

Poster Session P03/Special Needs Patients

P03-85

Comparison of oral health status of Turkish children with special needs

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Background: Children with disability who are extremely susceptible to dental disease require medication or special diets that may be detrimental to dental health. Children with special needs (CWSN) are reported to have worse dental health status than healthy peers.

Aim: The purpose of this study was to compare the oral health status of CWSN and to provide baseline data for future planning.

Design: Two hundred and eighty-eight CWSN (mean age: 9.51; 116 female, 172 male) who were attending to rehabilitation centers in Istanbul assessed in this study. All children were divided into seven groups; severely mentally retarded-SMR group (7.3%); mild to moderate mentally retarded-MR group (44.3%); autistic disorder-AD group (10.3); cerebral palsy-CP group (10.6%); physically disabled-PD group (15.5%); down syndrome-DS group (4.7%); unidentified disorders -ETC group (7.3%). All data were statistically analysed by SPSS 15.0 programme, Chi-square, Kruskal-Wallis and Mann-Whitney *U*-tests.

Results: The mean DMFT scores of CWSN in permanent, and mixed dentitions were 4.74 and 1.81. dft scores of primary and mixed dentitions were 3.15 and 3.05. CP group had the lowest caries (1.34 ± 1.99; *P* < 0.001). 77.8% of all participants had healthy gingiva according to plaque and bleeding indexes and 90.3% had CI 1% and 2.1% had CI 3 M relationship. Aphthous lesion prevalence was 5.9%. Medicament usage was statistically significantly high in SMR and CP groups (*P* = 0.001). 38.9% of all children had consanguineous parents. SMR group had more crowded families than other CWSN groups (*P* < 0.005).

Conclusion: Children with CP had better caries status than other groups of CWSN. Oral health status of CWSN may be increased through rehabilitation centers.

Keywords: disability, children, oral health status, periodontal status, aphthous ulcer.

P03-86

Dental treatment of a pediatric patient with homozygous protein C deficiency: a case report

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Introduction: Protein C deficiency is lack of anticoagulant factor protein C, which increases the risk of thrombosis. Homozygous protein C deficiency is one of the numerous congenital protein C deficiencies and it is almost undetectable and shows especially low protein C activity level. The probability is 1 : 250,000–500,000. The signs and symptoms are purpuric, necrotic dermatosis, ecchymosis, blindness, thrombosis in central nervous system.

Case reports: A 4-year-old female came to the Department of Pediatric dentistry, at Dental Hospital of Dankook University,

Cheonan, Korea with the chief complaint of extensive caries. She has Homozygous protein C deficiency and she is the handicapped child with the loss of vision. So it is difficult to manage her behavior effectively. She was sent to pediatric department in medical hospital for consultation. And dental treatment was carried out under general anesthesia.

Comments: Protein C deficiency increases the risk of thrombosis due to the lack of anticoagulant factor protein C. General anesthesia was helpful for dental treatment of patients who have protein C deficiency. Minimally invasive technique should be used during dental procedure. Preventative care, tooth brushing instruction, patient education are very important.

Keywords: protein C deficiency, dental treatment, pediatric patient.

P03-88

Self-injurious behavior in a patient with autism

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Introduction: Self-injurious behavior (SIB) has been defined as the deliberate destruction or alteration of body tissue without conscious suicidal intent. It occurs in conjunction with a variety of psychiatric disorders as well as various developmental disabilities and some syndromes. The behavior is destructive and causes concern and distress to all involved in the care and treatment of the affected individual.

Case reports: A 13-year-old girl with autism, mental retardation and delayed development was referred from her pediatrician because of severe and painful lower lip biting. An intraoral examination revealed a diffuse swelling of lower lip. It was covered with necrotic slough and the ulcer and scarring of the lower lip was observed. We chose to use an oral removable prosthesis for conservative treatment. It was decided to use a soft silicone mouthguard in the maxillary arch. Initially, she could not tolerate the appliance inside her mouth but soon adapted with the appliance. After 1 month, she lost the mouth guard and started lip biting. So we made mouth guard again.

Comments: There are no standard methods for preventing self-injurious behavior in a patient with developmental disability. Appropriate preventive methods must be developed for each individual patient based on close observation and clinical findings. Behavior modification techniques, pharmacological treatment, extraction of teeth, orthognathic surgery and intra/extra oral appliances can be performed for adjust self-injurious behavior. A suitable oral guard could be tried initially before employing more invasive approaches.

Keywords: self-injurious behavior, mouthguard, conservative treatment.

P03-89

Dental caries and oral health behaviors of hearing-impaired college students

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Background: Hearing impairment could limit learning opportunity and social interaction that may affect oral health condition. At present, the data on oral health status among adolescents and young adults with hearing impairment are scarce. This study explored the oral health status of students at Ratchasuda College, a special school providing the Diploma and Bachelor degree in deaf studies for both normal-hearing and hearing-impaired students.

Aim: This study aimed to compare oral health status and behaviors among normal-hearing and hearing-impaired students from Ratchasuda College.

Design: Self-administered questionnaires with sign language video were employed to obtain student's personal and behavior information. Plaque index and dental caries were determined by two examiners separately. The association between the oral health status, behaviors, and the hearing levels were analyzed by Chi-square test and *t*-test at the significant level of 0.05.

Results: Eighty-three normal-hearing and 97 hearing-impaired students completed the questionnaire and presented for the oral examination. Means of decayed teeth were 1.34 and 1.63, and missing teeth were 0.33 and 0.32 among normal and hearing-impaired students, respectively. Normal hearing students had significantly more filled teeth than hearing-impaired students (3.17 vs 1.95). Means DMFT between normal and hearing-impaired students were not statistically different (4.83 vs 3.9). Oral hygiene, tooth brushing, flossing, and seeing dentists were not different among these two groups. Mother's higher education was associated with lower caries, missing teeth, and DMFT in both normal and hearing-impaired students.

Conclusion: While hearing-impaired students were not significantly different from normal-hearing students in caries and oral hygiene levels, they were less likely to have filling.

