomaterial should be more important than its unavoidable disadvantages.

**Key Words:** Orbital Defects; Biomaterials; Reconstruction

# The Applicability of Resonance Frequency Analysis (RFA) in Evaluation Implant Stability

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## SUMMARY

The most important prerequisite for successful osseointegration is achievement and maintenance of implant stability. Recent clinical findings have demonstrated that only implants with high primary stability can be subjected to immediate loading protocol with predictable result. The purpose of this *in vivo* study was: (1) to determine the changes in implant stability after 6 months of functional loading by using RFA; (2) to evaluate implant stability of 4 implant systems utilizing different techniques for preparing surface roughness; and (3) to compare the results of RFA measurements with histomorphometrical data.

2 mongrel dogs were edentulated bilaterally in the mandibular and maxillary premolar areas. After 3 months, implants were placed in a pattern, 4 different implants per quadrant (n=32): (1) Mk III (RP), TiUnite, Nobel Biocare, Sweden D-3.75, L-10; (2) ITI-Screw, ITI TPS, Straumann, Switzerland D-4.1, L-10; (3) 3I-Osseotite, Implant Innovation, USA D-3.75, L-10; and (4) XiVE, Cell-Plus, Friadent, Germany D-3.4, L-11. Implants were subjected to immediate loading with 4 unit gold cast bridges (3-5days post implantation). Resonance Frequency Analysis - RFA, (Osstell<sup>tm</sup>, Integration Diagnostics, Sävedalen, Sweden) was used for measurement of implant stability after insertion, as *ISQ surgical*, and 6 months later, as *ISQ prosthetic*. Histomorphometrical evaluation - *BIC%*, the percentage of implant to bone contacts were quantified in the defined zone of interest (total peri-implant area) by computer assisted histomorphometry.

In this experimental setting, all evaluated surfaces achieved a good bone-to-implant contact and implant stability. The study demonstrated no statistically significant difference in implant stability and amount of bone-to-implant contact between implant systems utilizing different techniques for preparing surface roughness. Decrease or increase of ISQ values were not always correspondent to histomorphometrical data.

**Key Words:** Implant, stability; Resonance Frequency Analysis; Histomorphometry

# **Force Distribution on Denture-Supporting Tissues by Finite Element Analysis**

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## **SUMMARY**

The force distribution on denture-supporting tissues, abutment teeth and alveolar mucosa, was evaluated by using the finite elements analysis (FEA). For the purposes of this study, a 3D model of a bilaterally terminal edentulous mandible with border teeth 44 and 33, and a removable partial denture (RPD) was made. The RPD was loaded unilaterally and bilaterally by occlusal force with range of values from 5 to 250N. Non-linear FEA was used to examine the force distribution.

The results indicate that there were some differences in the distribution of force on abutment teeth and alveolar mucosa. The differences depended on the force magnitude and the loading place.

**Key Words:** Finite Element Analysis; Occlusal Forces; Removable Partial Denture

# Effects of High-Impact Dose of Amoxicillin on the Laboratory Value of the INR: Oral-Surgical Impact

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## SUMMARY

In oral surgery, we increasingly treat patients receiving a continuous anticoagulant treatment for various pathological conditions. The primary aim of administering anticoagulant medicaments is to maintain blood hypo-coagulation that will bar intravascular creation of clots and will not result in spontaneous bleeding. These patients are under continuous laboratory monitoring, especially at the beginning of treatment. Today, the recommended practice in the control of anticoagulant treatment effect is measurement of the INR. If they require oral-surgical or other dental treatment that implies bleeding, dental surgeons must be aware of and well acquainted with complications resulting from anticoagulant treatment. In the first place, this refers to bleeding. Some medicaments interact with oral anticoagulants increasing their effect, like penicillin-related antibiotics, which are administered in prophylaxis of bacterial endocarditis in patients with mechanical heart valves.

The aim of this study was to find out if the short-term “loading” doses of amoxicillin can have a considerable impact on the values of the INR, which is an indicator of the effect of anticoagulant treatment. In other words, the issue here is whether there is a considerably higher risk of prolonged post-extraction bleeding following the administration of amoxicillin in the dose of 2 g an hour prior to oral surgery. We examined 43 patients who were given 2 g of amoxicillin 1 hour prior to oral-surgical intervention or any other blood-related dental intervention because the patients had mechanical heart valves. All the examined patients were receiving the oral anticoagulant treatment at the same time.

By statistical analysis of the INR values prior to and following the antibiotic prophylaxis, we noticed that there was no significant difference ( $p > 0.05$ ; Correlation Coefficient = 0,111;  $p = 0.484$ ). Accordingly, there is no increased risk of prolonged bleeding.

