

FADAS 2017

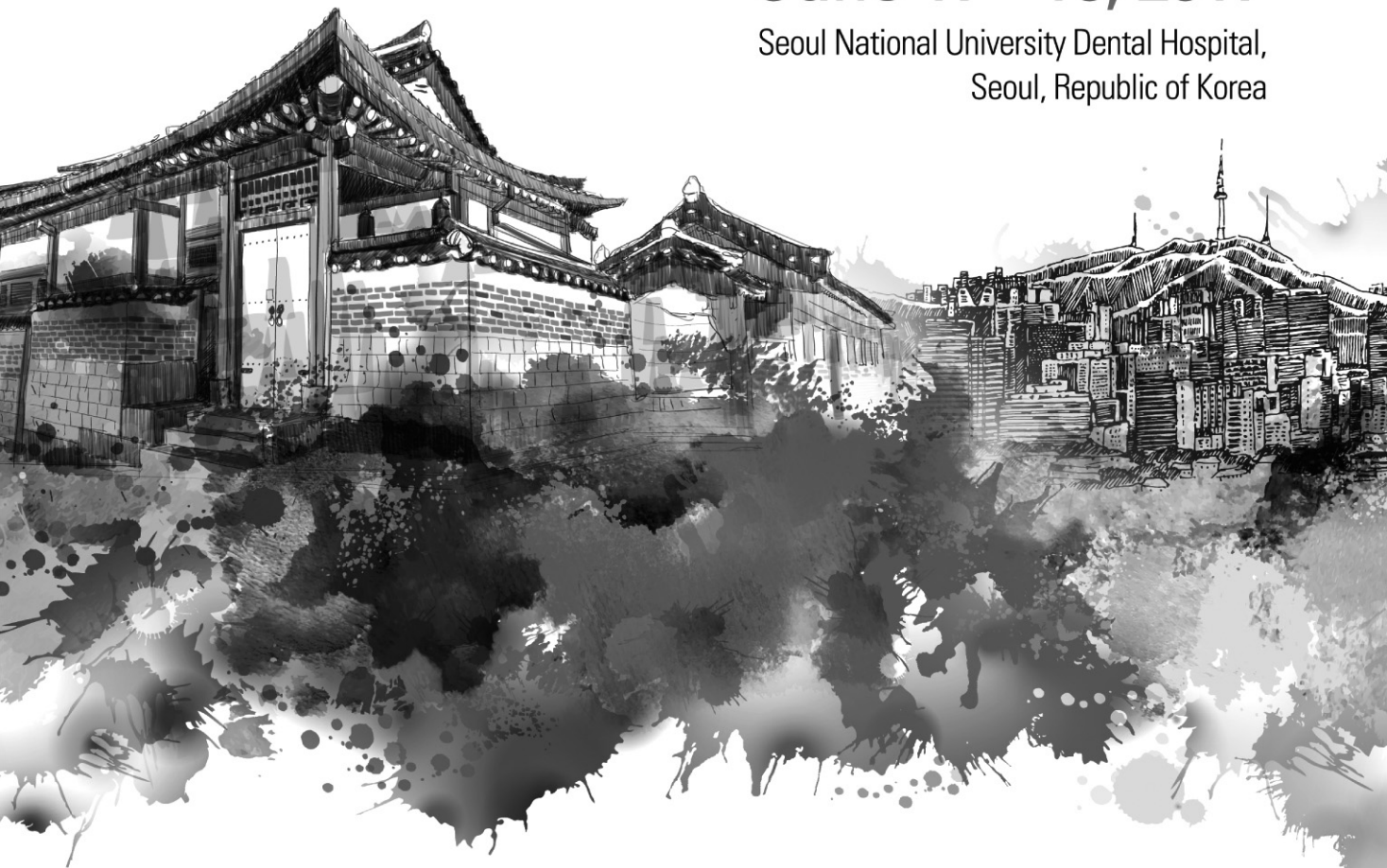
Seoul, Korea



The **10th** Annual Meeting of the Federation of Asian Dental Anesthesiology Societies (FADAS2017) and
The **17th** Annual Meeting of the Korean Society of Dental Anesthesiology

June 17 - 18, 2017

Seoul National University Dental Hospital,
Seoul, Republic of Korea



- **Date** : June 17~18, 2017
- **Venue** : Seoul National University Dental Hospital Auditorium (8th Floor)

Program

2017년 6월 17일(토) 서울대학교치과병원 8층 B세미나실

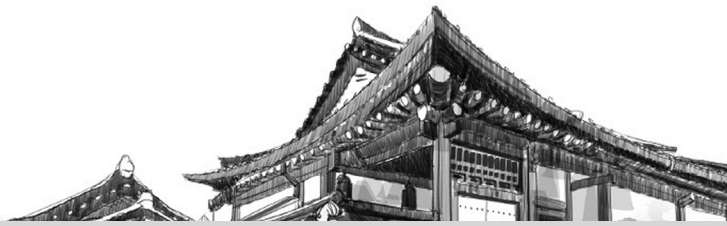
Basic Life Support Provider Coarse (심폐소생술 교육)

- 13:00-17:30 Basic Life Support Provider Coarse
18:00-21:00 Welcome Ceremony at the Grand Ambassador Hotel

2017년 6월 18일(일) 서울대학교치과병원 8층 대회의실

Dental Anesthesia for the Special Needs (장애인을 위한 치과마취)

- 09:00-09:30 Registration (등록)
- 09:30-09:45 Opening Remarks (개회사)
- Chair:** Dong-Mok Ryu (Kyunghee University, Korea)
-
- 09:45-10:15 **National Dental Centers for Disabled in Korea**
Prof. Sung Su Chung (Jeonnam National University, Korea) 3
- 10:15-10:30 Coffee Break
- Chair:** Prof. Hyun Jeong Kim (Seoul National University, Korea),
Prof. Hitoshi Niwa (Osaka University, Japan)
-
- 10:30-11:00 **Understanding the Disabled Patients**
Prof. Linming Bu (Kunming Medical University, China) 7
- 11:00-11:30 **Preoperative Evaluation of Dentally Disabled Patients**
Prof. Natthamet Wongsirichat (Mahidol University, Thailand) 9



11:30-12:00	Airway Management of Dentally Disabled Patients How to Manage Non-intubated Airway? Prof. Takao Ayuse (Nagasaki University, Japan) 11
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17:30-18:00	Award Ceremony & Closing Remarks (우수발표자 수상 및 폐회)



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³Division of Oral and Maxillofacial surgery, Department of Dentistry, Dongtan Sacred Heart Hospital, Hallym University College of Medicine, Hwaseong, Korea
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 Department of Pediatric Dentistry, College of Dentistry, Yonsei University, Seoul, Korea