Keywords: hearing-impaired, dental caries, behavior, oral health.

P03-90

Case report: Freeman sheldon syndrome

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Introduction: FSS (Freeman-Sheldon Syndrome), also known as 'Whistling Face Syndrome', is a rare genetic disorder. Patients diagnosed with FSS commonly present an unusually small mouth due to perioral muscle contracture, a flattened face, and an underdeveloped nasal cartilage. Also, other physical features due to the disorder may include clubfoot and joint contractures usually involving the fingers and hands. However, most patients show normal intelligence and often have psychological problems severe or mild. Most of the features of this syndrome are due to muscle weakness.

Case reports: The patient, 11 years old boy was referred from Department of Pediatrics to Department of Pediatric Dentistry for the treatment of dental caries. After clinical and radiographic examination, we observed following problems. His dental problems were: restricted mouth opening, microsomia (whistling mouth) and micrognathia, poor oral hygiene, generalized dental caries, perioral muscle contracture, high palatal vault, and severe

malocclusion and crowding. The patient was assessed to have orthopedic, ophthalmic, respiratory, anesthetic problems and a genital problem, cryptorchidism. He was also suffering from a hospital phobia due to his previous medical history which comprised frequent hospitalization. Due to these problems, he suffered with feeding, swallowing difficulties and showed growth retardation.

Comments: In order to improve the patient's oral health, pediatric dentist, orthodontist, oral surgeon, pediatrician, psychiatrist, orthopedist, they all agree with early, cautious intervention and treatment. Currently, the patient has received multidisciplinary care and now is recovering under general health maintenance.

Keywords: Freeman Sheldon syndrome, whistling face syndrome, club feet.

P03-91

Risk assessment of dental caries for developmental delay patient by using classification and regression trees

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Background: Developmental delay is when a child does not reach their developmental milestones at the expected times. It is an ongoing major or minor delay in the process of development. Caries and periodontal diseases are the most common oral diseases and their prevention, despite the existence of knowledge and methods of active prevention in the general public, is still not quite effective. Patients with developmental delay are different from the general population in terms of the incidence and severity of their oral disease; caries and periodontal diseases among patients with Developmental delay, compared with the normal population, are larger.

Aim: This study was to try to identify the caries risk factor of those patients with developmental delay by using classification and regression tree (CART).

Design: Data from 300 patients in a general practice who met the inclusion criteria were analyzed. CART was applied to the data to seek a model for predicting caries by using the following parameters according to each patient: age, DMFT and face-to-face interview questionnaires. The risks of caries were presented by odds ratios.

Results: CART identified Developmental Delay patients for caries (DMFT > 2.23) with relative odds ratio of 2.81 (95%CI: 1.43–5.54, *P* = 0.002) according the dental floss using. Other caries risk factors for the developmental delay patients could be identified by CART according to the regular dental check-up (odds ratio = 1.78, 95%CI: 0.72–4.044, *P* = 0.208), dental plaque accumulation (odds ratio = 2.577, 95%CI: 0.96–6.92, *P* = 0.032)

Conclusion: Although dental plaque plays a leading role in the incidence of caries, the cleaning attitude and oral care knowledge of the caregiver are the significant risk factors for the patients with developmental delay.

Keywords: developmental delay, caries, caries assessment.

P03-92

Dental management of a patient with Ehlers-Danlos syndrome: a case report

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Introduction: Ehlers-Danlos syndrome (EDS), an inherited connective tissue disorder, is caused by mutations in genes encoding different types of collagen or collagen-processing enzymes. EDS most typically affects joints, ligaments, skin, and blood vessels. There are also oral problems in EDS such as dental hard tissue defects, transmigration, ankylosis, root dilaceration, pulp stones, ectopic or delayed eruption, and periodontal disease. The purpose of this report is to describe a clinical case of eruption disorder in a patient with Ehlers-Danlos syndrome.

Case reports: This case report describes a 14-year-old boy with Ehlers-Danlos syndrome. Oral manifestations included dental caries, tooth impaction, ankylosis, malocclusion, congenital missing of four second premolars, abnormal eruption, calcification of pulp, root dilaceration, and gingival hyperplasia. Gingivectomy and window opening were carried out several times in primary dentition to promote and guide tooth eruption. Oral health may be severely compromised in EDS as a result of specific alterations of collagen in orofacial structures. Therefore, long-term based comprehensive dental management is required.

Comments: EDS is an inherited disorder of collagen biosynthesis which may be presented with specific oral manifestations. EDS anomalies affect all of the tissues in the oral cavity. When planning dental treatment in EDS, a number of tissue responses and precautions should be considered. Standard Panoramic X-rays should be taken periodically to identify the need for surgical orthodontical interventions. Patients with EDS need very cautious treatment and periodic follow-ups.

Keywords: Ehlers-Danlos syndrome, abnormal eruption, tooth impaction.

P03-93

Impact of 2-year fluoride tablet ingestion on children with disabilities in TaiwanS. T. HUANG^{1,2}, H. Y. LIU², H. S. CHEN^{1,2}, S. Y. HSIAO¹, C. C. CHEN², R. S. TANG² & T. C. CHIANG²¹*Division of Dentistry for Children and Disabled, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan;* ²*School of Dentistry, Kaohsiung Medical University, Kaohsiung, Taiwan*

Background: Dental caries is the most common oral disease in children with disabilities.

Aim: The aim of this study was to evaluate the caries preventive effects of a school-based fluoride tablet program in children with disabilities.

Design: Two hundred and forty-six children with disabilities were divided into two groups: the intervention group (IG) ingested 1.0 mg fluoride tablets daily while the control group (CG) ingested a placebo. The initial oral examination was conducted prior to fluoride intake and follow-up examinations were conducted once every 6 months to trace the effectiveness of fluoride tablet ingestion.

