

## Orals Communication

### INVESTIGATION WORK

#### 1. POLYMETHYL METHACRYLATE CROWNS: A NEW ALTERNATIVE FOR TREATING EXTENSIVE DAMAGE?

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*Introduction:* Dental caries represents a very common pathology in child patients, but conservative treatment can be difficult if there is considerable damage to the posterior region. The option most commonly accepted by most pediatric dentists is the placement of preformed metallic crowns, however, many parents reject these for aesthetic reasons.

Polymethyl methacrylate (PMMA) is a material with many favorable factors for use in dentistry among which is resistance to compression force and dimensional stability regarding temperature changes and load variance.

The manufacturing technique and adapting the crown is simple, inexpensive and the aesthetic appearance is very good. Because of this we are carrying out this research in order to manufacture PMMA crowns for primary molars.

*Objectives:* The aim of this study is to analyze these crowns made with resin (PMMA) from the point of view of adapting them, the need for dental preparation, aesthetics, physical properties and cost.

*Material and methods:* For making these crowns were using polymethyl methacrylate which is actually used for making long term provisional crowns.

This material has traction resistance of 80 MPA, elasticity limit of 60 MPA, flexural strength of 97 MPA and water absorption of  $< 32 \mu\text{g}/\text{mm}^3$ .

Two types of procedures are carried out:

1. The tooth is filed leaving a minimal occlusal thickness of 1.2 mm and a cervical thickness of 0.6. After this impressions are taken and sent to the laboratory. The laboratory then scans the stump and the crown is made.

2. The tooth is filed in the conventional manner and a preformed metal crown is adapted which will later be scanned.

*Results:*

—By using PMMA we achieve the desired aesthetic results as this material can be manufactured in color but it can also be transparent, and the color desired can be achieved with the cement color.

—The physical properties of resistance and elasticity permit carrying out dental preparation that is similar to that of metal crowns.

—The cost of these crowns is similar to that of aesthetic crowns that are to be found in the market.

*Conclusions:*

—PMMA crowns can be an alternative to metal crowns such as zirconium crowns.

—Long-term clinical studies are needed in order to evaluate clinical efficiency.

#### 2. ORAL HEALTH IN YOUNG HIGH PERFORMANCE SPORTSMEN AND WOMEN: CROSS-SECTIONAL STUDY AT THE JOAQUIM BLUME RESIDENCE

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*Introduction:* High performance sportsmen and women are a population group that, given their lifestyle and diet patterns, may be more prone to orodental diseases. Training strategies can reduce salivary flow as a result of dehydration and/or oral breathing. Competition stress is associated with a temporary descent in the activity of the immune system and an increase in para-functional activity. In order to satisfy high energy needs, they follow special diets based on carbohydrates and isotonic drinks with an acid pH. In addition, those practicing contact sports have a higher risk of orofacial trauma. Most of these orodental problems can be prevented from infancy-adolescence.

High performance sportspeople and women often undergo exhaustive medical examinations in order to monitor their state of health. However, oral health is rarely examined despite being related to sports lesions and a lower competitive performance.

*Objectives:* To determine oral health in young high performance sportsmen and women.

*Material and method:* This cross-sectional study was carried out between November 2012 and March 2013. The sample was made up of sportsmen and women living in the Joaquim Blume Residence in Esplugues (Barcelona). Following informed consent by legal custodians, they filled in a general questionnaire (demographic data, diet, trauma, hygiene and dental visits). A dentist registered DEFT, trauma, enamel defects, Dean's fluorosis index, ECC and DAI. The results were compared with those of the normal population, published in the Oral Health Survey in Spain 2010. The data obtained was analyzed statistically.

*Results:* The sample was made up of 33 sportsmen and women between the ages of 14 and 17 years (78.8 % were women), and 69.7 % practiced group sport. Of these 57.6 % did not visit a dentist regularly. All brushed with fluoride toothpaste more than once a day

although they had gingivitis and 45.5 % calculus. The DEFT index was 1.45, none had dental erosion although 36.4 % drank isotonic drinks (< 5 week). Some 54.5 % did not have malocclusion, or this was minimal, and 33.3 % had pronounced malocclusion. Some 75.8 % were familiar with oral protectors but none used them, and none had sport related dental trauma.

*Conclusions:* The results suggest that athletes are more disposed to gingivitis compared to the normal population despite better oral hygiene, as most did not seek dental aid. The DEFT index was slightly lower than that of the normal population (cohort 15 years: 1.72).

### 3. EVALUATION OF THE SPONTANEOUS CLOSURE OF THE REMAINING SPACE AFTER THE THERAPEUTIC EXTRACTION OF A PERMANENT FIRST MOLAR.

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*Introduction:* The extraction of permanent first molars (PFM) with an uncertain prognosis with regard to conservative treatment should be considered a therapeutic option. If this is carried out early, the eruption of the second permanent molar can result in a favorable closure of the space.

*Objectives:* To evaluate the spontaneous closure of a space after the extraction of a FPM and relating this to age at treatment in a series of cases.

*Material and method:* Retrospective study of a population that underwent the extraction of FPMs in the Hospital Sant Joan de Déu in Barcelona, between November 2000 and May 2012. Of the 40 medical histories, 18 were excluded as inclusion criteria were not met (extraction before the age of 12 years, no orthodontic treatment, an orthopantomography before the extraction and radiographic and clinical control for a minimum of one year). Firstly a measurement was taken between the second permanent molar and the second premolar, and secondly the inclination of both. "Good closure of the space" was considered to be the absence of any remaining space.

*Results:* Of the 22 cases in the evaluation, a total of 46 extractions were carried out (22 upper molars and 24 lower molars) with a mean of 2.7 extractions per patient. The mean age on extraction was 10.1 years (range of 7.7 to 11.9) and the mean follow-up was of 3.7 years (range 1 to 10). In 32 of the 46 extractions (70 %) spontaneous closure was observed without the need for any intervention (mean age of extraction was 9.4 years in this group). Of these, 24 had orthodontic requirements that were not related to the extractions. In the rest (30 %) a mean residual space was observed of 2.8 mm (mean age at extraction 11.1 years for this group), and there were orthodontic requirements due partially to the extractions. Of the 14 remaining spaces, 12 were lower molars. Another frequent finding was the rotation of the upper second molars and the mesial inclination of the lower ones.

*Conclusions:* When a young FPM has a bad prognosis in the medium or long term this treatment can be considered as, if carried out before the eruption of the second permanent molar, in most cases, and especially in the upper maxilla, the spontaneous closure of the space after the extraction can be expected.

### 4. EVALUATION OF MTA TREATMENT FOR PULPOTOMIES IN 150 VITAL PRIMARY TEETH AND THE REPERCUSSION ON THE PERMANENT SUCCESSORS.

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*Introduction:* Pulpotomies are one of the methods used to conserve deciduous teeth so that they can carry out their function regarding mastication, speech, aesthetics, and as natural space maintainers until the eruption of the permanent dentition. In 1995 Torabinejad et al. described the physical and chemical properties of mineral trioxide aggregate (MTA). This material stimulates the production of interleukins, and the release of bone cytokines. MTA actively encourages the formation of bone tissue and is far from an inert and irritant material.

*Objectives:* To carry out a revision of the literature on the different components used in pulpotomies of primary teeth, long-term prognosis and possible adverse effects on mineralization or disturbance in the eruption time in the permanent dentition. And therefore a) to identify the signs and symptoms of clinical and radiological failure of primary teeth during the long-term evaluation (48 months) b) to determine the differences in exfoliation and replacement of primary molars in each of the groups treated, and/or malpositions of the permanent successors compared with the contralateral side; c) to determine the presence/absence of calcification disturbances in the permanent erupted successor; d) to determine the presence/absence of root resorption.

*Material and method:* An analytical observational study was carried out of the cases with clinical and radiological long-term monitoring in order to determine the success/failure of pulpotomies with MTA by means of a longitudinal measurement of the repercussions in the eruption of the permanent successor tooth by a treated primary molar.

The patients chosen were children between the ages of 2-8 years who met the specific inclusion and exclusion criteria. After the treatment a clinical and radiological follow-up was carried out for 3/6/9/12/15/18/21/24/36 and 48 months, and the success/failure parameters described were determined.

*Results:* A success rate of 97.4 % was obtained, and the failures were due to internal root resorption of primary tooth pulpotomies. No other pathologies were observed except for the early eruption of the permanent successor.

*Conclusions:* Despite formocresol being the most commonly used material in pulpotomies in primary

teeth, MTA turned out to be the ideal material that had no repercussions on the permanent successor.

## 5. PARENTAL KNOWLEDGE ON ORAL HYGIENE AND USE OF FLUORIDE AT THE BELLVITGE DENTAL HOSPITAL

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*Introduction:* Dental caries is currently the most common chronic childhood disease. It does not distinguish between age, sex, race or culture and it can have repercussions on the general health of a child in the form of pain, visits to emergency services and being admitted to hospital. The relationship between inadequate oral hygiene and an increase in caries risk is well-known and for this reason evaluating patient knowledge of oral hygiene is very important in order to maintain a healthy and clean mouth.

*Objective:* To evaluate the oral hygiene and the use of fluoride knowledge of the parents of patients attending the clinic of the Pediatric Dentistry master's degree course of the Bellvitge Dental Hospital and to correlate this knowledge with dental caries and bacterial plaque in their children.

*Material and methods:* Descriptive, cross-sectional prevalence study. A questionnaire was carried out of a total of 53 parents on oral hygiene and fluoride. A clinical examination was carried out of the 53 children in order to evaluate present and past caries using the deft-DMFT index and the O'leary index for measuring plaque.

*Results:* The average age of the children assessed was 6.4 years, the average age of the parents was 37 years. The average age at first visit to the dentist of the children was 4.5 years, and in 64.15 % the reason for the consultation was caries. Some 77.36 % replied that fluoride helped them avoid caries but only 15 % of parents were familiar with the correct procedures for adequate oral hygiene, the use of fluoride and the importance of visiting a dentist regularly. The levels of caries and plaque were high for all the sample with a collective deft-DMFT index of 5.42 and group plaque index of 71 %.

*Conclusions:* Deficient oral hygiene increases the risk of caries and in our sample it was found that even though the parents had the necessary information for implementing adequate oral hygiene in their children, the latter had high rates of caries and plaque. Among the parents questioned there was confusion with regard to the benefits and uses of fluoride, and pediatric dentists should therefore educate both parents and patients on this subject.

## 6. INFLUENCE OF DIET ON CHILDHOOD CARIES

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*Introduction:* Caries is one of the most important and most common oral childhood and teenage diseases. But at the same time it is a disease with the highest success rates if the factors producing the caries are fought. It is of multifactorial etiology and characterized by the destruction of tooth tissue as a result of demineralization produced by the acid generated by bacterial plaque.

*Objectives:* The aim of this work was to evaluate the relationship between the caries index of children eating at home with the index of those eating in the school dining room.

*Material and methods:* A total of 35 children aged between 5 and 9 years were assessed. They were attending the University Clinic of the European University of Madrid. Parents or guardians were given a questionnaire regarding where the children had their midday meal and their hygiene habits. An intraoral examination was then carried out in a dental chair with a mirror and probe in order to assess the rate of caries.

*Results:* Significant differences were not found between the caries rate of children eating in the school dining room and those eating at home.

However, it was observed that the children eating food from caterers in the school dining room had a higher caries rate than those children eating food prepared on the school premises.

*Conclusions:* Given the results obtained up until now, we have concluded that:

1. Considerable differences were not found between those children eating in a school dining room or at home.
2. There was greater caries risk in the children eating food at school that was served by a catering company.
3. We believe the study should be continued, the number in the sample increased and the variables studied widened.

## 7. AESTHETIC PERCEPTION AFTER CARRYING OUT AUTOTRANSPLANTATION OF PREMOLARS TO THE ANTERIOR REGION

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*Introduction:* When there is a missing tooth in the anterior region, the treatment options that we have are implants or prosthetic repositioning. However, in pediatric dentistry, these should be rejected as our patients have not finished growing. In this context, autotransplantation of premolars to the anterior region, is a valid and predictable option. Nevertheless, due to aesthetic reasons, patient evaluation is a factor that has not been examined properly. Assessing the degree of patient satisfaction before, during and after the autotransplantation in the anterior region is necessary in order to correct potential errors that may pass unnoticed by the professional, in addition to obtaining endorsement for future treatment.

*Objectives:* To carry out a questionnaire regarding aesthetic perception, initially assessing internal validity,

and then the aesthetic perception by patients undergoing autotransplantation of premolars to the incisal region and receiving orthodontic treatment.

*Material and methods:* A search of the literature was carried out using the database MEDLINE/PubMed including the thesaurus terms “dental autotransplantation”, “esthetics”, “bicuspid/transplantation\*”. Variables were chosen from the search that were introduced in the questionnaire. Validity was determined using a correlation matrix which compared the results that were already known. Reliability was evaluated with the Alpha coefficient by Cronbach and the Spearman-Brown coefficient for half the sample. After carrying out the questionnaire, it was sent to twenty patients who had undergone repositioning by means of autotransplantation to the anterior region.

*Results:* According to the literature revised, as well as the input based on professional experience and subjected to posterior validation, a questionnaire was created in order to assess the satisfaction of patients who has previously undergone an autotransplantation. Reliable solid parameters were obtained. The questionnaire included aspects from the aesthetic as well as psychological point of view. The data from the questionnaire was recovered and classified, and the results were as expected.

*Conclusions:* Given all the data obtained we can confirm that autotransplantation is a valid alternative and that it should be considered for those patients who for various reasons need teeth replaced and who are still growing, providing they are receiving orthodontic treatment that requires the extraction of premolar teeth.

## 8. ANALYSIS OF THE CHILD DENTAL CARE BENEFIT IN ANDALUCÍA DURING TIMES OF CRISIS

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*Introduction:* Dental Care Benefit in Andalucía (PADA) since it was started in the year 2002 represented a change in the way many professionals worked in dentistry in Andalusia given that it was a child care program that was publicly financed but which had a mixed public-private provision.

In recent times with the financial-economical global crisis, it has even been a refuge for certain private clinics given the level of continuous patient recruitment that the program allows. Moreover, the cutbacks in the area of public health have meant that in other autonomous communities the target population has decreased in this type of program, which has led to concern and uneasiness.

*Objectives:* To carry out a study in order to assess the views of dentists under contract in the PADA program in the province of Seville with regard to how the crisis has influenced this program.

*Material and methods:* A questionnaire containing 25 items was carried out on a certain number of dentists

who were working in the PADA program in the province of Seville in order to study how the crisis has affected PADA dental offices. In order to increase the degree of reliability of the replies obtained, interviews were carried out of director members of the PADA program in Andalusia as well as a focus group of dentists in the program.

The data in the survey was treated quantitatively and subjected to discussion together with the data obtained from the interviews and discussion groups. This was done in a qualitative manner using a methodological (quali-quantitative) integration exercise.

*Results:* The results show that the PADA program continues being a haven for many private dental offices as many children see a dentist given that the visit is free. Similarly, in these times of crisis, the fact that other autonomous communities have seen how the number of children seen on the PADA program has decreased is viewed as a threat, and there is even fear that it may disappear in Andalusia.

*Conclusions:* Dentists continue seeing PADA as a source of child patient recruitment but they see an uncertain future with regard to the program.

## 9. STUDY ON THE PREVALENCE OF TRAUMATIC INJURIES AND COMPLICATIONS IN THE PRIMARY DENTITION.

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*Introduction:* Currently traumatic dental injury is the second reason for needing pediatric dental care following caries. The prevalence, according to the studies carried out to date, show an estimated variable of between 4 % and 33 %.

