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# Future of Multi-component and Complex Kampo Medicine

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## Abstract

The appeal of Kampo medicine is that dentists and physicians can engage in drug discovery. In contrast, the development of Western medicines is limited to pharmaceutical manufacturers. However, since Kampo medicine is essentially a combination of crude natural drugs, anyone can come up with new ideas. Moreover, dentists and physicians can prescribe and treat patients with Kampo medicines they have created themselves. When Western medicine alone cannot solve all medical issues, Kampo medicine offers the possibility of treating such conditions with personally developed remedies. Before creating your own Kampo medicine, you must first master the use of existing Kampo formulas. Over the past few decades, Kampo medicine has advanced in the form of Kampo extract formulations. Currently, 148 types of Kampo formulations are covered by insurance. The first step is to learn how to use these formulations effectively. Then, by utilizing these formulations, you can identify gaps where Kampo extract formulations are insufficient and develop new Kampo medicines to fill those gaps.

Kampo extract formulations are made by decocting multiple crude drugs, extracting their essence, and then adding excipients to produce the final product. When decocting crude drugs directly, their proportions can be adjusted, but this is not possible with extract formulations. While extract formulation have made Kampo medicine more convenient to carry, store, and consume, they have also led to a stagnation in its development.

To create new Kampo medicines, one can combine existing extract formulations or add crude drug extracts to them. However, true innovation requires discovering entirely new crude drugs or devising completely novel combinations. As an extension of this, combining crude drugs with Western medicines can also be a viable option.

Science, including dentistry and medicine, continues to advance.

**Keywords**：HERBAL MEDICINE, CRUDE DRUG, MEDICINAL HERB, PHARMACEUTICAL DEVELOPMENT

# Airway Safety of Patients Undergoing Head and Neck Surgery：A Multimodal Approach

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## Abstract

Well-known algorithms of airway management produced by Japanese and foreign medical societies might not be easily applicable to patients undergoing head and neck surgery. Blind insertion of supraglottic airways, as recommended in the Yellow Zone of the JSA algorithm, can cause bleeding or rupture cystic lesions near the pharynx or larynx. Establishing a surgical airway via the front of the neck, which is a last resort in a CICV situation, can be difficult or even impossible in patients with a distorted anatomy arising from scar tissue resulting from a previous surgery or radiation treatment. Therefore, the airway management plan must be individualised depending on the patient's airway anatomy as well as co-existing diseases. An appropriate choice of airway device does not necessarily ensure a successful intubation. Physiological measures to prolong the duration of safe apnoea should be utilised. The effectiveness of peri-oxygenation using high-flow nasal oxygen is now being recognised. Opportunities to perform awake tracheal intubation may be decreasing, and this technique may become obsolete. However, it might also be the only option to secure an airway under dire circumstances, such as an impending obstruction. Short-acting or rapidly reversible intravenous sedatives and opioids are useful. However, even when the drug effect wears off, upper airway patency can be lost if rapid swelling of the throat occurs. Although not fully appreciated, extubation following head and neck surgery is the most precarious phase. Adequate communication among the anaesthesia, surgical, and nursing staff members is extremely important during this critical period. Learning from the aviation industry, a so-called High Reliability Organisation, could help to improve the safety of perioperative care. A "Sterile Cockpit" approach and the phrase "Below Ten (thousand)" can be readily applied in daily practice.

**Keywords**：DIFFICULT AIRWAY, EXTUBATION, HUMAN FACTORS, METACOGNITION, STERILE COCKPIT

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## Ultrasound-guided Maxillary and Mandibular Nerve Blocks for Orthognathic Surgery in a Patient with Loeys-Dietz Syndrome

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### Abstract

The use of ultrasound-guided mandibular and maxillary nerve blocks during gnathoplasty is a recent development. In this report, we describe infrazygomatic approaches using out-of-plane needling to perform ultrasound-guided mandibular and maxillary nerve blocks. We also explain the advantages of mandibular and maxillary nerve blocks when applied in conjunction with general anesthesia to achieve stable hemodynamic control in a patient with LDS undergoing orthognathic jaw surgery.

**Keywords**：LOEYS-DIETZ SYNDROME, GNATHOPLASTY, ULTRASOUND-GUIDED, MANDIBULAR NERVE BLOCK, MAXILLARY NERVE BLOCK
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# Two Cases of Unilateral Recurrent Laryngeal Nerve Paralysis after General Anesthesia for Orthognathic Surgery

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## Abstract

Recurrent nerve palsy after general anesthesia is a rare complication with an incidence of 0.1% or less. Here, we report two cases of diagnosed unilateral recurrent nerve palsy after general anesthesia for orthognathic surgery.

Case 1 was a 32-year-old female (155 cm, 63 kg) scheduled to undergo a sagittal split ramus osteotomy (SSRO). Nasotracheal intubation was performed using a Portex Cuffed Maxillofacial Nasal Directional Endotracheal Tube® (⌀6.5 mm) and a McGRATH MAC Video laryngoscope®. The patient's head was retroflexed 40° for 1 hour and 56 min. After the general anesthesia, the patient became dysphonic and required 3 months to recover vocalization.