Results: The results from this study demonstrated significant reductions in the DMFT index (the sum of decayed, missing, and filled permanent teeth), 0.63, as well as the DMFS index (the sum of decayed, missing, and filled surfaces of the permanent dentition), 1.25, when compared with the CG. A statistically significant reduction in the DMFT index and DMFS index (30.42% and 36.84%, respectively) suggested an anti-cariogenic benefit to fluoride tablet administration. Greater caries reduction occurred

on mesio-distal and bucco-lingual surfaces (53.27% and 52.57%, respectively).

Conclusion: Fluoride tablets should be considered as a caries preventive strategy in school-based caries prevention programs for children with disabilities in fluoride deficient areas.

Keywords: fluoride, caries prevention, school-based, disabilities, children.

P03-94

Management of the impacted tooth associated with dentigerous cyst in autistic young patients

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Introduction: Autism is a developmental, neuropsychiatric disorder that begins in early childhood. A patient with autism seen in the dental office frequently may have many complications. Therefore, a consideration of a modified or alternative therapy for dental care of autistic patients may be needed.

Case reports: This is the case of a 16-year old boy with autism. He visited the department of the pediatric dentistry, Yonsei University Dental Hospital, for evaluation and treatment of dentigerous cyst associated with impacted teeth (#33, 34, 35). Under daily hospitalization and general anesthesia, the cyst was enucleated with surgical extraction of #34 and autotransplantation of #33, 35. And during the periodic dental follow-up, apexification of #33, 35 was performed for periapical lesion and root maturity. At 2 year 6 months follow-up, now, bony healing was completed and there are some complications like external resorption of #33 and space loss of #34 area.

Comments: Generally, the marsupialization has been widely recommended for treatment of dentigerous cyst. However, in this case, there is a little possibility of spontaneous eruption after marsupialization considering of patient's age, location and angulation of the impacted tooth, root maturity. And there is necessity to choose the treatment that has low recurrence risk and needs short-term follow-up for autism. Above all, poor oral hygiene and lack of cooperation for decompression treatment is a matter of primary consideration. Consequently, enucleation of the cyst was chosen for the final treatment plan in this case. It is important to consider the conditions that affect the eruption of a dentigerous cyst-associated tooth to predict the successful eruption and special health care needs of the patient when the treatment plan is settled.

Keywords: autism, dentigerous cyst, impacted teeth.

P03-95

Behavioral management and oral health status of special needs pediatric adolescents at the cerebral palsy center Singapore and preventive roles parents and teachers have for prevention, detection and proper dental treatmentH. J. LEE^{1,2}¹*Singapore Dental Health Foundation, Singapore, Singapore;*²*Cerebral Palsy Centre, Singapore, Singapore*

Introduction: Special needs pediatric patients in comparison to the general patients has been perceived to be requiring increased dental care due to their oral manifestations, intellectual and seizure disorders with delayed and involuntary movements manifesting as barriers to proper oral care by dental providers. However, at the Cerebral Palsy Center, Singapore, regular voluntary dental and medical facilities and guidance from teachers and parents for the students signifies that barriers can be overcome with practical behavior management.

Case reports: Patient's Demographics and History: For a period over 2011–2012, CP patients between the ages of 6–15 in the early mixed dentition to permanent stages of tooth eruption were examined. Ethnic groups were a mixture of Singapore Chinese, Malay and Indian group with equal proportion of gender. Findings include severe bruxism, malocclusions, increased drooling of saliva, gingival hyperplasia from side effects from medication, erosion from reflux, tongue thrust, gag reflex and most importantly inability to open mouth wide for a long period of time.

Eighty percent of the adolescents had good cognitive ability to understand the importance of brushing and understood the role sugar plays in caries and learn hand coordination. Providing scaling, fillings were not problematic with assistance.

Comments: Due to their condition it impaired their ability to achieve optimal oral health. Practical measures of brushing after lunchtime in the school environment was an effective preventive approach. Parental verbal commands/repetitions were effective. Multi-variate approach in analyzing the risk-factors for caries/periodontal disease would be useful for future investigations, protocols and improved outcome. Higher incidence of periodontal disease may be attributed to lack of coordination, parental support or malocclusion.

Keywords: barriers to dental care, optimal oral health, school environment, preventive approach, behavior management.

P03-96

Dental management of the pediatric patient with aplastic anemia under general anesthesia: case reports

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Introduction: Aplastic anemia (AA) is a serious hematologic disease characterized by hypocellular bone marrow and deficient production of erythrocytes, granulocytes, and platelets. Serious complications such as uncontrolled bleeding and bacteremia can occur during dental treatment. Two cases of severe aplastic anemia are presented with dental considerations.

Case reports: A (4-year-old boy had been referred from Seoul National University Hospital for dental examination before HSCT. Treatments were planned under general anesthesia. Following medical consult, dental treatments were performed after platelet transfusion and antibiotic prophylaxis. The planned extraction was changed to conservative treatment. Postoperatively, neither significant bleeding nor complication was observed. A 18 months old boy had also been referred from SNUH for dental examination. All of his erupted teeth were decayed. Stepwise approach was planned considering root immaturity. First, dental caries were removed and filled with GI under GA. Further treatment had been postponed until root maturation was achieved. A severely decayed upper incisor was extracted, stitched up, and the compression applied to the extraction site. Postoperatively, significant bleeding was not observed. He was transferred to medical hospital for his hematological stability and infection control.

Comments: On the time of the treatment planning, the dentist should perform a complete hematological assessment. It is imperative not only platelet counts but also other leukocyte counts are under safe boundaries. In severe thrombocytopenic patients, platelet transfusion should be considered. Also, it is recommended to establish a good oral hygiene.

Keywords: aplastic anemia, bleeding control, general anesthesia.

P03-97

Nasally erupting deciduous incisor in a patient with cleft lip and palate

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Introduction: The incidence of cleft lip and palate varies from 0.3 to 6.5 per 1000 live births worldwide. It may be associated with a genetic syndrome or may occur in isolation in otherwise healthy children. Often, cleft lip and palate is complicated by dental abnormalities such as oligodontia, enamel hypoplasia, supernumerary teeth, delayed or premature and ectopic eruption. A rare complication of cleft lip and palate is ectopic eruption in the nasal cavity. There are very few cases reported in the literature.