*Objective:* To assess the prevalence of traumatic injuries in the primary dentition, the severity, how swiftly parents attend the accident and emergency department, and how this relates to the age of the child, and the treatment and complications appearing in all traumatically injured primary teeth and permanent successors.

*Material and methods:* A total of 879 children were assessed in a specialized pediatric dentistry clinic in Seville by a single experienced operator. A total of 297 teeth with traumatic injuries were chosen in 191 patients out of the sample analyzed of 438 boys/441 girls (aged 1-7 years). A clinical registry was obtained (color 0-2/presence of fistulas/periapical radiolucency/pathological root resorption/root canal obliteration/eruption delay/damage to permanent tooth bud) as well as radiological records of all the children with traumatic injuries to the primary dentition who were monitored over 3-5 years.

*Results:* Age: 1-3 years; most common injury: Subluxation; tooth most affected: upper central incisor, most attend on first day; most common treatment was oral hygiene, chlorhexidine, soft diet and clinical and radiological moni-

toring. For late diagnoses or complications a pulpectomy or extraction was carried out. Intrusion was the type of trauma with the greatest number of complications. In primary teeth, the most common complication was pathological root resorption associated with pulp necrosis, pathological root resorption followed by necrosis. With regard to the permanent successor, in 5 out of the 4 intrusion cases, damage to the permanent successor was observed (2 cases of hypoplasia, 2 cases of hypomineralization and one case of delayed eruption of the permanent tooth compared with the other central incisor).

*Conclusions:* Even though most of the traumatic injuries in the primary dentition end with the extraction of the affected tooth because of treatment not being carried out in time, the International Association of Dental Traumatology (IADT) recommends in its protocols carrying out evidence-based treatment, and for treatment to be as biological and conservative as possible based on the principles of damage limitation.

## 10. STUDY ON THE ORODENTAL HEALTH SITUATION IN THREE REGIONS OF CAMEROON AND SENEGAL

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*Introduction:* The ineffectiveness of preventative plans within health policies, the lack of knowledge with regard to oral health and the globalization of cariogenic products has meant that immigrants with a low social status living in Spain have a similar situation to that of their country of origin.

*Objectives:* The aim of this work was to collect information on the health policies and status of third world countries and to compare these with the health policies in our country. And then, with this information, to adapt these policies to make them more effective for the large immigrant population living in Spain.

*Material and methods:* Between August and December 2011 a field study was carried out, dental offices were visited, together with public and private organizations in the cities of Kolda, Sant Luis and Dakar (in Senegal) and Yaundé, Bafoussam and Sangmelima (in Cameroon). In addition project technicians and health professionals in these cities cooperated. From January to May 2012 a search was carried out in English, French and Spanish in Pubmed, Google Academy and Scopus without specifying the year range. The latest WHO were consulted on orodental policies in Africa, together with the regulations and official documents of the respective countries. The chosen population was children up to 15 years.

*Results:* Those under the age of 15 years had an average of 2-3 diseased teeth. Moreover, the orodental health campaigns are intermittent and not very effective, especially in rural areas, and there is considerable difference between the circumstances of the population on the outskirts and those in large cities. Despite this, there is traditional “la tige” medicine, and other natural remedies for looking after the mouth.

With regard to Spain, the immigrant population is uninformed, isolated and marginalized. And despite

having the right to public health care, they only use this in emergency cases.

*Conclusions:* More professionals should be trained in dentistry in African countries, whether they are dentists, auxiliaries or prosthetic technicians. Orodental health campaigns should be more regular and promoted by the government. In this way early lesions can be detected together with the appearance of others. Lastly, the traditional remedy alternative should not be overlooked as this is integrated in local culture.

## 11. DEVELOPMENTAL ENAMEL DEFECTS IN THE PRIMARY AND PERMANENT DENTITION

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*Introduction:* Developmental enamel defects (DED) are defined as disturbances in the mineralization of hard dental tissue during odontogenesis. This can be qualitative (hypomineralization) arising clinically in the form of opacities, or quantitative, manifesting as a deficiency in enamel thickness (hypoplasia). The etiology is not all together clear, although it is attributed to genetic and environmental factors.

*Objectives:* The aim of this study was to determine and compare the prevalence and presentation of developmental enamel defects (DED) in the primary and permanent dentition in a group of healthy school children in Granada (Spain).

*Material and methods:* A total of 1414 school children between the ages of 3-12 years were examined, following the criteria of the FDI (1992) for the diagnosis of DED.

*Results:* The prevalence of DED in the primary dentition was 40.2 % and 52 % in the permanent dentition ( $p < 0.033$ ). Of the 31.820 primary and permanent teeth examined in the study, 699 (4.1 %) primary teeth and 1.232 (8.3 %) permanent teeth had some DED. Diffuse opacity was the most common type of DED in the primary dentition, and demarcated opacity in the permanent dentition. Enamel hypoplasia was the least prevalent defect in both types of dentition.

*Conclusion:* A high prevalence of DED was observed in the primary and permanent dentition in the population studied, which matches the growing rate with which these defect are appearing at a world level. This is currently a considerable public health issue.

## 12. COMPARISON OF TEETH FROM DIFFERENT SPECIES USING ELEMENTAL C/N ANALYSIS

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*Introduction:* The difficulty regarding finding human teeth in ideal conditions in order to carry out “in vitro” studies on the behavior of restoration materials, has

meant it is necessary to find easily obtainable teeth from other animal species which show similar behavior to human teeth. It has been affirmed in most studies that bovine teeth are the most suitable for substituting human teeth in adhesion studies.

**Objective:** The aim of this study was to compare by means of elemental C/N analysis the composition of enamel and dentin from human, bovine, swine, sheep teeth with Hydroxyapatite as a control.

**Material and methods:** Caries-free human teeth and, bovine, swine and sheep teeth of recently slaughtered animals were used. Using a diamond bur the enamel and dentin were separated, and the calculus, stains and pulp eliminated. The enamel and the dentin were ground down to a powder manually using an agate mortar. The powder was processed in order to detect its C/N composition using the C/N LECO TRUSPEC CN (LECO, St. Joseph, MI) elemental analyzer.

**Results:**

IDENTIFICACION MUESTRA	N (g/100g)	C (g/100g)	Corg (g/100g)
DV	1,68	5,13	4,40
DV	2,72	10,20	8,35
EO	2,54	9,78	6,34
DO	2,90	12,60	11,50
EC	2,29	8,36	7,95
DC	2,93	12,00	11,10
EH	0,55	2,36	1,60
DH	2,64	10,90	9,97
HA	0,07	0,27	0,07

**Conclusions:** Dentin had a greater amount of organic material than enamel, regardless of the species. Human enamel contained the most minerals, and its values were the closest to pure hydroxyapatite. With regard to the organic composition of the enamel and dentin, the specie most similar to human was bovine.

### 13. APPLICATION OF AN ANTIOXIDANT TO TEETH TREATED WITH TETRACYCLINE AND/OR MTA

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**Introduction:** In this investigation we aimed to optimize results and avoid crown discoloration during dental procedures in which the use of mineral trioxide aggregate (MTA) and/or tetracycline is essential.

**Objectives:** To evaluate if there is a reduction of crown discoloration on applying an antioxidant (ascorbic acid) on MTA and tetracycline (minocycline and doxycycline) treated teeth.

**Material and method:** This was a basic experimental research, clinical trial type study.

The study was carried out on 16 recently extracted permanent teeth, preserved in distilled water until use. The teeth were single or multi-rooted, with or without caries. The informed consent of the patient was requested in order to donate a tooth to research. Different dental samples were taken, the agents applied, and later the color changes registered using a colorimeter according to the VITA guide.

**Results:** We have no results to date because we have not obtained a tetracycline stain. This is due to the methodology used for preparing the tooth before applying the antibiotic. Moreover we have achieved favorable results in the root area and in the longitudinal slices in the minocycline and MTA groups both with ascorbic acid where a reduction of discoloration was observed.

**Conclusions:** We are currently in an experimental phase so we do not have conclusive results but we expect to have these shortly.

**Financial source:** Internal financing of the research Project by the European University of Madrid. Project code: 2013 UEM13.

### 14. VARIATIONS IN THE PH VALUES OF 5 DIFFERENT CALCIUM HYDROXIDE PASTES

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**Introduction:** Calcium hydroxide is typically used in pulp treatment as intracanal medication due to its favorable properties. Its efficiency is due to ionic effects based on chemical dissociation of calcium and hydroxyl ions in an aqueous solution, which result in a pH increase at a local level. When calcium hydroxide is used as intracanal material, a vehicle is added to it to give it the consistency of a paste. The different vehicles that are used can lead to a variation in the pH of the paste and differences in the diffusion speed of the ions through the dentinal tubules. The ideal vehicle should allow the gradual and slow liberation of the calcium and hydroxyl ions.

**Objective:** To evaluate in vitro pH differences, over different time periods, produced by a combination of calcium hydroxide with different vehicles used in pastes as obturation material for pulpectomies in the primary dentition.

**Material and methods:** An in vitro study was carried out that lasted 28 days in order to assess the pH values of 5 calcium hydroxide-based pastes over certain time intervals. The sample was made up of 120 vials that contained 120 capillaries with different preparations.

**Results:** When the pH changes over time were compared, we observed that there were statistically significant differences between the mean pH values at 5 mins, 1h, 48h and 7 days. No statistically significant differences were found between the groups studied on day 14 and 28 of the evaluation.

**Conclusions:**

— Calcium hydroxide pastes containing an aqueous vehicle had higher pH values at the different time intervals evaluated due to the greater speed of ionic dissociation.

— The calcium hydroxide and propylene glycol pastes had a greater diffusion of OH<sup>-</sup> ions and the highest pH value was achieved at 7 days.

— Vitapex<sup>®</sup> paste had the least diffusion of OH<sup>-</sup> ions and therefore the lowest pH value of all the pastes analyzed at the different time intervals.

## 15. STUDY ON THE CLINICAL EFFECTS OF NITROUS OXIDE

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*Introduction:* Patients are currently demanding quality dental treatment that is free of pain and discomfort. One of the tools that can help achieve this and that is resurfacing is conscious sedation with nitrous oxygen. Although it is a technique that has been widely used and that is safe, it is important to find out from an objective point of view the physiological and psycho-sedative effects.

*Objectives:* The objective to this work was to study the clinical effects of nitrous oxide in a group of dentistry students.

*Material and methods:* An observational investigation was carried out on a total of 101 dentistry students of the Universitat de València. Each individual participated in a single session directed by the same investigator. After informed consent, the physiological values were registered regarding pulse and hemoglobin oxygen saturation. These values were re-registered with a 30 % and 50 % nitrous oxide dose and after sedation. The signs and symptoms experienced were also registered during the procedure and after the recovery period. The analysis of the data was carried out using the SPSS 17 statistical package.

*Results:* The results in this study show a significant reduction in oxygen saturation in hemoglobin during the procedure and recovery after the final oxygenation period. However, heart rate showed a significant drop during the procedure and even after recovery. The most common signs experienced were shiny eyes, hypernasal speech and smiling. The most common symptoms were tingling and relaxation. Recovery was perceived as rapid and relaxed at the same time.

*Conclusions:* Nitrous oxide produced a significant reduction in oxygen saturation and heart rate in the group studied, but this was always within safety margins. The level of consciousness was constant and adequate which confirmed the safety of this technique. The signs and symptoms that appear most frequently can help clinicians recognize if the person is reaching suitable sedation levels without receiving an overdose.

## 16. EPIDEMIOLOGICAL STUDY OF MOLAR INCISOR HYPOMINERALIZATION IN 8 YEAR-OLD CHILDREN IN THE COMMUNITY OF VALENCIA

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*Introduction:* Increases are currently being observed in structure disturbances to enamel in child populations,

especially permanent molar incisor hypomineralization (MIH). The frequency with which these patients are affected by this condition signals a great interest in its study with regard to its prevalence and etiology. There are no conclusive data to date regarding the etiological factors.

*Objectives:* To discover the prevalence of this defect in 8-year old Valencian children and to collect information on the possible etiological factors and clinical consequences.

*Material and methods:* A cross-sectional study was carried out in order to determine the prevalence of hypomineralization of permanent incisors and molars in a random sample of 840 eight-year old children in the Community of Valencia, Spain. The parents of the children, in addition to giving their informed consent, completed a questionnaire on the medical history of the child. A single operator had previously received calibration training with regard to MIH diagnostic criteria of the European Academy of Pediatric Dentistry (EAPD). At the same time the DMFT and DMFS indices were evaluated according to WHO criteria.

*Results:* Some 21.8 % of the population was diagnosed as having hypomineralization but statistically significant differences were not obtained between boys and girls. Of the students with the syndrome 56.8 % with the syndrome had hypomineralization in molars and incisor and, out of an average of 3.5 affected teeth per child, 2.4 were molars. Although most of the defects were mild, significant differences were found when the need for care was compared for those with or without hypomineralization. Both caries indices were significantly higher in children with MIH than in those without the defect.

*Conclusions:* Molar incisor hypomineralization is a common enamel defect in this community that shows no gender difference. The children affected have a greater caries experience and the need for treatment in the permanent dentition is greater in the children affected. However, conclusive etiological findings have not been obtained.

## 17. CLINICAL COMPARISON ON THE REMINERALIZATION EFFICIENCY OF FOUR THERAPEUTIC AGENTS ON INCIPENT CARIOUS LESIONS.

**Leyda Menéndez A, Llena Puy C**

*Introduction:* Dentists are currently trying to treat all types of carious lesions. For the treatment of incipient carious lesions (ICL) we have at our disposal agents that have been proven to be efficient.

*Objectives:* To evaluate the remineralization (RE) capacity (RC) of ICL in the permanent teeth of children aged 6 to 15 years by means of a CPP-ACP cream, a CPP-ACFP cream, fluoride varnish and chlorhexidine varnish (CHX) using a stimulated fluorescent laser (DIAGNOdent®) and the ICDAS II system.

*Materials and methods:* The sample was made up of 110 children with at least one ICL in their permanent

teeth. After cleaning the teeth, the ICL were detected using visual examination with the ICDAS II system. In order to calculate the dimensions of the ICL, a periodontal probe was used, and for assessing the mineralization the DIAGNOdent® was used. Plaque accumulation was evaluated using the Silness and Løe index (OHI). The work schedule was made up of 5 sessions, the first was choosing the sample, the second collecting the initial information and the random assignment to the study groups (n:22): A) CPP-ACP B) CPP-ACFP, C) Fluoride varnish 22.600 ppm D) CHX varnish and E) placebo. The remaining three were for follow-up. The statistical analysis was made on 1315 ICL. A descriptive analysis was made of the different variables in order to compare them later using the Chi square tests, ANOVA, ANOVA for paired data and a logistical regression model in order to establish what factors are associated with RE.

**Results:** All the groups except the one treated with CHX varnish showed significant OHI improvement and significant RE of the ICL. The number of lesions for each ICDAS code and the size of the lesions in all the groups was stable. With regard to the average rate of mineralization with the DD, all the agents except for the CHX achieved RE, although the time required for each agent to make a significant difference varied.

**Conclusions:** None of the agents used in the study produced changes in the size of the lesions nor in their ICDAS II clinical appearance. All the agents studied, including the placebo cream but with the exception of the CHX varnish, achieved significant remineralization during the length of the study. Greater remineralization of the ICL is achieved in younger patients with no previous carious history and who brush regularly and efficiently.

## 18. INFLUENCE OF ORAL HABITS IN MALOCCLUSIONS IN CHILDREN AGED 6 TO 12 YEARS

**Martínez Hernández E, Cabrerizo Merino MC, Alcaina A, Fernández Miñano E, Teruel Fernández J**  
*Universidad de Murcia*

**Introduction:** Oral habits are acquired through to the continuous repetition of a series of acts that serve to calm an emotional need. All these abnormal habits modify the position of the teeth and the shape and relationship of the arches, and they interfere in the normal growth and function of the orofacial muscles.