Case 2 was a 38-year-old female (159 cm, 57 kg) scheduled to undergo an SSRO and Le Fort I osteotomy. Nasotracheal intubation was performed using the same tube as that used in Case 1, and the patient's head was retroflexed 40° for 4 hours and 51 min. The endotracheal cuff pressure was monitored using a disposable pressure transducer connected to the pilot balloon during the operation. The cuff pressure changed according to surgical manipulation, but the mean value was 28.4±3.2 $cmH_2O$. After the general anesthesia, the patient became dysphonic and required 48 days to recover vocalization.

During orthognathic surgery, the nasotracheal tube cuff can compress the recurrent nerve inside the thyroid cartilage. Consequently, nerve palsy can occur even if the operation time is relatively short or the cuff pressure is appropriate. Repeated tracheal tube cuff pressure changes during orthognathic surgery may increase the risk of developing recurrent nerve palsy.

**Keywords**：GENERAL ANESTHESIA, ORTHOGNATHIC SURGERY, RECURRENT NERVE PALSY, CUFF PRESSURE, NASOTRACHEAL INTUBATION

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# Glucagon-like Peptide Receptor Agonist-induced Recurrent Vomiting before Surgery：A Case Report

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## Abstract

Glucagon-like peptide receptor agonists (GLP-1RAs) are used to improve glycemic control in type 2 diabetes. Semaglutide, a GLP-1RA, delays gastric emptying, resulting in sustained satiety and weight loss. However, concerns exist regarding an increased aspiration risk during the perioperative period. This report presents a patient with recurrent vomiting induced by GLP-1RA before surgery.

A 64-year-old male was scheduled to undergo a mandibulectomy under general anesthesia for medication-related osteonecrosis. The patient had diabetes mellitus, chronic renal failure requiring hemodialysis, hypertension, and hypothyroidism. The patient received weekly subcutaneous semaglutide, with the last injection administered four days before surgery. He was admitted to the hospital two days before surgery and vomited a moderate amount of undigested stomach contents during the night on the day of admission. Vomiting recurred during hemodialysis on the following day, at dinner, and at midnight. He reported a history of repeated vomiting prior to admission. A nasogastric tube was inserted while the patient was awake before the induction；however, no gastric contents were aspirated. After oxygenation in the semi-Fowler's position, rapid sequence induction was performed using remifentanil, propofol, and rocuronium, followed by nasal intubation. No vomiting occurred during the anesthesia induction.

We experienced general anesthesia to a patient with type 2 diabetes with repeated vomiting suspected to be caused by GLP-1RAs. Anesthesiologists should confirm that patients are receiving GLP-1RAs for gastrointestinal symptoms such as vomiting preoperatively and consider the induction of anesthesia, including rapid sequence induction similar to that in patients with full stomachs.

**Keywords**：GLUCAGON-LIKE PEPTIDE-1 RECEPTOR AGONISTS, DIABETES MELLITUS, OBESITY, GASTRIC EMPTYING, PULMONARY ASPIRATION

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# General Anesthesia for a Patient with Drug-induced Gingival Hyperplasia Leading to Sleep-related Breathing Disorders

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## Abstract

A 12-year-old boy (height, 123 cm ; weight, 20 kg) with a history of cerebral palsy, West syndrome, and severe intellectual disability was brought to our hospital for evaluation of gingival hypertrophy and snoring.

The patient's condition was diagnosed as drug-induced gingival hyperplasia, and surgery was planned. He had previously undergone general anesthesia and had consulted an anesthesiologist at another hospital. We subsequently requested an otolaryngology evaluation to assess the patient's airway. Fibreoptic bronchoscopy was prepared as a precaution, but video laryngoscopy was used for intubation. After confirming the absence of bleeding from the surgical field or laryngeal edema, the patient was extubated and transferred to the ICU. On the second postoperative day, the patient exhibited labored breathing due to swelling in the submandibular region. Accordingly, we again requested an otolaryngology evaluation to assess airway edema. A nasal airway was inserted because the airway around the soft palate had narrowed owing to postoperative pharyngeal edema. It was removed on the fifth postoperative day, and the patient was discharged on the sixth postoperative day. The patient's physician was requested to reduce the phenobarbital dosage, which was identified as a possible cause.

Drug-induced gingival hyperplasia can develop rapidly, leading to sleep-related breathing disorders. If severe, it may cause difficulty in securing the airway or postoperative airway stenosis due to surgical stress. Careful airway management is, therefore, essential during the perioperative period.