**Key Words:** Oral Surgery, Oral Anticoagulants; Antibiotics

# Comparative Histopathologic Study of Gingival Retraction Methods

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## SUMMARY

Procedures for fixed partial dentures require adequate duplication of the prepared tooth and finish line. Finish lines are frequently placed below the crest of the gingival margin and necessitate gingival retraction when impressions are made. The aim of this study is to histopathologically and clinically determine the effect of three gingival retraction techniques on gingival tissues.

Four incisor teeth of sixteen Guinea Pigs were used in this study so that three gingival retraction techniques (non-medicated gingival retraction cord, electro-surgery and epinephrine-impregnated gingival retraction cord) and control group could be compared with each other. The effect of three gingival retraction techniques was evaluated histopathologically, and gingival recession and loss of attachment were analysed clinically at each of postoperative times. Data were analysed by a one way ANOVA and (multiple comparison) a DUNNET test.

It was found that all of the gingival retraction techniques caused minimum gingival recession and loss attachment. However, there was a statistically significant difference between the used gingival retraction techniques groups at the 72<sup>nd</sup> hour and on the 10<sup>th</sup> day. In addition, all of the techniques tested induced some degree of destruction of sulcular epithelium and/or junctional epithelium, as well as oedema and disruption and/or loss of fibres in circumscribed regions of the underlying connective tissue.

**Key Words:** Gingival Retraction; Cord; Gingival Recession; Gingival Sulcus

# **TMJ Dysfunction as a Result of Occlusal Disequilibrium**

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## **SUMMARY**

The aim of this study was to determine the correlations between occlusal disequilibrium and TMJ dysfunction and to make an assessment of final prosthetic treatment i.e. reconstruction of lost dental unity. We treated 141 patients with occlusal disequilibrium and TMJ dysfunction during a 5-year period (1999 - 2003). The causes of occlusal disequilibrium were premature contact, occlusal interferences and para-function, and teeth missing. In 7 cases we performed MRI examination of TMJ.

Final results, based in conservative treatment with plastic splints and final prosthetic treatment, are evaluated according to: subjective data, clinical data and, eventual MRI imaging.

**Key Words:** TMJ Dysfunction; Occlusal Disequilibrium

## **Soft Tissue Facial Profile in Macedonian Subjects**

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### **SUMMARY**

Lateral head cephalograms of 30 preadolescent and 30 adolescents of both sexes, who had normal occlusion and well-balanced facial profiles, were evaluated to define norms for several integumental variables for Macedonian population. Utilized measurements were: angle of skeletal convexity (N-A-Pg); angle of soft tissue facial convexity excluding the nose (N'-Sn-Pg); angle of total facial convexity (N'-Pr-Pg'); nasolabial angle (tangent to columella of nose / Sn-Ls); mentolabial angle (Li-B' / tangent to chin); upper lip distance to aesthetic line (Ls-E); lower lip distance to aesthetic line (Li-E); upper and lower lip lengths.

A comparison of the means for all variables between the 2 age groups indicated that the face of a man is significantly different from that of a child.

**Key Words:** Facial Profile; Cephalometry

# **Evaluation of the Bonding Procedure of Clearfil SE Bond in Primary Teeth: A High Resolution SEM Study**

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## **SUMMARY**

The introduction of adhesive techniques and new materials gradually change operative dentistry. Self-etching primers are widely used in permanent teeth, as well as in primary teeth, under composite and compomer materials. The aim of the study was to investigate the resin-dentine interface of an adhesive system Clearfil SE Bond (Self-etching primer + bonding agent, KURARAY) in primary teeth using High Resolution Scanning Electron Microscope. Freshly extracted caries-free human deciduous molars were used in the study. Standard class V cavities were restored using Clearfil SE Bond according to the manufacturer's instructions. Adhesive was also applied upon total etching for 15s by using a 10% poly-acrylic acid, as a different protocol. Teeth were then restored with Compoglass F (VIVADENT) compomer restorative material.

The interface images of the specimens, micro-morphologically analyzed by SEM, showed that the Clearfil SE Bond, as a dentine adhesive system, had a homogenous hybrid layer, and also exhibited similar characteristics regarding resin penetration in deciduous teeth. When poly-acrylic acid conditioning was applied, the smear plugs were removed. The total etching technique revealed open tubules and resin tag formations. Micro-porosities were filled with resins and thus revealed a good adaptation of the compomer to enamel. It was concluded that Clearfil SE Bond as dentine adhesive system could be used successfully under compomer restorative materials in primary teeth. However, removal of the smear plugs by poly-acrylic acid etching could further improve the adhesion to dentin and enamel.