This is detected on many occasions by a dentist but also by a pediatrician examining a child. Therefore, becoming familiar with the more obvious clinical signs of these habits is very important.

**Objectives:**

—Main objective: To carry out a statistical study on the prevalence of oral habits in children who came for four checkups from the age of 6 years to 12 years.

—Secondary objective: Most common malocclusions. Relationship between the presence of oral habits and the appearance of malocclusions.

**Material and methods:** In order to carry out the descriptive statistical study we required the cooperation, examination and data collection of children who attended the Oro dental Health Unit of a Primary Care Centre in the region of Murcia. Only the children attending consecutively over four school years were included. This corresponded to the 6,8,10 and 12 age group (209 children who came for 4 checkups, of the nearly 3.000 children reviewed).

**Results:** Of the 209 children examined, the most prevalent oral habits among the 6 to 12 year-olds were bruxism and atypical swallowing. With regard to the most common malocclusions we observed overjet together with overcrowding of upper and lower teeth in the four school years. There was a significant relationship between the appearance of a habit and the presence of one or more malocclusions in the children examined over the four school years. However, we found that a high percentage of the children examined did not have any habit (90-95 %) and that they did have one or various malocclusions at the same time (only at the age of 6 years was the percentage of children without habits and no malocclusion greater).

**Conclusions:** The greatest prevalence of oral habits was found at the age of 6 years (7.17 %), but as the child grew these habits were reduced. However, malocclusion arose more frequently as the child grew and developed. According to our study many malocclusions appeared without any associated oral habit. However, we can confirm that in all the cases, before or after the development of a malocclusion, a habit was observed.

## 19. MATERIAL USED IN PULP CAPPING AND INFLUENCE IN CELL VIABILITY

**Rebollo P, Cortés O, Alcaina A, García C, Austro MD**  
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**Introduction:** Advances in research have allowed us to understand the mechanism that determine the capacity for repair of pulp-dentin complex, in such a way that for a deep carious lesion with reversible pulpitis in a primary tooth some authors suggest a less invasive pulpal procedure such as indirect pulp capping which can stop the lesion. This is because dentin contains many proteins that are capable of stimulating tissue responses, among which are growth factors, especially those of the beta family (TGF-β). These can be liberated as a result of demineralization of carious dental tissue, the application of acid etching agents and restoration materials. The materials that are most used as pulp protection agents continue to be calcium hydroxide, adhesive systems and glass ionomers. These materials can be differentiated among themselves given their composition and also because they have different pH values, and this may influence the liberation of the different growth factors.

**Objectives:** To analyze if the different pH values used in the materials for indirect pulp capping affect cell viability, and in later studies to assess if these differences also influence the release of growth factors.



*Material and methods:* For this the pH of the materials was determined and later cell viability for each pH value in an L929 fibroblast culture. Viability was determined using an MTT assay in order to compare it later with the negative control.

*Results:* The results showed that pH differences affect cell viability.

*Conclusion:* The pH of the materials determines cell viability differences. Future studies are needed that will permit linking these pH differences and their influence on the liberation of growth factors in order to find the most suitable material for pulp capping.

## 20. UNDERSTANDING OF TRAUMATIC INJURY MANAGEMENT BY FIRST YEAR DENTISTRY STUDENTS

**Valdepeñas Morales J, Gómez Clemente V, Planells del Pozo P**

*Máster de Ciencias Odontológicas de la Universidad Complutense de Madrid*

*Introduction:* Traumatic dental injuries are the second most common reason requiring pediatric dentistry care following caries. They are considered an emergency and the most common causes are children falling, games or sports and mistreatment. Because of this acting correctly is essential in order to prevent, detect or intervene promptly any cases that may arise.

*Objective:* To train first year dentistry students at the Universidad Complutense de Madrid so that they are able to apply the knowledge acquired should a lesion of these characteristics arise, and to pay special attention to avulsions and non-complicated crown fractures.

*Materials and methods:* After a review of the literature questionnaires were carried out in order to evaluate the student's knowledge of dental trauma. These contained questions on the primary and permanent dentition and questions associated with care following these accidents. A lecture was then given on the subject to reinforce their training in this area.

*Results:* With regard to the permanent dentition, just over 50 % knew what action to take when faced with a non-complicated crown fracture, but more than 50 % did not know how to act correctly if faced with an avulsion. With regard to the primary dentition it stood out that more than 70 % would intervene correctly, although there was little knowledge on how to conserve primary teeth after a blow. With regard to traumatic dental injuries, approximately 95 % recognized that they did not have sufficient knowledge on the management of these injuries. About a third of the students had witnessed an accident involving a tooth avulsion.

*Conclusions:* A significant number of students had witnessed an accident involving an avulsion. Most considered that following a traumatic dental injury a dentist had to be seen immediately. Nearly all the students recognized that they did not have sufficient knowledge on the management of traumatic dental injuries and that they would like to have more. Training campaigns are necessary so that students are able to act when faced with these types of cases.

## 21. EFFICIENCY OF TOOTH BRUSHING IN CHILDREN WHEN ASSOCIATED WITH CHRONOLOGICAL AGE AND DEVELOPING FINE MOTOR SKILLS

**Cavero D, Palma C, Cahuana A**

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*Introduction:* One of the most important methods for preventing caries and gingivitis is tooth brushing. Most authors indicate that brushing in children should be carried out by parents until the age of 8 years and after this supervision is indicated until they are able to do this on their own. The inability of children to brush effectively is related to fine motor skills as motor development requires certain maturity and physical growth which can vary from child to child.

*Objectives:* To relate the percentage of dental plaque reduction with chronological age and fine motor skills in children.

*Material and methods:* The study was a descriptive correlational type study. The sample was made up of 40 children aged 5 to 7 years who attended the department of Pediatric Dentistry of the Hospital Universitario de Bellvitge (Barcelona) between January and March 2013. Fine motor skills were evaluated in each child and the items from the Battelle Developmental Inventory were applied. Initially the O'Learly plaque index was recorded followed by autonomous tooth brushing and a final plaque index was recorded. In order to determine the relationship between variables, a simple linear correlational analysis was carried out (Pearson "rxy" correlation coefficient) with the statistical program SPSS 16.

*Results:* A relationship was not found between chronological age and the percentage of plaque reduction (Pearson correlation = 0.268; p-value = 0.094) On the other hand, it can be confirmed that there was a statistically significant relationship between the standard age for fine motor skills and plaque reduction (Pearson correlation = 0.378; p-value = 0.016), and that this relationship was both direct and low. In other words, the children who achieved fine motor skills at a later age, tended to show a greater percentage of dental plaque reduction and vice versa.

*Conclusions:* Determining when a child is able to brush his own teeth efficiently without the help of an adult is difficult. While fine motor skill development may be an important factor, more studies are required to support this theory. Therefore the influence of other factors such as motivation and brushing technique in reducing plaque effectively should be considered.

## 22. CURRENT KNOWLEDGE OF PEDIATRICIANS WITH REGARD TO ORODENTAL HEALTH

**Gómez Vilanova V, Revollo J, Jarrod i Pàmias M, Cahuana A**

*Universidad de Barcelona*

*Introduction:* Child orodental health is an integral part of the general health and wellbeing of children and

it is an important objective in public health policies. Pediatricians promote child health and development. They play a role in prevention, and they intervene and advise parents on oral health. But there is a possibility that their knowledge is insufficient because pediatric dentists continue treating many children with rampant tooth decay.

*Objectives:* To determine the level of knowledge of pediatricians on orodental prevention and the factors associated with this.

*Material and methods:* Structured self-administered survey with voluntary responses and 20 multiple choice questions that was sent to the College of Physicians of Catalonia for distribution among its registered pediatricians.

The responses were tabulated and assigned a score (0 to 10) on a scale of five (dental anatomy, emergencies, caries, prevention and habits).

*Results:* A hundred surveys were collected (from 48 males and 52 females) aged 47.5 (14.2) years [mean (ED)]. Some 43 % had more than twenty years experience. Another 34 % worked in hospital, 27 % in primary care centers and 39 % worked as private consultants.

Together the degree of anatomical knowledge was 6.7 (4.6) points, emergencies 6.7 (4.7) caries 5.9 (2.3) and prevention 7.8 (3.5) and habits 8.2 (3.9).

The best knowledge on the five scales related to pediatricians who worked in hospitals and private centers and who had under 20 years of experience. Bacterial transmission from mothers to children was unknown by 52 % of the primary care center pediatricians. Some 69 % of the professionals were unfamiliar with white spots. A third did not know at what age brushing should start. Some 26 % of the total did not know when a child should start using toothpaste. And 18 % did not know when the use of a pacifier should be stopped.

*Conclusions:*

—In general, knowledge on prevention and habits is good, and acceptable with regard to the anatomy and emergencies. Knowledge regarding caries had the worse score.

—The professionals working in hospitals or private practices had more knowledge regarding oral prevention than those in primary care centers.

—Encouraging continuous training in orodental health is advisable for pediatricians with more than 20 years experience.

—There should be an improvement in the specific training for pediatricians that is aimed at preventing tooth decay.

### **23. ORAL MANIFESTATIONS OF PATIENTS INFECTED WITH HIV DUE TO VERTICAL TRANSMISSION IN CATALONIA.**

**Gundana M, Cahuana A, Noguera A, Fortuny C**  
*Universitat de Barcelona. Servicio de Odontología Hospital Universitario Sant Joan de Déu. Barcelona*

*Objective:* To determine the DMF index and oral manifestations of pediatric HIV patients in the com-

bined treatment era and to compare this with a control group of pediatric patients who were seen in the Dentistry Faculty.

*Material and methods.* A total of 50 patients were included who were under the age of 19 years, infected with HIV and who were being monitored in the Hospital Sant Joan de Déu. Study design: from February to April 2013, the patients infected with HIV were evaluated by the same dentist and together with two control patients were included (who being attended in the same center) for every patient who was infected in order to compare the findings in both groups. The following variables were analyzed: demographic variables (age, sex, age at diagnosis of the HIV infection, clinical stage, immunological stage, age at the start of the antiretroviral treatment –TAR, type of TAR), oral hygiene, type of dentition, clinical manifestation in oral mucosa. An EXCEL file was designed to collect the information.

*Results:* The preliminary analysis of the first 28 patients determined that the mean age was 11.9 years, SD 4.9 (range 2-18 years). Given the age of the patients, the type of dentition was 15 % primary, 26 % mixed and 59 % permanent. Of these 52 % were girls. 93 % were being followed by the dental office and they were receiving retroviral treatment. On being examined none completed the criteria of progressive HIV, and 4 had moderate immunodeficiency (Class 2 CDC). Only six (21 %) of the patients did not have a disorder on being examined. The patients analyzed had a greater number of oral manifestations than those in the control group, except for gingivitis along the gum line that was more common in the latter group. The oral manifestations were: 1 cheilitis, 3 gingival erythema, 5 plaque gingivitis, 17 patients with caries (1 to 18 teeth affected) 13 patients with obturations. We would like to highlight that currently more than half the patients (56 %) carry out correct oral hygiene with fluoride toothpaste, unlike the control group that used non-fluoridated pastes less frequently.

*Conclusions:* Children and adolescents with HIV infection currently have less prevalence of oral manifestations than during the earlier years, and this was even more common in the control group.

### **24. GENETIC PREDISPOSITION TO EXTERNAL INFLAMMATORY POST-ORTHODONTIC RESORPTION IN JUVENILE PATIENTS**

**López de Francisco C, Iglesias Linares A, Yáñez Vico R, Solano Reina E, Mendoza Mendoza A**  
*Universidad de Sevilla*

*Introduction:* Root-resorption following orthodontic treatment (EARR) is an undesirable and unpredictable effect of orthodontic treatment in juvenile patients. It is multifactorial in origin and affected by biological factors in patients and by the mechanical factors of the orthodontic treatment.

*Objective:* The objective of this study was to determine if the interleukin-1 gene cluster variants (IL1RN,

IL1B, IL1A) have a positive/negative association with EARR.

*Material and methods:* 75 consecutive patients were chosen from the Master's degree course of the Universidad de Sevilla. Genetic screening was carried out of the patients regarding the IL1 gene (rs1800587, rs1143634, rs419598). The sample was classified according to the presence or not of root resorption using the comparative measurements of the radiological registers that were calibrated and adjusted pre- and post-treatment following the Linge&Linge method adapted by Brezniak et al. The central and lateral incisor with the greatest resorption was taken as a dependent variable based on the equation  $r1-r2 [c1/c2]$ . The method error analysis was carried out with 15 radiographies that were randomly chosen with a 3 week interval. The concordance was determined using the Student T test for paired samples as well as for method error according to the formula  $SE = \sqrt{(\sum d^2/2n)}$ . Additionally the Kappa index for concordance was used for estimating the presence or absence of EARR. Each gene marker of the IL1 was examined independently in order to determine the potential association with EARR. Genotype distribution and allele frequencies were established in both groups. Associated risk was established using the Odds ratio (OR) with a 95 % confidence interval by means of the chi-squared test. Interference due to the influence of clinical parameters was established using binary logistic regression, and a statistical significance value was established of  $p > 0.05$ .

*Results:* A highly significant association was determined using the comparative analysis of juvenile homozygote subjects [1/1(CC)] for the IL1B gene, which led to a greater risk of suffering post-orthodontic EARR (OR:2.01;p=0.007;CI:95 %). While an association was not found for the IL1A gene (p=0.13), homozygous subjects [1/1(TT)] for the IL1RN gene were more likely to suffer EARR (OR: 6.21; p = 0.05; CI:95 %).

*Conclusions:* Variations in the interleukin-1 receptor antagonist gene (rs419598), and not just the IL1B gene (rs1800587), are determinant of a predisposition to external apical root resorption in juvenile orthodontic patients.

## 25. IN VITRO STUDY ON THE COLOR STABILITY OF PEDIATRIC AESTHETIC CROWNS MADE OF ZIRCONIUM CERAMIC REGARDING COMMONLY CONSUMED DRINKS

**Torrents R, Lorente AI, Cano J, Cedeño R, Fuks A**  
*Universitat Internacional de Catalunya*

*Introduction:* The amount of dental decay of children in first world countries has descended since the beginning of 70's. However, caries management in the primary dentition is under constant debate. For the last 50 years stainless steel crowns have been used for restoring back teeth in the primary as well as permanent dentition. Despite the favorable qualities of these crowns for the primary dentition, they have a considerable disad-

vantage: their poor aesthetic appearance. Dental ceramics exhibit very advantageous properties such as biocompatibility, aesthetics, reduced plaque accumulation, low thermal conductivity, abrasion resistance and color stability. Zirconium has high resistance to abrasion and color stability. Ceramic color changes can be due to intrinsic and extrinsic factors. The extrinsic solution related to diet, water resorption, chemical reactivity, oral hygiene, and roughness of the surface material will all affect the degree of color change. Spectrophotometers are used to determine the colorimetric parameters of these materials. There is currently an increase in demand for aesthetic restorations by parents but there are only a few studies in the primary dentition that evaluate the color stability of aesthetic pediatric crowns made with zirconium ceramic.

*Objectives:* To compare the color variation of NuSmile ZR® ceramic crowns after 7 and 15 days in a pigmented liquid.

*Material and methods:* In order to carry out this study, 8 anterior zirconium pediatric crowns by Nusmile ZR® (NuSmile®, Houston, EE.UU) were chosen. The pigmenting liquids used were: chocolate milkshake (Cacaolat®), orange juice (Granini®), CocaCola (Cocacola®) and distilled water. The experimental liquids were changed every 7 days and they were kept in an incubator at a constant temperature of  $37 \pm 1$  °C. The color measurements were carried out with a Spectro Shade™ Micro Spectrophotometer (MHT, Niederhasli, Switzerland), using the classic vita guide (A1-D4), at the start (T0), at 7 days (T1) and at 15 days (T2).