Case reports: A 20 months old male child was referred to the department of child dental health, LASUTH with the complaint of erupting tooth in the left nostril a month after corrective surgery done by the Burns and Plastic Unit. The surgery for lip and palate repair was done at 16 months. There was no associated pain or breathing difficulty. Clinical examination revealed a visible scar on the left side of the upper lip, missing upper left deciduous central and lateral incisor intraorally and presence of the central incisor in the left nostril. Occusal radiograph was taken. Extraction of the nasally erupting deciduous central was planned after medical evaluation of the patient. Thereafter, extraction of the tooth was done from the nasal aspect with an extraction forceps under anaesthesia. Healing was uneventful.

Comments: Paediatric dentists are crucial in the multidisciplinary management of cleft lip and palate patient.

Keywords: deciduous central, eruption, nasal.

P03-98

The strategy of behavior management for dental treatment of autistic patient

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Introduction: Due to uncooperative behavior of the patient with autism, we can approach them with various strategy for behavior management, for example, conventional psychologic behavior management, conscious or deep sedation with pharmacologic method and General anesthesia to carry out the proper dental treatment. Autistic behavior management technique for dental treatment, can be chosen by factors such as the severity of autism, degree of cooperation, oral and general condition, age and body weight. Among various factors, to screen the severity of autism, there are several instrument tools such as CARS (the childhood Autism Rating Scale), ADOS (Autism Diagnostic Observation Schedule), CHAT (checklist for Autism in Toddlers) etc.

Case reports: In Case 1, non-pharmacologic method can be chosen for the patient who is able to communication with dentist, mild dental caries without compromised medical history by CARS scoring. Pharmacologic method can be selected by CARS evaluation, for the patient who is young age, low body weight and without respiratory disease (case 2). In Case 3, General Anesthesia can be chosen for the patient who is severe communication disorder, older age, excessive dental care need, living in remote area with compromised medical history.

Comments: In Comparison with other measures, CARS method requires little training, is easy to score. So, we evaluated the autistic patient in our clinic with CARS method, and chose

proper behavior management by CARS score. Then, we can reduce trial and error for comfortable dental treatment of autistic patients who are difficult to find proper treatment strategy.

Keywords: autism, behavior management strategy, CARS.

P03-99

Relationship between acquisition of mouth-rinsing and the developmental age in autistic children

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Background: Mouth-rinsing is crucial method for fluoride application, with which dental caries prevention can be expected. Several studies have reported that acquisition rate of mouth-rinsing among children aged 3 years was 92.2%. As for autistic children, however, retardation of the acquisition can be expected from its developmental peculiarity.

Aim: The aim of this study was to clarify the readiness for mouth-rinsing in autistic children.

Design: Fifty-eight autistic children aged between 3 and 6 years were investigated regarding chronological age, developmental age (Enjoji's Developmental Test) with six domains, and the mouth-rinsing acquisition. The cut-off points of the developmental age in each domain were examined, when mouth-rinsing had become possible.

Results: Fifteen children (25.9%) were incapable of mouth-rinsing. Concerning the developmental age, impossible group of mouth-rinsing was significantly lower than the possible group in six domains respectively, while no significant relevance regarding chronological age. In the developmental age of each domain, the cut-off points were obtained at the age as follows; 1-year and 4-month (speech), 2-year and 4.5-month (fundamental habits), 2-year and 3-month (hand movement), 1-year and 5-month (language understanding), 1-year and 7.5-month (personal relationships), and 3-year (locomotion), each of which is the time of mouth-rinsing acquisition. The most significant correlation with mouth-rinsing acquisition was seen in speech domain.

Conclusion: It was suggested that a certain degree of development in each developmental domain was more necessary for the mouth-rinsing acquisition of autistic children.

Keywords: mouth-rinsing, developmental age, autistic children.

P03-100

Case report: orthodontic treatment of a visually-impaired patient

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Introduction: Visual impairments include optical defect and impairment in field of vision. In December 2008, there were 233,245 persons with visual disabilities in Korea, which accounts for 0.47% of total population. Depending on the time of life when the disability was acquired, different level of intellectual and emotional impairments may be accompanied. These characteristics should be taken into account during dental care.

Case reports: A 15 years old girl with visual impairment visited our clinic. Clinical examination revealed that tooth #12 was missing and the root of tooth #22 was severely absorbed by impacted tooth #23. Tooth #23 did not erupt spontaneously even after extraction of the hopeless #22. An orthodontic button was attached on #23 after its surgical exposure and the flap was repositioned.

Despite continual dental attendance, the patient showed high level of dental anxiety and needed detailed explanation of each step throughout the dental procedure.

Comments: Patients with visual impairment do not accompany specific dental complications; however, they usually have high level of dental anxiety. Dental personnel should pay attention to their mental and emotional status and dental treatment should be adjusted accordingly.

Keywords: orthodontic treatment, visually impaired patient, dental anxiety.

P03-101

Factors affecting on dysphasia in Down syndrome

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Background: Down syndrome is characterized by a dysphasia associated with malocclusion, palatal deformity, dysfunction of tongue and lips followed by various complications such as mental retardation and congenital heart disease. Despite the recent development of medical support for dysphasia, early management is not established for dysphasia in Down syndrome.

Aim: In order to resolve the mechanism of dysphasia and promote the oral function in Down syndrome, the status of dysphasia associating with dental data were estimated in the syndrome.

Design: The investigation was carried out in 117 patients with Down syndrome (69 males and 48 females, from 1 year and 8 months old to 25 years old), according to description style by the guardian, asking about the state in feeding in conjunction with dysphasia. Statistical analysis resolved the factors affecting on dysplasia of Down syndrome.

Results:

- 1) Swallowing without chewing was more found in soft food than normal diet ($P < 0.05$).
- 2) The chewing with anterior tooth took longer time for feeding compared with chewing without anterior tooth ($P < 0.05$).
- 3) There were gender differences associating with dysphasia; first, swallowing without chewing was more found in male than female ($P < 0.05$), secondly, in male the malocclusion significantly induced swallowing without chewing ($P < 0.05$), thirdly, in female, feeding by oneself without assistance ($P < 0.01$) and shorter time for feeding ($P < 0.05$), inclined to obesity.

