



소아, 청소년을 위한 -

대한소아치과학회

대한소아치과학회

2017 추계학술대회

(제51회 전공의 학술대회)

2017년 10월 27일(금)~28일(토)

한화리조트 해운대티볼리 몬테로소

October 27~28, 2017

PROGRAM



대한소아치과학회 2017 추계학술대회 제 51회 전공의 학술대회

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2017 대한소아치과학회 추계학술대회

[제 51회 전공의 학술대회]

일 시 2017년 10월 27일(금) ~ 10월 28일(토)

장 소 한화리조트 해운대 티볼리 몬테로소

🕒 추계학술대회 일정

장 소		몬테로소(지하1층)	마나롤라(3층)
10월 27일 (금)	12:00	등록	
	13:00	구연발표 I	구연발표 II
	14:20	Coffee Break	
	14:30	구연발표 I	구연발표 II
	15:50	Coffee Break	
	16:00	특강 1 미성숙영구치에서의 재생근관치료 임상 김현철 교수 (부산대학교 치의학전문대학원 치과보존학교실)	
	17:00	특강 2 아이의 마음 읽기 이경화 교수 (부경대 유아교육과)	
	18:00	만찬	
장 소		마나롤라(3층)	
10월 28일 (토)	09:00 ~09:50	구강질환과 치주질환 (이주현 교수)	
	09:50 ~10:40	구치부 수복치료의 최근 경향 (김선미 교수)	
	10:50 ~11:40	전신질환을 가진 어린이의 치과적 관리 (이제호 교수)	
	11:40 ~12:30	어린이의 구강악습관이 악안면 성장발육에 미치는 영향 (이난영 교수)	



구연발표

| ORAL PRESENTATION

OA 10. 27(금) 한화리조트 해운대 티볼리 지하1층 몬테로소 좌장 정태성 교수	
OA-01 13:00~13:10	김 속 희 (경희대) Evaluation of Airway Space in Children with Different Anteroposterior Skeletal Patterns
OA-02 13:10~13:20	이 한 이 (전북대) Lip closing force measurement and its affecting factors of children in the early and late mixed dentition
OA-03 13:20~13:30	김 현 태 (서울대) Characteristics of Intravenous Midazolam Sedation with Nitrous Oxide in Pediatric Dental Treatment : a Retrospective Study
OA-04 13:30~13:40	박 창 현 (단국대) A Retrospective Statistical Study on Sedation Cases in Department of Pediatric Dentistry at Dankook University Dental Hospital for 5 Years
OA-05 13:40~13:50	김미리 (조선대) Cervicofacial subcutaneous emphysema secondary to endodontic treatment of primary upper anterior teeth: a case report
OA-06 13:50~14:00	김희라 (경북대) Buccal Bifurcation Cyst: Two Case Reports
OA-07 14:00~14:10	박 민 지 (연세대) Missing of mandibular second premolars and its relation to dental anomalies
OA-08 14:10~14:20	이연주 (이대목동) Evaluation of midpalatal suture maturation in 10- to 15-year-olds using cone-beam computed tomography
휴식 (10분)	
OA-09 14:30~14:40	김재용 (강릉원주대) A Comparison of Bonding Strength by Cleaning Method of Zirconia in Saliva and Blood Contamination
OA-10 14:40~14:50	채종균 (서울대) Current status analysis of pediatric dental clinics in Korea – focused on regional distribution –
OA-11 14:50~15:00	오나경 (경북대) Abnormally early eruption of maxillary permanent canine following congenital missing of primary canine : Case report
OA-12 15:00~15:10	김도영 (전북대) The Effects of Parental Rearing Styles on Children' s Dental Fear
OA-13 15:10~15:20	이은경 (부산대) Management of Mandibular First Molars with Eruption Disturbances using a Fixed Type Traction Appliance
OA-14 15:20~15:30	윤지혜 (원광대대전) A Survey Using Infant Oral Health Examination Screening
OA-15 15:30~15:40	이재희 (단국대) Effect of Blood Decontamination on Orthodontic Bracket Bonding
OA-16 15:40~15:50	임소영 (연세대) Surgical Reposition of Ectopic Impacted Incisor Tooth Germ : A long term follow up
휴식 (10분)	



구연발표 II ORAL PRESENTATION

OB 10. 27(금) 한화리조트 해운대 티볼리 3층 마나몰라(3층) 좌장 이난영 교수	
OB-01 13:00~13:10	정 현 태 (전남대) Effect of Intra-canal Medicaments on the Push-Out Bond Strength of Calcium Silicate-based Biomaterials
OB-02 13:10~13:20	김 민 지 (서울대) Tooth Eruption Disturbances associated with Developmental Anomalies of Permanent Lateral Incisors
OB-03 13:20~13:30	오 태 준 (경희대) A Study on the Eruption Stage of Teeth in Korean Children Using Model Analysis
OB-04 13:30~13:40	이 상 은 (단국대) Characterization of Gene Expression from Supernumerary Dental Pulp and Periodontal Ligament Stem Cells
OB-05 13:40~13:50	고 한 호 (강릉원주대) Effect of different polishing burs on the surface roughness of zirconia and Streptococcus mutans adhesion
OB-06 13:50~14:00	박 영 준 (원광대) Evaluation of high-power and X-tra power mode of LED Curing Light on Sealant Polymerization
OB-07 14:00~14:10	오 나 영 (경북대) A delayed eruption of infraoccluded primary molar
OB-08 14:10~14:20	송 지 혜 (연세대) Analysis of anterior crossbite correction in mixed dentition using intraoral appliance : A retrospective study
휴식 (10분)	
OB-09 14:30~14:40	송 용 호 (조선대) Microleakage and Shear Bond Strength of Biodentine™ at the different time interval
OB-10 14:40~14:50	최 수 지 (아주대) Diagnosis and treatment of chronic osteomyelitis, mimicking Langerhans cell histiocytosis, in a 6-year-old child: a case report
OB-11 14:50~15:00	이 창 근 (전북대) Comparison of diagnostic validity between DIAGNOdent® and DIAGNOdent® pen in proximal caries
OB-12 15:00~15:10	이 유 경 (단국대) Gene Expression of Supernumerary Dental Pulp related to the subculture speed
OB-13 15:10~15:20	이 지 원 (서울대) A Novel RUNX2 Mutation in a Family with Cleidocranial dysplasia
OB-14 15:20~15:30	노 유 미 (단국대) Cariogenicity of vitamin supplements for children
OB-15 15:30~15:40	모 승 한 (연세대) Hemisection of a Supernumerary tooth Fused to a Maxillary Lateral Incisor
15:40	메인 강연장으로 이동



특 강 I PLenary LECTURE

PLENARY LECTURE 10. 27(금) 한화리조트 해운대 티볼리 지하1층 몬테로소 좌장 김 신 교수	
16:00	미성숙영구치에서의 재생근관치료 임상 김현철 교수 (부산대학교 치의학전문대학원 치과보존학교실)
17:00	아이의 마음 읽기 이경화 교수 (부경대학교 유아교육과)



2017년 추계학술대회(제 51회 전공의 학술대회)를 축하하며

회

회원여러분 안녕하십니까?

이번 2017년도 대한소아치과학회 추계학술대회를, 열정과 낭만이 가득한 도시 부산, 그 중심에
늘 푸르고, 젊음의 열기가 느껴지는 이곳 해운대에서 개최하게 되었습니다.

지난 반세기 동안 많은 선배님들의 헌신적인 노력으로 항상 발전하고 있는 본 학회의 전공의학술대회를 51
회째를 맞이하여 좋은 발표를 해주신 역대 전공의 선생님들 그리고 지도해 주신 교수님들께 전 학회 회원을
대표하여 감사의 말씀을 전해드립니다.

이번 추계학술대회에서는 학계에 명망이 있는 부산대학교 치과보존학교실 김현철 교수님을 초청하여 “
미성숙영구치에서의 재생근관치료 임상”에 대한 최신지견을 듣는 기회를 마련하였으며 또한 부경대학교
이경화 교수님의 “아이의 마음 읽기”에 대한 특강을 마련하였습니다. 이번 학술 프로그램을 통하여 전공의
선생을 포함한 회원님들의 식견을 높일 수 있는 시간을 마련하였으니 소아치과학에 대한 지식과 임상역량이
한층 더 향상되는 계기가 되었으면 하는 바램입니다.