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Takahiro Goi¹, Yoshiki Shionoya¹, Katsuhisa Sunada², and Kiminari Nakamura¹
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Chair Dong-Mok Ryu
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FADAS²⁰¹⁷

National Dental Centers for Disabled in Korea

Sungsu Chung

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Name: Sungsu Chung



1977 Chonnam National University Medical School
1981-1984 Resident, Dept. of Anesthesiology, Chonnam University
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Present

1985.1.~Present Professor of Department of Anesthesiology, School of Dentistry, Chonnam National
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1985.1.~Present Professor of Department of Anesthesiology, Chonnam University Hospital, Gwangju
2015.~Present Honorary member of Japanese Society of Intensive Care Medicine

Past

Dean, College of Dentistry, Chonnam National University
President, Korean Society of Anesthesiologists
President, Korean Society of Critical Care Medicine
President, Korean Dental Society of Anesthesiology
President, Korean Society of Respiratory Care



Abstract

Nine national dental centers for disabled in Korea are located in Chungnam, Gwangju, Busan, Gyeonggi, Jeonbuk, Daegu, Incheon, Gangwon and Jeju. National dental centers for disabled are supported by Ministry of Health and Welfare.

Total numbers of people with disability are about 2.5 million, 5% of population. About half of people with disability have limbs disability. People with severe disability such as brain lesion, psychiatric disability, epilepsy, intellectual disability and autism are 567 thousands.

National dental centers for disabled support financially to people with disabilities. In people with lower income and disabilities, 50% of uncovered dental service fee by insurance system are supported. And people with severe disability and minimal disability are supported uncovered dental service fee by insurance system by 30% and 10%, respectively.

Total dental care cases are about 100 thousands in 9 national dental centers for disabled. And about 9.5 thousands cases were treated under ambulatory anesthesia. Most of these cases performed in patients with brain lesion, intellectual disability, autism, psychiatric disability, epilepsy and dental phobia.



Chair Prof. Hyun Jeong Kim
(Seoul National University, Korea)

Prof. Hitoshi Niwa
(Osaka University, Japan)



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Understanding the Disabled Patients

Linming Bu (卜林明)

The Fourth Affiliated Hospital of Kunming Medical University
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CURRICULUM VITAE

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SPECIALTY

Pediatric anesthesia and Difficult Airway management

PROFILE

graduated from Kunming Medical College in 1985 and majored in clinical medicine.

PRESENT

professor of the Department of Anesthesiology in The Second People's Hospital of Yunnan Province
the Permanent Member of Chinese Stomatological Association Standing Committee of Anesthesiology
the Member of Chinese Society of Anesthesiology Physician Committee
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RESEARCH FIELDS

Pediatric anesthesia and Difficult Airway management.

About 20 papers have been published in Chinese. His research on the Cleft lip and palate anesthesia was awarded the third prize of Yunnan Scientific and Technological Progress.

Preoperative Evaluation of Dentally Disabled Patients

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- 1978 Doctor of Dental Surgery Degree from Faculty of Dentistry Mahidol University, Thailand.
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- 1989 Certificate of the Advanced Surgical Study Programme in Oral and Maxillofacial Surgery from Osaka University Japan.
- 1998 Thai Board of Oral & Maxillofacial Surgery from Thai Dental Council.
- 2002.1 Professor
- 2013.9 Senior professor

Abstract

1. Introduction

In the globalization there are many disabled patients have long life span with the advanced medical remedy. The disabled patients are an impairment or combination of mental, development, cognitive intellectual and physical impairment. These patients have activity limitations and participation restrictions. They need the home health aides always take care of them. In preoperative evaluation of dentally disabled patients need for making decisions type of dental anesthesia including the dental treatment.

2. Dental treatment needs integration of special suitable treatment by many fields expert dentists

To get the demographic data and patient health history, we can get from the caretaker or home health aides. Patient health history needs both medical and dental information including the past history.

3. Suitable dental anesthesia in the un-co-operative patient due to in-communication, understand or follow instruction. These patients have to be treated under general anesthesia with their health is not contra-indication

The cooperative patients mostly are the elder patient, physical impairment or slow mental development patient can understand and follow instruction. Suitable dental anesthesia is local dental anesthesia or conscious sedation which is safety than general anesthesia. The dental treatment should be gentle and soft touch management. Conscious sedation in some cooperative patient is also not affective due to uncontrolled behavior and dangerous to the patient.

4. Inclusion the local dental anesthesia is safety for the cooperative patient with gentle and rapid treatment

While the un-co-operative patient have to consider the special remedy under special general anesthesia.

Reference

1. Han J, Hyun H, Kim Y, Kim J, Jang K, Kim C, et al. Child with intellectually disabled parents J Dent Anesth Pain Med 2016; 16: 213-6. English. Available from <https://doi.org/10.17245/jdapm.2016.16.3.213> online Sep 30, 2016.

Airway Management of Dentally Disabled Patients How to Manage Non-intubated Airway?

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- 1989 board of Dental Anesthesiology (No:416)
- 1990 assistant professor of Tokyo Medical and Dental university hospital
- 1992-1994 Research fellow in The Johns Hopkins School of Medicine
Department of Anesth. & Critical. Care. Medicine.
- 1996 Associate professor of Nagasaki University Hospital
- 2013 Professor and Chairman, Nagasaki University Graduate School of Biomedical Sciences,
Course of Medical and Dental Sciences, Unit of Translational Medicine,
Department of Clinical Physiology

**Abstract**

Airway management for dentally disabled patients, especially under non-intubated condition, is important task for anesthesiologist. We should understand the pathophysiology of upper airway obstruction during anesthesia and efficacy of monitoring method to detect the respiratory complication. Nasal high-flow oxygen therapy (NHF) have become common in intensive care unit (ICU) settings and procedural sedation rather than CPAP. Previous study showed that, during wakefulness, NHF led to an increase in tidal volume and a reduction in respiratory rate. In contrast, during natural sleep, it was reported that NHF led to decrease tidal volume and no change in respiratory rate. The ventilation responses to NHF during wakefulness and natural sleep were well documented but that during sedation remain unclear.

The accurate monitoring of upper airway obstruction during anesthesia with non-intubated condition or procedural sedation would be required for establishing safer management. Among several monitoring methods, including SpO₂, Capnograph, nasal airflow, the gold standard method using a visual inspection by anesthesiologist should be re-recognized and improved. In this lecture, we will present several issues related to upper airway management for patients under sedation.



