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Study of the Efficacy and Safety of Local Dental Anesthetics：Articaine Hydrochloride and Hydrogen Tartrate Adrenaline Injections（OKAD01）versus Lidocaine Hydrochloride and Hydrogen Tartrate Adrenaline Injections（A Phase Ⅲ Study of Articaine Hydrochloride）

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Abstract

This was a domestic phase Ⅲ clinical trial to evaluate the efficacy and safety of a dental local anesthetic, articaine hydrochloride/hydrogen tartrate adrenaline injections (OKAD01：articaine), and compare them with those of lidocaine hydrochloride and hydrogen adrenaline tartrate injections (lidocaine).

Japanese adult patients who underwent the extraction of a mandibular semi-implanted wisdom tooth were included in this study. Two to 3 cartridges of articaine or lidocaine were administered in combination with an inferior alveolar nerve block and infiltration anesthesia or infiltration anesthesia alone, and the mandibular impacted wisdom tooth was extracted. The primary outcome was the patient's pain during the dental procedure according to a visual analog scale (VAS) (0-10 cm).

The mean (95% confidence interval (CI)) VAS score was 0.90 (0.32 to 1.48) for the articaine group (42 patients) and 1.37 (0.63 to 2.11) for the lidocaine group (44 patients). The mean difference in the VAS score (articaine group-lidocaine group) (95% CI) was −0.46 (−1.39 to 0.47), and the upper confidence limit was lower than the equivalence limit of 1.0, confirming the non-inferiority of articaine compared with lidocaine ($p=0.0012$). No adverse events related to the study drug were observed in either group.

This study confirmed the non-inferiority of articaine compared with lidocaine in terms of efficacy, and the safety profile of articaine was comparable to that of lidocaine.

Keywords：LOCAL ANESTHESIA, ARTICAINE, LIDOCAINE, CLINICAL TRIAL, PHASE Ⅲ STUDY
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A Case of GLIDESCOPE® Core™ for Intubating in a Patient of Treacher-Collins Syndrome with Severe Sleep Apnea

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Abstract

Treacher-Collins syndrome (TCS) is often associated with mandibular hypoplasia, presenting significant challenges in securing the airway under general anesthesia. This report details a case of tracheal intubation in a patient with TCS using the GLIDESCOPE® Core™, a device that integrates a video-laryngoscope and bronchoscope.

A 23-year-old female patient with obstructive sleep apnea due to severe micrognathia was scheduled for the extraction of bilateral impacted mandibular third molars under general anesthesia. Preoperative evaluation, including a lateral cranial radiograph, indicated potential difficulties with mask ventilation and tracheal intubation, prompting a plan for awake intubation. Intravenous midazolam and fentanyl were administered, and oral intubation was attempted using a GLIDESCOPE® video-laryngoscope. However, due to the patient's narrow oral cavity, it was initially impossible to guide the tracheal tube to the glottis using the GLIDESCOPE® video-laryngoscope alone. Thus, a bronchoscope was introduced to guide the tube while the tongue was lifted with the video-laryngoscope, enabling successful intubation. In this case, the video-laryngoscope alone was insufficient ; however, the two-person technique using a video-laryngoscope and bronchoscope provided a clear view of the larynx and facilitated airway management.

As the GLIDESCOPE® Core™ allows simultaneous visualization from both devices on a single screen, it enhances the safety and reliability of the procedure. This makes it suitable for tracheal intubation in patients with micrognathia, such as those with TCS.

Keywords：TREACHER-COLLINS SYNDROME, DIFFICULT AIRWAY, VIDEO-LARYNGOSCOPE, BRONCHOSCOPE, GLIDESCOPE® CORE™

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Evaluation of Sufficient Blood Preparation for Oral and Maxillofacial Cancer Surgery：A Retrospective Study

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Abstract

Efficient perioperative blood management is vital to reduce wastage. Using tools such as the surgical blood order equation (SBOE) and regularly reviewing preoperative blood preparation volumes owing to advancements in surgical techniques and evolving management strategies are crucial. This study evaluated the use of red cell concentrates (RBCs) in oral and maxillofacial cancer surgeries at our institution and retrospectively assessed the adequacy of blood preparation.

Between April 2019 and August 2022, we analyzed oral malignant tumor surgeries lasting more than 8 hours. We evaluated the quantities of RBCs prepared, utilized, and discarded. Patient-specific RBC preparation was calculated using the SBOE, factoring in average blood loss and preoperative hemoglobin (Hb) levels, and compared with the actual amount of RBCs prepared. Preoperative RBC preparation occurred in all 27 cases (2 units in 5 cases, 4 units in 22 cases). A total of 98 RBC units were prepared during the study, with 22 units discarded, resulting in a 21% discard rate. SBOE analysis showed that RBCs were over-prepared in 22 of the 27 cases. RBCs were transfused intraoperatively in 17 out of 27 cases (63%), with several transfusions given despite Hb levels exceeding 8 g/dL. Following these findings, the RBC preparation volume was reduced to 0–2 units, which led to a lower transfusion rate (2 out of 8 cases：25%).

