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Postoperative Airway Management Challenges after Cheiloplasty in Two Pediatric Patients with Alobar Holoprosencephaly and Single Nostril

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Abstract

Holoprosencephaly (HPE) is a congenital brain malformation resulting from incomplete prosencephalic cleavage with an incidence of approximately 1 in 8,000 live births. Alobar HPE, the most severe form, is often associated with airway-related craniofacial anomalies such as a single nostril, absent columella, and nasal septal defects, which may complicate postoperative airway management. Here, we report two pediatric cases of alobar HPE with single nostril that presented difficult postoperative airway management after cheiloplasty.

The first case involved a 22-month-old girl with a median cleft lip, a single nostril, and hypotelorism. She also had intractable epilepsy, central hypopituitarism, and thermoregulatory dysfunction and required home oxygen therapy. The anesthesia was uneventful. A nasopharyngeal airway (NPA) was inserted before extubation. Postoperatively, excessive secretion led to oxygen desaturation, which resolved after NPA removal. The remainder of the postoperative course was stable.

The second case involved a 19-month-old boy who also had a median cleft lip, a single nostril, hypotelorism, and a history of epilepsy without respiratory disorders. The anesthesia was uneventful. After extubation, retractive breathing appeared, which was improved by NPA insertion. However, the patient experienced seizure-like episodes and respiratory deterioration the following day, resulting in difficult airway management.

These cases suggest that in patients with alobar HPE and a single nostril, cheiloplasty may further narrow the nasal and oral airways, thereby increasing the risk of postoperative respiratory compromise. Careful postoperative airway evaluation, appropriate NPA positioning, and close monitoring are essential.

Keywords：HOLOPROSENCEPHALY, ALOBAR TYPE, CHEILOPLASTY, SINGLE NOSTRIL, AIRWAY MANAGEMENT

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A Case of Hypesthesia Recovery Following the Removal of a Lateral Periodontal Cyst

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Abstract

Lateral periodontal cyst（LPC）is reported to be a rare condition with many unknown factors.

The patient was a 47-year-old woman who experienced hypesthesia in the left inferior alveolar nerve area.

Mechanical detection threshold（MDT）and mechanical pain threshold（MPT）measurements revealed increased tactile threshold on the left mental nerve innervated area. CT imaging suggested the presence of a dentigerous cyst involving the crown of a horizontally impacted tooth in the left lower 8th tooth, and it was believed that physical compression of the mandibular canal by the cyst was the cause of the hypesthesia.

Tooth extraction and cystectomy were performed under intravenous sedation with midazolam. The dental anesthesiologist assisted during the cyst dissection and cystectomy to assess the burden and condition of the inferior alveolar nerve. Dissection of the cyst wall and the area of contact with the inferior alveolar nerve was straightforward, and no obvious injury was observed in the exposed inferior alveolar nerve area. The cyst that was removed was diagnosed as a LPC based on histopathological examination.

MDT and MPT measurements taken after surgery showed no remaining left-right differences.

In this case, the hypesthesia was caused by compression from the LPC.

If the cyst is compressing or in contact with the inferior alveolar nerve, it is recommended that the dental anesthesiologist assess the difficulty of cyst dissection and the condition of the exposed inferior alveolar nerve to predict and manage the potential presence and severity of postoperative hypesthesia.

Keywords：LATERAL PERIODONTAL CYST, HYPESTHESIA, MENTAL NERVE, MECHANICAL DETECTION THRESHOLD, MECHANICAL PAIN THRESHOLD
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Transnasal Humidified Rapid-Insufflation Ventilatory Exchange (THRIVE) for Fiberoptic Nasotracheal Intubation in a Pediatric Patient with Micrognathia and Trismus

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Abstract

Pediatric patients with micrognathia and restricted mouth opening are at increased risk of difficult mask ventilation and tracheal intubation due to craniofacial abnormalities；therefore, an anesthetic plan anticipating a difficult airway is essential from the preoperative stage. In adults, awake intubation is a viable option；however, in children, limited understanding and cooperation often necessitate tracheal intubation after induction of general anesthesia. Under such circumstances, upper airway obstruction and difficulty in ventilation may become apparent following induction, making it crucial to ensure adequate oxygenation strategies and to prepare alternative airway management options to prevent hypoxemia.