Chair Prof. Cheul-Hong Kim
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General Anesthesia for the Disabled Patient

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EDUCATION

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- 1996-1997 Internship, Pusan National University Hospital, Busan, South Korea
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PROFESSIONAL EXPERIENCE

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- 2008-2016 Assistant Professor, Seoul National University School of Dentistry, Seoul, South Korea
- 2016-present Associate Professor, Seoul National University School of Dentistry, Seoul, South Korea

PROFESSIONAL SOCIETIES (Year/Society/Role)

- 2008-present/Korean Dental Society of Anesthesiology/General Secretary
- 2008-present/Korean Association for disability and Oral Health/ Planning Director
- 2006-present/Korean Society Medical and Biological Engineering/Member



Abstract

An increasing number of the special need dental patients have been receiving dental treatment under general anesthesia. The trend is more prevalent in the outpatient dental clinics for them, where patients are commonly subjected to general anesthesia and return home on the same day.

I want to discuss the issues of benefit and risk associated with outpatient general anesthesia for the special need dental patients. The purpose of administering anesthesia for patients with special needs is to provide effective dental treatment. But there are many complications such as sore throat, nausea and vomiting, airway trauma, airway obstruction and hypoxic brain damages, etc. In order to decrease incidence of complication, before general anesthesia meticulous patient evaluation is important. But, there are a number of factors that make it difficult to accurately assess the anesthetic risk for many people with special needs. These include limited medical workups, uncooperative behavior, and difficulties in postoperative cares, etc.

But judging from several years' experience of many countries, it appears that the incidence of mortalities for people with special needs in dental setting is minimal and the incidence of morbidity is limited. In the long run, the delivery of general anesthesia for people with special needs can be considered a very safe and successful procedure.

Sedation for the Disabled Patients

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EDUCATION

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CURRENT POSITIONS

2005-Present Professor and Chair

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Abstract

Dental practices are currently challenged by the rapidly growing number of patients with intellectual or physical disabilities. The provision of dental care for the disabled often requires some form of behavior management. This can be as simple as positive reinforcement or verbal communication. However, some individuals may be so anxious or resistant during treatment that possible harm could come to the patient. It would be inappropriate to believe that all persons with intellectual disabilities will require conscious sedation for dental treatment. In general, general anesthesia is only indicated for those individuals presenting extreme maladaptive behavior in the dental environment. Although not necessary for most people with intellectual or physical disabilities, general anesthesia is a vital management tool and may prove to be the safest and the most appropriate technique for some. However, it is important to understand the limitations of general anesthesia and some of the considerations that could influence it.

In our hospital, patients with physical and physiologic disabilities often exhibit maladaptive behavior and are mentally stressed during dental treatment, which justifies the use of conscious intravenous sedation for their safety. Compared with general anesthesia, TCI intravenous sedation is easy to perform and propofol-remifentanyl is often used in dental treatment for medically compromised and physically impaired patients. A strategy for relieving mental strain is important for safe dental treatment of such patients, and to this end, intravenous sedation is often used.

Unlike the traditional dental setting where conscious sedation may be used to reduce stress and to allay the fear of an anxious yet otherwise cooperative patient, sedation for persons with intellectual disabilities, is used to address a severe management problem often characterized by resistant, combative, and uncooperative behavior. In our hospital, patients with intellectual disabilities required simple dental treatment. Deep sedation with inhaled sevoflurane were successfully employed and patients were discharged without any complications. Some attempts have been made to use sevoflurane for conscious sedation. In our hospital, we successfully treated Patients with mental disabilities under deep sedation by sevoflurane inhalation without other sedatives. Considering its potency and favorable recovery profiles, sevoflurane inhalation sedation may be useful for the intellectual disabilities in dental patient. Dental treatment under general anesthesia is considered for behavioral control of disabled patients who have severe anxiety or involuntary movement. However, in the case of simple and short treatment such as impression taking, cementation, sevoflurane inhalation sedation, which has fast onset and recovery, is preferred.

How to Manage Dental Phobia Patients

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EDUCATION

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- 1991 PhD The Nippon Dental University (Dental Anesthesiology)
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SOCIETY AND CERTIFICATIONS

- 1987 Japanese Board of Dental Anesthesiologist
- 1994 Board Certified Dental Anesthesiology Specialist
- 2009- Councilor of Japanese society for disability and oral health
- 2009- Councilor of Japanese society of oral therapeutics and pharmacology
- 2009- Councilor of Japanese society of dentistry for medically compromised patient
- 2011- Board director of JDSA
- 2011- Board director of Japanese stomatological society

Abstract

High dental fear affects approximately 3-7% in adults. In Japan, five million patients have avoided dentistry because of strong fear of dental procedures. Some studies said that 20% of children have phobia for dentistry. I will talk to you about how to manage dental phobic patients in our country.

We administer inhalation nitrous oxide sedation, intravenous sedation or general anesthesia for dental phobic patients. Selection criteria of these anesthetic procedures are level of fear, communication ability, type of operation and duration time.

1) Inhalation nitrous oxide sedation

We administer oxygen mixed 20-30% of nitrous oxide gas via nasal mask or cannula. This technique is suitable for mild phobia patients with communication ability.

2) Intravenous sedation

We often choose midazolam and/or propofol for intravenous sedation. This technique must not be used for patients who do not have communication ability.

3) General anesthesia

These days we can provide good ambulatory anesthesia because we choose short-acting anesthetics. For example, there are sevoflurane, desflurane, propofol, remifentanyl. GA is a good anesthesia procedure for patients who cannot communicate.

References

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2. Armfield JM. The extent and nature of dental fear and phobia in Australia. *Aust Dent J* 2010; 55: 368-77.
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4. Nicolas E, Collado V, Faulks D, Bullier B, Hennequin M. A national cross-sectional survey of dental anxiety in the French adult population. *BMC Oral Health* 2007; 7: 12.
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Poster



FADAS²⁰¹⁷

Comparison between sevoflurane and dexmedetomidine on oral mucosal blood flow

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1. Introduction

Dexmedetomidine (DEX) is a sedative and analgesic agent that acts through an alpha-2 agonist effect. In our hospital, DEX is frequently used in sedation of oral surgery or oral implant surgery, because it has little respiratory depression. On the other hand, it is reported that cat gingival blood flow is controlled by sympathetic alpha-adrenergic fibers for vasoconstriction¹⁾. We assessed blood flow of palatal mucosa during sedation with DEX.

2. Material and Methods

Twenty-two male Japanese rabbits underwent a tracheotomy under general anesthesia with 5% sevoflurane and 100% oxygen. They were divided into two groups. One was SMB-group that eleven male Japanese rabbits were anesthetized with sevoflurane, tracheotomy, the other was DMB-group that eleven male Japanese rabbits were anesthetized with DEX, midazolam and butorphanol after the tracheotomy. Mean arterial pressure (MAP), central venous pressure (CVP), end tidal carbon dioxide (ETCO₂) and in palatal mucosal blood flow (PMBF) were monitored at 0 (control), 12, 17, 22, 27, 32 and 42 minute after measure after measuring the control value.