Identifying excessive RBC preparation through SBOE analysis can help reduce blood resource wastage and prevent unnecessary transfusions. Regularly reviewing and tailoring RBC preparation protocols using methods such as SBOE may enhance transfusion optimization.

Keywords：PERIOPERATIVE BLOOD PREPARATION, ORAL AND MAXILLOFACIAL SURGERIES, SURGICAL BLOOD ORDER EQUATION, BLOOD PRODUCTS WASTAGE REDUCTION, DENTAL ANESTHESIOLOGY
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Intensive Dental Treatment of a Patient with Hereditary Angioedema under General Anesthesia with Nasal Intubation：A Case Report

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Abstract

Hereditary angioedema (HAE) is an autosomal dominant hereditary disorder in which edema occurs spontaneously because of a decrease and dysfunction of the complement inhibitor C1-inhibitor (C1-INH), developing and disappearing repeatedly in various parts of the body. The edema can be triggered by physical stress, such as emotional stress and overwork, as well as by dental procedures, such as tooth extraction. In addition, stimulation arising from tracheal intubation and extubation under general anesthesia can induce laryngeal edema, which may lead to a fatal upper airway obstruction, thereby requiring strict attention during perioperative management. In the present case, dental treatment under general anesthesia with nasal intubation was performed in an HAE patient with autistic spectrum disorder and an extreme phobia of dental treatment. Reportedly, adrenaline and felypressin, which are added to local anesthetic preparations, should be avoided in dental treatment because they can trigger seizures by tensing the adrenal gland and sympathetic nerves and increasing the fibrinolytic system. In the present case, since there were no plans for tooth extraction or other invasive procedures, 3% mepivacaine hydrochloride was used.

We report our experience providing good perioperative management that did not lead to an edema attack in response to stimulation during the dental treatment or nasal intubation；this success was achieved by collaborating with a medical doctor, preoperative supplementation with C1-INH and tranexamic acid, and thorough preparation.

Keywords：HEREDITARY ANGIOEDEMA, NASAL INTUBATION, LARYNGEAL EDEMA, C1 INHIBITOR, TRANEXAMIC ACID

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Enhancing the Safety of Sedation：A Medical Accident Analysis Model

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Abstract

The incidence of accidents involving sedation, which is widely practiced in the dental and medical fields, has been increasing. To analyze the causes of medical accidents during sedation in Japan and to improve the safety of sedation, case reports describing sedation accidents were searched for using the "Case search" function in the Project to Collect Medical Near-miss/Adverse Event Information of the Japan Council for Quality Health Care database. A statistical analysis was then performed using the P-mSHELL model, which is used for medical accident analyses. The results showed that among the accident factors, patient factors had a large influence on the occurrence of serious disabilities. A significant association was observed between outcome and the timing of the accident (preoperative, intraoperative, and postoperative), while no significant association was found between outcome and the type of drug that was used. On the other hand, a significant association was observed between respiratory depression, the most common type of accident, and the use of multiple drugs. To prevent sedation accidents, it is important to monitor patients throughout the perioperative period. For high-risk patients, in particular, prior assessment of the patient's condition and strict postoperative management are essential to prevent serious accidents.

Keywords：SEDATION, P-mSHELL MODEL, MEDICAL ACCIDENT, RESPIRATORY DEPRESSION, MONITORING

Pitfalls in ECG Monitoring That are Easy to Fall into in Daily Clinical Practice

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Abstract

The electrocardiogram (ECG) is an essential monitor that enables cardiac abnormalities to be imaged easily and non-invasively in clinical settings. However, interpreting ECG results can be more difficult than interpreting other biomonitoring information because of the need to link non-numeric waveforms to cardiac conduction. Also of note, preoperative 12-lead ECG examinations and intraoperative ECG monitoring have different purposes and testing environments. During intraoperative ECG monitoring, which is based on comparisons with the preoperative waveform but focuses on dynamic changes, the continuously flowing waveform appearing on the monitor must be evaluated by eye in real time. Furthermore, the strong filtering that is taken for granted and commonly applied to obtain a stable and easy-to-read waveform can result in waveform distortions and lead to erroneous interpretations. This article provides an overview of ECG monitoring basics, such as the detection of myocardial excitation and automaticity and the basic mechanisms of tachyarrhythmias, focusing on a less-conscious attention to intraoperative ECG monitoring and focusing particularly on ECG filtering.

Keywords：ECG, ABNORMAL WAVEFORM, MYOCARDIAL ELECTROPHYSIOLOGY, FILTERING