그동안 이번 추계학술대회를 기획, 준비해 오신 총무이사님, 학술이사님, 홍보이사님, 인정의/전문의
필수교육 프로그램을 마련해 주신 인정의/전문의 위원장님과 수련고시이사님을 비롯한 모든 임원님께
감사드립니다. 그리고 전공의 발표를 성심껏 지도해 주신 각 대학 교수님들께도 다시 한 번 감사드립니다.
마지막으로 이번 대회를 준비하는데 정성과 노력을 다해주신 부산대학교 교수님들과 전공의 선생님들,
그리고 부산울산경남지부 회원님들께 감사의 말씀을 전합니다.

회원 여러분들의 건승을 기원합니다.

2017년 10월 27일

대한소아치과회장 장 기 택

구연발표 |

ORAL PRESENTATION

OA 10. 27(금) 한화리조트 해운대 티볼리 지하1층 몬테로소 좌장 정태성 교수	
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OA-16 15:40~15:50	임소영 (연세대) Surgical Reposition of Ectopic Impacted Incisor Tooth Germ : A long term follow up

Evaluation of Airway Space in Children with Different Anteroposterior Skeletal Patterns

Kim, Sook Hee* / Nam, Ok Hyung / Kim, Mi Su /
Lee, Hyo-Seol / Kim, Kwang Chul / Choi, Sung Chul

Dept. of Pediatric Dentistry, School of Dentistry, Kyung Hee University, Seoul, Korea.

Objectives

The purpose of this study is to evaluate the size of the pharyngeal airways in children among various skeletal patterns.

Material and Method

Sixty healthy children (27 boys and 33 girls) aged 7–11 years (mean, 8.6 years) visited Kyunghee University Hospital from January 2015 to May 2017 and were divided into three groups in terms of the [A point–Nasion–B point] angle (Groups I, II, and III). Lateral cephalometric data were used to measure the airway dimensions.

Results

The dimensions of the middle airway were significantly lower, reducing the upper airway space, in Group II than in other children.

Conclusion

Children with large [A point–Nasion–B point] angles have a narrower middle airway space than others.

Key words : Airway, Anteroposterior skeletal patterns, Lateral cephalometry, Child

Lip closing force measurement and its affecting factors of children in the early and late mixed dentition

Lee, Haney* / Lee, Dae-woo / Kim, Jae-gon / Yang, Yeon-mi

Department of Pediatric Dentistry, School of Dentistry, Chonbuk National University

Objectives

The aim of this study was to measure the mean lip closing force(LCF) and investigate the factors which affects the LCF of the children in the early and late mixed dentition.

Material and Method

The sample consisted of 471 children who were 8–11 years old in Jeonju city. The height and weight of the children were recorded. One examiner took the clinical examination about occlusal condition, lip competency, philtrum length. LCF was measured three times for each children with Lip Decum® (Cosmo Instruments).

Results

The mean LCF of the examined children was 8.12 N, 8.86 N in boys, and 7.41 N in girls. LCF showed statistically significant differences according to gender and age. LCF increased with age. The LCF of the children showed a statistically significant positive correlation with height($r=0.23$, $p<0.001$), weight($r=0.23$, $p<0.001$) and Philtrum length($r=0.12$, $p<0.05$). When LCF was analyzed according to Angle's classification, the LCF of the children of Class I was the highest and there was a statistically significant difference between the Angle classes ($p<0.01$).

Conclusion

The clinical implication of this study is that it revealed the factors affecting the Lip Closing Force of children in the early and late mixed dentition and it could suggest the mean LCF as the standard of orofacial myofunctional therapy.

Key words : Lip closing force, Mixed dentition, Orofacial myofunctional disorder

Characteristics of Intravenous Midazolam Sedation with Nitrous Oxide in Pediatric Dental Treatment: a Retrospective Study

Kim, Hyuntae* / Song, Jisoo / Hyun, Hong-Keun / Kim, Young-Jae /
Kim, Jung-Wook / Jang, Ki-Taeg / Lee, Sang-Hoon / Shin, Teo Jeon

Department of Pediatric Dentistry, School of Dentistry, Seoul National University, Korea.

Objectives

Dental fear and anxiety may create behavioral difficulties that form major barriers to dental treatment. Midazolam is a short-acting benzodiazepine which benefits from sedative, anterograde amnesia and anxiolytic effects. Intravenous midazolam has advantages in that titration, reversible agent or emergency medication are available. However, the use of intravenous midazolam for dental care with inhalation sedation(N₂O/O₂) is poorly documented. The study aims to analyze the records of patients who received dental treatment under intravenous midazolam sedation with nitrous oxide at Seoul National University Dental Hospital.

Material and Method

60 cases for 58 patients under 14 years of age, who received dental treatment under intravenous midazolam sedation with nitrous oxide in the Department of Pediatric Dentistry at the Seoul National University Dental Hospital, from November 2015 to July 2017 were included in the study.

Results

1. In this study, there were more male(60%) than female(40%). Mean age of patients was 9.4 year, ranging from 2.7 to 13.1.
2. The main dental treatment that patients received was surgical extraction of supernumerary tooth(50%), followed by caries treatment (16.7%).
3. Mean duration of sedation was 59.26 minute, and mean treatment time was 36.25 minute.
4. The mean midazolam dosage was 0.061 mg/kg. In 23 cases(38.3%) additional midazolam was delivered during dental treatment.
5. The primary route of administering nitrous oxide was nasal mask (80%), and nasal prong was also used(20%). The concentration of nitrous oxide varies among patients; 50% nitrous oxide (70%), followed by 45% nitrous oxide(10%) and 60% nitrous oxide(6.7%).
6. Adverse event during waking up the patient was reported in only one of the included events. Flumazenil, the benzodiazepine antagoist, was administered to reverse the effect of midazolam.

Conclusion

The intravenous midazolam sedation with inhalation sedative agent was shown to be effective for patients who have fear and anxiety in dental treatment.

Key words : midazolam, intravenous sedation, nitrous oxide, inhalation sedation

A Retrospective Statistical Study on Sedation Cases in Department of Pediatric Dentistry at Dankook University Dental Hospital for 5 Years

OA 04
ORAL PRESENTATION

Park, Changhyun* / Kim, Jongsoo /
Yoo, Seunghoon / Kim, Jongbin / Shin, Jisun

Dankook University, School of Dentistry, Dept. of Pediatric Dentistry

Objectives

The purpose of this study is to analyze dental treatment in the pediatric dentistry of Dankook University Dental Hospital associating with sedation for the recent 5 years.

Material and Method

Using the Order Communication System (OCS), we collected information about dental treatment under conscious sedation in the pediatric dentistry of Dankook University Dental Hospital from January 2011 to December 2015. The information gathered was patient gender, age, sedation type, sedative agents, date of operation, and type of procedure.

Results

The proportion of treatment cases with conscious sedation for total treatment cases continued to decline until 2014. On the other hand, the incidence of general anesthesia increased gradually. The frequency of midazolam administration and N2O inhalation sedation increased recently. The use of conscious sedation was significantly decreased when the age of patient was 3 years or older. The frequency of general anesthesia was similar in all age groups. There was a tendency to perform treatment with deeper sedation when the patient was male than female, and when the pulp treatment was performed together with the restorative treatment than not performed. The frequency of re-treatment within 90 days after restoration treatment decreased as the depth of sedation increased.

Conclusion

This study was confined to a specific area and surgeons. Long-term surveys in wider range of areas will be needed.

Key words : Conscious sedation, General anesthesia, Practice patterns

Cervicofacial subcutaneous emphysema secondary to endodontic treatment of primary upper anterior teeth: a case report

Kim, Mi-ri* / Lee, Sang-ho / Lee, Nan-young / Jih, Myeong-kwan

Department of Pediatric Dentistry, School of Dentistry, Chosun University

Introduction

Subcutaneous emphysema is the condition characterized by air being forced into the facial planes of the connective tissue, leading to sudden onset of swelling. Although its rare, dental treatment has been reported as a causing factor following the use of air-drive hand-piece and compressed air syringes. Because of its rare prevalence, dentists often overlook and miss the chance for early treatment of emphysema. This case report is about the patient who had been affected to iatrogenic subcutaneous emphysema secondary to pulpectomy of maxillary primary incisors.

Case report

A 5-year old female child patient visited our Pediatric Dental Clinic for dental caries control and treatment had been progressed under conscious sedation. After endodontic retreatment of upper primary incisors, sudden swellings on the patient's both eyelids, right cheek and neck were appeared. Patient was placed in the recovery room, and observed for two hours, but sign of subsidence was not observed and referred to the Pediatric clinic. She was diagnosis as iatrogenic subcutaneous emphysema secondary to dental treatment and decided admission. During the hospitalization, empirical antibiotics was administered for the first four days in order to prevent infection. Six days after the admission, the patient's clinical condition was improved and swelling was significantly reduced and discharged.