Optiflow THRIVE^{TM} (Fisher & Paykel Healthcare, New Zealand) delivers heated and humidified high-flow oxygen via a nasal cannula and is used to maintain oxygenation and prolong safe apneic time during tracheal intubation. Although its utility in pediatric airway management has been reported, there are limited reports describing its use in combination with nasotracheal fiberoptic intubation in pediatric patients with anticipated difficult mask ventilation and intubation due to micrognathia and restricted mouth opening.

We report a pediatric case with micrognathia and restricted mouth opening, in whom difficult airway management was anticipated, and in whom safe airway management was successfully achieved using nasotracheal fiberoptic intubation under Optiflow THRIVE^{TM}.

Keywords：THRIVE, NASOTRACHEAL INTUBATION, MICROGNATHIA, RESTRICTED MOUTH OPENING, PEDIATRIC PATIENT
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Dental Treatment under General Anesthesia in a Post-operative Fontan Child with Hypoplastic Left Heart Syndrome

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Abstract

Hypoplastic left heart syndrome (HLHS) refers to congenital conditions with hypoplasia of the left ventricle, ascending aorta and right-heart dominated circulation. We report a case of general anesthesia managed with propofol in a post-operative Fontan pediatric patient with HLHS. The patient was a 4-year-old boy undergoing dental treatment (caries restoration and extractions) under general anesthesia. Preoperative echocardiography demonstrated no significant intracardiac shunt and preserved right ventricular systolic function. Oral antithrombotic therapy was continued. Thirty minutes after oral administration of 10 mg midazolam, anesthesia was induced with sevoflurane. General anesthesia was maintained with continuous infusions of remifentanil and propofol, which was chosen for its antiemetic properties and to minimize emergence agitation. Mepivacaine hydrochloride was used during the dental treatment. Lidocaine hydrochloride was used at the time of tooth extraction. Since antithrombotic therapy was continued, lidocaine hydrochloride with 1/100,000 adrenaline was used at the extraction site, and no significant hemodynamic effect was observed. Intraoperative hemodynamics remained stable (blood pressure 60–85/30–50 mmHg ; heart rate 60–100 bpm ; SpO_2 94–96% at FiO_2 0.3). Thirty minutes after the administration of sugammadex sodium, spontaneous respiration was observed and extubation was performed ; slight movement was noted, but no significant desaturation or respiratory depression occurred. The patient regained full consciousness within one hour after returning to the ward and could drink water. The patient was discharged on the next day without postoperative nausea and vomiting (PONV). Propofol-based anesthesia can maintain stable hemodynamics without PONV and agitation in a post-operative Fontan pediatric HLHS patient.

Keywords：FONTAN CIRCULATION, HYPOPLASTIC LEFT HEART SYNDROME, CHILD, GENERAL ANESTHESIA, PROPOFOL

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A Pediatric Patient Who Developed Avoidant/Restrictive Food Intake Disorder after General Anesthesia：A Case Report

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Abstract

There are few medical institutions that provide treatment and support for pediatric feeding and eating disorders (FED), making early intervention difficult. We report a case of FED that developed due to avoidant/restrictive food intake disorder (ARFID) after general anesthesia, in which the patient presented with hypoglycemia and ketoacidosis.

The patient was a 9-year-old girl (height 131 cm, weight 23 kg；Rohrer index 102.3). Because of difficulty in behavior management due to her dental anxiety, extraction of the impacted supernumerary tooth in the maxillary midline was performed under general anesthesia. She had no medical history and was not on any medications. Anesthesia was maintained with propofol and remifentanil hydrochloride, and 1% glucose-acetated Ringer's solution was administered as the infusion fluid.

Three hours after returning home, she took a sip of fluid；however, no further oral intake was observed. On the third postoperative day, due to ongoing poor oral intake, a decision was made—after consultation with a pediatrician—to admit her to a hospital with a pediatric ward for treatment. After admission, blood tests revealed a ketone body level of 7,996 μmol/L, indicating progression to ketoacidosis. On postoperative day 11, she was able to resume oral intake and blood glucose levels stabilized, allowing her to be discharged in good condition.