3. Results

In the comparison between SMB-group and DMB-group, significant difference in the HR and PMBF were recognized. However, no significant differences were recognized in the MAP, CVP and ETCO₂.

4. Discussion

The present study focused on the relationship between the effects of DEX on alpha adrenoceptors and vasoconstriction in the tissues of the oral cavity and compared the palatal mucosal blood flow (PMBF) in rabbits between general anesthesia with sevoflurane and that with DEX. Our results suggest that the PMBF decreased due to the vasoconstriction of vessels following alpha-2 adrenoceptor stimulation by DEX.

5. Conclusions

It is concluded that blood vessels in the palatal mucosa region were constricted by the alpha-2 agonist effect of DEX, because the decrease of HR and PMBF were recognized. In addition, the present study suggests that DEX may contribute to the decrease of blood loss in oral surgery or oral implant surgery.

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Preoperative tracheostomy due to the airway constriction with muscular weakness in the patient with bilateral cerebral infarction history : A case report and literature review

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Cerebral infarction is a kind of cerebrovascular disease which may result in motor, sensory, perceptual, and verbal disorders. Lung dysfunction, vocal cord paralysis or paresis, and muscle weakness around vocal cord are very severe complications which could threaten the patients' lives. These may result in insufficient removal of intra-airway secretions leading to complications like mal-hygiene of respiratory system and pneumonia. Tracheostomy may be necessary before or after general anesthesia in patients with serious motor and sensory disorder, and muscle weakness around vocal cord which may cause difficulty in removing intra-airway secretion and rigidity. This case report is on a patient with medical history of bilateral cerebral infarction, who visited department of oral and maxillofacial surgery with dental history of complete dislocation of TMJ for one year. During the Preoperative work-up, the ENT doctors reported the patient have crico-arytenoid muscle weakness during the inspiration. The anesthesiologist recommended preventive tracheostomy. The tracheostomy was performed under local anesthesia before the induction. There were no special events during the operation, however post-operative constriction from hyoid bone to epiglottis was observed. So tracheostomy tube remove was delayed. The airway constriction was resolved after postoperative 3 weeks, but the patient showed airway obstruction during the spasticity when the tracheostomy tube was tried to be removed. The tracheostomy tube was removed finally postoperative 6 weeks after training with gradual tube size reduction.

In conclusion, pre-operative elective tracheostomy for the general anesthesia might be necessary to avoid critical complications such as post-operative intra-airway constriction, in patients with history of bilateral cerebral infarction.

Influence of sufentanil TCI versus remifentanil TCI on the quality of recovery after orthognathic surgery

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1. Objective

To assess the effects of sufentanil and remifentanil administered using target-controlled infusion (TCI) on postoperative recovery quality in patients after orthognathic surgery.

2. Methods

Forty adult patients scheduled for orthognathic surgery were randomly divided into 2 groups. Total intravenous anesthesia by using Sufentanil – propofol TCI (SF group, n = 20) or remifentanil-propofol TCI (SF group, n=20) was administered during surgery. At the time point of 30min before the end of surgery, stopped the TCI of sufentail in the SF group; sufentanil 0.2 $\mu\text{g}/\text{kg}$ bolus was administrated i.v. in the RF group. In both groups, postoperative pain was controlled by patient-controlled analgesia with sufentanil.

3. Result

The recovery time to spontaneous breathing and tracheal extubation time was similar in the two groups. For hemodynamic changes in periextubation period, the HR and MAP was obviously higher in RF group than in SF group ($P < 0.05$) at extubation, and was remain higher 5 min and 30 min after extubation, however, there was no significant differences between that two groups. The patients with lever-1 Ramsay score were remarkably more in the RF group than in the SF group at the 5 min after extubation ($P < 0.05$). Visual analogue scale scores were distinctly greater during the first 30 min after extubation in the RF group than in the SF group ($P < 0.05$). Conclusion: TCI sufentanil obtained a better quality of recovery than the combination of TCI remifentanil with sufentanil bolus before the end of orthognathic surgery.

Double dose versus single dose of 4%articaïne infiltration injection at retromolar region in lower third molar surgery

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1. Introduction

There are no studies about 4% articaïne infiltration injection at retromolar area for lower third molar surgery. This study aimed to evaluate the efficacy of infiltration technique using 1.7 ml (single dose) 4%articaïne versus 3.4 ml (double doses) 4%articaïne with 1:100,000epinephrine in lower third molar surgery.

2. Material & methods

This double-blind study involved 30 healthy patients with symmetrically impacted lower third molars. The patients were assigned either 3.4 ml or 1.7 ml 4%articaïne with 1:100,000epinephrine as local anesthetic for each operation. Onset, duration, profoundness, hemodynamic changes, need for additional anesthetic administration, total volume of anesthetic used, vitality of the tooth and pain score during operation were recorded.

3. Results

Double doses of 4%articaïne had high success rate of 83.3% whereas only 53.3% success rate was achieved with single dose and the differences were significant ($P<0.05$). The duration of soft tissue anesthesia was faster in double doses group. Intra-operative pain was higher in the single dose group with significant ($P<0.05$) need of supplementary local anesthetic drug.

4. Conclusions

We concluded that double doses of infiltration injection provide higher success rate, longer duration of anesthesia, less intra- operative pain and lower number of additional anesthesia compared to single dose for surgical removal of impacted lower third molar. We recommend that double doses (3.4ml 4%articaïne 1:100,000epinephrine) infiltration at retromolar region would be an alternative anesthetic technique for lower third molar surgery.

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Decreased post-operative pain using a sublingual injection of dexamethasone (8 mg) in lower third molar surgery

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1. Introduction

Every patient who undergoes mandibular third molar surgery is concerned about post-operative pain. Indeed, previous researchers have used various methods to treat such pain. This study aimed to assess the effectiveness of sublingual injection of dexamethasone (8 mg) to treat post-operative pain after mandibular third molar surgery.

2. Materials & Method

This was a randomized, double-blind, split-mouth, clinical trial, involving 48 healthy patients who required surgical removal of two mandibular third molars with similar bilateral positions. All operations were performed by the same experienced surgeon. The patients were randomized into a study group (8 mg dexamethasone injection) and a placebo group (normal saline injection). Both interventions were injected into the sublingual space immediately after local anesthesia, 30 min before the first incision. The study group received an 8 mg dexamethasone injection, while the placebo group received a normal saline injection. The wash period between the patients' two operations was 3 to 4 weeks. Pain was assessed by recording the number of analgesic tablets (rescue drug) consumed, as well as by noting the patients' responses to the visual analog scale (VAS) on the first, second, and third days after surgery.