Summary

In this case, cervicofacial iatrogenic subcutaneous emphysema appeared after pulpectomy of maxillary primary incisors. The major causing factor of emphysema is thought to be the use of compressed air into root canals, directly. The swelling subsided after six days of hospitalization with empirical antibiotic administration. In rare occasion, there are some emphysema cases with fatal results such as infection, air embolism, and dyspnea. The dentists should aware of the possibility of iatrogenic subcutaneous emphysema by dental treatments and be prepared for its prevention, early recognition and proper treatment.

Key words : Subcutaneous emphysema, Cervicofacial swelling, Endodontic treatment, Three-way air syringe. Upper primary incisors

Buccal Bifurcation Cyst: Two Case Reports

OA 06
ORAL PRESENTATION

Kim, Hee-Ra* / Nam, Soon Hyeun / Kim, Hyun Jung

Department of Pediatric dentistry, School of dentistry, Kyungpook National University

Introduction

A buccal bifurcation cyst (BBC) is an uncommon inflammatory odontogenic cyst associated with the permanent mandibular first or second molar in children. The aim of this report is to present two cases of BBC affecting the buccal furcation of permanent mandibular first molar.

Case operation procedure

Two patients complained of mandibular buccal swelling around the permanent first molar. In both cases, only enucleation was performed without extracting the involved tooth. There were no recurrences during follow up. All teeth remained vital and erupted normally.

Summary

The diagnosis of BBC in both cases was based on the clinical and radiographic features. The most appropriate treatment is usually enucleation of the cyst without extraction of the associated tooth. Therefore, knowledge of the distinct features of BBC is important for diagnosis and appropriate treatment.

Key words : Buccal bifurcation cyst, Mandibular infected buccal cyst, Cyst enucleation, Oral surgery

Missing of mandibular second premolars and its relation to dental anomalies

Park, Min-ji* / Song, Je Seon / Choi, Byung Jai /
Kim, Seong Oh / Jeon Yo won / Lee, Jae Ho

Department of Pediatric Dentistry, College of Dentistry, Yonsei University, Seoul, Korea

Objectives

The purpose of this study is to investigate the relationship between congenital missing of mandibular second premolar and other tooth missing or delayed dental maturation, and to provide information on clinical characteristics of congenital missing of mandibular second premolar and intervention time in orthodontic treatment.

Material and Method

Among patients aged 9–15 years who visited the pediatric dentist at Yonsei University College of Dentistry, patients who have taken panoramic view radiographs are selected. In panorama radiographs, patients with missing mandibular second premolar are selected and first recorded missing teeth other than mandibular second premolar. Second, The teeth except the third molar are evaluated as nolla stage. When the nolla stage was lower than the average level compared with the Korean standards, the teeth were evaluated as delayed, and the lesions were classified as sex, dental quadrants, bilateral or unilateral missing of mandibular second molar. Use statistical programs to determine if there is statistical significance in the differences between the analyzed data.

Results

Among the 9–15 year old patients who visited the pediatric dentist at Yonsei University from 2014 to 2016, 1,931 patients were satisfied with the standard, 928 girls and 1,003 boys. A total of 125 patients with a missing in the mandibular second premolar were 62 girls and 63 boys. There were 56 patients with unilateral missing in the mandibular second premolar, and 69 patients with bilateral cases. In these patients, the missing of other teeth except for the mandibular second premolar was examined, and the prevalence rate was significantly higher than the general prevalence. Especially, the missing of the maxillary second premolar was observed prominently. In the case of teeth with delay compared to normal, the prevalence rate was higher than that of general prevalence, especially in maxillary second premolar and maxillary second molar. In the case of delayed maxillary second premolar, the bilateral missing of the mandibular second premolar was statistically significantly higher than that of the unilateral missing of mandibular second premolar.

Conclusion

Missing in the maxillary second premolar and delays in the maxillary second premolar and maxillary second molar are observed more frequently than in the general case in the case of the mandibular second premolar defect.

In patients with missing mandibular second premolar teeth, tooth loss or delay is more prominent than in normal cases

Key words : Agenesis, Second premolar, congenital missing, delayed dental maturation

Evaluation of midpalatal suture maturation in 10-to 15-year-olds using cone-beam computed tomography

OA 08
ORAL PRESENTATION

Lee, Yeonju* / Hwang, Inkyung / Sim, Dohee / Mah, Yon-Joo

Division of Pediatric Dentistry, Department of Dentistry, Ewha Womans University Mokdong Hospital

Objectives

Rapid maxillary expansion (RME) is an orthopedic procedure that produces separation of the midpalatal suture (MPS), thus widening the maxilla. It is helpful to assess the MPS maturation for prediction of the prognosis of RME.

The aim of this study was to determine the frequency of MPS maturation stages in children aged 10 to 15 years by using cone-beam computed tomography (CBCT).

Material and Method

Tomographic images in axial sections of the MPS from 375 children (177 boys, 198 girls; ages, 10–15 years) were classified into five stages (A, B, C, D and E) to define the radiographic stages of MPS maturation.

Results

Stage A was observed at all ages, except for 15 years. Stage B was present in all ages and more prevalent in patients up to 12 years of age. Stage C was the most prevalent at age 13 in girls (35%), age 14 and 15 in boys (37% and 44%, respectively). Stage D showed higher prevalence in those aged 14 (38%) and 15 (41%). Stage E was rarely observed up to 14 years of age in boys and 12 years of age in girls showing the lowest prevalence in all ages included in our study.

Conclusion

RME may produce most favorable skeletal effects in patients up to 12 years of age and it could be possible to use conventional RME with fewer skeletal effects in patient at the age of 13 in girls, 15 in boys.

Key words : RME, Midpalatal suture maturation, CBCT

A Comparison of Bonding Strength by Cleaning Method of Zirconia in Saliva and Blood Contamination

Kim, Jae-Yong* / Seo, Hyun-Woo / Park, Ho-Won / Lee, Ju-Hyun

Department of pediatric dentistry, Gangneung-Wonju National University

Objectives

The purpose of this study is to compare the bond strength with resin cement after cleaning zirconia contaminated by saliva or blood, and then evaluate the effect of thermocycling on the bond strength.

Material and Method

The section of zirconia (5mm x 3mm) in the similar condition as the inside of zirconia crown was embedded in acrylic resin. (n=180).

Among them, 160 samples were divided into two groups and the contamination process were conducted. With the remaining 20 samples, the bonding was conducted with resin cement without contamination process.

The samples contaminated by saliva (n=80) and blood (n=80) were cleaned by using four cleaning methods, respectively. Regarding the cleaning method, it was set with the group dried for 10 seconds after water injected for 20 seconds and the group cleansed and dried for 10 seconds after 37% phosphate gel, a commercial cleanser, and 2.5% NaOCl were applied for 20 seconds, respectively. After that, bonding was performed in all samples (n=160). All the control and experiment groups were divided in half, and the shear bond stress was measured in the first half, and the shear bond strength was measured in the other half after thermocycling.

Results

In both groups contamination by saliva and blood, no statistically significant difference was not found in control, groups cleansed by commercial cleanser and 2.5% NaOCl. When the groups cleansed with water and 37% phosphate gel were compared with the control, significantly low shear bond strength was shown. When the thermocycling was conducted, a statistically significantly low shear bond stress was found in both groups contaminated by saliva and blood compared to the groups without thermocycling.

Conclusion:

When zirconia was contaminated by saliva or blood, the original shear bond stress could be obtained if cleansed with commercial cleanser or 2.5% NaOCl.

The significantly low shear bond stress was shown in all groups in thermocycling.

Key words : Zirconia, Saliva, Blood, Contamination, Luting cement, Ivoclean, Shear bond strength, thermocycling

Current status analysis of pediatric dental clinics in Korea

– focused on regional distribution –

OA 10
ORAL PRESENTATION

Chae, Jong Kyun* / Song, Jisoo / Shin, Teo Jeon / Hyun, Hong-Keun /
Kim, Jung-Wook / Jang, Ki-Taeg / Lee, Sang-Hoon / Kim, Young-Jae

Department of Pediatric Dentistry, School of Dentistry, Seoul National University, Korea.

Objectives

Currently about 500 certified pediatric dentists by KAPD and 293 specialists in pediatric dentistry dedicate to the oral health of children from infancy through the teen years in community. The purpose of this study was to investigate the present status of pediatric dental clinics in Korea in several respects, including regional distribution.

Material and Method

The search was conducted in databases from health insurance review and assessment service. Pediatric dental clinics were extracted from 17,011 dental clinics in Korea.