FED requires early, comprehensive physical and psychological intervention, implying that dentists must fully understand it. For pediatric patients, appropriate preoperative preparation is vital to alleviate anxiety.

Keywords：PEDIATRIC PATIENT, FEEDING AND EATING DISORDERS (FED), AVOIDANT/ RESTRICTIVE FOOD INTAKE DISORDER (ARFID), HYPOGLYCEMIA, KETOACIDOSIS

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Perioperative Management of Congenital Adrenal Hyperplasia in Oral Surgery：A Case Report

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Abstract

Congenital adrenal hyperplasia (CAH) is a group of inherited disorders characterized by enzymatic defects in adrenal steroidogenesis, resulting in cortisol deficiency and compensatory adrenocorticotropic hormone (ACTH) overproduction. The most common form is 21-hydroxylase deficiency, and the salt-wasting type is associated with both glucocorticoid and mineralocorticoid deficiency, requiring careful perioperative management.

We report the perioperative management of a 14-year-old boy with salt-wasting CAH who underwent oral surgery under general anesthesia. The patient had been treated with hydrocortisone, dexamethasone, and fludrocortisone, reflecting the need for combined glucocorticoid and mineralocorticoid replacement. In consultation with pediatric specialists, perioperative steroid coverage and electrolyte management were planned based on current guidelines.

On the day of surgery, oral steroids were withheld and intravenous hydrocortisone was administered for stress coverage. General anesthesia was induced with propofol, rocuronium, and remifentanil and maintained with volatile anesthetics. Intraoperative monitoring included repeated measurements of electrolytes, glucose, ACTH, and cortisol levels. The surgery was completed uneventfully without signs of adrenal crisis.

Postoperatively, intravenous hydrocortisone was gradually tapered, and oral steroid therapy was resumed. The patient was discharged without complications.

In patients with CAH, perioperative care requires not only steroid coverage but also knowledge of glucocorticoid properties, electrolyte-focused fluid management, and readiness for adrenal crisis. Even dental procedures without general anesthesia can induce stress, and minimally invasive treatments may still trigger a stress response. Thus, individualized steroid coverage and perioperative management are essential.

Keywords：CONGENITAL ADRENAL HYPERPLASIA, CAH, PERIOPERATIVE MANAGEMENT, GENERAL ANESTHESIA, STEROID COVERAGE

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A Multifaceted Approach to Painful Temporomandibular Disorders

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Abstract

Temporomandibular disorders (TMD) present with a variety of symptoms, including pain in the masticatory muscles and the temporomandibular joint, joint sounds, and restricted mouth opening. Recently, the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD), which are internationally standardized diagnostic criteria for TMD, have been developed and are now widely used in clinical and research settings. Conservative and reversible treatments are recommended as the primary approach to managing TMD. Although exercise therapy has been reported to reduce pain and improve mandibular range of motion, the overall strength of the recommendation remains limited and standardizing exercise prescriptions remains challenging. This article focuses on TMD-related pain, specifically TMD myalgia and TMD arthralgia, and provides an overview of their diagnostic criteria and multidisciplinary conservative management. Furthermore, it reviews the evidence regarding the classification and effectiveness of exercise therapy and discusses future directions for managing painful TMD, integrating evidence-based medicine with individualized patient care.

Keywords：TEMPOROMANDIBULAR DISORDERS, MYALGIA, ARTHRALGIA, EXERCISE THERAPY

組み合わせて血液ガス分析を行うことで，より簡便に血液ガス診断を行うことができる．また，病態把握が難しい症例においては，Boston 法だけではなく Stewart 法や簡易 Stewart 法を実践することで，酸塩基平衡異常の解明につながる可能性もある．そして，血液ガス分析は，あくまで病態解明の一手段にすぎないことも理解しておく必要がある．疾患名や病態から予想される酸塩基平衡異常があり，根本的な臨床像が把握できていることが重要となる．血液ガス分析結果は常に臨床所見とすり合わせて考え，病歴聴取や臨床兆候，検査値などと総合的に判断し，正しい臨床診断と治療につなげたいところである．