3. Results

The study group differed significantly from the placebo group in terms of VAS score and analgesic consumption.

4. Conclusion

Dexamethasone (8 mg), injected sublingually, significantly eased post-operative pain after surgical removal of the mandibular third molar.

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Anesthetic management for simultaneous drug-induced sleep endoscopy and maxillomandibular advancement in a patient with obstructive sleep apnea

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Drug-induced sleep endoscopy (DISE) is used to identify areas of upper airway obstruction, which occurs when patients with obstructive sleep apnea (OSA) snore. DISE enables effective diagnosis and appropriate treatment of the obstruction site. Among surgical treatment methods for OSA, maxillomandibular advancement surgery (MMA) is performed to move a jaw forward; the surgery has a high success rate for OSA treatment. In DISE, anesthetics such as propofol and midazolam must be administered to induce snoring while the patient is deeply sedated for an accurate diagnosis to be made. When inducing deep sedation in a patient with OSA, airway obstruction may increase, causing oxygen saturation to drop; airway interventions are necessary in such cases. Effective DISE and MMA surgery can be performed by administering propofol through target-controlled infusion while monitoring the bispectral index (BIS).

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Dental treatment in patients with severe gag reflex using propofol-remifentanil intravenous sedation

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Patients with severe gag reflex (SGR) have difficulty getting the treatment they require in local clinics, and many tend to postpone the start of their treatment. To address this problem, dentists have used behavioral techniques and/or pharmacological techniques for treatment. Among the pharmacological methods available, propofol IV sedation is preferred over general anesthesia because it is a simpler procedure. Propofol in combination with remifentanil is characterized by stable sedative effects and quick recovery, leading to a deep sedation. Remifentanil acts to reduce the pain caused by lipid-soluble propofol on injection. The synergistic effects of propofol-remifentanil include reduction in the total amount of drug required to achieve a desired sedation level and anti-emetic effects. In this case report, we outline how the use of propofol-remifentanil IV sedation enabled us to successfully complete a wide range of dental treatments in a patient with SGR.

A clinical statistical study on the management of general anesthesia and intravenous sedation in the Tama Oral Rehabilitation Clinic, The Nippon Dental University

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1. Introduction

The Tama Oral Rehabilitation Clinic, the Nippon Dental University was established in October 2012 as a clinic specializing in oral rehabilitation. Our clinic conduct general anesthesia (GA) and/or intravenous sedation (IVS) for disabled patients. To manage anesthesia safely, we investigated the condition of anesthesia.

2. Material and Methods

We examined 104 cases that had been treated during the 4.5 years from October 2012 to March 2017. We retrospectively investigated on anesthesia record about age, main reason for management, systemic disease, anesthesia method.

3. Results

The subjects ranged in age from 3 to 93, with an average of 24.5. As for age distribution, the age group of 0-9 years old was the most dominant (38cases). Main reason for management were as many as 50 cases of mental retardation. All elderly cases were dementia. GA was performed in 81.7%, and IVS in 18.3%. The mean age of patients received GA or IVS was 15.4 or 65.2 years old. In the GA cases, slow induction was 83.5% and the rate using inhalational anesthesia during maintenance was 62.4%. In the IVS cases, patients who were only using propofol were 63.2%.

4. Discussion

To determine whether GA or IV, it was considered to be in age and systemic complication. Because children are non-cooperative and have disabilities, we selected GA and slow induction. On the other hand, it was thought we selected IVS by using a single drug because mostly elderly patients have circulatory and /or respiratory disorders and they regularly taking many medication. Therefore, we chose single hypnotic for could avoid drug interaction.

Acknowledgement: This subject is approved by The Nippon Dental University, School of Life Dentistry Ethics Review Committee. (Permission number: NDU-T2016-24)

Respiratory rate is an inadequate parameter of ventilation in non-intubated sedation

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1. Objective

We usually measure percutaneous oxygen saturation (SpO₂) and respiration rate (RR) for respiration monitor during IVS. It is unknown whether the RR is reliable as a ventilation monitor. Because ventilation function affected by not only RR but also tidal volume. Arterial carbon dioxide pressure (Pa_{CO2}) is one of the best ventilation monitor but there are difficult to measure during IVS. Transcutaneous carbon dioxide pressure (Ptc_{CO2}) can measure blood carbon dioxide pressure noninvasively and conveniently, which reflects the ventilation states. Therefore, we compared RR and Ptc_{CO2} during IVS, to determine whether RR is useful as a ventilation monitor for IVS.

2. Material and Methods

We performed IVS with propofol or midazolam for 15 patients under BIS level between 70-80. We measured respiration rate by the capnogram (RR), transcutaneous carbon dioxide pressure by the TOSCA 500™ (Ptc_{CO2}), and SpO₂ same time. The obtained result was authorized using Dunnet's test and Pearson's correlation coefficient.

3. Results

There were no significant changes among RR measurements over time. However, the Ptc_{CO2} values increased significantly after induction of sedation and were significantly high compared with the control. The SpO₂ values were decreased significantly at 5 min and from 30 min to 50 min. The correlation coefficient was -0.22, which indicated no statistically significant difference or correlation between RR and Ptc_{CO2}.

4. Discussion

In this study, RR did not change during IVS while Ptc_{CO2} increased. In conclusion, in IVS, (1) ventilation is reduced by tidal volume reduction and (2) compensatory increase in respiratory rate is suppressed because of reduced sensitivity of the respiratory center to CO₂. Therefore, we consider the RR inadequate ventilation monitor during IVS.

4% lidocaine versus 4% articaine for inferior alveolar nerve block in impacted lower third molar surgery

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1. Introduction

No study has compared lidocaine with articaine, each at a concentration of 4% and combined with epinephrine. The purpose of this study was to compare the effectiveness of 4% lidocaine with that of 4% articaine, with a concentration of 1:100,000 epinephrine added to each, in an inferior alveolar nerve block for surgery on impacted lower third molars.

2. Materials & Method

This study was conducted at the Faculty of Dentistry, Mahidol University in Bangkok, Thailand. The randomized, single-blind, comparative split-mouth study was carried out in patients with symmetrically impacted lower third molars, as identified on panoramic radiographs. Each patient underwent surgery for the removal of the lower third molars by the same surgeon under local anesthesia at two separate visits, 3 weeks apart. The onset and duration of local anesthesia, intra-operative pain, surgical duration, and number of additional anesthetics administered were recorded.