Results

1. There were 311 pediatric dental clinics (1.8%) among 17,011 dental clinics in Korea. Of 311 private practitioners, 274 (88%) completed residency program in pediatric dentistry and 99 (32%) were board certified pediatric dentists. Of 99 board certified pediatric dentists, 9 (9.1%) displayed the specialty in their clinics' name.
2. Of 16 metropolitan cities and provinces, Gyeonggi (33%) occupied largest share of the total pediatric dental clinics in Korea, which was followed by Seoul (27%) and Busan (8.3%).
3. Of 25 districts in Seoul, Gangnam-gu (14%) occupied largest share of the total pediatric dental clinics in Seoul, which was followed by Nowon-gu (7.1%), Gangseo-gu (7.1%), Seocho-gu (7.1%) and Songpa-gu (7.1%).
4. 160 pediatric dental clinics (51%) were located in metropolitan cities, and 150 pediatric dental clinics (48%) were located in other cities.
5. The mean time spent in opening private practices since the graduation of residency program was 5.0 years.

Conclusion

Most of private practitioners in pediatric dental clinics completed residency program in pediatric dentistry. Some of board certified pediatric dentists displayed the specialty in their clinics' name. About two thirds of pediatric dental clinics were located in the capital region. All pediatric dental clinics except one were located in metropolitans and other cities.

Key words : pediatric dental clinics, board certified pediatric dentist, regional distribution

Abnormally early eruption of maxillary permanent canine following congenital missing of primary canine : Case report

Oh, Na Kyeong * / Kim, Young-jin / Nam, Soon-Hyeun / Kim, Hyun-jung

Department of Pediatric dentistry, College of dentistry , Kyungpook National university

Introduction

Early development and eruption of permanent canine has been rarely reported. It is known to occur by local factors such as trauma or dental abscess in primary teeth and systemic conditions like hyperthyroidism, hypophosphatasia, precocious puberty, etc. The purpose of this case report is to present an extremely rare case of early eruption of permanent canines following congenital missing of primary canine, without these aetiologic factors.

Case operation procedure

The first case was an 2 year old boy who chief complaint with dental caries. He was diagnosed with congenital missing of both maxillary primary canine and caries of right mandibular primary canine. After 3 year follow up, maxillary permanent canines were erupted, at the age of 5. He has no history of any systemic disease and dental age of other permanent tooth was normal.

The second case was an 6 year old girl who chief complaint with the mobility of maxillary primary first molar by early erupting of permanent canine. She has history of congenital missing of maxillary primary canine and no history of any systemic disease.

Summary

Early development and eruption of permanent canine is a rare case. In this two cases, maxillary primary canines were congenitally missed and their successional permanent tooth were abnormally early erupted. The Pediatric dentist may be pose adequate knowledge about relation with deciduous predecessor and successional permanent tooth and keep an open eye to identify such case.

Key words : permanent canine, congenital missing, eruption, development

The Effects of Parental Rearing Styles on Children's Dental Fear

OA 12
ORAL PRESENTATION

Kim, Do-young* / Lee, Dae-woo / Kim, Jae-gon / Yang, Yeon-mi

Department of Pediatric Dentistry, School of Dentistry, Chonbuk National University

Objectives

The aim of this study was to investigate the relationship between child's dental fear and parental rearing style.

Material and Method

The subjects were 804 children aged 8 and 11-year old and their parents in Jeonju city. The parents were asked to answer a questionnaire which included four parental rearing style and the Children's Fear Survey Schedule - Dental Subscale(CFSS-DS) at home. Also, the CFSS-DS was completed by 8 and 11 years old children in a classroom.

Results

Children answered that injections(shots) are the most frightening of the 15 items that cause dental fear. The mean of dental anxiety score reported by parents was 7.3 points higher, compared to that of their children($P<0.01$). There were statistically significant differences in children's dental fear according to parental control level. For 8-year-old children, the dental fear of children raised by authoritative parents was 3.9 points higher than those of children raised by permissive parents($P<0.01$). There were statistical differences between children's dental fear and parental rearing style in 8 years old children($P<0.05$).

Conclusion

Parents tended to estimate the dental fears of their children slightly higher than their children. Children raised by authoritative style had greater dental fear than children in permissive style.

Key words : Dental Fear, Dental Anxiety, CFSS-DS, Parental Rearing Style

Management of Mandibular First Molars with Eruption Disturbances using a Fixed Type Traction Appliance

Lee, Eungyung* / Jeong, Taesung / Kim, Shin / Kim, Jiyeon

Department of Pediatric Dentistry, School of Dentistry, Pusan National University

Introduction

Eruption disturbances of permanent molars are divided into 3 categories: impaction, primary retention, and secondary retention. Orthodontic traction can be considered as the treatment of choice. It is very important that a traction appliance should not have any adverse effects on the antagonistic and/or the adjacent teeth. This case report describes three cases with eruption disturbances of mandibular first molars using a fixed type traction appliance.

Case operation procedure

1. An 8-year-old boy visited with eruption failure of the left mandibular first molar. He was diagnosed as impaction of the left mandibular first molar caused by an odontoma. The removal of the odontoma and surgical exposure of the impacted tooth were performed under general anesthesia. After delivery of a fixed type traction appliance, eruption guidance was achieved in 8 months.
2. An 8-year-old boy visited with eruption failure of the right mandibular first molar. He was diagnosed as mesial impaction of the right mandibular first molar. After the surgical exposure of the impacted tooth, a traction appliance was delivered. Traction and eruption guidance were performed for 9 months.
3. A 9-year-old girl visited with eruption failure of the right mandibular first molar. She was diagnosed as primary retention of the right mandibular first molar. Treatment was performed for 9 months with a traction appliance.

Summary

A fixed type traction appliance was effectively used for the eruption guidance of the mandibular first molars in three cases described here. It can be helpful to control the traction force and direction in cases which have eruption disturbances without positional change of other teeth.

Key words : eruption disturbance, impaction, primary retention, eruption guidance, traction appliance

A Survey Using Infant Oral Health Examination Screening

JiHye Yun* / JiHyun Song / JiYoung Ra / JeWoo Lee / SoYoun An

Department of Pediatric Dentistry, Wonkwang University

Objectives

For prevention of Early childhood caries (ECC), the early establishment of a dental home is the ideal approach to infant oral health care. Adults generally make decisions about their children's health, so caregivers play an important role in infant oral health. Infant oral health examinations have been implemented as a component of early health examination in Korea. It includes perception assessment of caregivers about their children's oral health. The aim of this study is to investigate oral health awareness of caregivers and children's oral health habits through infant oral health examination screening.

Material and Method

This survey was conducted using the "Infant oral health examination screening". Records of 201 children who had undergone "1st, 2nd, 3rd infant oral health examination (respectively, 18 – 29, 42 – 53, 54 – 65 months of age)" in department of pediatric dentistry, Wonkwang university Daejeon dental hospital from January 2014 to June 2017 were analysed. The data were evaluated using SPSS software (SPSS 23.0 for Windows, SPSS Inc, Chicago, IL, USA).

Results

1. 77.3% of infants aged 18–29 months had not visited the dentist before.
2. 51.2% of infants aged 18–29 months eat sugar-containing snacks more than twice a day.
3. Only 19.3% of caregivers of children aged 18–29 months and 26.6% of children aged 42–53 months had been advised on how to brush teeth from the dental professionals.
4. 31.3% of infants aged 42–53 months use excessive amounts of toothpaste.

Conclusion

To improve infant oral health, there is a need for increased preventive education such as routine dental care, dietary management, tooth-brushing method and toothpaste use for both children and caregivers.

Key words : Infant oral health examination, preventive education, awareness

Effect of Blood Decontamination on Orthodontic Bracket Bonding

Lee, Jaehee* / Shin, Jisun / Kim, Jongsoo / Yoo, Seunghoon /
Kim, Jongbin / Shin, Jisun

Department of Pediatric Dentistry, School of Dentistry, Dankook University

Objectives

The purpose of this study is to evaluate the shear bond strength affected by blood decontamination. The shear bond strength was measured on blood decontamination before and after primer photopolymerization. And the adhesive remnants type and surface patterns was evaluated under scanning electron microscopy.

Material and Method

A total of 50 human premolars were prepared. Group I was attached using conventional resin-acid etching method as control group. Group II and III were blood contaminated before curing primer and groups IV and V were blood contaminated after curing primer. Group II and IV were treated only with cotton pellet and Groups III and V were treated with cotton pellet after water washing

Results

The mean shear bond strengths were in the order of groups I, V, III, II, and IV. In scanning electron micrographs group III and V showed more uniform surface than group II and IV. The ARI was significantly different between the control group and the experimental groups ($p < 0.05$).