**Key Words:** Bonding; Primary Teeth; Clearfil SE Bond; Enamel; Dentin; SEM

# Calcium Concentration and pH in the Periapical Region after Application of Different Calcium Hydroxide Preparations into Root Canals

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## SUMMARY

The purpose of the present study was to determine both calcium concentration and pH in the periapical region after application of 4 different calcium hydroxide preparations into root canals. 65 extracted human single-rooted teeth were randomly sorted into 4 experimental groups of 15 teeth each, and a control group of 5 teeth. In group 1, calcium hydroxide was mixed with distilled water; in group 2, calcium hydroxide was mixed with glycerin; in group 3, calcium hydroxide was mixed with glycerin and 1/7 distilled water; in group 4, calcium hydroxide was mixed with anaesthetic solution; and in group 5, the control group, nothing was applied to the canals. All samples were immersed in distilled water and stored at 37°C. The pH and amount of calcium released were measured at days 3, 7 and 15.

After the placement of calcium hydroxide within the root canal, all groups showed a significantly decline of the pH over time ( $p < 0.05$ ). Highest pH change and calcium concentration were observed after 3 days for the mixture groups. The results suggest that the use of calcium hydroxide mixed with glycerin and calcium hydroxide mixed with glycerin (1/7 distilled water) combinations, should be preferred for optimum intra-canal activity instead of calcium hydroxide mixed with distilled water and calcium hydroxide mixed with anaesthetic.

**Key Words:** Calcium Hydroxide; pH; Ca<sup>2+</sup>

# Townes-Brocks Syndrome: Case Reports in the Same Family

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## SUMMARY

The Townes-Brocks syndrome is a rare, autosomal dominant and phenotypically variable disorder, characterized by an association of ear, limb, anal, and genitourinary abnormalities. This report features 3 new familial cases of the syndrome that illustrate the intra-familial phenotypic variability. 1 of the cases exhibited unilateral cleft lip and palate, a finding not having been reported previously in association with this condition.

**Key words:** Townes-Brocks Syndrome; Syndromes, head and neck

# Orofacial Findings in Mucopolysaccharidosis Type I (Hurler Syndrome): Report of a Case

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## SUMMARY

The mucopolysaccharidosis type 1 (Hurler syndrome) is a hereditary, progressive and autosomal recessive disease. The main factor of this disease is the absence of the lysosomal hydrolase  $\alpha$ -L iduronidase enzyme, which obtains ruining of glycosamino-glycans. Head and neck, as well as oral findings, are characteristic. In this article, orofacial findings of an 11-year-old boy with Hurler syndrome had been defined.

**Key Words:** Mucopolysaccharidosis Type I; Hurler Syndrome; Iduronidase Deficiency

# **Adult Subcutaneous Haemangiopericytoma of the Buccal Region: Report of a Case**

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## **SUMMARY**

Haemangiopericytoma (HPC) is a rare neoplasm with uncommon maxillofacial involvement. In this article we describe a case of a subcutaneous HPC of the right buccal region in an adult patient with angiographic and immunohistochemical investigation.

**Key Words:** Haemangiopericytoma; Mesenchymal Tumours; Angiography

# Chondrosarcoma of the Mandible: Report of a Case

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## SUMMARY

Chondrosarcoma (CHS) is an uncommon malignant tumour of unknown aetiology, which is characterized by the production of cartilaginous tissue and the absence of production of bone tissue. Maxillary and mandibular localizations of CHS are extremely rare and have a poor prognosis. Usually, the lesion presents as a slow growing painless swelling, firm to palpation, frequently associated with paraesthesia and loosening of teeth. Radiographically, CHS is characterized from radiopaque and radiolucent areas, either alone or in combination. The most acceptable treatment is wide local resection with a tumour-free margin of 2 to 3 cm.

This article presents the case of an 80-year-old woman with a large tumour mass that had originated in the mandible, resulting in facial asymmetry, and speech and feeding difficulties. The clinical course and characteristics with the radiopaque features of the tumour and the final microscopic examination of the specimen set the diagnosis of a mandibular CHS. The epidemiology, clinical, radiographic and histological appearance, the aetiology, treatment and prognosis of CHS are also discussed in detail according to the recent literature.

**Key Words:** Chondrosarcoma; Mandible; Malignant Tumour

# **Erupted Complex and Compound Odontoma: A Review and Report of 2 Cases**

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## **SUMMARY**

Odontomas are reported among the most common odontogenic tumours, and they are classified as either compound or complex lesions. Complex odontomas are less frequently seen than compound odontomas, but they are not uncommon; in extremely rare instances, they may erupt into the oral cavity.

In this report, cases of erupted odontoma are described, and their clinical, radiological and histological findings and complications are discussed.

**Key Words:** Erupted Odontoma; Odontomas, Complex and Compound

# **Extrusion of Root Canal Sealer to the Mandibular Canal Area: A Case Report**

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## **SUMMARY**

A case of extrusion of endodontic filling material to the mandibular canal area is presented. Hypaesthesia and severe pain was confined to the areas supplied by the inferior alveolar nerve. Conservative endodontic re-treatment relieved pain and surgical retrieval of the sealer was not necessary.

**Key Words:** Mandibular Canal; Endodontic Treatment