3. Results

The subjective and objective onset of action for the local anesthetics showed statistically significant differences ($P < 0.05$). However, the intra-operative pain, surgical duration, duration of local anesthesia, and number of additional anesthetics administered did not show statistically significant differences.

4. Conclusions

The use of 4% articaine for the inferior alveolar nerve block was clinically more effective in the onset of subjective and objective anesthesia as compared with the use of 4% lidocaine. Based on the pain scores from the visual analogue scale, 4% lidocaine provided more analgesia during the procedure, and patients noted less intra-operative pain than with 4% articaine; however, the difference was not clinically significant.

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Survey of the sevoflurane sedation status in one provincial dental clinic center for the disabled

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1. Background

Sevoflurane sedation in pediatric and disabled patients has the advantage of faster induction and recovery compared to general anesthesia, as well as minimum influence on the respiratory and cardiovascular functions, and airway protective reflexes. This study aimed to evaluate the clinical efficacy of sevoflurane sedation used in dental treatment at one provincial dental clinic center for the disabled.

2. Methods

We investigated patients' gender, age, reasons for undergoing sedation, medication history prior to treatment, duration of anesthesia, treatment length, type of treatment, and yearly patterns, for 387 cases of dental treatment performed using sevoflurane sedation from January 2013 to October 2016.

3. Results

We analyzed 387 cases (215 male patients, 172 female patients). Male patients aged 20 year or older accounted for 39.0% of all patients, marking the highest proportion. Patient's lack of cooperation was the most common reason for performing dental sedation. Prosthetic treatment was the most frequently practiced, accounting for 174 treatment cases. The mean lengths of the entire treatment and of the dental procedure were 55.2 min and 39.8 min, respectively.

4. Conclusions

Sevoflurane sedation has the advantage of fast anesthesia induction and recovery compared to general anesthesia; therefore, it can be used efficiently to induce anesthesia in pediatric and disabled patients during short dental procedures, enabling stable treatment of these patients.

Effects of airway evaluation parameters on the laryngeal view grade in mandibular prognathism and retrognathism patients

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Background

Failure to maintain a patent airway can result in brain damage or death. In patients with mandibular prognathism or retrognathism, intubation is generally thought to be difficult. We determined the degree of difficulty of airway management in patients with mandibular deformity using anatomic criteria to define and grade difficulty of endotracheal intubation with direct laryngoscopy.

Methods

Measurements were performed on 133 patients with prognathism and 33 with retrognathism scheduled for corrective esthetic surgery. A case study was performed on 89 patients with a normal mandible as the control group. In all patients, mouth opening distance (MOD), mandibular depth (MD), mandibular length (ML), mouth opening angle (MOA), neck extension angle (EXT), neck flexion angle (FLX), thyromental distance (TMD), inter-notch distance (IND), thyromental area (TMA), Mallampati grade, and Cormack and Lehane grade were measured.

Results

Cormack and Lehane grade I was observed in 84.2%, grade II in 15.0%, and grade III in 0.8% of mandibular prognathism cases; among retrognathism cases, 45.4% were grade I, 27.3% grade II, and 27.3% grade III; among controls, 65.2% were grade I, 26.9% were grade II, and 7.9% were grade III. MOD, MOA, ML, TMD, and TMA were greater in the prognathism group than in the control and retrognathism groups ($P < 0.05$). The measurements of ML were shorter in retrognathism than in the control and prognathism groups ($P < 0.05$).

Conclusions

Laryngoscopic intubation was easier in patients with prognathism than in those with normal mandibles. However, in retrognathism, the laryngeal view grade was poor and the ML was an important factor.

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The Changes of Sedative Treatment Patterns for 6 Years (2011-2016) in the Department of Pediatric Dentistry, Yonsei University Dental Hospital

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1. Introduction

Sedation is a behavior management technique for dental patients who may be uncontrollable or have medical problems. The aim of this study is to investigate changes in sedative treatment patterns within pediatric dentistry departments by analyzing the distribution of patients and used sedative agents.

2. Material and Methods

From January 2010 to December 2016, patients who were treated with sedation in the department of pediatric dentistry of Yonsei University Dental Hospital, are samples of this study. These samples have been analyzed based on electronic medical records (EMR).

3. Results

A. The number of patients receiving sedation has been increasing. However, growth trends in 2013, 2014 and 2016 decreased. B. Boys received more sedation treatment than the girls. C. The ratio of sedative treatment for age groups 4-5 and 6-10 has been increased, while for age groups 1-2 and 11~ has been decreased. Yet, for age group 3 has been relatively maintained. D. The proportion of sedation in patients with systemic disease decreased. E. Nitrous oxide was the most frequently used sedative agent.

4. Discussion

Patient pool characteristics were changing. Investigation of the latest treatment trends in sedation are expected to help pediatric dentists to make an appropriate treatment decision.

Acknowledgement: I would like to express my deepest gratitude to professor Choi and Song for their comments.

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Identifying the more suitable nostril for nasotracheal intubation using radiographs

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Background

One nostril must be selected for nasotracheal intubation. In some cases, structural anomalies within the nasal cavity hinder the insertion of the tube or complications, such as epistaxis, develop. This study examined the possibility of using radiography to select the nostril that would induce fewer complications.

Methods

Four hundred and five patients who underwent nasotracheal intubation under general anesthesia were studied. A 7.0-mm internal diameter nasal right angle endotracheal (RAE) tube and 6.5-mm internal diameter nasal RAE tube were inserted into men and women, respectively. Complications were considered to have developed in cases in which insertion of the tube into the nasal cavity failed or epistaxis occurred. The tube was inserted into the other nostril for insertion failures and hemostasis was performed in cases of epistaxis. The degree of nasal septal deviation was determined from posteroanterior skull radiographs or panoramic radiographs; the incidence of complications was compared depending on the direction of the septal deviation and the intubated nostril.

Results

The radiographs of 390 patients were readable; 94 had nasal septum deviation. The incidence of complications for cases without nasal septum deviation was 16.9%, that for cases in which the tube was inserted into the nostril on the opposite side of the deviation was 18.5%, and that for cases in which the tube was inserted into the nostril with the deviation was 35.0%, showing a high incidence of complications when intubation is performed through the nostril with septum deviation (chi-square test, $P < 0.05$).

Conclusions

Although there were no differences in the incidence rates of complications between intubation through the left nostril and that through the right nostril, radiological findings indicated that incidence of complications significantly increased when the tube was inserted into the nostril with the septum deviation.