Conclusion

In the case of orthodontic bracket attached to the orthodontic appliance in a blood contaminated environment, a cotton pellet after water washing may exhibit a shear bond strength that can withstand clinically effective static output, but additional clinical studies including intraoral condition is required.

Key words : Shear bond strength, Orthodontic bracket, blood contamination, Decontamination

Surgical Reposition of Ectopic Impacted Incisor Tooth Germ : A long term follow up

OA 16
ORAL PRESENTATION

Lim, So-young* / Choi, Hyung-Jun / Choi, Byung-Jai / Jeon, Yo-won /
Lee, Jae-Ho / Kim, Seong-Oh

Department of Pediatric Dentistry, College of Dentistry, Yonsei University, Seoul, Korea

Introduction

Ectopic impaction of maxillary incisor can cause formation of odontogenic cyst, tilting of adjacent teeth, and even social and esthetic problems. In case of unfavorable impactions, surgical reposition may be considered as a reasonable solution. Successful prognosis can be achieved if the procedure is performed without SCAP damage, root development stage is appropriate, extraoral time is short, and infection control is well managed.

Case operation procedure

A 5-year-old boy had an impacted maxillary incisor and two mesiodens. After surgical reposition of maxillary incisor tooth germ and extraction of mesiodens, continuous root development was observed during follow-up period. Orthodontic traction was performed for tooth eruption up to normal position.

A 7-year-old boy had an impacted maxillary right central incisor. Periodic observation was conducted every year after surgical reposition, and root development and eruption of maxillary permanent incisor was successfully performed.

Summary

Surgical reposition of the ectopic impacted incisor tooth germ into a natural orientation was achieved in early stages of root development. Long term follow-up radiographs showed continuous development of the root without root resorption. Surgical reposition is considered as viable alternative to forced eruption or extraction, especially in a developing germ phase.

Key words : Surgical Reposition, Ectopic Impaction, Tooth germ, SCAP



구연발표 II

ORAL PRESENTATION

OB

10. 27(금) | 한화리조트 해운대 티볼리 3층 마나롤라(3층) | 좌장 이난영 교수

OB-01 13:00~13:10	정 현 태 (전남대) Effect of Intra-canal Medicaments on the Push-Out Bond Strength of Calcium Silicate-based Biomaterials
OB-02 13:10~13:20	김 민 지 (서울대) Tooth Eruption Disturbances associated with Developmental Anomalies of Permanent Lateral Incisors
OB-03 13:20~13:30	오 태 준 (경희대) A Study on the Eruption Stage of Teeth in Korean Children Using Model Analysis
OB-04 13:30~13:40	이 상 은 (단국대) Characterization of Gene Expression from Supernumerary Dental Pulp and Periodontal Ligament Stem Cells
OB-05 13:40~13:50	고 한 호 (강릉원주대) Effect of different polishing burs on the surface roughness of zirconia and Streptococcus mutans adhesion
OB-06 13:50~14:00	박 영 준 (원광대) Evaluation of high-power and X-tra power mode of LED Curing Light on Sealant Polymerization
OB-07 14:00~14:10	오 나 영 (경북대) A delayed eruption of infraoccluded primary molar
OB-08 14:10~14:20	송 지 혜 (연세대) Analysis of anterior crossbite correction in mixed dentition using intraoral appliance : A retrospective study
휴식 (10분)	
OB-09 14:30~14:40	송 용 호 (조선대) Microleakage and Shear Bond Strength of Biodentine™ at the different time interval
OB-10 14:40~14:50	최 수 지 (아주대) Diagnosis and treatment of chronic osteomyelitis, mimicking Langerhans cell histiocytosis, in a 6-year-old child: a case report
OB-11 14:50~15:00	이 창 근 (전북대) Comparison of diagnostic validity between DIAGNOdent® and DIAGNOdent® pen in proximal caries
OB-12 15:00~15:10	이 유 경 (단국대) Gene Expression of Supernumerary Dental Pulp related to the subculture speed
OB-13 15:10~15:20	이 지 원 (서울대) A Novel RUNX2 Mutation in a Family with Cleidocranial dysplasia
OB-14 15:20~15:30	노 유 미 (단국대) Cariogenicity of vitamin supplements for children
OB-15 15:30~15:40	모 승 한 (연세대) Hemisection of a Supernumerary tooth Fused to a Maxillary Lateral Incisor

Effect of Intra-canal Medicaments on the Push-Out Bond Strength of Calcium Silicate-based Biomaterials

Jeong, Hyun-tae* / Yang, Sun Mi / Kim, Jae Hwan /
Kim, Seon Mi / Choi, Nam Ki

Department of Pediatric Dentistry, College of Dentistry, Chonnam National University

Objectives

The objective of this study is to evaluate the effect of the intra-canal medicaments on the push-out bond strength of the calcium silicate-based biomaterials.

Material and Method

Eighty extracted single-rooted human mandibular premolars were sectioned below cemento-enamel junction, and root canals were instrumented using rotary files. Standardized root canal dimension was obtained with a parallel post drill. The specimens were randomly divided into a control group (no medicament) and one of the following groups received an intra-canal medicaments with either CH(calcium hydroxide), DAP(double anti-biotic paste; a mixture of ciprofloxacin and metronidazole), or TAP(triple antibiotic paste; a mixture of minocycline, ciprofloxacin and metronidazole). Removal of medicaments with irrigation was followed and the roots were cut into sections with 1-mm-thickness. Thereafter, the root canals applied with ProRoot MTA and Biodentine. A push-out bond strength test was performed. The data were analyzed statistically using 2-way ANOVA and Tukey post hoc tests.

Results

The push-out bond strength values of Biodentine was significantly higher than MTA ($p < 0.05$) regardless of the intracanal medicaments. The bond strength results of the CH group was higher than other groups.

Conclusion

Biodentine had a higher bond strength to dentin than ProRoot MTA. CH intra-canal medicament increased the bonding resistance of both calcium silicate-based biomaterials.

Key words : Push-out bonding strength, intracanal medicament, MTA, biodentine

Tooth Eruption Disturbances associated with Developmental Anomalies of Permanent Lateral Incisors

OB 02
ORAL PRESENTATION

Kim, Min Ji* / Song, Jisoo / Shin, Teo Jeon / Hyun, Hong-Keun /
Kim, Young-Jae / Kim, Jung-Wook / Lee, Sang-Hoon / Jang, Ki-Taeg

Department of Pediatric Dentistry, School of Dentistry, Seoul National University, Korea

Objectives

The purpose of this study was to retrospectively determine the appearances of tooth eruption disturbances associated with developmental anomalies of permanent lateral incisors.

Material and Method

Panoramic radiographs of patients (aged 5 to 13 years) who visited the Department of Pediatric Dentistry of Seoul National University Dental Hospital since August, 2015 to August, 2017 were selected for an investigation. These patients were examined for developmental anomalies of permanent lateral incisors and eruption disturbances.

Results

The prevalence of developmental anomalies of permanent lateral incisors was 10.10%. The most common developmental anomalies were congenitally missing teeth, followed by peg-shaped lateral incisors, twinning (double lateralis) and microdontia. Eruption disturbances appeared in 16.88% of patients. The most frequently affected permanent teeth were the canines, followed by the maxillary central incisors. Among the patients who had eruption disturbances of permanent teeth, developmental anomalies of permanent lateral incisors appeared in 14.97% of the patients. The most commonly associated anomalies of lateral incisors were peg-shaped lateral incisors, followed by microdontia and congenitally missing teeth. Interestingly, microdontia of lateral incisors appeared to be associated with eruption disturbances of the central incisors at a high frequency. The most affected permanent teeth with eruption disturbance were the canines, followed by the central incisors and the lateral incisors.

Conclusion

This study has shown that eruption disturbances in association with developmental anomalies of permanent lateral incisors occur frequently and in variable form. The most associated developmental anomalies of lateral incisors were peg-shaped lateral incisors and the most affected permanent teeth with eruption disturbances was the canines. Microdontia of lateral incisors was strongly associated with eruption disturbances of the central incisors. Diagnosis and treatment plan in view of such relationship is important in order to treat appropriately at the optimal time.