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Conclusion: In order to promote the oral function for feeding in Down syndrome, it was important to consider gender and develop the standard occlusion as well as oral rehabilitation.

Keywords: down syndrome, dysphasia, occlusion, gender differences, oral rehabilitation.

P03-102

Management and consideration of adenoleukodystrophy patient in dental treatment

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Introduction: Adrenoleukodystrophy (ALD) is a rare, inherited disorder that leads to progressive brain damage and failure of the adrenal glands. It is passed down from parents to their children as an X-linked genetic trait. Therefore, it affects primarily males especially under the age of 10. People with ALD have excessive accumulation of very long chain fatty acids (VLCFA) in their brain because they do not have the enzyme which breaks down these fatty acids. Eating a diet low in VLCFA and taking special oils, called Lorenzo's oil, can lower the blood levels of VLCFA. This is the case report of the dental treatment of patient with Adrenoleukodystrophy.

Case reports: A 12-year-old boy suffering from ALD was referred to the Seoul National University Dental Hospital. This patient has many dental caries to be treated but his medical history makes it difficult. Careful management must be required during treatment procedure because of the possibility of life-threatening accident. General anesthesia is used successfully to manage this patient during dental procedure.

Comments: The dental treatment of the patient with Adrenoleukodystrophy under general anesthesia was successfully performed and no complication was discovered. Not only thorough treatment of dental caries but also regular check-ups and oral hygiene managements should be carried out because of the difficulty in hygiene control.

Keywords: adrenoleukodystrophy, general anesthesia, dental caries.

P03-103

Effectiveness of labial arch wire in palatal augmentation prosthesis: a case report in a cerebral palsy child

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Introduction: A Palatal Augmentation Prosthesis (PAP) is applied for the patients with dysphagia. PAP helps tongue to contact with palate and makes easy to form bolus. In the present case, by using the PAP attached with labial arch wire, we could improve lip close and labial tipping of upper incisors and prevent alveolar ridge from deforming in a cerebral palsy child.

Case reports: A Japanese boy with cerebral palsy had been referred to the Clinic of Pediatric dentistry at Nagasaki University Hospital for dental caries treatments when he was 6 years and 5 months old. As his glowing, his swallowing and labial tipping of upper incisors became worse. At 13 years old of age, the PAP attached with labial arch wire was inserted since his mother want to improve these symptoms. By this treatment, his swallowing and hypersalivation were improved. After 3 years, deformation of his alveolar ridge was prevented. Additionally, he can close his lip easily since his major axis of dental arch was decreased by labial arch wire.

Comments: In children with cerebral palsy, insertion of the PAP attached with labial arch is effective for not only improve of swallowing, but also for improvement of lip closing and labial tipping of upper incisors and for prevention of deforming alveolar ridge like a brace for scoliosis.

Keywords: cerebral palsy child, palatal augmentation prosthesis (PAP), labial arch wire.

P03-104

Gingival overgrowth in a mucopolysaccharidosis patient and dental management

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Introduction: Mucopolysaccharidosis (MPS) is a disorder with storage defect in which excessive accumulation of glycosaminoglycan (GAGs) arises from lysosomal enzyme defect. Lysosomal accumulation of GAGs eventually leads to cell, tissue and organ dysfunction, which may cause severe mental retardation and physical abnormalities. Oral manifestations of MPS include enlarged tongue, gingival hyperplasia, multiple impacted teeth and abnormal spacing of teeth.

Case reports: This clinical report presents a girl with MPS who had visited Seoul National University Dental Hospital due to pain in # 54, 55 in 1997. She had been coming to the dental clinic to receive treatments and regular check-ups. Upon clinical examination, severe gingival hyperplasia, especially in the upper anterior region, was observed. Gingivectomy was performed under general anesthesia. Recurrence of the gingival hyperplasia is also presented.

Comments: Because mucopolysaccharidosis is a disorder involving storage metabolite, it is difficult to prevent recurrence of the gingival hyperplasia. Therefore, regular check-ups are important to delay the recurrence and prevent other symptoms. Pediatric dentists should be aware of oral manifestations present in patients with MPS. Dental management will require teamwork between the dentist and the patient's physician.

Keywords: mucopolysaccharidosis (MPS), GAGs, gingival hyperplasia.

P03-105

Oral bacterial flora in disabled children and persons with feeding dysfunction

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Background: It is easier to cause the aspiration pneumonia for the disabled children and persons with feeding dysfunction. The oral flora of such patient was assumed to be more diverse than healthy one, because texture of foods and feeding methods were different.

Aim: The purpose of this study was to investigate oral bacterial flora of disabled children and persons with feeding dysfunction.

Design: This study group consisted of 25 subjects (13 male and 12 female, age range 2–31 years old) who visited Nagasaki University Hospital. The patients had a wide range of disabilities including cerebral palsy, mental retardation, epilepsy, and sequelae of encephalopathy. Saliva and plaque samples were examined by dental test kits which detect caries, putative periodontal, and opportunistic pathogens (BML, Tokyo, Japan). This study protocol was approved by the ethics committee of Nagasaki University Graduate School of Biomedical Sciences and informed consent was obtained from each subject and their parents.

Results: Mutans streptococci (MS) was detected in seven patients with caries. *Tannerella forsythensis* (4), *Aggregatibacter actinomycetemcomitans* (1), *Prevotella intermedia* (2) were detected. No characteristic pattern was observed. *Staphylococcus aureus* (2),

Pseudomonas aeruginosa (9), *Serratia marcescens* (1), and *Candida sp.* (3) were detected. 4. *P. aeruginosa* was detected in five patients with tracheostomy and in 8 patients with tube feeding.

Conclusion: Presence of MS and Latobacilli was related to caries prevalence. Detection of *P. aeruginosa* was related to tracheostomy and tube feeding.