*Expected results:* There were no significant differences between the initial measurement and the measurement at 7 and 15 days.

*Expected conclusions:* NuSmile ZR® pediatric crowns have high color stability when submerged in drinks that are commonly consumed by pediatric patients.

## 26. TOXICITY EVALUATION OF EIGHT DIFFERENT TYPES OF COMPOSITE MATERIALS

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*Introduction:* Biocompatibility is perhaps the most important characteristic of dental materials. The development of a new generation of self-adhesive cements has permitted more conservative and aesthetic techniques. However, concerns regarding biocompatibility continue.

*Objective:* To evaluate the toxicity of eight different composite materials.

*Material and methods:* Tablets with a 3 mm diameter and 1 mm height were prepared of the materials to be studied (Relyx Unicem Automix, X-Flow, G-Cem Automix, Smart Cem 2, Prevent Seal, Maxcem Elite, Vertise Flow, Bifix SE). Rat vascular smooth muscle

cells were obtained and 5.000 cells seeded per well-plate with DMEM. The sheets were incubated for 2, 5 or 7 days depending on the trial, at 37°C with a 5 % CO<sub>2</sub> atmosphere. Cell survival was measured using the bromine tetrazolium MTT reduction assay. Aluminum balls were used as a negative control and for positive toxic control we used 20 % ethanol and DOXCA 1 mM.

**Results:** In the 2 day trial, the greatest amount of cell death was obtained with the SmartCem 2 cement and viability was only  $2.85 \pm 0.93$  %. The remaining materials showed no significant differences with regard to positive control for viability (100 %). After 5 days, the SmartCem 2 and MaxCem were the most toxic ( $p < 0.0001$ ) with a viability of  $2.29 \pm 0.84$  % and  $3.31 \pm 0.87$  %, respectively. After 7 days we found toxicity in all the material groups with the exception of Relyx Unicem that had similar results to the control group  $43.464 \pm 5.410$  %.

**Conclusions:** All the composite materials studied led to cell cytotoxicity after 7 days with the exception of the self-etching resin cement Relyx Unicem.

## 27. LIFESTYLE VS TOOTH DECAY IN A SAMPLE OF CHILDREN FROM VALENCIA AGED 3 TO 10 YEARS

**Muñoz Crespo I, González Galván F, Sanfelú P, Carmona M, Ribelles M**

*Universidad CEU-Cardenal Herrera*

**Introduction:** Tooth decay is the most common childhood orodental disease and the etiology is closely related to lifestyle. Prevention currently represents a great challenge for pediatric dentists and for other health professionals who struggle to establish efficient guidelines for promoting health. It is essential to view health education as a combination of learning opportunities that facilitate voluntary changes in the behavior of children which will improve their health. Pediatric dentists consider early education necessary, together with monitoring the different etiological factors that are recorded in pediatric dentistry medical histories that are related with lifestyles, in order to prevent the development of tooth decay.

**Objectives:** To assess if there is a relationship between the different factors in the lifestyles that appear in pediatric dentistry medical records, and the development of tooth decay. And to analyze what factors are more significant regarding the development of tooth decay in the sample studied.

**Material and methods:** Observational, analytical, cross-sectional and retrospective study of cases that included the analysis of 337 medical records of children aged between 3 and 10 years, who attended the dental clinic of the Universidad CEU-Cardenal Herrera between 2010 and 2013. Some 38 variables were studied that were related to the development of caries. These were extracted from the medical records and analyzed using the G-Stat 2.0 program.

**Results:** Some 42.14 % of the children studied had good oral hygiene and 12.17 % had deficient oral

hygiene. Manual toothbrushes were used by 75 % and only 18.15 % brushed 3 times a day. Statistically significant results were obtained regarding the children with bad oral hygiene and the development of tooth decay. With regard to sugar consumption, 48.07 % of the children, consumed sugary food, which produced an increase in caries. Some 59.55 % of the children had more than 5 decayed teeth. Most of the children went to a pediatric dentist for a check-up or because of tooth decay.

**Conclusions:** A relationship was found between lifestyle and the onset of caries. The variables with most impact were oral hygiene and diet. Orodonal health should be promoted through the teaching of lifestyles such as oral hygiene and the importance of a varied diet in order to reduce the appearance of tooth decay.

## 28. VARIATIONS IN WEIGHT VS TOOTH DECAY IN A POPULATION OF CHILDREN AGED 6 TO 12 YEARS

**Orantes J, Gandía A, Garcovich D, Carmona M, Ribelles M**

*Universidad CEU- Cardenal Herrera*

**Introduction:** Tooth decay is an infectious disease that is progressive and multifactorial. It has a chemical-biological origin, which is characterized by the loss of hard tissue. The body mass index (BMI) is a value that relates the stature and weight of a child. This index for the child and juvenile population is used as criteria for defining overweight and obesity. Dental caries tends to develop more frequently in children who are overweight than children with normal or low body weight. And a sugar-rich diet changes the chemical and microbiological composition of dental plaque, which would explain the different caries patterns. Dental decay is directly related to diet. A high prevalence of tooth decay has been observed in children who consume lots of sweets, sugary drinks and buns and who are at the same time overweight, as both pathologies are related.

**Objective:** To compare BMI with dental caries after evaluating stature, weight and after conducting an oral examination in a sample of school children aged between 6 and 12 years.

**Material and methods:** A cross-sectional in vivo clinical report was carried out. The sample was made up of 160 children aged between 6 and 12 years who attended the government school Vicente Trencó (Moncada, Valencia). The study was approved by a scientific research ethics committee of the Universidad CEU Cardenal Herrera and all the parents gave their informed consent authorizing the examination of the children. After an orodental hygiene workshop adapted to the age group of the school was given, the weight and size measurements were taken with digital scales and a stadiometer in order to obtain the BMI ( $\text{kg}/\text{m}^2$ ). After this a single operator examined the children with disposable kits, torch and a KAVO® Diagnost pen in order to obtain the dft and DMFT indices.

**Results:** Some 50.62 % of the children were below normal weight ( $\text{BMI} < 18.0$ ), 41.245 % had normal

weight (BMI 18.1-24.99), 6.875 % were overweight (BMI 25.0-29.9) and only 1.25 % were obese (BMI > 30.00). Of the children examined 66.25 % had caries and 33.75 % were caries-free. The dependence analysis between the BMI and caries variables showed a significant relationship with a confidence level of 95 % ( $p < 0.05$ ) for the group of children whose weight was below normal.

**Conclusions:** We observed a significant association between below normal BMI and presence of caries in most individuals. Low weight and caries had common risk determinants. Prospective studies are necessary in order to analyze other factors in a person that can play a part in the development of caries.

## CASE REPORTS

### 29. TREATMENT OF MALOCCLUSIONS IN DENTISTRY FOR BABIES

**Arreguin Mandujano C, Flores Paredes A, Sancen Zavala MC, Miranda Silis A, Prado Flores V**  
*Centro Dental Infantil. Celaya. México*

**Introduction:** We have observed during clinical practice that the rate of malocclusions in children under the age of 3 years is high. But if this deviation affecting function or growth and development is treated, these patients will then have the morphological and physiological conditions that will permit normal development.

**Objectives:** To diagnose, prevent, control and treat growth and development problems that affect the dental arches and bone bases. And to maintain the reflexes that will enable oral function to be carried out correctly together with the perfect distribution of the forces of occlusion and mastication.

**Material and method:** Solid photocurable A1 resin, photopolymerizable compomer twinkly star voco, high speed hand drill, cartwheel burr with diamond number 3053 FF, Bausch 200 micras wax-free articulating paper. (Planas direct tracks modified by Dr. José Lazaro Barbosa dos Santos a pupil of Dr. Planas)

These two cross-bite cases were treated with direct tracks using the direct method and selective grinding. The physiological movements in the jaw were monitored periodically of patients with primary dentition who were aged two years and three months. One had a skeletal problem and the other a postural problem.

**Key words:** Direct tracks. Growth and development. Oral functions. Primary dentition.

Review years 2011-2013

Number of cases treated 100

**Conclusions:**

1. Preventing or treating deviations from growth patterns from an early age is important in order to restore and maintain a morphological and functional balance of the stomatognathic system.

2. In this way a baby will reach the mixed dentition with ideal development and it will be prepared for the permanent dentition.

3. This treatment is based on obtaining an ideal occlusal plane with mandibular movement that provides physiological function during mastication and normal muscle contraction.

4. If these mouths are kept stable and if physiological function is developed, relapse will be avoided.

### 30. JUSTIFICATION OF THE USE OF PLANAS DIRECT TRACKS FOR CLASS II MALOCCLUSION. ACTION PROTOCOL

**Gavara MJ, Alarcón JP, Martínez P, Díez S, Lorente AI**

*Universitat Internacional de Catalunya*

**Introduction:** Early treatment is aimed at eliminating the factors that make the normal development of the jaw difficult and the ultimate goal is to have well-balanced mouths with good neuromuscular balance. It is also aimed at achieving a very resistant system that is prepared for the functional demands of the primary dentition. By undergoing early treatment the possibility of complete correction increases, treatment time is reduced and the condition will fail to become more serious.

The common belief that the size and shape of the jaws are only hereditary, and that for this reason they cannot be changed, is under discussion. The NOR is very interested in finding out which is the paratypical excitement that breathing and masticatory function gives the stomatognathic system and which are, during this process, the receptive nerve ends of this excitement. They can in this way be excited or inhibited in order to achieve a normal stimulus that will provide the perfect phenotype.

Class II malocclusion, which is very common among pediatric patients, worsens over time, but early detection is possible. Applying the technique and concept of Planas direct tracks can represent an interesting tool for correcting this type of occlusion or for preventing it from getting worse, while improving the dentofacial, skeletal and muscular aspect of oral function.

**Objective:** To put together a protocol for the application of Planas Direct Tracks for Class II malocclusion of primary molars, in order to achieve good neuromuscular balance and to correct the malocclusion as soon as possible.

**Material and methods:** During the first visit a registration was taken together with central relationship and ICP photos, the sides, PMFA, and the measurements using heavy silicone and the Planas facial arch. At the laboratory this was emptied, assembled in the gnathostate, and the diagnosis was made using a gnathostatic form. Direct tracks were made with composite and a vacuum for indirect placement. During the second visit, it was placed in the mouth and monitoring was scheduled for one week, one month and at 3 months. Once the treatment had been finished the registers were taken again in order to check the results.

*Conclusions:* The protocol presented for placing Planas tracks in Class II malocclusion in primary molars represents a useful tool from the diagnostic and clinical point of view for correcting and/or improving dental and skeletal malocclusions in patients of a young age with masticatory dysfunction.

### **31. EARLY CHILDHOOD CARIES: PREVENTION AND RECOMMENDATION PROTOCOL**

**Requena C, Guinot F, Armengol A, Barbero V, Lorente AI**

*Universitat Internacional de Catalunya*

*Introduction:* Early childhood caries (ECC) and its more severe form (S-ECC), are infectious diseases that appear soon after the teeth erupt, and which progresses rapidly. Although ECC is preventable, the latest epidemiological studies in Spain indicate that nearly 20 % of 3 year-olds have caries and 40 % of 5 year-olds.

Determining the caries risk of each patient is a key element in preventative care for babies, children, adolescents and people with special health needs. The aim is to prevent the disease by means of the identification and minimization of the causal factors and the optimization of protective factors. The frequency of these visits to the dentist will depend on the individual needs of the child according to the risk indicators.

With regard to ECC cases, some recommendations should be given for improving the oral health and habits of both parents and children, emphasizing oral hygiene habits, diet, proper fluoride use and bacterial transmission of *S. mutans*.

*Objective:* To establish preventative and educational needs for oral health in patients with ECC and S-ECC.

*Materials and methods:* Specific preventative recommendations for different cases of ECC or S-ECC that were seen at the dental university clinic. We propose a system of informative pamphlets for educating parents on the dental health of our patients in order to prevent future lesions and in order to acquire correct oral hygiene habits from a very early age.

### **32. ERUPTION PATHOLOGY IN THE ANTERIOR REGION. A REPORT OF TWO CASES**

**Vilches Fernández AA, Mendoza Mendoza A, Gutiérrez Pulido N, Gómez Ponce C, Salas Sánchez M**  
*Facultad de Odontología. Universidad de Sevilla*

*Introduction:* The eruption of the permanent dentition can be disturbed by a series of local factors that may modify the chronology and/or sequence, and that will force us to carry out a thorough radiographic examination. This will permit locating the etiopathogeny and allow prompt treatment. One of these factors, although not the most common, is the Odontoma.

*Objectives:* To demonstrate the importance of a correct diagnosis that will determine the local factor

affecting eruption, and which may disturb the correct chronology and sequence.

*Material and method:* A case report of two patients aged 7 and 9 years with delayed eruption of the upper right central incisor associated with the presence of an Odontoma.

*Conclusion:* Being familiar with the physiopathology of dental eruption will take us to a correct diagnosis of the etiological causes behind a disturbance. In this case, the presence of an Odontoma prevented the eruption of the upper right central incisor.

### **33. THE DOWN SYNDROME PATIENT IN THE PEDIATRIC DENTISTRY OFFICE (A CASE REPORT)**

**Álvarez Alonso A, Cabezas Fuentes C, Beltri Orta P, Torres Moreta LA, Bartolomé Villar B**

*Universidad Alfonso X y Universidad Europea de Madrid*

*Introduction:* DS is the most common chromosomal abnormality caused by the chromosome 21 trisomy (95 %). It was described by John Langdon Hayden Down in 1866 although he referred to it as mongolism due to the similar facial features to the inhabitants of Mongolia. It was not until 1959 that the cause of this disorder was discovered, which was the presence of 47 chromosomes instead of 46.

Patients with DS have associated systemic disease: the most common (40-50 %) are related to the heart (mitral valve prolapse, atrio-ventricular communication, etc.) This means that these patients sometimes have a short life expectancy.

They have typical orofacial features (reduced midface, short narrow nasal bone, short upper lip, thick tongue, narrow palate) in addition to other general features, the most important being general hypotonia, growth retardation, variable cognitive impairment.

*Objectives:* A review of the literature of the orofacial clinical manifestations of Down Syndrome. Case follow-up of a 5 year old girl treated at the European University of Madrid.

*Case report:*

—The following databases were used: Medline, Pubmed (2001-2012).

—The following keywords were used: “down syndrome”, “oral findings”.

—Follow-up of 1 case.

*Discussion and results:* In this work the case of a 5 year-old girl with Down Syndrome is presented: her medical/surgical history included AVC repair at the age of 4 years. The articles consulted indicated that these patients commonly have underlying pathologies especially heart conditions. During the intraoral examination multiple carious lesions were observed together with dental abrasion due to bruxism, which is the most common oral pathology in children with Down Syndrome. Despite the age of the girl and the existing pathology, by using the motivational techniques that as pediatric dentists we are familiar with, we were able to carry out

treatment without the need for general anesthesia nor for premedication.

*Conclusions:* Down Syndrome patients can be treated successfully in dental offices depending on the degree of disability and by using management and motivation techniques.

### 34. COMPOSITE PLANES AS AN AID FOR CORRECTING UNILATERAL CROSS-BITE

**Lobato García JA, Lobato de Enciso AF**

*Introduction:* It is well known that it is important to correct unilateral crossbites (UCB) early on in order to achieve better physiological function as soon as possible. We should not wait for the patient to grow because the growth will be incorrect and the prognosis worse. Shape determines function and good function is the best way of achieving stability in the result.