Key words : Permanent lateral incisors, Developmental anomalies, Eruption disturbances

A Study on the Eruption Stage of Teeth in Korean Children Using Model Analysis

Oh, Tae Jun* / Nam, Ok Hyung¹⁾ / Kim, Mi Sun²⁾ /
Lee, Hyo-Seol¹⁾ / Kim, Kwang Chul²⁾ / Choi, Sung Chul¹⁾

1) Department of Pediatric Dentistry, School of Dentistry, Kyung Hee University

2) Department of Pediatric Dentistry, Kyung Hee University Dental Hospital at Gangdong

Objectives

Individual dental age is used as an index of chronological age and is an important indicator of the child's growth stage. Traditionally, panoramic radiographs have been used to analyze the eruption stage of teeth, but this method has errors due to difficulty in accurate measurement of the eruption stage of teeth, errors in imaging, and distortion of images. Changes in dental age are not as great as changes in the times, but they change steadily, and the importance of updating information about these changes is well known. The purpose of this study was to investigate the relationship between age and tooth eruption stage in Korean children and to provide data that can be used as a reference for age estimation of Korean children.

Material and Method

Tooth eruption stages were measured on a study model in 6–12 year old children who visited a department of pediatric dentistry in the Kyung Hee University dental hospital for orthodontic treatment from January 2015 to December 2016. 221 patients were selected for the study, excluding patients with congenital missing teeth or impaction of permanent teeth due to ectopic eruption problems. The eruption stages of the permanent teeth except for the third molar were scored as pre-eruptive stage 0, mucosal penetration stage 1, pre-occlusal stage 2, and occlusal stage 3.

Results

The mean age of the patients was 8.7 years old. The sex was 104 males and 117 females. Eruption of mandibular second molar in females tended to be performed a little faster than in males.

Conclusion

This study evaluated the tooth eruption stage using the study model. As there are no other studies regarding this topic recently, the data of this study could be used as one of the references for the tooth eruption stage in Korean children.

Key words : Tooth eruption stage, Age estimation, Study model analysis

Characterization of Gene Expression from Supernumerary Dental Pulp and Periodontal Ligament Stem Cells

Lee, Sang Eun* / Kim, Jong Soo / Yoo, Seung Hoon /
Kim, Jong Bin / Shin, Ji Sun

Department of Pediatric Dentistry, School of Dentistry, Dankook University

Objectives

Supernumerary teeth are additional teeth to normal dentition. They were extracted quite early due to the negative influence to adjacent teeth. The purpose of this study is to characterize the properties of dental pulp stem cells and periodontal ligament stem cells from extracted supernumerary tooth by quantitative real-time PCR.

Material and Method

Impacted supernumerary teeth in the maxillary anterior region were extracted from two male patients of 6-year-old without medical history. Dental pulp and periodontal ligament cells were collected from extracted supernumerary teeth on the same day. After isolation and culture of cells, compare characterization of them by using qRT-PCR. Primer sequences for odontoblasts are ONT, ALP, OCN, DMP-1 and DSPP.

Results

On dental pulp group, ONT has the largest quantity of gene expression, followed by OCN, ALP, DMP-1 and DSPP. On periodontal ligament group, ONT has the largest quantity of gene expression, followed by OCN, DSPP, ALP and DMP-1. Analysis of quantitative gene expression data using relative quantification showed that the expression of all genes decreased in periodontal ligament cells. Compared with dental pulp group, DSPP was expressed more in periodontal ligament group than other genes.

Conclusion

Dental pulp and periodontal ligament stem cells from supernumerary teeth have the properties of odontoblasts. Considering that properties, supernumerary teeth were considered a useful donor site of dental pulp and periodontal ligament stem cells.

Key words : supernumerary dental pulp stem cells, supernumerary periodontal ligament stem cells, qRT-PCR, odontoblast

Effect of different polishing burs on the surface roughness of zirconia and *Streptococcus mutans* adhesion

Go, Han Ho* / Juhyun Lee / Howon Park /
Hyunwoo Seo / Siyoung Lee

Department of Pediatric Dentistry, School of Dentistry, Gangneung-Wonju National University

Objectives

Due to the increased esthetic demand in pediatric patients, the zirconia crown for children has been developed and its frequency of use is increasing.

Smooth surface of the restoration is important factor to successive restoration. The rough surface of the restoration increases plaque attachment which causes gingival inflammation or caries formation at the adjacent tooth.

The purpose of this study is to evaluate the effect of various polishing burs on the surface roughness of zirconia and to correlate the findings with bacterial adhesion using CDC biofilm reactor.

Material and Method

Zirconia disks were fabricated through the same procedure used for the Nusmile pediatric zirconia crown. The specimens were divided into 5 groups. They were control(negative control group), roughed(positive control group), roughed and polished with three different burs(Diacera group, CeraGloss group, Ceramiste group). Polishing was carried out using three polishing burs repectively; Diacera(EVE Ernst Vetter GmbH, Pforzheim, Germany), CeraGloss(Edenta, Hauptstrasse, Switzerland), Ceramiste Ultra(Shofu Inc, Kyoto, Japan). The surface roughness was measured using an atomic force microscope and images of surface were obtained by SEM. The CDC biofilm reactor was used to induce biofilm formation. After 5 days of incubation, CFU was measured and images of biofilm were obtained by SEM.

Results

There was statistically significant difference in surface roughness and bacterial adhesion between the positive control group and the other four groups. However, there was no significant difference between the negative control group, Diacera group, CeraGloss group and Ceramiste group. There was a significant correlation between surface roughness and bacterial adhesion, showing a positive correlation.

Conclusion

There was a positive correlation between surface roughness and bacterial adhesion. When polishing was done, regardless of the type of bur, the surface roughness and the bacterial adhesion were not significantly different from those of the pediatric zirconia crown surface.

Key words : Zirconia crown, Polishing, Biofilm, CDC biofilm reactor, Atomic force microscope

Evaluation of high-power and X-tra power mode of LED Curing Light on Sealant Polymerization

YoungJun Park* / JeWoo Lee / SoYoun An / JiHyun Song / JiYoung Ra

Department of Pediatric Dentistry, Wonkwang university

Objectives

The aim of this study was to determine whether high-power and Xtra-power mode of VALO® light emitting diode (LED) curing light are sufficient to polymerize sealant materials.

Material and Method

The light curing units used were VALO in high-power and Xtra-power modes and Elipar™ Freelight 2. Opaque-filled sealant (UltraSeal XT plus) were light cured in a covered mold (1.5mm thick x 4mm diameter) using the manufacturers' curing times (high-power mode-8, 12s Xtra-power modes 3, 6s). Vickers hardness was measured 24h after curing. The microhardness of upper and lower sides of the specimens were analyzed separately by the Kruskal-Wallis test and Mann-Whitney Post-hoc tests (significance level 0.05).

Results

At upper side, there was no statistical difference between light curing units. At lower side, an decreased microhardness was observed in Xtra power mode for 3 seconds ($p < 0.05$).

Conclusion

Compared to conventional LED curing unit, the recommended time for final cure in high-power mode and Xtra power mode has achieved adequate polymerization of the tested sealant.

Key words : Curing unit, Light emitting diodes, Microhardness

A delayed eruption of infraoccluded primary molar

Oh, Na Young* / Nam, Soon-Hyeun / Kim, Hyun-jung

Department of Pediatric dentistry, College of dentistry , Kyungpook National University

Introduction

Infraoccluded tooth is the one that is depressed below the occlusal plane. It is rare for a primary molar to temporarily exhibit secondary failure of eruption, followed by regeneration of full eruptive capacity. The purpose of these case reports is to present two rare cases of delayed eruption of infraoccluded primary molar.

Case operation procedure

In case 1, a 6-year-old boy was referred to Dept. of Pediatric Dentistry for infraoccluded primary molar. Based on Clinical and radiographic finding, a provisional diagnosis was ankylosis of primary molar. At his 7 months follow-up, spontaneous re-eruption occurred without intervention.

In case 2, a 5-year-old boy also had infraoccluded primary second molar without successor. At his 1 year and 9 month, delayed eruption of infraoccluded primary molar occurred with development of successor.

Summary

This report demonstrates that infraoccluded primary molar may still have the eruptive potential to become functional within the dentition. While a wait and see strategy cannot be recommended as a treatment option following all ankylosis, we can consider a careful monitoring in primary dentition if there is no complication.

Key words : Delayed eruption, Infraocclusion, Submergence.