Keywords: oral bacterial flora, disabled children and persons, feeding dysfunction.

P03-106

Dental treatment of a pediatric patient with medulloblastoma; considerations in periodic MRI taking

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Introduction: Medulloblastoma is a highly malignant brain tumor. Its nature is very invasive that, unlike most brain tumors, spreads through the cerebrospinal fluid (CSF) and frequently metastasizes to different locations in the brain and spine. Therefore, patients with medulloblastoma need close observation with periodic magnetic resonance imaging (MRI) taking. The possible complications include hypothalamic-pituitary, thyroid dysfunction, and intellectual impairment. Such patients must be treated with special considerations in these aspects.

Case reports: Three-year-old male patient with medulloblastoma was referred from pediatric department. Almost all of his teeth had multisurface caries, which required imminent dental treatment before his anticancer treatment schedule due to the risk of infection. Possibility of the future MRI taking made it impossible to restore with stainless steel crowns even in molars with extensive caries, therefore, all the restorations were done with glass ionomer cement and composite resin only.

Comments: When treating patients with medulloblastoma, special considerations must be given on the possibility of complications like hypothalamic-pituitary dysfunction, intellectual impairment, importance of caries prevention due to the difficulty of maintaining proper oral hygiene during the anticancer treatments and the high risk of infection, and the need of periodic MRI takings. Most of these consideration were carried out in this case report, except the prevention of caries. Stainless steel crowns, one of the most durable material with low incidence of secondary caries, are not the treatment of choice here because the metal will become artifacts and receive strong magnetic force during MRI taking. Further studies on development of noble materials are acutely needed for these pediatric patients.

Keywords: medulloblastoma, magnetic resonance imaging (MRI), dental caries, dental restoration material, stainless steel crown.

P03-107

Correlation between supervisor awareness and oral hygiene level of Down syndrome children

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Background: The fact that oral hygiene of Down syndrome children is assessed not good, which may be due to a lack of attention and awareness of the supervisors.

Aim: To analyze the correlation between supervisor awareness and the oral hygiene level of Down syndrome children.

Design: Cross sectional design. Total 96 subjects Down syndrome children and supervisors, consisted of 48 caregivers and 48 parents (mothers). Supervisors were given questionnaires consisted of 13 questions about supervisor awareness on oral hygiene level of Down syndrome children and Oral Hygiene Index-Simplified (OHI-S) examination of 96 Down syndrome children.

Results: Statistical analysis showed that supervisor awareness on oral hygiene level of Down syndrome children had a strong correlation ($r = 0.7$; $P \leq 0.05$).

Conclusion: There was a strong correlation between supervisor awareness and oral hygiene level of Down syndrome children.

Keywords: supervisor awareness, down syndrome, oral hygiene level of down syndrome children.

P03-108

Orthodontic treatment of a pediatric patient with ADHD

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Introduction: Attention Deficit Hyperactivity Disorder (ADHD) is a neurobiological behavioral disorder characterized by inattention, impulsivity, and over activity. An individual with ADHD finds it much more difficult to focus on something without being distracted. Affected person has greater difficulty in controlling what he or she is doing or saying and is less able to control how much physical activity is appropriate for a particular situation compared to others without ADHD. The goal of treatment is to contain the disorder or reduce the symptoms rather than to cure the condition usually with the medications impacting the neurotransmission of catecholamines.

Case reports: Nine-year-old male patient with ADHD visited the clinic with his mother, complaining of 'He can't bite well in his back teeth, and can't chew comfortably, probably due to cross-bite' He had several orthodontic problems including -1.5 mm overjet and about 10 mm space deficiency in upper arch. By using upper removable orthodontic appliance with transverse expansion screw for 6 months to gain more space for teeth aligning and full fixed appliance for 2 years, almost ideally aligned dentition was achieved.

Comments: The successful orthodontic treatment requires following conditions; the patient's awareness of his/her serious dental problems, the will to correct the problems, cooperation with the dentist, and regular attendance to the appointment. These can be somewhat challenging to the patient with ADHD. In this case, the pediatric patient who had several orthodontic problems with ADHD was treated successfully by proper behavior management protocols. The special considerations of dental care, especially orthodontic treatment for the patient with ADHD are reviewed.

Keywords: attention deficit hyperactivity disorder (ADHD), behavior management, orthodontic treatment, removable orthodontic appliance, full fixed appliance.

P03-109

Oral health care sequence cards for the special needs

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Background: In general, the oral health status of the Special Needs children is unsatisfactory because it is difficult for them and their caregivers to maintain good routine oral health care. As well, the Special Needs children such as those with autism usually encounter difficulties in seeking dental care from dentists as they need detailed and small-step explanation before they could cope with the new environment or procedures.

Aim: Educating the Special Needs requires small-steps but detailed explanation. Through a series of detailed sequence cards, the Special Needs, their parents, caregivers, teachers and dental staffs could help the needy to prevent two major oral diseases: gum dis-

eases and tooth decay. Both the Special Needs and their caregivers could learn and teach the procedures at their own pace.

Design: This project is to provide two tailor-made sequence cards relating to 'Oral Health Care' (including daily flossing and brushing) and 'Visit To dentist' in both Chinese and English scripts for the needy. 'Siu Ming' who is a well-known local cartoon character will be used as the role model in all the cards. These needy groups can get either soft copy from the website or request hard copies free of charge.

Results: This project could continue to deliver the message to the needy through the world wide web. Free download will be provided.

Conclusion: Currently, most educational resources for the Special Needs children are published in English, a tailor-made Chinese version of the sequence cards can benefit the local Special Needs group and their caregivers in preventing oral diseases.

Keywords: oral health care sequence cards, special needs patients, routine oral health care.

P03-110

The study of oral health conditions and dental management of autism spectrum disorder and cerebral palsy patients

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Background: Autism Spectrum Disorder (ASD) is a complex, life-long disability that typically appears during first 3 years of life. Cerebral palsy (CP) is a non progressive chronic neurologic condition caused by damage to the immature brain. Patients with ASD or CP tend to have poor oral health.