Postoperative nausea and vomiting after general anesthesia for oral and maxillofacial surgery

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1. Background and introduction

Postoperative nausea and vomiting (PONV) is one of the most common postoperative complications. Despite this, few papers have reported the incidence and independent risk factors associated with PONV in the context of oral and maxillofacial surgery (OMFS). Therefore, we sought to determine the incidence of PONV, as well as to identify risk factors for the condition in patients who had undergone OMFS under general anesthesia.

2. Materials & methods

A total of 372 patients' charts were reviewed, and the following potential risk factors for PONV were analyzed: age, sex, body mass index, smoking status, history of PONV and/or motion sickness, duration of anesthesia, amount of blood loss, nasogastric tube insertion and retention and postoperative opioid used. Univariate analysis was performed, and variables with a P-value less than 0.1 were entered into a multiple logistic regression analysis, wherein P-values < 0.05 were considered significant.

3. Results

The overall incidence of PONV was 25.26%. In the multiple logistic regression analysis, the following variables were independent predictors of PONV: age < 30 years, history of PONV and/or motion sickness, and anesthesia duration > 4 h. Furthermore, the number of risk factors was proportional to the incidence of PONV.

4. Conclusions

The incidence of PONV in patients who have undergone OMFS varies from center to center depending on patient characteristics, as well as on anesthetic and surgical practice. Identifying the independent risk factors for PONV will allow physicians to optimize prophylactic, antiemetic regimens.

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The Relationship between Subjective Oral Health and Dental Fear in Korean Adolescents

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1. Introduction

Federation Dentaire Internationale (FDI) introduced a new definition for oral health: the ability to speak, smile, taste, chew and swallow without any diseases of the craniofacial complex, pain or discomfort, thus including both physical and mental well-being¹. Dental fear defined as a response to dental treatment-related stimulation, and it varies in the degree of anxiety or fear that the patient feels subjectively². Dental pain is a major cause of fear. Fear in turn increases the pain and leads to postponement or avoidance of dental care³. Analysis of the Fifth National Health and Nutrition Survey data in Korea revealed that 22% of adolescents had dental fear⁴. This study aimed to evaluate the feeling of fear more than any other symptom and reduce the overall fear, thereby enabling patients to receive treatment via timely visits.

2. Material and Methods

In a survey conducted by 460 South Korean middle school students, we used 453 datas. Multiple regression analysis was conducted to investigate the factors influencing subjective oral health and dental fear.

3. Results

The higher grade and female students were the higher the rate of experience of fear. The factors affecting dental fear were the higher gingival bleeding and dental pain, the higher level of dental fear. The factors of dental fear affecting subjective oral health were the lower the fear of puncture needle and tooth removal tool, the higher the subjective oral health.

Table 1. Factors Affecting Dental Fear

Variables	B	S.E	β	t	p
Gingival bleeding	0.769	0.037	0.700	21.073	0.000
Toothache	0.158	0.050	0.110	3.137	0.002
Halitosis	0.005	0.041	0.004	0.121	0.904
Food impaction	0.002	0.051	0.001	0.043	0.966
Xerostomia	0.001	0.041	0.001	0.019	0.985

$R^2 = 0.532$, Adjusted $R^2 = 0.526$, $F = 101.435$

Statistically significant differences by multiple regression analysis at $\alpha=0.05$



4. Discussion

The study found that adolescents had higher fear of dental care when they had gingival bleeding and tooth pain. Gingival bleeding is a symptom of early gingival disease and dental pain is likely due to advanced dental caries. These results suggested that it is necessary to have a program to reduce dental fear and anxiety as well as a program to prevent dental diseases through regular periodic screening and education.

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Development of protocol for high risk group screening of dental injury during intubation for general anesthesia: pilot study

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1. Introduction

In this study, a questionnaire is prepared for non - specialists to easily screen high - risk teeth such as periodontitis, tooth caries, restoration of dental implants, and periodontal disease. To assess whether we correctly predicted through a questionnaire that can be easily screened for high-risk groups. Developing a questionnaire for an easy non-specialist can screen high-risk patients that may be missed and reduce the likelihood of medical accidents and the likelihood of litigation. This study establishes an appropriate pre-anesthesia evaluation protocol for screening high-risk teeth in order to safely protect teeth from general anesthesia.

2. Material and Methods

This study was performed for patients who visited AGD for dental checkup due to general anesthesia. The recruitment period is from December 28, 2016 to May 12, 2017, and the total number of subjects was 50 (M: 27, W: 23). we also evaluated the agreement between the patient and the questionnaire checked by the dentist. The selection criteria were excluded from the study voluntarily, and patients who were considered inappropriate by the researcher were excluded from the study.

3. Results

In the questionnaire between the patient and the dentist, questions about oral interview, hard tissue, and questions about implant prostheses result in high agreement scores. However, both the correlation coefficient and the significance were low in questionnaire items related to periodontal tissue. In this study, the statistical significance of the questionnaire was high in almost all items.

4. Discussion

Pre-anesthesia evaluation for all patients planning general anesthesia is an ineffective procedure, but is a necessary procedure for high-risk patients with severe periodontitis and prosthetic teeth. Therefore, this study provides anesthesiologists with useful guidelines for pre-anesthesia evaluation. In this study, there were limitations on the results of age and gender classification and on the setting of individual items in the questionnaire. In conclusion, this study showed the limitations of periodontal related items in the questionnaire before general anesthesia, and it is necessary to revise questionnaire items.

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The Immunohistochemically Study of Sensory Nerve Fibers and Vessels in the Jawbone for the Dental Anesthesiologists

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1. Introduction

Dental anesthesiologist should consider the nociceptive invasion even in the jawbone. There is no report about the distribution of vessels and sensory nerve fibers in the jawbone in detail. In this study, the detailed distribution of vessels and sensory nerve fibers in the jawbone was investigated immunohistochemically in rats.

2. Material and Methods

Six Rats were used for the subjects. General anesthesia was induced by sevoflurane. Infiltration anesthesia was administered under the periosteum. Whole body perfusion fixation was made by 4% paraformaldehyde phosphate buffer solution. Mandibular bone was removed. Decalcification was made with 10% EDTA buffer solution. Serial sections were sliced from paraffin-embedded tissues. Immunohistochemically stained by PGP antibody, CGRP antibody, and α -SMA antibody. Examination under the microscope and calculation of the nerve distribution. Statistical analysis was performed by Kruskal-Wallis H-test and Mann-Whitney U-test with Bonferroni correction. The level of significance was set at $P < 0.05$.

3. Results

Both the total number of nerves and sensory nerves increases toward the mandibular canal. A significant amount of vasoconstriction was confirmed histologically in soft tissue after application of 1/80,000 epinephrine-containing 2% lidocaine. However, no significant vasoconstriction was found in the jawbone.