Analysis of anterior crossbite correction in mixed dentition using intraoral appliance : A retrospective study

OB 08
ORAL PRESENTATION

Song, Ji-hyeo* / Kim, Seong-Oh / Song, Je Seon / Jeon, Yo won /
Choi, Byung-Jai / Choi, Hyung Jun

Department of Pediatric Dentistry, College of Dentistry, Yonsei University, Seoul, Korea

Objectives

Class III malocclusion or anterior crossbite is commonly seen in Asian. This problem is easily recognized by dentists and parents. Anterior crossbite with functional shift and deep overbite could develop to skeletal protrusive mandible. So, early and proper diagnosis of anterior crossbite which needs prompt treatment is important. The purpose of this study was to identify time taken to correct the crossbite and treatment duration and to identify some of the clinical factors that predict treatment duration for patient with anterior crossbite.

Material and Method

A sample of 61 active retention patients based on specific selection criteria, was obtained from patient who visited a department of pediatric dentistry in the Yonsei University dental hospital for orthodontic treatment of anterior crossbite. From the patient records, data were collected in these categories: (1) patient information, (2) model information, (3) pretreatment cephalogram information, and (4) treatment information.

Results

The mean age of the patients was 8.9 years old. The sex was 28 males and 33 females. The average treatment time was 22.3 months. The duration of 'over the bite' was 3.4 months and anterior crossbite was corrected after 2.1 months. The subsequent months of treatment were to resolve other problems and to achieve detailed torque.

Conclusion

These research showed the early management of crossbite with functional shift in permanent dentition using intraoral removable appliance resulting in improvement of intermaxillary relationship. Further research is required to help explain more of the variance associated with treatment duration.

Key words : Mixed dentition, Anterior crossbite, Intraoral orthodontic appliance

Microleakage and Shear Bond Strength of Biodentine™ at the different time interval

Song, Yong-ho* / Lee, Sang-ho / Lee, Nan-young / Jih, Myeong-kwan

Department of pediatric dentistry, School of Dentistry, Chosun University

Objectives

The purpose of this study is to evaluate the microleakage of Biodentine™ in pulp capping materials and to compare the shear bone strength with composite resin according to the curing time.

Material and Method

For microleakage evaluation, 80 bovine teeth were used to form a cavity on the labial surface, then filled with Biodentine™ and divided into 8 groups each consisting of 10 teeth. The specimens were prepared by applying the composite resin on the upper-side after different curing time for 12minutes, 45minutes, 24hours, 48hours, 1week, 2weeks, and 1month. For microleakage evaluation, the specimens were immersed in a 0.5% fuchsin solution for 24hours, rinsed and dried. Each specimen was cut in half using a disk under water and observed with a electron microscope.

Results

To evaluate shear bond strength, 240 pieces of acrylic resin blocks with a central groove were prepared and the groove filled up with Biodentine™. Acrylic resin blocks divided into 8 groups each consisting of 30 pieces, and the specimens were prepared by applying the composite resin on the upper-side after different curing time for 12minutes, 45minutes, 24hours, 48hours, 1week, 2weeks, and 1month. The shear bond strength was measured with a universal testing machine according to the curing time. As a result of the study, there was no significant difference according to the curing time in microleakage. In case of shear bond strength, a valuable result was that the experimental group with 12 minutes curing time showed lower shear bond strength than the other experimental groups.

Conclusion

In case of microleakage, significant difference according to the curing time cannot be found in the study. However, a valuable result was confirmed in case of shear bond strength experiment. The conclusion is that the valuable result from shear bond strength experiment should be considered while final restoration.

Key words : Pulp capping material, Biodentine, Curing time, Microleakage, Shear bond strength

Diagnosis and treatment of chronic osteomyelitis, mimicking Langerhans cell histiocytosis, in a 6-year-old child : a case report

OB 10
ORAL PRESENTATION

Choi, Sooji* / Cho, DongHyu / Kim, Seunghye / Song, SeungIl

Department of Pediatric Dentistry, Ajou University School of Medicine

Intruduction

Chronic osteomyelitis in children, associated with odontogenic infection, can be treated by anti-biotic administration, endodontic treatment, or extraction. If not healed, secondary surgery, such as sequestrectomy, saucerization or decortication, may be necessary. Clinical and radiographic manifestations of osteomyelitis are similar to malignant diseases, such as tooth movement, gingival swelling, proliferation and bone destruction patterns of affected areas. Therefore, histological examination is required for differential diagnosis.

Case operation procedure

A 6-year-old boy visited Ajou university hospital with the chief complaint of facial swelling and consistent pain following extraction of the lower left first primary molar in a local dental clinic. The patient had pulp treatment on the extracted tooth 4 days ago, but swelling and pain consisted. On the day of visit, the lower first primary molar was extracted and pulp extirpation was performed on the lower second primary molar in the local clinic. Based on dental history, clinical symptoms, and radiographic examination, we diagnosed as periapical abscess. Endodontic treatment on the lower second primary molar and antibiotic administration were performed. However, pus was consistently discharged from the extraction socket for 2 weeks. On facial CT

suspicious periosteal reaction was shown on ourter surface of the left mandible, posterior to the odontogenic infection site. Chonic osteomyelitis or Langerhans cell histiocytosis were suspected.

Under general anesthesia, the curratage and bone biopsy of the cortical bone were done. The wide range of cortical bone resorption pattern was observed when flap was opened. On histopathologic examination, possibility of Langerhans cell histiocytosis was ruled out. Chronic osteomyelitis was diagnosed, and the clinical symptoms were subsided after the surgical intervention.

Summary

A 6-year-old boy with increased swelling and pain after extraction of primary tooth with odontogenic infection was diagnosed as chronic osteomyelitis and successfully healed after surgical treatment.

Key words : Osteomyelitis, Surgical treatment, Periosteal reaction, Differential diagnosis, Langerhans cell histiocytosis

Comparison of diagnostic validity between DIAGNOdent® and DIAGNOdent® pen in proximal caries

Chang-keun, Lee* / Dae-woo, Lee / Jae-gon, Kim / Yeon-mi, Yang

Department of Pediatric Dentistry, School of Dentistry, Chonbuk National University

Objective

The aim of this study was to evaluate the proximal caries detecting ability of two types of laser fluorescence(LF) devices; DIAGNOdent® and DIAGNOdent® pen (KaVo, Biberach, Germany).

Material and Method

One hundred ten proximal surfaces of posterior teeth in primary dentition, and 438 proximal surfaces of posterior teeth in permanent dentition were participated in this study. Each tooth surface was sequentially assessed by two LF devices, and bitewing radiograph. The radiographs were classified into 4 groups in permanent dentition(PR0;sound, PR1;radiolucency in outer half of enamel, PR2; radiolucency in inner half of enamel, PR3; radiolucency in dentin) and 3 groups in primary dentition(pR0; sound, pR1; radiolucency in enamel, pR2; radiolucency in dentin) according to the depth of caries, and used as gold standard.

Results

In both primary and permanent dentition, the area under curve (AUC) of DIAGNOdent® pen was greater than that of DIAGNOdent® in all cut-off levels.

In primary dentition, pR2 cut-off level showed higher AUC than pR1 cut-off level. In permanent dentition, PR3 cut-off level showed the highest AUC and PR1 cut-off level showed the lowest AUC with both LF devices.

Conclusion

When detecting proximal caries in posterior teeth with LF devices, DIAGNOdent® pen is more useful than DIAGNOdent® in both primary and permanent dentition. However, in primary dentition, DIAGNOdent® can also be useful to detect proximal caries.

Key words : proximal caries, caries detection, laser fluorescence device, DIAGNOdent®

Gene Expression of Supernumerary Dental Pulp related to the subculture speed

OB 12
ORAL PRESENTATION

Lee, Yookyung* / Kim, Jong Soo / Yoo, Seung Hoon /
Kim, Jong Bin / Shin, Ji Sun

Department of Pediatric Dentistry, School of Dentistry, Dankook University

Objective

The purpose of this study is to investigate the odontoblast gene expression related to the subculture speed of Supernumerary dental pulp stem cells (sDPSCs) derived from the mesiodens. Stem cell is undifferentiated cells with the ability to differentiate into various types of body tissues.

It has the ability to differentiate into different body organ tissues such as muscles and bones by the regulation of differentiation stimulation and environment and proliferate and differentiate through cell division.

Material and Method

20 sDPSCs from healthy children was cultured. The cells with the slowest growth rate and the fastest growth rate were divided into 3rd passage and 10th passage with and without differentiation. RT-PCR was performed for each group. The gene was ONT, ALP, OCN, DMP-1, DSPP that is related to odontoblast differentiation.

Result

10th passage expressed more ALP, DMP-1, DSPP. It means that there is a high proportion of odontoblast precursor cells in the 3rd passage. Cells treated with differentiation agent exhibited less gene expression. The expression rate was higher in cells with fast growing subculture except DSPP.