*Objective:* Two case reports are presented that show how composite planes (CP) facilitate this correction regardless of the expansion technique chosen. Given our experience as pediatric dentists of small children and of the primary dentition, we are in a position to act decisively with regard to early treatment from the first indication of UCB, and promote the development of normal occlusion while preventing greater malocclusion.

There are many resources available for correction: McNamara, expansion plates, QH, etc. We propose the use of inclined composite planes as a treatment aid and even as a basic element for correcting stability and for retention.

*Case reports:*

—Case 1. Girl aged 2.9, class 1, straight profile and left sided UCB of teeth 62, 63 and 64. Treatment with HQ and CP. Progress to date.

—Case 2. Boy aged 3.6 years, class III, prognathic mandibular profile and complete right anterolateral CB of teeth 62, 61, 51, 52, 53, 54 and 55. Treatment with QH, traction mask and CP. Progress to date.

*Conclusions:* The use of CP helps to center from the start the occlusal plane and midlines and they encourage the functional correction of the TMJ and soft tissues. There is very little discomfort for the patient, UCB is corrected and there is even a saving on more complex orthodontic treatment.

### 35. DIAGNOSTIC DIFFICULTIES IN A CASE OF SUBMAXILLITIS

**Azanza N, Bidaguren A**

*Osakidetza (Servicio Vasco de Salud)*

*Introduction:* Submaxillitis is not commonly seen in pediatric dentistry. However, a diagnosis is very important as very specific treatment is required without which the complications can be serious depending on the area affected.

*Objectives:* The aim of this communication is to present a case of submaxillitis in a 13 year-old male that was difficult to diagnose due to different circumstances that confused the clinical picture.

*Case report:* A case of submaxillitis is presented in a 13 year-old male who first attended the emergency pediatric department and a few days later visited his pediatrician complaining pain to the right side of his jaw. The pediatrician diagnosed a tooth infection and prescribed antibiotics. Since there was no improvement he visited a pediatric dentist who diagnosed submaxillitis and who referred the patient to the department of maxillofacial surgery.

*Comments:* The case was difficult to diagnose given that the patient insisted he had “tooth ache” and the antibiotics obscured the signs.

*Conclusions:* On occasions patients visit various professionals before reaching our department. When faced with a difficult case it is important to start the diagnostic process again and to repeat the anamnesis, examination and complementary tests.

### 36. CLASS III TREATMENT AND CASE REPORT

**Hernández Bernad C, Friedländer IM, Guinot Jimeno F, Cuadros Fernández C, Lorente Rodríguez AI**

*Departamento de Odontopediatria. Universitat Internacional de Catalunya*

*Introduction:* Class III malocclusion is considered one of the most complex and difficult with regard to diagnosis and treatment. Clinically insufficient and hypoplastic development of the jaw can be observed, together with retrognathia compared with a normal jaw. Prognathism can also be found due to excessive growth of the mandible, and in both cases an edge-to-edge anterior relationship or anterior cross-bite will appear. This lack of sagittal development is often associated with a transverse deficiency of the jaw and the therapy for this will be rapid expansion.

The success of the treatment will depend on four areas: the relationship of the maxilla with the mandible, the relationship of the jaw with the skull, the vertical dimension and the age of the patient.

*Objectives:* Treatment of a patient aged 9 years and 1 month who attended the Department of Pediatric Dentistry of the University Dental Clinic of the Universitat Internacional de Catalunya. He had no family or personal medical history of interest. The reason for the consultation was parental concern over an anterior cross-bite.

*Material and methods:* During the examination a class III skeletal and dental relationship was observed, in addition to hypoplasia of the upper jaw and antero-posterior and vertical deficiency. Treatment was started with a McNamara appliance with rapid expansion, followed by anterior traction using a facial mask (Petit). The traction forces used were 224 to 392 grams per side with elastic, starting with lesser forces initially using 8

ounce elastic of 3 octaves, after which the ideal force was achieved for the rest of the treatment.

These authors recommend overcorrection of the overjet and of the molar relationship to ensure long term stability, as it has been established that a facial mask does not normalize growth.

*Conclusions:* After a year of treatment the patient has a skeletal and dental class I. We can therefore conclude that early orthopedic treatment and a suitable diagnosis of class III helps to achieve suitable results, by stimulating the growth of the jaw and reducing the number of cases requiring surgery.

### **37. ATTENTION PROVIDED TO SAHARAWI CHILDREN BY THE CLINICA UNIVERSITARIA DE MURCIA**

**Pérez Silva A, Serna Muñoz C, Martínez Hernández E, Fernández Miñano E, Germán Cecilia C**

*Universidad de Murcia*

*Introduction:* Fluorosis is an enamel defect caused by the intake of more fluoride than is adequate and for over a long period of time. Histologically it is characterized as hypomineralization with the presence of surface pores, despite the tooth being well-mineralized. The clinical appearance is of porous enamel with opacities, streaks and color changes.

*Objectives:* To evaluate the different dental pathologies of Saharawi children.

*Material and methods:* Examination of 66 children aged 6 to 15 year.

*Results:*

—Of the 66 patients, 37 were girls and 29 were boys.

—Among the girls we observed 34 teeth with caries in the primary dentition, 53 in the permanent dentition and 273 with fluorosis in the permanent dentition.

—Among the boys we found 18 teeth with caries in the primary dentition and 29 teeth with caries in the permanent dentition and 154 teeth with fluorosis in the permanent dentition.

*Conclusions:*

—The Saharawi girls had more teeth with caries in the primary and well as in the permanent dentition than the boys.

—The Saharawi girls had a greater number of permanent teeth with fluorosis than the boys.

—Fluoride as a preventative measure against caries should be accompanied by proper monitoring of diet and hygiene.

### **38. PARTIAL PULPOTOMY OF A YOUNG PERMANENT SYMPTOMATIC TOOTH WITH BIODENTINE™. A CASE REPORT**

**García J, Cuadros C, Sáez S, Virolés M, Lorente A**

*Universitat Internacional de Catalunya*

*Introduction:*

—Vital pulp therapy of immature permanent teeth presents a challenge in pediatric endodontics. A partial pulpo-

tomy is indicated for the treatment of deep caries of young permanent teeth that is aimed at maintaining pulp vitality and inducing the physiological closure of the roots.

—Historically a large number of materials have been recommended for inducing the normal development of roots. To date the material of choice has been calcium hydroxide (Ca (OH) 2) and mineral trioxide aggregate.

—Recently a cement has appeared on the market based on calcium silicate Biodentine™ (Septodont, St. Maur-des-Fossés, France). This material has similar mechanical properties to healthy dentin and it can substitute it at both crown and root level.

*Objectives:* We aim to present a case report of pulp treatment in young teeth using Biodentine.

*Materials and methods:* Female patient, aged 6 years and 10 months who made an emergency visit to the Department of Pediatric Dentistry of the University Dental Clinic of the Universitat Internacional de Catalunya complaining of pain in the lower left quadrant. In tooth 3.6 occlusal caries was observed with pulp involvement, irreversible pulpitis and open apexes. A pulpotomy was carried out of the permanent tooth with Biodentine™. Clinical and radiological monitoring was carried out at one week, one month and at 3, 6 and 12 months.

*Conclusions:*

—In this case vital pulp treatment for a young permanent tooth with Biodentine™, was clinically and radiologically successful for over a year.

—Biodentine™ showed clinical and radiographical success as a pulp agent in immature permanent teeth (apicogenesis) and it seems to be a promising alternative to MTA and calcium hydroxide.

### **39. THE IMPORTANCE OF A CORRECT PROTOCOL FOR TREATING AN AVULSION. A CASE REPORT**

**Gómez C, Iglesias A, García I, Martín R, Mendoza A**

*Universidad de Sevilla*

*Introduction:* Dental avulsion represents one of the emergencies in Pediatric Dentistry in which following the correct action protocol is essential.

*Objectives:* To review the clinical protocol that should be followed for an avulsion and the possible complications of this injury, and to illustrate this by means of a case report with bad pretreatment prognosis.

*Materials and methods:* A search in the data bases of MEDLINE/PubMed with the following search strategy of with a combination of the thesaurus terms: (“treatment\*” OR “protocol” OR “complication\*” OR “consideration\*”) AND (“dental” OR “Tooth”) AND (“avulsion” OR “exarticulation”).

The case is described of an eight-year old girl who presented with an avulsion of tooth 11 an hour and forty minutes after the traumatic injury. The tooth had incomplete root development and an open apex. During this time it was kept dry for 40 minutes and for an hour in tap water. In the dental office the tooth was reimplanted after eliminating the blood clot and then irrigating the alveolus with a saline solution and after putting it for 5 minutes in 20 ml of Hank's solution and 1 mg of doxycycline. The



correct positioning was verified radiographically. Splinting was carried out for 2 weeks and an antibiotic with clindamycin was prescribed for a week. Clinical and radiological monitoring was carried out at 1 week, 2 weeks, 1 month, 3 months and then every 6 months. At the 2 week follow-up external root resorption was detected radiologically in the middle third of the root. Intracanal treatment was carried out with calcium hydroxide until it was observed that the root resorption had stopped. Apical closure was then carried out with MTA after which endodontic treatment was carried out.

*Conclusions:* Re-implanting a tooth as swiftly as possible or maintaining it in a suitable storage medium are basic clinical parameters for the prognosis of an avulsed tooth. The condition of the apex, the extraoral dry time period or keeping the tooth in a suitable pre-treatment storage medium, dramatically condition the prognosis of an avulsed tooth. The follow-up protocol of the clinical guidelines based on evidence will determine to a large extent the success of the treatment despite a bad initial prognosis.

#### 40. INTRUSIVE LUXATION WITH ROOT RESORPTION. A CLINICAL CASE REPORT

**Salas Sánchez M, Iglesias Linares A, Gómez Ponce C, Vilches Fernández A, Mendoza Mendoza A**  
*Universidad de Sevilla*

*Introduction:* Intrusive luxation of permanent teeth is an uncommon traumatic injury but it is considered one of the most serious due to the risk of harming the periodontal ligament, the pulp and the alveolar bone. Inflammatory root resorption, calcification of pulp tissue, and interrupted or disturbed root development are common associated complications. Three treatment modalities are recommended depending on the severity of the trauma and root development (a wait-and-see approach in case there is spontaneous eruption, surgical repositioning, or orthodontic repositioning). The latest literature reviews point to decoronation being the ideal treatment for those cases involving replacement resorption. It has been demonstrated that decoronation allows the buccopalatal width of the alveolus to be maintained over years, while allowing additional vertical growth of the alveolus, and that therefore it could be used as alternative treatment in cases of severe root resorption.

*Objective:* To demonstrate the aesthetic benefits and resistance to bone loss of decoronation treatment for an intrusive luxation complicated by inflammatory root resorption.

*Material and method:* The literature was reviewed on intrusive luxation of young permanent teeth and the treatment options, in Pubmed and SCOPUS using the combined thesaurus terms: "intrusive luxation" OR "decoronation" OR "tooth AND decoronation" between the years 2008-2013. A case report is presented of a 13 year-old patient with replacement resorption as a result of serious injury suffered at the age of 8 involving the four upper incisors and intrusion of tooth 22, which having not erupted spontaneously was subjected to orthodontic extrusion. After 4 years of clinical and radiolo-

gic monitoring it was observed that root development had halted and that there was root resorption from the tooth cervix to practically all the root. Decoronation treatment was carried out with a bonded bridge.

*Conclusion:* Preserving a decoronated root in the alveolar process not only helps to maintain bone volume, but it also allows vertical bone growth. The long term objective of this procedure is to place an implant after growth has halted in such a way that the aesthetic result is maximized.

#### 41. CONSEQUENCES OF INJURIES TO PRIMARY TEETH ON THE TOOTH GERMS OF DEVELOPING PERMANENT TEETH

**Santillán C, Martínez P, Cuadros C, Guinot F, Lorente AI**  
*Universitat Internacional de Catalunya*

*Introduction:* Traumatic injuries to primary teeth are a frequent occurrence and the incisors of the maxilla are the teeth most affected. Epidemiological studies reveal that traumatic injuries in school age children have increased over the last ten years from 12.0 to 64.8 %. The incidence of traumatic injury to primary teeth is more than twice that of permanent teeth where intrusion and avulsion are the most common traumatic injury causing disturbances to mineralization in 40-70 % and 30-50 % respectively, with hypoplasia of the enamel being the most common complication in the successor teeth.

*Objective:* To present a case report of an extrusive luxation of a primary central incisor highlighting the fact that the reimplantation of primary teeth is still contraindicated due to the different disturbances that can arise in the successor teeth in the short and long term.

*Material and methods:* The case is presented of a female patient who visited the university clinic of the Universitat Internacional de Catalunya and who was monitored over six years for the short and long term consequences suffered after the replacement of a central primary incisor due to extrusive luxation at a young age.

*Results:* The long term consequences of repositioning a primary tooth are: periodontal and orthodontic disorders affecting tooth structure.

*Conclusions:* Of the treatment available for traumatic lesions of primary teeth, repositioning can seriously affect the permanent teeth.

#### LITERATURE REVIEW

#### 42. CURRENT DENTAL TREATMENT FOR CHILDREN WITH GENERALIZED DEVELOPMENTAL DISORDERS (GDD) USING NEW TECHNOLOGIES

**Clemente VG, Martínez Pérez EM, Adanero Velasco A, Planells del Pozo P**  
*Universidad Complutense de Madrid*

*Introduction:* Autism is currently considered a generalized developmental disorder, characterized by intense disturbances and divergence from normal development models, and from reciprocal social interaction in verbal as well as non-verbal communication patterns and from behavior patterns that are expressed in a restricted, repetitive and stereotyped way.

The particular characteristics of these children means that behavior management protocols are necessary before any type of activity or procedure that involves confronting a new situation. Pediatric dentistry treatment for these children is obviously no exception.

Setting up a “systematic desensitization protocol” using pictograms and augmentative communication devices has proved to be efficient. Currently many children with GDD use communication systems based on pictograms which help to evoke what they verbally cannot express.

The development of new technologies offers a multitude of possibilities for facilitating communication. We believe that expanding our knowledge and adapting and individualizing these alternatives during our dental practice would be very useful.

*Objectives:*

—To describe the disorder and desensitization procedures that are used in GDD children.

—To become familiar with the new technologies that exist in this field with regard to communication and visual aids.

—To individualize different multimedia applications and programs or multimedia tools that have been developed with this in mind for use in the field of dentistry.

*Material and methods:* A search was carried out in the literature on autism over the last ten years. The literature was also revised and various associations contacted together with companies developing technology in order to put together a list of programs or applications that could possibly be implemented in dentistry, and which would allow better communication and better management of these patients.

*Results and discussion:* The literature review permitted harnessing the technology available to complement the dental management of autistic patients and to consider the possibility of individualizing this treatment, while unifying criteria with collaborating centers and parents in order to work together in the same direction.

*Conclusions:* Conventional pictograms are a useful tool for working with patients with autism, but the development of technology provides numerous possibilities.

Pediatric dentists can help family members, educators and children to incorporate these systems and maintain good oral health.

*Research project sponsored by Mutua Madrileña.*

#### **43. BREASTFEEDING AND CARIES. A CONCILIATORY APPROACH.**

**Almazán L, Ros B, Frechina N, Parra R, Catalá M**  
*Máster Odontopediatría. Clínica Odontológica. Facultad de Medicina y Odontología. Universitat de València*

*Introduction:* Some pro-maternal breastfeeding associations encourage prolonged demand breastfeeding

until the mother and child believe dropping this is appropriate, regardless of the age of the child. This tendency means that the cases of early caries related to breastfeeding are increasing as parents have never been informed on the need to take certain steps to prevent the appearance of caries. Achieving a balance between these stands and good oral health is often complicated given the fervor generated in these families.