4. Discussion

The results suggest that less vascular smooth muscle occurs in the jawbone than in soft tissue. Therefore, it is to be expected that the vasoconstrictive effect and action of locally applied anesthetics in the jawbone are not sufficient. Effective local anesthesia to the core of the mandibular is required when the surgical invasion deepens toward the mandibular canal.

Protective Appliance for preventing dental injury before endotracheal intubation using intraoral scanning and 3D printing : pilot study

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1. Introduction

Digital dentistry impacts on many dental fields such as 3D diagnosis and treatment planning, surgical splint and prosthetic treatment. Patient specific protective appliance (PSPA) is definite method for preventing from dental injury during endotracheal intubation, however, laboratory works takes time and there is a chance of tooth extraction during dental impression taking. In this study, we tried to adopt new digital technology for PSPA using direct intraoral scanner and 3D printer for dental cast fabrication.

2. Material and Methods

Dentiform (Standard dentiform ANKA-4, Frasco, Germany) was used for evaluation of digital PSPA. Both arch (Maxilla, Mandible) of dentiform were designed with 3D CAD software (Exocad, Medit, Germany) after scanning using intraoral scanner (CS3500, Carestream Dental, USA). Four 3D printers were used, two were FDM type and the other two were SLA type. Outputs of FMD type are produced with density of 4 conditions (25, 50, 75, 100 %). The 3D printing model of various conditions was made with vacuum former (Bioplast, SCHEU, Germany) with soft silicon film (Bioplast, SCHEU, Germany) to make PSPA. The accuracy of the PSPA was evaluated as 1-3 grade, which was compared with the conventional method. (grade 1, 2, 3)

3. Results

The PSPA fabricated with 25% model of FDM type showed gap of more than 3 mm in all teeth. In the PSPA fabricated with 25% model showed gap of more than 3 mm in all teeth. However, due to the material characteristics of the PSPA, a gap was not generated if a stronger force was applied. On the other hand, PSPA fabricated with 75% and 100% model did not have gap between occlusal surface and PSPA in all teeth. In addition, the gap between the occlusal surface and the PSPA did not occur in all the teeth of the PSPA fabricated with the SLA type output model.

4. Discussion

3D printing can be tried to make PSPA itself after optimal design of splint with computer assisted design (CAD). Based on recent technology, it is possible to design and print the splint shape product, but there is no regulation about the safety of the 3D printing material used for intraoral appliance in Korea. If regulations related to 3D printing material are set, we can try full-digital sequential procedure for PSPA like intraoral scanning, CAD, and direct 3D printing of splint. In conclusion, we think that a 3D printing can be applied for the patient's discomfort (temporomandibular joint dysfunction, severe periodontal disease, orthodontic patients, etc.) and simplification of the manufacturing process according to the PSPA manufacturing procedure.



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About the Yokohama City Center for Oral Health
and the Duties of Dental Hygienists

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1. Introduction

In Japan, there are 297 oral health centers jointly established by governments and local dental associations, and at 83 of these facilities dental care for people with disabilities is performed. The Yokohama City Center for Oral Health, operated by the Yokohama Dental Association, is organized into four departments: nighttime treatment, weekend/holiday treatment, visit treatment and disabled persons' treatment.

2. Material and Methods

Approximately 90% of the patients in disabled persons' treatment department are with developmental disabilities. We have had approximately 200 cases each of the general anesthesia and intravenous sedation methods, approximately 400 cases of the nitrous oxide anesthetic sedation method, approximately 2000 cases of restraint, and approximately 8000 or so cases of lawful medical care, including training. On this occasion, we are reporting after having surveyed the roles of dental hygienists at our center.

3. Results

The dental hygienists at this center have a broad range of duties, assisting with preoperative scans, assisting with intubation when general anesthesia is administered, providing postoperative patient care, helping to secure veins for the intravenous sedation method, the nitrous oxide anesthetic sedation method, and screening through monitoring and management. Moreover, Dental Hygienist accredited for persons with disabilities and Dental anesthetic are also on our register. Furthermore, we also accept practical training of students and we also provide observation training in general anesthesia and intravenous sedation.

4. Discussion

The dental hygienists at this center are also fulfill duties in training the knowledge and skills for whole-body management. Also, in order to promote the societal participation of disabled persons, approaching local dental care providers is vital. We believe that this, too, is one of the roles shouldered by the dental hygienists who work at the oral health centers.

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One-day general anesthesia of a child with glucose-6-phosphate dehydrogenase deficiency

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1. Introduction

Glucose-6-phosphate dehydrogenase (G6PD) is deficient, excessive oxidative stress from invasive surgery stimulates the onset of acute hemolytic attacks. In addition, these patients are in a high-risk group, for the development of methemoglobinemia. Propitocaine is one of popular local anesthetic on dental field and it cause methemoglobinemia when too much administration. Therefore we should pay much consideration for dental procedures. This time, we chose antioxidant general anesthetics and mepivacaine for dental treatment of 3-year-old boy with this disease.

2. Case report

The patient was a boy aged 3 years 7 months, 107.5 cm, 22.1 kg. He had been diagnosed with G6PD deficiency. The patient had no history of acute hemolytic attacks or any other illnesses or allergies. We slowly induced with sevoflurane 5% and oxygen at 6 L/min. After that, we administered 14 mg of rocuronium bromide. Anesthesia was maintained under conditions of oxygen 1 L/min, air 2 L/min, propofol 8–10 mg/kg/h, remifentanyl 0.2–0.3 µg/kg/min. The dental intervention involved 8 restorative procedures, and we used a total of 3.6 mL of mepivacaine. The patient went back to ward immediately when waked up because without any abnormalities occurring during the GA. We observed no rise in LDH or indirect bilirubin in blood tests performed at the end of the anesthesia. Thus, the patient was discharged on the same day.

3. Discussion

The most important aspect of the anesthetic management in this case was reducing oxidative stress in order to avoid hemolysis. Therefore we selected propofol and remifentanyl, which has a potent antioxidant effect. Furthermore, mepivacaine was chosen for local anesthetic which could not cause methemoglobinemia.

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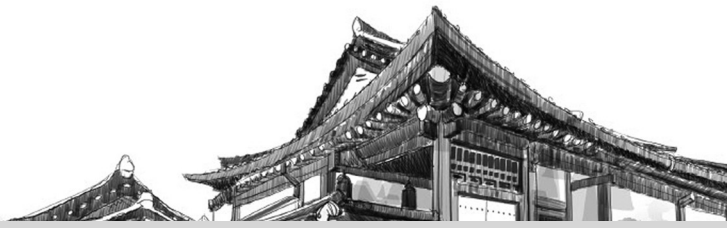
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