Conclusion

sDPSC with fast growth rate and slow growth rate have the properties of odontoblasts. Considering that, supernumerary teeth can be used as useful donor site of dental pulp stem cell.

Key words : supernumerary dental pulp stem cells, qRT-PCR, odontoblast

A Novel RUNX2 Mutation in a Family with Cleidocranial dysplasia

Lee, Ji Won* / Song, Jisoo / Shin, Teo Jeon / Hyun, Hong-Keun /
Kim, Young-Jae / Kim, Jong-Bin / Lee, Sang-Hoon / Kim, Jung-Wook

Department of Pediatric Dentistry, School of Dentistry, Seoul National University, Korea

Objective

RUNX2 gene, a master regulator of bone formation, has been identified in cleidocranial dysplasia (CCD) patients. The aim of this study was to identify the causative genetic mutation of the RUNX2 gene in a family with delayed tooth eruption.

Material and Method

The 23-year-old female proband and her mother underwent oral examination, panoramic radiographs were obtained and blood samples were collected for genetic analysis. All coding exons of the RUNX2 from proband were amplified by polymerase chain reaction (PCR) with specific primers, and the products were purified and sequenced. The sequencing results were compared with the human genome sequence in the NCBI Gene Bank to search out causative mutation. The study protocol was approved by the Institution Review Board at the Seoul National University Dental Hospital.

Results

The proband had delayed tooth eruption for 8 molars, 2 maxillary lateral incisors, and 4 canines. Radiographic examination showed delayed closures of cranial sutures and maxillary hypoplasia. Mutational analysis revealed a single nucleotide deletion mutation (NM_001024630.3: c.357delC) in exon 3 in the proband. Her mother also carried the mutation in the same position.

Conclusion

The single C deletion would result in a frameshift in translation and introduce a premature stop codon (p.Asn120Thrfs*24). The mutant mRNA transcript would be degraded by nonsense-mediated decay and cause haploinsufficiency.

Key words : RUNX2, Cleidocranial dysplasia, Mutation

Cariogenecity of vitamin supplements for children

OB 14
ORAL PRESENTATION

No, Yoomi* / Yoo, Seunghoon / Kim, Jongsoo /
Kim, Jongbin / Shin, Jisun

Department of Pediatric Dentistry, School of Dentistry, Dankook University

Objective

The purpose of this study is to analyze the cariogenecity of vitamin supplements for children by the Caries Potentiality Index (CPI), bacterial activity of *Streptococcus mutans* and its pH drop capacity.

Material and Method

Top four vitamin supplements were selected – Noma (NM), Cenovis Kids (CK), Animal Parade (AP), and Character Vitamin (CV). After measuring the viscosity and brix degree of materials, CPI was calculated by the formula. Saliva was collected from 5 adults and pellicles were formed in 8 well and 24 well. Each group of vitamin supplements is added to a Brain Heart Infusion (BHI) medium to prepare a 10% vitamin solution. The prepared vitamin solution was inoculated with 5 mL of *S. mutans* ACTT 25175, and part of it used for measuring pH drops for 12 hours and rest was injected into the prepared wells for initiating the *S. mutans* metabolization. Mitis Salivarius agar medium was used to measure bacterial colony forming units (CFU) grown in the 24 wells after 24 and 48 hours. 8 wells were stained after 24 hours and the cluster pattern of *S. mutans* was photographed with a confocal laser scanning microscope.

Result

CPI value decreased in the order of AP, CV, CK, and NM. Initial values of all experimental groups showed acidity below pH 7.0. Analysis of the colony forming units of *Streptococcus mutans* showed that NM and CV resulted a higher proliferation rate ($p < 0.05$) than CK and AP ($p < 0.05$). Bacterial activity of the control group was lower than other groups when observed with a confocal laser scanning microscope.

Conclusion

Considering the bacterial activity and acidity of vitamin supplements, it is necessary to pay close attention when children taken the vitamin supplements, and further studies to reproduce the oral environment more precisely is required.

Key words : Vitamin supplements, Cariogenecity, Streptococcus mutans, Biofilm

Hemisection of a Supernumerary tooth Fused to a Maxillary Lateral Incisor

Mo, Seung Han* / Jeon, Yo Won / Lee, Jae-Ho / Song, Je Seon /
Choi, Byung-Jai / Choi, Hyung-Jun

Department of Pediatric Dentistry, College of Dentistry, Yonsei University, Seoul, Korea

Introduction

Fusion is a developmental anomaly which occurs due to a union of 1 or more adjacent teeth during morphodifferentiation of the dental germs. Fused teeth may cause esthetic, spacing, periodontal, eruption and caries problems. Many different multidisciplinary approaches in the therapy of fused teeth were suggested, hemisection is can be a option if the fused tooth possesses independent pulp chambers and canals.

Case report procedure

A 10-year-old boy was referred to local clinic with the chief complaint of the presence of fusion of anterior teeth.
Radiographic investigations indicated fusion between the maxillary lateral incisor and a supernumerary tooth with two separate roots.
The fused tooth was separated with a diamond bur, and the supernumerary tooth was extracted; there was no pulp exposure of the lateral incisor.
The distal side of the lateral incisor was reshaped. The lateral incisor was still healthy after a follow-up examination period of 34 months.

Summary

Hemisection can be considered as an appropriate treatment alternative for a permanent tooth fused to a supernumerary tooth.

Key words : Fusion, Gemination, Hemisection

특 강

PLENARY LECTURE

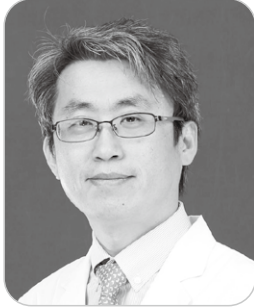
PLENARY LECTURE 01 한화리조트 해운대 티볼리 지하1층 몬테로소 좌장 김 신 교수

10. 27(금) | 16:00 | 미성숙영구치에서의 재생근관치료 임상 | 김현철 교수 (부산대학교 치의학전문대학원 치과보존학교실)

PLENARY LECTURE 02 한화리조트 해운대 티볼리 지하1층 몬테로소 좌장 김 신 교수

10. 27(금) | 17:00 | 아이의 마음 읽기 | 이경화 교수 (부경대학교 유아교육과)

Clinical Regenerative Endodontics for Immature Permanent Teeth



Hyeon-Cheol Kim

DDS, PhD, Department of Conservative Dentistry,
Pusan National University School of Dentistry

The treatment of immature teeth with necrotic pulps is a challenge in dental practice because the thin and short roots that often increase the risk of subsequent fracture. Of course the procedures for root canal shaping and cleaning as well as obturation process are quite different from the procedures for common root canals. For a long time, clinicians have relied on conventional calcium hydroxide apexification or the use of MTA for artificial apical barriers to manage these immature teeth. Although favorable results have been reported, these treatment procedures provided a less chance to increase root length and/or width even after quite a long period of treatment procedure. Recently, a revascularization method as a kind of regenerative endodontic treatment has been proposed for immature teeth with necrotic pulp and periapical pathosis because it was reported as a new protocol to make successful continuation of the tooth development and root dentine thickening. There have been many treatment protocols using various materials such as antibiotics and calcium hydroxide medicament. In this lecture, various clinical applications for the pulp revascularization technique will be discussed with some cases.



이 경 화

부경대학교 유아교육과 교수

진 정한 소통은 상대방의 마음을 읽고 이해하는 것을 전제로 한다. 소통하기 위해서는 특정 맥락이나 현상을 부정, 축소, 왜곡하지 않아야 하며 있는 그대로를 받아들이고 존중하는 자세가 필요하다. 불안하고 두려워하는 영·유아와 소통하기 위해서는 그 마음을 제대로 알아차리고 존중하는 자세가 무엇보다도 우선이다. 이 강의를 통해 영·유아의 발달 과정에서 나타나는 불안 및 공포의 심리적 특성과 영·유아의 불안과 공포를 완화시켜줄 수 있는 의사소통 기술을 이해하는데 도움이 되고자 한다. 다음의 질문을 중심으로 관련 자료를 제시하면서 강의를 진행할 것이다. 첫째, 영·유아기에 나타나는 불안과 공포의 특성은 어떠한가? 둘째, 영·유아기의 불안과 공포의 원인과 영향력은 어떠한가? 셋째, 불안하고 두려워하는 아이에게 해서는 안 되는 말과 행동은 무엇인가? 넷째, 불안하고 두려워하는 아이를 도와주는 말과 행동은 무엇인가? 이러한 질문의 답을 찾아가면서, 아이의 마음을 읽는다는 것이 어떤 의미인지 생각해 보는 기회를 갖고자 한다.