*Objective:* To analyze the information available on human milk and prolonged breastfeeding in order to achieve a consensus with the different parties involved (pediatricians, midwives, mothers, children and pediatric dentists).

*Methods:* A review of the literature was carried out in PubMed, Medline, Cochrane and Google Scholar, and the search was limited to the last 12 years. Some 68 articles were obtained of which 4 were systematic reviews.

*Key words:* milk, human milk, breastfeeding, prolonged, duration, demand, baby, caries, dental caries, ECC, infant food, infant nutrition, lactation, lactose, dietary habits, oral health, milk quality.

*Conclusions:* Caries is a multifactorial disease involving the interaction of substrate, host and time. Human milk is very beneficial for nursing babies, but given its composition it is cariogenic. This is potentially dangerous and ECC may appear as this is a cariogenic substrate given on demand. This risk of contracting this disease will diminish if suitable hygiene habits are established regularly. Information streams should be established between the different groups of professionals so that those mothers who intend to continue breastfeeding can also receive this information.

#### **44. SEARCH FOR NEW MATERIALS FOR CARRYING OUT PULPOTOMIES**

**Guerrero Gironés J, Alcaina Lorente A, Ortiz Ruiz A, Pérez Silva A, Hernandez Fernández A**  
*Universidad de Murcia*

*Introduction:* Pulpotomies help to maintain the integrity of the dental arch and to preserve teeth that would otherwise be destined for extraction. Numerous agents have been used in pulpotomies. Up until now the clinical and radiological results of mineral trioxide aggregate have been very favorable. The problem with MTA is its high cost, and there is currently a search for new materials.

*Objectives:* To analyze the current scientific literature on the clinical and radiographic results regarding the materials used over the last 5 years in primary teeth pulpotomies.

*Material and methods:* Relevant publications were identified using a search of electronic data such as MEDLINE (Ovid) and The Cochrane Library. In order to be included in the review, the studies had to define the material used in the primary teeth with pulp exposure due to caries or dento-alveolar traumatic injury.

*Key words:* pulpotomy, new materials, primary teeth, pulp capping agent.

*Results:* Of the 54 articles obtained in the initial phase of the revision, the full text was available in 33 of these together with the inclusion criteria which could be compared and analyzed.

*Conclusions:* The clinical evidence available showed significant differences with regard to the use of one material or another. More studies are necessary to find out the potential efficiency and the possible adverse effects of the new materials used in pulpotomies.

#### **45. DIGITAL PHOTOGRAPHY IN PEDIATRIC DENTISTRY: TECHNIQUE AND DIAGNOSTIC TOOLS FOR ENAMEL STRUCTURE DEFECTS**

**Melián Artiles V, Caballero Villarte M, Friedlander I, Martínez P, Lorente Rodríguez AI**

*Departamento de Odontopediatría. Universitat Internacional de Catalunya*

*Introduction:* The use of photography in dentistry has increased rapidly due to the importance of having a visual register that will permit an objective evaluation of a pathology.

A digital photographic examination will permit studying the state of a patient, and it will help us establish a diagnosis, a treatment plan and the prognosis. Moreover, it facilitates interdisciplinary communication with the laboratory and with the patient. It is very helpful in dental education and as a medical-legal document.

Digital photography has a high success rate in caries detection. However, in epidemiological studies on enamel structure defects (DDE), the method that is most used is direct clinical examination, despite the advantages that photography and its reproduction have shown over direct clinical examination.

*Objectives:* To carry out a literature review on digital photography and its use in enamel structure defects, from both the technical point of view and as diagnostic material.

*Material and methods:* A literature search was carried out in the data bases of Pubmed (Medline) and Cochrane of articles published between 2000 and 2013 using the keywords: digital photography, defects of enamel, dental fluorosis.

*Conclusions:* Digital photography is of great help as a diagnostic tool for cases of structural defects. Various investigations have shown that the diagnosis of demineralized lesions using photographs is reliable. However, it has the disadvantage that the technique is sensitive and the photographic equipment costly as a good reflex camera is needed with a macro lens and ring flash.

#### **46. THE IMPORTANCE OF FOLLOWING A CORRECT PROTOCOL FOR AVULSED TEETH: CASE REPORT**

**García Pete IM, Iglesias Linares A, López de Francisco C, Gutiérrez Pulido N, Mendoza Mendoza A**

*Universidad de Sevilla*

*Introduction:* Avulsion is one of the most serious traumatic dental injuries and it represents 0.5-16 % of all traumatic dental injuries. Therapeutic management with rapid and correct emergency treatment for an avulsion is decisive for the prognosis of the tooth. The most commonly involved tooth is the permanent upper central incisor, usually between the ages of 8-12 years, which is when the periodontal ligament provides minimal resistance to an extrusive force. The prognosis of a reimplanted tooth depends radically on the time elapsed between the traumatic injury and reimplantation, the type and condition of the storage medium, the stage of the root formation and maximum asepsis so that revascularization of the tooth can take place.

*Objective:* To exemplify and demonstrate using clinical evidence how an incorrect action protocol for an avulsion can lead to secondary complications and even the loss of the injured tooth.

*Material and methods:* A revision of the literature was carried out on the avulsion of permanent teeth based on PubMed and SCOPUS, with the combined thesaurus terms ("permanent tooth avulsion", "tooth avulsion periodontal ligament", "complications tooth avulsion") and ("prevention and control tooth avulsion" or "therapy tooth avulsion") between the years 2008-2013. Based on the literature reviewed and once the recommended clinical guidelines for treatment and action in these clinical contexts had been established, a case of avulsion is presented in which the correct steps in the protocol are not taken. A girl aged 8 years suffered an avulsion of tooth 11. After remaining dry for 15', 30' in physiological serum the tooth was reimplanted in the alveolus without following the right protocol (the blood clot was not removed, the alveolus was not irrigated, topical antibiotic therapy with doxycycline was not administered and the splinting put in place by the local emergencies department was incorrect). Later, the radiological monitoring showed at 17 days inflammatory root resorption. The pulp was removed and intracanal calcium hydroxide was placed, and the injury was stabilized and reversed.

*Conclusion:* Following a correct clinical protocol, and one based on evidence, is essential with regard to avulsions, as can be seen in this case. The tooth was not placed in doxycycline, the splinting was incorrect and the area was contaminated considerably. This results in secondary complications such as inflammatory root resorption and a bad prognosis for the avulsed tooth.

#### **47. CORRELATION OF MALOCCLUSIONS, FOOTPRINTS AND POSTUROLOGY IN PEDIATRIC PATIENTS**

**Gómez Munilla A, Diéguez Pérez M, Pérez Márquez F, Albero Romano G, Gómez Munilla A**

*Universidad Europea de Madrid*

*Introduction:* Postural disorders are frequently observed during childhood as a result of the practice of incorrect postures. This abnormal attitude during periods of growth affects the balance of the skull as well as the

position of the mandible, encouraging disturbances to the growth and development of the jaws as well as malocclusion.

The evaluation of head and neck posture has been the subject of many studies not only because of temporomandibular disorders accompanied by neck pain and headaches, but also due to the biomechanical relationship between the cervical spine, the head and dentofacial structures.

The role of the pediatric dentist should be directed towards the prevention and early diagnosis of disturbances that can affect the proper development of the stomatognathic system of the child patient.

*Objectives:*

1. To examine the existing correlation between footprints, malocclusions and posture.
2. To establish an integral diagnostic and treatment protocol for children

*Material and methods:* Bibliographic revision of articles and journals over the last ten years using the Medline, Pubmed and Dialnet databases with keywords such as "Malocclusion", "posture" and "position syndrome". Various well-known educational journals were consulted such as the Latin-American journal on Orthodontics and Pediatric Dentistry and books of a scientific nature such as "Descriptive, topographic and functional Human Anatomy" (H. Rouvière and A. Delmas).

*Conclusions:* 95 % of human beings are asymmetric. Establishing differential postural symmetry criteria for this pathology is important, among which we should include balanced occlusion.

With regard to the articles reviewed on the subject, it has been observed that there is a greater frequency of headache symptoms in the younger population over the last 20 years. Studies carried out in children at the age of 7 years warn that the presence of these symptoms is 20-35 % of the population, and that this increases with age. A diagnosis protocol is therefore necessary and early treatment for child patients.

#### **48. AUTISTIC SPECTRUM DISORDER IN THE PEDIATRIC DENTISTRY OFFICE**

**Lavado C, Carvalho Silva C, Barbosa C, Norton A, Cardoso Silva C**

*Faculdade de Medicina Dentária da Universidade do Porto, Portugal*

*Introduction:* The world health organization (WHO) defines Autistic Spectrum Disorder (ASD) as a syndrome that is present from birth and that manifests before the age of 30 months, and in which there is a response deficit to visual and auditory stimuli with speech absence or deficiency.

Children with ASD have very different behavior compared with other children. This is characterized by behavior problems related to a limitation in social interaction and disturbances in speech, language and communication. It is also characterized by repetitive behavior and routines which is difficult to modify.

The exponential increase in children diagnosed with ASD increases the probability that pediatric dentists will find these patients in their dental office, and for this reason being familiar with this pathology is very important together with its characteristics, as this could influence the dental treatment to be carried out.

*Objectives:* Our aim is to inform pediatric dentists on how we should care for and approach these patients with ASD, according to the characteristics associated with the pathology.

*Material and methods:* A literature search was carried out in MEDLINE/Pubmed, Science Direct and B-on between January and February 2013 on articles published over the last 10 years with the keywords: "Autism", "special needs", "autism in dentistry", "oral health and autism", "dental treatment"; "neurodevelopmental disorders".

*Conclusions:* Children with ASD have many medical and behavioral problems which complicates dental treatment. Due to the growing number of children with this syndrome who attend our dental offices it is very important that pediatric dentists have a thorough knowledge of the characteristics that these patients have in order to be able to obtain maximum cooperation.

Patients with ASD do not have any particular pathology. However these patients have worse oral hygiene and they are more susceptible to caries, periodontal disease, orofacial pain and xerostomia. They are hypersensitive to sound, lights, colors and smells. Interaction, perception and following instructions is also difficult for them. Special training is needed for dealing with these patients and it is a process that requires specific training of the professional as well as his team.

#### **49. IS THERE A RISK OF CARIES FROM A NATURAL UPBRINGING?**

**Marès C, Boj JR, Cahuana A, Marès J**

*Universidad de Barcelona. Hospital Sant Joan de Déu*

*Introduction:* Bringing children up naturally is a philosophical deal we make with our children. This is based on carrying the baby in our arms, sharing a bed, allowing demand breastfeeding and weaning when the child wants to.

The increase in early childhood caries raises the possibility of there being a relationship between upbringing and detected disease. A review of the literature was carried out in order to explore this association and establish recommendations.

*Material and method:* A literature review was carried out on breastfeeding, bottle-feeding, pacifiers and early childhood caries, of articles published between 2000 and 2013. Non-scientific generalized information on "natural upbringing" was also reviewed. A possible relationship was analyzed between some of the principles of breastfeeding with the appearance of caries.

*Results:* 48 scientific articles were evaluated together with other different information sources on natural upbringing which lead to the conclusion that:

—Breast milk is an ideal food for nursing babies and on its own it is not cariogenic.

— Breastfeeding on demand is recommended from birth with complementary food as from six months.

—There is no reference to a specific age for weaning.

—Natural upbringing groups advocate demand breastfeeding with late and natural breast weaning

—There are very few indications on hygiene and preventative care at an early age.

**Discussion:** A natural upbringing, demand breastfeeding and late and natural weaning implies a caries risk given the constant food in the mouth, which generates persistent acidogenic conditions. This risk increases if the diet is rich in sugar and even more so if oral hygiene measures are not observed after every feed.

In this group of patients preventative measures should include a reduction in nightly feeds if possible, dental hygiene after each feed and preventative application of fluoride in the pediatric dental office.

**Conclusions:**

1. Natural upbringing with on demand breastfeeding and natural and late weaning without oral hygiene leads to a high caries risk .

2. We consider that this behavior should be accompanied by specific preventative measures regarding caries.

3. We propose that the organizations implied in child health combine the promotion of breastfeeding and its benefits with the need for oral hygiene measures and caries prevention, when weaning takes place beyond dental eruption.

## 50. REIKI IN PEDIATRIC DENTISTRY

**Rico A, Precioso MA, Beltri P, Correa E, Méndez M**

*Universidad Europea de Madrid*

**Introduction:** Reiki is a pseudoscientific practice considered alternative complementary medicine that tries heal and balance a patient through the hands of a practitioner. It is a natural therapeutic method, easy to learn, which transmits energy that flows, transmitting warmth, with all its strength through the hands. This technique is part of a very simple thesis: which is that human beings are “all energy”, this affirmation that may seem esoteric actually shares aspects with quantum physics. According to Reiki, if energy becomes blocked by whatever circumstance, a disease will arise. By placing hands on the affected area where the energy had been trapped, the ‘knot’ that stops the energy from flowing will be dissolved and the body’s balance will be restored.

In the United States and the United Kingdom it is used in more than 1.000 hospital centers and it is included in the Public Health System. In the state of New York even the emergency services are trained in giving Reiki. In Spain, this therapy has only been practiced for a few years and in a limited area, but it is applied in various hospitals such as the Gregorio Marañón, La Paz, Ramón y Cajal and 12 de Octubre, given the good results observed in patients.

Our aim is to be able to improve and even achieve a positive attitude among pediatric patients and to reduce stress levels using Reiki in dental offices.

**Material and methods:** A review of the literature was carried out in the following databases Medline/Pubmed, Dialnet, CSIC. The following keywords were used: “stress Reiki”, “Reiki dental”, “Reiki medicine”.

Two case reports are presented of patients who underwent dental treatment with the support of Reiki sessions. The response to this therapy was evaluated by observing behavior development and objectively by means of a pulsioximetry.

**Conclusions:** The use of alternative therapies is an adjuvant treatment option to traditional techniques for managing behavior and of pharmacologic treatments that will improve pediatric dentistry treatment.

## 51. ENVIRONMENTAL DYSPLASIA VS AMELOGENESIS IMPERFECTA

**Salmorán P, Torres L, Méndez Zunino M, Villar C, Ramos Salazar Y**

*Universidad Europea de Madrid*

**Introduction:** Structure anomalies in teeth are disorders due to defects in tooth development that manifest in the histodifferentiation, apposition or maturity stages and that affect the enamel, dentin or cement. The etiology of these structural pathologies can be hereditary or environmental. Each one will give rise to clinical entities that are perfectly differentiated both clinically and during diagnosis and treatment.

From the point of view of etiology we can distinguish hereditary disorders such as Amelogenesis Imperfecta, a genetically transmitted disease that can affect the enamel of both dentitions, and which can lead to eruption delays as well as to anterior open bite, lack of interdental contact and a tendency to suffer periodontal problems with greater frequency than in the general population. On other occasions the structural disturbance will be environmental as the crowns of the teeth, given the nature of their development, are a permanent register of any metabolic, systemic or local disorder occurring during their formation, and this is called Environmental Dysplasia.

The clinical manifestations in both cases go from hypoplasia (macroscopic defect on the surface of the enamel) to hypocalcification (with no visible loss of the enamel but a change in color and/or transparency) and a differential diagnosis is important.

This communication aims to carry out a review of the anomalies of the enamel by means of reviewing the literature and using a case report for determining the different etiological factors of these pathologies.