Aim: The aim of this study was to investigate and compare the oral health conditions of ASD and CP patients visiting the Kyung Hee University Dental Hospital from January 2003 to December 2010.

Design: This study analyzed the data of 58 ASD patients and 57 CP patients. The oral health conditions of patients were surveyed by DMFT (dmft) and periodontal condition at the first visit. The performed dental procedure, behavior management methods and follow-up check were analyzed.

Results: The average age of patients having ASD and CP was 12 year 2 month (ASD; 11 year 9 month and CP; 12 year 4 month). Within the limit of this study, the rate of dental caries was higher in CP patients than autism patients. Both of diseases showed periodontal problem.

Conclusion: If oral diseases occur in patients having ASD and CP, much more active care is needed. More than half of ASD patients and more than one third of CP patients had to be treated under GA. Therefore, dental professionals should consider the use of GA in consulting patients and making treatment plans when they encounter patients with ASD or CP in dental office.

Keywords: autism spectrum disease, cerebral palsy, dental management, oral health conditions.

P03-111

Prader-willi syndrome- paediatric dentists' perspective – a case report

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Introduction: Prader-Willi syndrome (PWS), also referred to as Prader-Labhart-Willi syndrome, is linked to disorder of chromosome 15 and has major characteristics of hyperphagia (appetite disorder) and oesophageal reflux, mild to moderate cognitive impairment, behaviour issues, hypotonia (affecting motor skills and delaying speech) and hypogonadism. It occurs in males and

females equally and in all races. Prevalence estimates have ranged from 1 : 8000 to 1 : 25,000 with most likely figure being 1 : 15,000 [<http://www.pwsausa.org/syndrome>].

Case reports: Two cases of PWS were referred to Paediatric dentistry clinic, Prince Philip Dental Hospital (PPDH) for management of dental problems. Case one is a 5 years old Chinese boy suffering from PWS, who presented in early mixed dentition stage with poor oral hygiene and caries affecting almost all primary teeth. He was uncooperative and had to be treated under General anesthesia. He is currently under regular follow up at PPDH. Case 2 is a 16 years old Chinese boy who is currently undergoing orthodontic treatment in PPDH. He presented as a small obese child with moderate mental retardation and type II diabetes. He was diagnosed with early childhood caries at the age of 3 and was treated under general anesthesia and was regularly followed up.

Comments: Children with PWS typically present with feeding problems, childhood-onset hyperphagia and associated obesity and dental problems of varying degree. Strict oral hygiene maintenance and regular review takes utmost priority in these patients with mode of treatment governed by degree of cooperation and cognition.

Keywords: Prader-Willi syndrome, Prader-Labhart-Willi syndrome, eating disorders – hyperphagia.

P03-112

Dental caries and need for treatment under general anesthesia among cleft lip and palate patients in Northern Finland

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Background: In Finland dental caries prevalence is low, but polarized among children.

Aim: The aim was to investigate caries occurrence among children with clefts. Another aim was to investigate the proportion of the children with clefts requiring dental treatment under general anesthesia (DGA).

Design: Patient records of 183 patients with clefts treated in Oulu University Hospital, Finland during the period 1998–2012 were analyzed regarding occurrence of dental caries (Yes/No) at 3 and 6 years. Frequencies and proportions of DGAs in association with the cleft types were calculated. The analyses were carried out using cross-tabulation and Chi-square testing. Differences between the groups were considered statistically significant with P values < 0.05.

Results: Of the patients about 71.1% had cleft palate with or without cleft lip, 14.2% had cleft lip of some degree, 14.7% had sub mucosal cleft or cleft in the soft palate. Sixteen point eight percent had dental caries at the age of 3 and 31.5% at the age of 6. Almost one fifth of the study group (17.9%) had DGA. The treatments under DGA were i.e. restorative treatment (13.6%), extractions (14.7%), pulpotomy (4.3%), and steel crowns (5.4%). Restorative treatment, extractions and steel-crowns under DGA were significantly ($P < 0.05$) more common among those with most severe clefts involving lip and palate compared to the rest.

Conclusion: Dental caries is common among children with clefts and big proportion them need DGA. Prevention and regular recall system must be in place and emphasized among this challenging group to minimize treatment need.

Keywords: dental caries, DGA, cleft lip and palate.

P03-114

Perception of dental care in wheelchair bound patients treated in a wheelchair recliner

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Background: People living with disabilities experience several barriers to oral health care, some related to the structural features of the buildings, social and political facts, other related to the patient and his environment as well as other barriers related to the dentist. There are specific tools to enable patients to overcome some of these barriers. One of these tools is the wheelchair recliner, which enables wheelchair bound patients to accommodate for dental treatment in their own wheelchair without the need of having to transfer to a dental chair.

Aim: To provide knowledge on the perception of dental care for wheelchair bound patients that receive dental treatment in a wheelchair recliner.

Design: A exploratory qualitative study was performed, conducting in-depth semi-structured interviews to wheelchair users (five patients and four caregivers), allowing to explore the medical and social history of the patient, his disability and everyday life, as well as his experience receiving dental treatment in a wheelchair recliner. The information was then organized and analyzed, providing common codes and symbols.

Results: All interviewees showed adaptation to disability, considering as normal most of the difficulties they have to go through on everyday life. The main benefits perceived by the patients were Independence, Comfort, Security and Trust. It was well accepted by the patients.

Conclusion: The wheelchair recliner enables people with physical disabilities to break down some of the barriers to access oral care, giving autonomy and a better dental care experience.

Keywords: wheel chair bound, disability, wheel chair recliner.

P03-115

Retrospective audit of dental treatment provided to special needs patients under general anaesthesia

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Background: Little information is available on dental treatment provided to special needs patients (SNP) under general anaesthesia (GA).

Aim: This study performed a comprehensive audit of dental treatment provided to SNP under GA over a 10-year period.

Design: Special needs patients, who received dental treatment under GA at Queen Mary Hospital, Hong Kong between 2002 and 2011, were divided into three age groups (<6, 6–12, >12 years). Treatment duration, post-operative recovery time, treatment procedures and type of restorations placed in SNP were analyzed using one-way ANOVA. Kappa statistics were used for intra-examiner reliability.