本稿により，周術期や集中治療室で働く麻酔科医にとって，ベッドサイドでの迅速な血液ガス分析が可能となり，酸塩基平衡異常の病態把握の一助となれば幸いである．

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Useful Tips for Clinical Blood Gas Analysis

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Abstract

Blood gas analysis is a simple, rapid bedside test that is widely used to assess metabolic and respiratory disorders, electrolyte abnormalities, and hemoglobin and blood glucose levels. However, fully understanding and utilizing blood gas analysis can be surprisingly difficult. To efficiently learn blood gas analysis, it is recommended to understand respiratory physiology and acid-base balance, and then organize the necessary analytical formulas. It is best to study in a clinically relevant manner through as many case studies as possible. There are several methods for blood gas analysis, including the Boston method, the Copenhagen method, and the Stewart method, but it is useful to organize the analysis procedures in a way that integrates the advantages of each method. Furthermore, the Stewart method's Gamblegram is highly useful for simplifying the understanding of each method's theory and complex acid-base disorders. However, it is also important to recognize the limitations of blood gas analysis, which is merely one method for elucidating a patient's pathophysiology. It is important to link diagnosis and treatment to medical history, symptoms, and other tests.

This article clearly explains blood gas analysis and provides knowledge useful for rapid bedside evaluation and diagnosis.

Keywords：BOSTON METHOD, COPENHAGEN METHOD, STEWART METHOD, SIMPLIFIED STEWART METHOD, ELECTROLYTE ABNORMALITIES

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The Future of Dental Patient Safety：Advanced Resuscitation Devices and AI Prediction under the 2025 CPR/ECC Guidelines

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Abstract

Ensuring patient safety during systemic emergencies is a core responsibility of dental anesthesiologists. Recent technological advancements have drastically transformed the landscape of cardiopulmonary resuscitation (CPR). This article, based on 39th refresher course of the Japanese Society of Dental Anesthesiology, outlines the latest emergency devices, AI-driven cardiac arrest prediction, and citizen responder systems, incorporating insights from the 2025 CPR/ECC Guidelines. Key topics include the clinical significance of video-assisted CPR, deep-learning-based screening for hypertrophic cardiomyopathy (HCM), and arrhythmia detection using wearable devices. Furthermore, the utility of CPR feedback devices for quality assurance and auto-shock AEDs to minimize human error is discussed. Finally, we present a vision for a next-generation emergency medical system integrated with digital technologies such as connected AEDs and drones, highlighting the leadership role dental anesthesiologists must play in this evolving field.

Keywords：CPR, 2025 GUIDELINES, ARTIFICIAL INTELLIGENCE, VIDEO-ASSISTED CPR, CHAIN OF SURVIVAL

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Systemic Management in Dental Treatment for Children with Special Needs

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Abstract

In Japan, dental treatment for children with special needs has traditionally relied on physical restraint. However, following recent shifts in ethical awareness and reports of fatal accidents, dental anesthesiologists are now strongly required to possess comprehensive management skills that consider the patient's psychological burden and mental development. In behavior management, it is essential to understand the characteristics of behavioral modification, physical restraint, sedation, and general anesthesia, and to select the appropriate approach based on the patient's developmental stage and social background. Crucially, practitioners must implement "future-oriented care" that fosters the patient's long-term acceptance of dental treatment. Furthermore, regarding sedation and general anesthesia for children with high anatomical and physiological risks of airway obstruction, it is vital to construct anesthetic strategies with a "retreat-possibility" (exit strategy) that prioritizes safety. By applying the systematic evaluation approach of Pediatric Advanced Life Support (PALS) which emphasizes early recognition of pre-cardiac arrest signs to preoperative assessment and perioperative management, safer and higher-quality systemic management can be achieved for patients with diverse backgrounds.

Keywords：PEDIATRIC ANESTHESIA, PEDIATRIC SEDATION, SPECIAL NEEDS DENTISTRY, SYSTEMIC MANAGEMENT