**Objectives:**

1. To review the causes of enamel structure anomalies.

2. To establish the criteria for the differential diagnosis using hereditary and environmental anomalies.

3. To analyze the possible etiology of the clinical case presented.

*Material and methods:* A review of the literature has been carried out of the information published in high impact informative journals and academic texts of the digital library of the Universidad Europea de Madrid and Universidad Complutense de Madrid. The data were obtained consulting the databases of Medline, PubMed and Google Academic. A detailed medical history was taken, with radiographic registers and photographs of the case.

*Conclusions:* Investigating in detail the factor that causes these dental anomalies is very important in order to identify if the origin is due to environmental or hereditary factors. A correct differential diagnosis can then be carried out and the patient and parents advised on appropriate prevention measures and the most suitable treatment for each case.

## 52. THE INFLUENCE OF PARENTS TODAY IN PEDIATRIC DENTISTRY

**Torres C, Boj JR, Espasa E, Hernández M**  
*Universidad de Barcelona*

*Introduction:* Recent studies have determined the association between the anxiety of parents and children with regard to their dental treatment, the risk of developing oral problems and the influence that parents can have. For this reason, dentists should be able to decide individually according their preferences, on the presence of parents or not in the dental consulting room. Dentists should be able to differentiate between the different profiles and to evaluate the degree of anxiety of both parents and children, so that the treatment is more efficient.

*Objectives:* The aim of this article is to report on the influence parents have on their children and when the presence of parents in the consulting room should be avoided. We will cover the types of parents to be found at a practice and how this will determine what type of behavior we will encounter.

*Material and methods:* A search of the literature was carried out using the PubMed database, introducing the keywords “dental anxiety parents” “Maternal and child's dental anxiety”, “parental presence and dental procedures”.

*Conclusions:* Proper communication is important between the dentist, patient and parents in order to create confidence and security.

The presence of a mother and father is undoubtedly a factor that produces security in children under the age of 3 years, but for children over the age of 4 years parents can interrupt dental procedures, delay treatment and interfere with the establishment of a good relationship with the patient.

Pediatric dentists have the responsibility of determining the communication method and the support that will best improve the treatment environment, taking into account their own skills, the capacity of the particular child, and taking into account the wishes of the parents.

## 53. IS PERIODONTAL DISEASE A RISK FACTOR FOR PRE-TERM BIRTHS AND LOW BIRTH WEIGHT BIRTHS?

**Debiaggi B, Marqués L, Álvarez T, Carmona M, Ribelles M**

*Universidad CEU. Cardenal Herrera*

*Introduction:* Pre-term births, which are those that take place before week 37, represent the greatest reason for world perinatal morbi-mortality. The identification of etiological factors in pre-term babies or low-weight babies is of special interest for the Public Health Sector in order to prevent most of the complications associated with the immaturity of the different systems of a baby's organism. Different types of risk factors are raised that are linked to pre-term births, among which certain infections should be highlighted. In the area of dentistry periodontal disease has been studied as a risk factor in pre-term births.

*Objectives:* To study the importance of periodontal disease during pregnancy, and to describe the different pathogenic mechanisms that explain the relationship of periodontal disease with pre-term births and children with low birth weight.

*Material and methods:* A search was made of the Medline, Pubmed, Scielo, Teseo and Cochrane Library, using the keywords “pregnancy” “periodontal disease” “pre-term birth” “premature birth” “low weight”. A total of 92 articles published between 1996 and 2013 were found.

*Results:* The relationship between periodontal disease and pre-term births or low birth weight children has been studied since the 90's by Offenbacher et al, and it was considered that this constituted a risk factor for pre-term births or children with low birth weight. However, there are authors who fail to observe a direct relationship between both clinical situations. It is considered that pregnant mothers should be informed and educated on the importance of undergoing an orodental examination and undergoing any dental care before and after a pregnancy in order to avoid complications at a later date.

*Conclusions:* Given the importance of prenatal dentistry today, it is important to study the clinical situations that interfere in the correct development of the fetus until birth. Therefore, further studies should be carried out in order to reinforce opinions either one way or another with regard to the causal relationship: periodontal disease: preterm birth/ low birth weight.

## 54. UPDATE ON THE IMPORTANCE OF MEDICATION CARIES IN OUR SOCIETY

**Goberna I, Borrell C, Lorente A, Carmona M, Ribelles M**

*Universidad CEU. Cardenal Herrera*

*Introduction:* Taking medication, either prescribed or self-prescribed that contains chemical sugars together with poor or no oral hygiene in children, can lead to Public Health problems due to the increase in dental caries in the pediatric population. The total or partial

replacement of saccharose by non-acidogenic sweeteners is essential for preventing the cariogenic potential of pediatric medication. There are four prevention levels for medication caries: family, health professionals, pharmacists and the pharmaceutical industry.

*Objectives:* To investigate the importance of medication caries due to the taking of medicine that contains sugars, prescribed as well as self-prescribed. To examine the knowledge and attitudes of parents, chemists and health workers with regard to the existence of medication with and without sugar. To investigate the importance parents give to oral hygiene after taking sugary medicine.

*Material and methods:* A search was carried out of the literature using the Pubmed, Medline, Cochrane Library, Scielo, Teseo using the keywords, dental caries, oral liquid medicine, sugar and oral hygiene of articles published between 1995 and 2013. A total of 64 articles were obtained.

*Results:* Medication with saccharose has a high cariogenic potential. Very few pediatricians consider prescribing sugar free medicine. It is basic that pharmacists advise taking medication with sugar substitutes. The children whose parents know and use medication with saccharose substitutes cooperate in the prevention of dental caries in children. Poor oral hygiene of children after taking sugary medicine contributes to the appearance of medication caries.

*Conclusions:* Parents as well as health professionals should know that the ingestion of sugary medicine is an etiological factor in dental caries and they should look for sugar free substitutes in order to minimize the development of caries. Information campaigns should be directed at health professionals who should then transmit the information to the general population.

## 55. UPDATE ON DIET AS A MODIFIABLE INDIVIDUAL RISK FACTOR

**González Mallea E, Huertas López MD, Ribas Pérez D, Biedma Perea M, Mendoza Mendoza A**

*Universidad Mayor. Santiago, Chile. Universidad de Sevilla. España*

*Introduction:* Cariology has advanced over the last 30 years and there have been scientific advances in understanding the carious process in terms of its pathogenesis, transmission and treatment, with the latter focusing in recent years on minimal intervention.

The concept of minimal intervention is based on all the factors that affect the appearance and progression of the disease and that therefore include prevention concepts, the identification of risk factors (evaluation of risk) and the implementation of prevention strategies/monitoring and health education for the patient.

The evaluation of individual risk for each patient is what dentistry today is focused on, and cariogenic risk is one of the factors that is most easy to measure and modify in all our patients.

*Objectives:* To list the factors affecting the cariogenic potential of food and to propose a danger scale for these in order to be able to evaluate and instruct a patient according to risk, and to inform on new sugar substitutes.

*Material and method:* A review of the literature was carried out using Pubmed and Medline, of the articles published in the last 5 years, using the keywords “dietary risk”, “caries and food”, “alimentary and risk and caries” and “dietary and risk and caries”

*Conclusions:*

1. Diet is one of the modifiable factors in Cariogenic Risk
2. Instruction on danger scales, sugar substitutes and the nutritious value of food is a basic task in prevention.
3. Providing dietary recommendations according to age is important for good nutrition and suitable development.

## 56. PREMATURE LOSS OF PRIMARY INCISORS AS A PREDISPOSING FACTOR FOR DEVELOPING BAD HABITS.

**Gutiérrez Pulido N, Biedma Perea M, Vilches Fernández AA, Salas Sánchez M, Mendoza Mendoza A**

*Universidad de Sevilla. España*

*Introduction:* The premature loss of primary incisors has become a common occurrence in dental consulting rooms due to traumatic injury, extensive caries or pulp disease, making extraction our only treatment option.

The American Academy of Pediatric Dentistry (AAPD), suggests that the correct occlusion for primary canines and permanent first molars does not lead to a loss of space as the mesialization of neighboring teeth does not take place. Despite this we have to take into account other factors such as the age of the patient and the possible appearance of bad habits. Fitting an appliance is recommended that will restore masticatory function and maintain the tongue in the correct position. This will avoid immature swallowing, the acquisition of other bad habits and difficulty in pronouncing certain phonemes.

*Objective:* To carry out a review of the literature related to the appearance of secondary habits as sequelae to the premature loss of primary incisors and to determine the treatment options.

*Material and methods:* A revision of the literature was carried out using an electronic database (Pub Med, Scopus, Embase) of articles published over the last 10 years. The keywords: “Premature” / “loss” AND “primary teeth”/ “Incisor”/“tooth, deciduous”, “Habits”, “Swallowing”.

*Conclusion:* The premature loss of primary teeth arouses concern among parents regarding oral health and aesthetics, and this is one of the first reasons for a consultation as it is a factor that influences the security and self-esteem of a child.

The early loss of primary incisors leads to a predisposition to develop secondary habits in a child such as

tongue thrusting, accentuated finger sucking and many times it will interfere with the pronunciation of certain phonemes.

We consider that using an aesthetic space maintainer is a treatment alternative that substitutes lost teeth quickly and that will avoid the appearance of bad habits.

## 57. UPDATE ON MOLAR INCISOR HYPOMINERALIZATION

**Barbosa C, Lavado C, Carvalho C, Norton A, Barroso J**

*Facultad de Medicina Dentaria de la Universidad de Porto (FMDUP), Portugal*

*Introduction:* Molar incisor hypomineralization (MIH) is a clinical condition that is characterized by a congenital defect in the mineralization of the enamel. Although its prevalence has been studied since 1987, the number of cases over the last two decades makes it a very relevant oral health problem for professionals all over the world.

It has been described as a defect in the quality of the enamel of first molars and permanent incisors, and the result of various associated factors although establishing a specific etiology has not been possible.

Clinically it appears as well-defined opacities of the enamel, initially of a normal thickness and white color that then becomes yellow or brown, more porous and less thick. With the development of minimally invasive dentistry today, prompt mineralization of the enamel is the treatment of choice.

*Objective:* To inform pediatric dentists of the importance of a correct diagnosis and early treatment of molar incisor hypomineralization.

*Material and methods:* A search of the literature was carried out in Medline/PubMed, Science Direct and B-on of articles with the following keywords: molar, incisor, hypomineralization, treatment, MIH, early diagnosis. According to the inclusion criteria previously established by the authors 39 articles published between 2000 and 2013 were chosen.

*Conclusions:* Over recent years molar incisor hypomineralization has become generalized and it has become the object of different studies. However, there is not enough evidence regarding its etiology, prevalence or of the suitable therapy for each case. It is known that a disturbance to molars and incisor mineralization is an indicator of compromised ameloblast function at some point during dental development. Preventative measures are necessary to seal pits and fissures and/or fluoride, and therapy should be based on the severity of the defect.

More studies are needed regarding the etiology of the problem in order to be able to apply treatment that is more suitable and to act on the causal factor. Pediatric dentists should carry out an early diagnosis combined with different prevention strategies in order to encourage a better quality of life for their patient. Cases of acute hypersensitivity can in this way be avoided in which the disturbance to enamel mineralization is so serious that it leads to a need for urgent attention.

## 58. DEVELOPMENTAL DISORDERS IN PEDIATRIC PATIENTS RECEIVING ONCOLOGICAL TREATMENT

**Carvalho Silva C, Lavado C, Barbosa C, Cardoso C**  
*Faculdade de Medicina Dentária da Universidade do Porto, Portugal*

*Introduction:* Over the last decades notable progress has been made in oncological therapies administered to pediatric patients that has permitted a considerable reduction in associated mortality rates. However, the use of new and different chemotherapy protocols, or the combination of this therapeutic modality with head and neck radiotherapy are strongly associated with a high prevalence of late-onset sequelae. With respect to the adverse effects of these treatments in dental development, it is only recently that this subject has received attention after it was verified that these therapies can severely affect odontogenesis. The main manifestations are microdontia, agenesis, taurodontism and changes in crown-root relationships, disorders that can affect occlusion and aesthetics in these patients.

*Objective:* To highlight the clinical importance of pediatric dentists having an objective understanding of the inherent dental characteristics of pediatric patients who have previously received oncological treatment.

*Material and methods:* A literature search was performed in Medline/PubMed and Science Direct and B-on between January and March 2013, of articles published over the last ten years and with the following keywords: pediatric oncology, dental anomalies, chemotherapy, radiotherapy and odontogenesis. A total of 20 articles were chosen according to the inclusion criteria previously established by the authors.

*Conclusions:* Microdontia and agenesis, which are to a large extent related to exposure to chemotherapy agents, are correlated conditions. However microdontia prevails in children under the age of three years. With regard to disorders in the crown-root relationship and taurodontism, these are observed principally in patients with combined oncological treatment. It is important to point out that patients who have received a therapeutic regime of chemotherapy administered concomitantly with head and neck radiotherapy have a greater incidence of dental development disorders and that the seriousness of these defects is directly associated with the age of the child. Other predictive factors of dental disorders are the intensity, type and frequency of the chemotherapy and the area and dosage of the radiotherapy.

The nature and extension of these dental anomalies includes a wide range of disorders with a clinically significant impact which can even compromise the oral health and the quality of life of the child.

In order to optimize the oral health of their patients, pediatric dentists should supervise dental and occlusal development in order to prevent and minimize the impact of the disorders derived from oncological treatment.



### 59. RELATIONSHIP BETWEEN BREASTFEEDING AND MALOCCLUSION IN CHILDREN DURING THE PRIMARY DENTITION: A REVIEW OF THE LITERATURE

**Colombo C, Giunta ME, Cahuana A**  
*Universidad de Barcelona*

*Introduction:* Breastfeeding is ideal nutrition for a child as the nutrients necessary for growth and development are supplied and, in addition, immunological protection is provided. At an orofacial level it is believed that the muscles are suitably activated and the correct growth and development of the jaws is favored.

*Objective:* To analyze by means of a review of the literature the relationship between the duration of breastfeeding and the prevalence of malocclusion in children with primary teeth.

*Material and methods:* A search was carried out using the databases of Medline, Scopus, Isis and Google Scholar, using the relevant terms according to the objective (breastfeeding and malocclusion and primary dentition) and scientific articles in English, Spanish and Portuguese published in the last 20 years.

*Results:* A total of 19 articles were found of which only 8 met the inclusion criteria which had previously been determined, and which were all prevalence studies. Most of the studies determined that the prevalence of malocclusion diminishes in those children who are breastfed over 6 months.

*Conclusions:* Despite this being a revision of observational articles, it can be considered that a protective relationship exists between breastfeeding and malocclusion.

### 60. INFLUENCE OF MULTICULTURALISM IN PEDIATRIC DENTISTRY

**Zanón M, Boj JR, Espasa E, Hernández M**  
*Universidad de Barcelona*

*Introduction:* Currently the population of foreigners in Spain is greater when compared to previous years. This massive flow of immigrants principally from Rumania and Morocco is reflected in the cultural diversity of society. Multiculturalism is present in schools, companies and even in health centers. The literature shows that health risks are related to different cultures, and this can involve different ethnic groups, religious creeds, health knowledge and attitudes. In the health sector, especially in pediatric dentistry, it is increasingly common to treat children from multiple cultures with considerable oral disorders.

*Objectives:* To determine how multicultural factors influence the oral health of pediatric patients. To inform health professionals on the tools available for solving these issues, which are increasingly visible in daily practice.

*Material and methods:* A review of the literature was performed using Pubmed, Scopus and Google Aca-

demy. The search was limited to articles published between 2001 and 2013. All the articles found in English and Spanish referring to more than one country were taken into account.

*Conclusions:* All health professionals should acquire a greater consciousness and sensitivity regarding cultural diversity. They should be able to communicate with a heterogeneous group of patients with very different styles in communication, visions, expectations and concepts regarding health. The creation of public health campaigns at an oral and well as general level can strengthen care and disease prevention at a world level.