Results: A total of 275 patients (174 males and 101 females) were included in the study. The mean age of the patients at the time they received GA was 12.37 ± 10.18 years. Dental procedures performed were mostly restorative in nature (47%). The >12 years group had significantly shorter treatment duration ($P < 0.05$). No significant difference in post-operative recovery time was observed among the three age groups ($P > 0.05$). The <6 years group received significantly less preventive, but more restorative procedures. Significantly fewer extractions were performed in the 6–12 years age group ($P < 0.05$). The use of composite restorations was significantly higher in the <6 years group;

while amalgam restorations were more frequently used in the >12 years group ($P < 0.05$). Stainless steel crowns were more frequently employed in SNP under 12 years of age ($P < 0.05$). Intra-examiner reliability was good ($k = 0.94$).

Conclusion: There are disparities in the treatment procedures and type of restorations placed under GA among the three age groups.

Keywords: special needs patients, general anaesthesia, dental treatment.

P03-116

Atraumatic restorative treatment, (ART) technique, applying in a 9 year-old girl with Down syndrome under inhalation sedation

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Introduction: ART technique, was instigated by the World Health Organization. Tooth decay is managed by simple hand excavation of the caries and then sealing the cavity with an adhesive material. The entire procedure of ART technique was significantly faster, less expensive, less painful, and more acceptable by the children than the conventional restorative method.

Case reports: This case report describes Atraumatic Restorative Treatment, (ART) technique, applied in a 9 year-old Down syndrome girl, referred to the Pediatric Dentistry Department, Faculty of dentistry in Damascus University, Syria, with the chief complaint of pain in one of her teeth. The patient was in risk to be treated under general anesthesia, because of her previous medical history. After medical consulting was performed, treatment has done under inhalation sedation with (nitrous oxide – oxygen) in order to take advantages of nitrous oxide in treating medically compromised patient and to enhance child cooperation. We indicate (ART) technique because dental pulpotomy is contraindication in patients with serious congenital heart conditions. Clinical and radiological examination for treated tooth revealed a good restoration and normal periapical region after 6 months.

Comments: The purpose of the current case report is to present the modification of the dental treatment plane to fit with critical medical condition associated with Down Syndrome, and to light on the useful and successful results of the (ART) technique to use in patient with a lack of cooperation like those who had Down syndrome.

Keywords: down syndrome, art, inhalation sedation, nitrous oxide, atraumatic restorative treatment.

P03-117

Prevalence and severity of mucositis in pediatric patients with hematologic disease of Tijuana general hospital

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Background: Cancer is the second leading cause of infant death in Mexico. Chemotherapy causes complications such as oral mucositis. This study provides baseline information to enable the construction of randomized clinical trials to test methods of preventions and proposed interventions for oral complications in a research based on the Mexican children population. Sabater et al (2006), found a prevalence of 60.8% of mucositis and a 44.3% severity grade I, grade II 7.2%, grade III 6.2% and grade IV

3.1% according to the World Health Organization (WHO) criteria. Cheng K (2011) showed a prevalence of 40% of mucositis, 23% grade II and grade III-IV 18%.

Aim: To determine the prevalence and severity of mucositis in pediatric patients with hematologic disease in Tijuana General Hospital.

Design: A cross-sectional study was made on 37 children with cancer, with an age range between 0 and 19 years. To describe oral manifestations, according WHO's scale of measurement on severity of mucositis, a clinical diagnosis was made. Data was analyzed using descriptive statistics.

Results: Was found that 17% presented mucositis. Grade 0 involved 84%, grade I 6%, grade II 5%, grade III 5% and grade IV 0% of the patients examined. A higher prevalence of mucositis, 67%, was found in the 11–15 years of age group.

Conclusion: The prevalence of mucositis was 17%. Mucositis with no symptoms (grade 0) was mostly found. The age range of 11–15 years had the highest prevalence.

Keywords: mucositis, Mexican children, hematologic cancer.

P03-118

Autotransplantation of ectopic erupted central incisor in encephalopathy patient: 18 month follow up

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Introduction: A 9 year-old encephalopathy patient visited our hospital with the chief complaint of malformation crown in the maxilla incisor. After oral examination and radiographic examination, we found two supernumerary teeth. One is erupted state with right side of malformed incisor and the other is full impacted state over right lateral incisor. Full impacted supernumerary tooth was erupted during follow-up. We decided to auto-

transplantation with the full impacted supernumerary tooth instead of malformed incisor after full impacted supernumerary tooth eruption, under the endotracheal general anesthesia (G/A). So far, we have done 18 months follow-up and there is no abnormality.

Case reports: Case operation procedure under G/A- A sulcus incision was made from the end of right lateral incisor to distal side of left central incisor on the labial gingival area. The malformed incisor was gently extracted. Receptor bed was prepared in its bony socket using low-speed burs with internal irrigation. Quickly thereafter, the supernumerary incisor was extracted carefully, keeping the radicular part intact and untouched. The donor tooth was out of the mouth as little time as possible. After the donor tooth placing and adjusting, we checked the occlusion. The flap was sutured and the donor tooth was splinted for the stability. After 3 weeks, the splint was removed.

Comments: This case is a treatment and follow-up of a dental autotransplantation in encephalopathy child. The malformed incisor was replaced with an autotransplanted supernumerary incisor. Still now, there is no progressive root resorption, hard and soft tissues adjacent to the transplanted tooth are normal. PDL space is occurred to repositioned donor tooth. The treatment of choice satisfied both esthetics and function. Overall, tooth transplantation can be accomplished within a single visit unlikely implant or other prosthetic treatment. Even though, more regular check-ups are required, the autotransplantation provided the fastest and most economically feasible treatment option in the present cases. Therefore, autotransplantation is suggested a valuable option for a young disabled patient instead of implants.

Keywords: autotransplantation, encephalopathy, supernumerary teeth, endotracheal general anesthesia.