*Key words:* “multiculturalism”, “factors”, “pediatric dentist”, “dentistry”, “cultural”, “infancy”, “health”.

### 61. EXTENDED BREASTFEEDING AND THE ORAL CONSEQUENCES

**Barreiro López S, Alvericio Gil M, Pinés García BI, Maroto Edo M, Barbería Leache E**  
*Universidad Complutense de Madrid*

*Introduction:* Breast milk is the most natural food a mother can give a newly born baby and consequently this is the type of feeding that is encouraged today. The benefits are not only nutritious but facial growth is also influenced and dentofacial anomalies are also prevented.

Pediatric dentists are opposed to breastfeeding over longer time periods and on demand. In general, at this age, basic oral hygiene habits are not observed leading to the appearance of caries disease. This is the moment in which pediatric dentists are important as they should guide and educate on oral hygiene habits, not only mothers but pregnant women who may not know the risks of this type of food.

*Objectives:* The objectives of this study are to carry out a literature review of the orofacial consequences raised by prolonged demand breastfeeding and to become familiar with the basic oral hygiene habits of nursing babies.

*Material and methods:* A search to the literature of the Dental Faculty of the

Universidad Complutense de Madrid and databases of Pubmed and Medline was performed on prolonged breastfeeding and oral consequences. The communication is backed with images of cases that were seen on the Master's degree course of Pediatric Dentistry of the Universidad Complutense de Madrid and the dental care program for children.

*Conclusions:* The best food for newly born babies up until the age of six months is breast milk. There is much controversy regarding prolonged breastfeeding and the risk of caries. Breastfeeding favors the correct use of the orofacial muscles, proper development of the jaws and the introduction of good swallowing habits. It is important from the moment of pregnancy to educate mothers on basic oral hygiene habits for their children.

## 62. THE INFLUENCE OF A DENTIST'S PERSONALITY IN PEDIATRIC DENTISTRY

**Barreto A, Boj JR, Espasa E, Hernández M**  
*Universidad de Barcelona*

*Introduction:* We can define personality as a unique and dynamic pattern of thoughts, feelings and behavior that is determined by hereditary and environmental factors. This differentiates each person and it permits foreseeing their behavior. Human relationships, the environment and a person's trade highlight their personality and their way of behaving in different situations and environments.

If we take into account the differences that may exist regarding training, and the experience and personality of each dentist, the way of guiding the behavior of a child and of relating to parents may vary among pediatric dentists. It is clear that in order to pursue this profession, pediatric dentists should have in common certain intrinsic or acquired attributes regarding personality and behavior, because otherwise they are likely to have difficulties practicing pediatric dentistry.

*Objectives:* This communication aims (1) to analyze how the personality of a dentist may influence the practice of pediatric dentistry; (2) to define what type or types of personality can be attracted by this specialty; and (3) to describe the desirable attributes that pediatric dentists should have and all those wishing to practice this specialty in the future.

*Methodology:* A review of the literature was performed that included books, journals and the Pubmed/Medline database from the year 1982 until today. The keywords were: dentist, personality, behavior, influence and pediatric dentistry.

*Conclusions:* The behavior and personality of dentists is very influential as it determines the behavior of their pediatric patients. The dentist who wishes to treat solely children should be a person who enjoys being with them and who feels motivated working with them. Ideally pediatric dentists should have qualities that will optimize their interaction with their pediatric patients and with their parents. Those wanting to practice this specialty should try to have, or acquire, these attributes, which will improve their skills and knowledge in order to practice the profession of pediatric dentistry satisfactorily.

## 63. ECTODERMAL DYSPLASIA: THERAPEUTIC OPTIONS

**Blanco Sanfrutos S, Lugo Hernández E, Sánchez Delgado A, Blázquez B, Lorente AI**  
*Universitat Internacional Catalunya*

*Introduction:* Ectodermal dysplasia is a disease characterized by the disorder of the ectodermal tissue which presents with hypodontia. Currently prenatal diagnosis is available for family members. The treatment of patients with ectodermal dysplasia is a challenge for dental professionals because hypodontia tends to

be severe and it is often associated with bone atrophy. Edentulous child patients require early prosthetic rehabilitation due to having to satisfy basis needs such as eating, speech and social relationships. For this options with mucosa or implant-supported prostheses have been described.

*Objective:* To perform a literature review in order to establish the different therapeutic options available for children as well as young adults, and to review craniofacial growth and bone age staging.

*Material and methods:* A search was undertaken in the PubMed database with the following inclusion criteria: English articles published from 1996-2012 with the keywords anodontia, cervical maturation, child, dental implant, dental management, ectodermal dysplasia, hand wrist x-ray, oral rehabilitation, prenatal diagnosis, prosthodontic rehabilitation.

*Results:* There is no standard rehabilitation treatment with optimal results for children with ectodermal dysplasia, although most of the articles agree that the most efficient treatment with the best cost-benefit ratio is the removable prosthesis that is muco or dento-supported.

*Comments:* Due to poor retention, discomfort and psychological repercussions in the child, it is our duty to look for therapeutic options that will improve these inconveniences, increasing retention but without affecting growth. Despite that placing implants in healthy children is contraindicated, it represents one of the therapeutic options for children with ectodermal dysplasia although understanding craniofacial development is necessary, the speed of growth and bone age staging.

*Conclusions:* It is our job to be familiar with the variety of treatment options available for child patients with ectodermal dysplasia and to apply these to each patient according to their age, morphology, family/social support, and financial possibilities, as well as carrying out further studies on the behavior of long-term implants.

## 64. DENTAL AGENESIS IN PEDIATRIC PATIENTS

**Briceño Chávez S**  
*Universidad Europea de Madrid. Máster en Odontopediatría*

*Introduction:* Tooth agenesis is defined as the absence of one or more deciduous or permanent teeth. It is believed that up to 20 % of the population has tooth agenesis. In the primary dentition the prevalence of agenesis wavers between 0.1 and 0.9 %, but in the permanent dentition it is difficult to specify and values have been found between 3 and 11 %. This partial lack of teeth follows a hereditary pattern. The incisor region is particularly affected during the primary dentition, especially the upper lateral incisors and the lower lateral incisors. In the permanent dentition there is agenesis mainly of the lower second premolars, lateral upper incisors and upper second premolars.

*Objectives:* 1. To study the etiology and epidemiology of this pathology and its determining factors.

2. To analyze possible treatment.

*Material and methods:* This study will be carried out using the information provided by scientific articles from various journals. Articles from over the last ten years will be analyzed and they will be reviewed.

*Results:* Inheritance is considered the main causal factor as in most cases a family distribution has been observed of this disease. When comparing both genders, there was a slightly larger female predominance. The permanent teeth affected most frequently are the upper lateral incisor and the lower premolars. A greater amount of bilateral agenesis has been observed in the male sex. On the other hand agenesis as an isolated finding is more common in the female sex.

*Conclusions:*

1. The prevalence of dental agenesis is high and these cause pathologies such as periodontal disease and malocclusions in addition to aesthetic and functional problems.

2. The etiology that causes tooth agenesis is unclear, although it is thought to be directly related to genetic reasons.

3. The treatment options will depend on the age of the patient and their cooperation. As a general rule in the primary dentition the space will be maintained and in the permanent dentition the missing tooth will be replaced.

## 65. THE DIFFERENT VIEWS OF MATERNAL BREASTFEEDING AND THE ORAL REPERCUSSIONS

**Monfort M, Boj JR, Espasa E, Hernández M**  
*Universidad de Barcelona*

*Introduction:* The multiple benefits of breastfeeding for both mother and child are well-known. But over the last century, and due largely to social changes, breastfeeding was abandoned earlier. The WHO and UNICEF encourage and defend breastfeeding. Over recent years different organizations have appeared plus support groups for nursing mothers that are aimed at encouraging a natural upbringing and breastfeeding. In this work we review the effects of breastfeeding on orofacial growth, and the relationship between lactation and early childhood caries in addition to providing a summary of the views of pro-lactation organizations.

*Objectives:* To carry out a review of the literature on the effects of maternal lactation at an oral level and to investigate the views offered by pro-lactation organizations.

*Material and methods:* A search of the literature using the Pubmed (Medline) database was carried out on articles that linked breastfeeding with occlusion and/or caries using the keywords “breastfeeding” and “prolonged breastfeeding”, “early childhood caries”, “habits and malocclusions”. In addition a search was performed to find the recommendations and opinions on breastfeeding of the Spanish Association of Pediatricians, the International La Leche League, Alba Lactancia, WHO and UNICEF.

*Conclusions:* Breastfeeding is the best option for feeding a baby not only because of the advantages for the system but also because of the advantages for the

mouth. It permits the correct development of the orofacial structures, it satisfies the need for sucking and it prevents the appearance of bad habits. The controversy is related to prolonged maternal breastfeeding (after the appearance of the first tooth) and caries. There is a tendency today to see breastfeeding as up to the mother and child, and for this reason pediatric dentists play a very important role in the education and prevention in a baby’s oral health.

## 66. DENTAL EROSION IN PEDIATRIC PATIENTS: THE IMPORTANCE OF AN EARLY DIAGNOSIS

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*Introduction:* Dental erosion is the progressive and irreversible loss of hard dental tissue through chemical processes with no bacterial implication. It is currently considered an important clinical challenge that is increasingly prevalent in adults as well as in children.

*Objectives:* To enable diagnosing dental erosion in pediatric patients based on an understanding of the characteristics and etiological factors.

*Results:* Primary teeth are more susceptible to the complications of erosion that progresses faster in permanent teeth due to structural differences. The clinical manifestations vary according to the degree of involvement but in pediatric patients dental erosion is associated with clinical problems such as dental hypersensitivity, occlusion disorders, eating problems, lack of aesthetic appeal, pulp exposure and abscesses. In addition, the children who suffer this in the primary dentition have a greater risk of developing this type of lesion in the permanent dentition, and early prevention and diagnosis is fundamental.

Dental erosion is a multifactorial condition, with individual factors that influence susceptibility, and the causal factors can be divided into intrinsic and extrinsic factors. The former are a consequence of gastric acid in the oral cavity, leading to eating disorders and/or gastroesophageal reflux among other digestive problems. These are often not diagnosed and erosion is the first warning sign that leads us to send the patient to a digestive health specialist. The frequent and prolonged intake of acidic drinks, medicine, and other dietary habits, are a source of extrinsic acids that are also involved, and the main cause of an increase in the prevalence of this disease.

In order to manage dental erosion correctly, reaching a correct diagnosis is fundamental in order to identify the causal factors by taking a detailed medical history.

## 67. CURRENT PREFERENCES OF PARENTS REGARDING TECHNIQUES FOR BEHAVIOR CONTROL

**Prol A, Boj JR, Espasa E, Hernández M**  
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*Introduction:* Most children who visit a dental office are relaxed and they cooperate during the treatment. However there is a group of patients whose behavior is inadequate, and which makes clinical success difficult. Ideally the use of behavior control techniques can guide a child towards better behavior. Sedation and general anesthesia are options that should be considered once the other techniques have been tried.

Parental preferences regarding one technique or another have changed over time. And there was once even a preference for treatment under sedation or general anesthesia rather than the use of a technique involving the physical restriction of a child.

*Objectives:* To find out how parental preferences have been modified over time regarding the use of different behavior control techniques in non-cooperating children in order to permit carrying out dental treatment.

*Materials and methods:* We performed a review of the literature between now and 1984 on the preferences of parents regarding the use of different behavior control techniques in the dental office. A search was also made in the library of the Universidad de Barcelona and in the Medline/Pubmed® using the following terms: “parenteral acceptance”, “parenteral attitudes”, “behavior management in dentistry” and “behavior management techniques”.

*Conclusions:* The technique tell-show-do is the most accepted behavior control technique of parents. And the technique hand-over-mouth the most rejected, to the point that parents prefer sedation or general anesthesia before the use of this technique. There are various factors that influence this current tendency, such as the age of the parents, social class, and being unfamiliar with the indications for, and the risks of, these techniques.

Pediatric dentists should recommend the technique that is most suitable for each particular case and they should inform parents on what this consists of and the benefits for their child’s behavior. They should obtain informed consent from the parents and they should recommend, according to their own criteria, the most suitable technique. This should take into account the age, cognitive development, fear, anxiety and disability of the child that does not allow cooperative behavior. In this way clinical success and parental acceptance will be achieved.

## 68. CURRENT SITUATION OF THE HAND-OVER-MOUTH TECHNIQUE

**Pujol A, Boj JR, Espasa E, Hernández M**  
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*Introduction:* Within pediatric dentistry there have always been discrepancies among professionals on the use of hand-over-mouth (HOM). This technique consists on the operator putting their hand over the mouth of the boy/girl during an attack of hysteria and/or when their behavior is disruptive, while at the same time telling them what behavior is expected of them. Over the years this technique has been diminishing and even

in May 2006, the AAPD eliminated it from their guide on clinical practices regarding behavior management. Very few studies and revisions have been made on developments in the technique and on the long term effects that this may produce.

*Objectives:* The aim of this literature review is to analyze the historic developments of HOM in pediatric dentistry, as well as to inform on the current tendency with regard to the use of this technique and why it has fallen into disuse.

*Material and methods:* A review of the literature was carried out using Pubmed with the keywords: “Hand over mouth exercise” and “Pediatric Dentistry” using the articles available that were published between 1972 and 2010. The literature found in the library of the Dental Faculty of the Universidad de Barcelona was also reviewed.

*Conclusions:* The profile of parents in current society is changing, as are the criteria of the pediatric dentist. Although there are no studies showing the adverse effects of using the MOM technique, it is clear that its use is not liked by most pediatric dentists nor by the parents of our patients.

In our opinion in pediatric dentistry we have many alternative resources at our disposal for managing behavior that can substitute this technique as mentioned by Boj et al who feel that different behavior modification techniques are subject to changes over time and that they should be considered a dynamic area within pediatric dentistry. The keyword here is “dynamic”. We should not consider pediatric dentistry as a static profession, as the success of whatever profession is based on adapting to changes in society and to the times we live in. While it can be said that pediatric dentists can be quite different, they are all in their right to use HOM providing the technique is used correctly and with parental consent. Legally it can be used, although we would discourage it.

## 69. MANAGEMENT OF ATTENTION DEFICIT HYPERACTIVITY DISORDER IN PEDIATRIC DENTISTRY

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*Introduction:* Attention deficit hyperactivity disorder (ADHD) is a chronic disorder that interferes in the normal development of a child leading to disorders at a medical, cognitive, emotional and behavioral level. ADHD consists in a persistent pattern of inattention together with over-activity given the maturity of the child and little control over impulsivity. It is the most common psychiatric disorder affecting children with a prevalence of 4-6 %.

*Objectives:* To inform on the characteristics of ADHD and the repercussions on oral health so that professionals can identify this disorder and manage these patients appropriately.

*Material and methods:* A review of the literature was performed on attention deficit disorder and its management in pediatric dentistry using the Compludoc, Medli-

ne and Pubmed databases as well as articles and books on Pediatrics and Pediatric Dentistry available at the Dental Faculty of the U.C.M. and published over the last 25 years in English or Spanish.

*Key words:* Attention deficit, hyperactivity, ADHD, dental management

*Results:* Carrying out a complete medical history of ADHD patients is essential. This disorder will influence their oral health negatively due to poor skills and motivation to carry out good oral hygiene and due to the medicines prescribed for the treatment. It has been

observed that they have a greater predisposition to suffering traumatic lesions and more behavioral problems at dental clinics.

*Conclusions:*

1. The application of these behavior management techniques should be maximized, and they should be given clear instructions in order to obtain their cooperation.

2. These high-risk patients should be included in an individualized preventative program in order to avoid a worsening of their dental condition.