**Keywords**：DRUG-INDUCED GINGIVAL HYPERPLASIA, ANTI-EPILEPTIC DRUGS, AIRWAY NARROWING, SLEEP-RELATED BREATHING DISORDERS

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本論文に関連して開示すべき利益相反（COI）はない．

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# A Case of Psychogenic Non-epileptic Seizures after Intravenous Sedation and Tooth Extraction


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## Abstract

We report a case of psychogenic non-epileptic seizures (PNES) after intravenous sedation and tooth extraction. The patient was a 29-year-old woman who was scheduled to undergo intravenous sedation because of her fear of the treatment. The patient was currently being treated for chronic pain, somatoform disorder, and dissociative disorder and had been prescribed diazepam (DZP) for PNES. A dental procedure was performed under intravenous sedation with propofol (PPF). Immediately after the procedure, the patient had a seizure with convulsions and became unresponsive；as her condition did not improve and the seizure was difficult to manage, the patient was transported to an emergency hospital. After a detailed examination at the emergency hospital, the incident was identified as a PNES seizure. Wisdom tooth extraction was scheduled for a later date, and the procedure was performed under local anesthesia. Limb convulsions occurred during the local anesthesia, which were alleviated by the administration of DZP；the tooth was successfully extracted. After the tooth extraction, the patient had a PNES seizure similar to the seizure that occurred during the first treatment, but she improved after the administration of midazolam (MDZ). The patient was discharged home on the same day. The trigger of this patient's PNES episodes was thought to be stress brought on by her fear of dental treatment, the securement of an intravenous line before the start of sedation, and vascular pain caused by PPF. Detailed patient information and perioperative stress should be considered when planning treatment. The administration of MDZ was effective at the onset of PNES.


**Keywords**：PSYCHOGENIC, NON-EPILEPTIC SEIZURE, INTRAVENOUS SEDATION, LOCAL ANESTHESIA, SYSTEMIC MANAGEMENT

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## General Anesthesia for Partial Tongue Resection in a Patient with Mixed Connective Tissue Disease：A Case Report

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### Abstract

Mixed connective tissue disease（MCTD）is a rare systemic autoimmune disease characterized by the main features of overlapping connective tissue diseases. The disease is also defined by the presence of anti-U1-ribonucleoprotein（RNP）antibodies and the Raynaud phenomenon. We report the administration of general anesthesia in a patient with MCTD. A 53-year-old female（height, 161.2 cm；weight, 50.4 kg）was scheduled to receive a partial tongue resection under general anesthesia for the treatment of tongue cancer. Around 2000, swelling in both hands and Raynaud's symptoms developed, and she was confirmed as being positive for the anti-U1-RNP antibody and was diagnosed with MCTD. The patient also developed interstitial pneumonia and idiopathic thrombocytopenic purpura. Because a decreased platelet count was observed in the preoperative evaluation, the doses of eltrombopag olamine and prednisolone were increased. A chest CT scan showed reticular ring shadows and ground-glass opacities in both lower lung fields. For the general anesthesia, steroid coverage was provided by the intravenous administration of hydrocortisone. To prevent exacerbation of the interstitial pneumonia, the oxygen concentrations were maintained at 60% during induction and emergence and at 30% during maintenance. Anesthetic induction was performed with remifentanil and propofol, and anesthetic maintenance was performed with sevoflurane and remifentanil. After the induction of anesthesia, the securement of a venous tract in the upper extremities was difficult. MCTD presents with a variety of clinical manifestations, including symptoms of various autoimmune diseases, and the severity of these manifestations varies greatly from person to person. Therefore, understanding the symptoms and severity of MCTD is an important component of perioperative management.

**Keywords**：MIXED CONNECTIVE TISSUE DISEASE, GENERAL ANESTHESIA, PERIOPERATIVE MANAGEMENT, AUTOIMMUNE DISEASES
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# A Case of Severe Chronic Obstructive Pulmonary Disease Managed with Intravenous Sedation via Nasal Pressure and Thoracic Kinematic Measurements to Detect Airway Obstructions

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## Abstract

Patients with severe chronic obstructive pulmonary disease (COPD) are highly predisposed to respiratory complications under general anesthesia. Herein, we report the case of a 69-year-old man with severe COPD, forced expiratory volume 1.0 sec rate 37%, underwent surgery for the excision of a large intra-mandibular tumor. Intravenous sedation was chosen over general anesthesia to avoid the acute exacerbation of COPD and the impossibility of postoperative extubation. This intravenous sedation was managed using dexmedetomidine and fentanyl because it is hard to ensure adequate analgesia during surgery with local anesthetics alone. To monitor fentanyl-induced respiratory depression, we used the impedance and thoracic kinematic measurement belts to monitor respiratory movements as well as capnography and intranasal pressure measurements to monitor airway obstruction. Fentanyl administration was discontinued when the amplitude of intranasal pressure waveform decreased to approximately 25% of the pre-sedation level. Subsequently, a 25 $\mu$g dose was administered when the amplitude rose to approximately 75%. We could monitor the relative decrease in respiratory flow continuously via the gradual decrease in the nasal pressure amplitude. However, it was difficult to monitor the decrease in respiratory flow based on the shape of the capnography waveform. The intranasal pressure measurement and waveform of the thoracic kinematics belt could adjust the fentanyl dosage appropriately and perform adequate analgesia for the procedure without any respiratory complications.

**Keywords**：CHRONIC OBSTRUCTIVE PULMONARY DISEASE, NASAL PRESSURE MEASURING, FENTANYL, DEXMEDETOMIDINE, INTRAVENOUS SEDATION

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## V．結　　語

過去2度の全身麻酔において覚醒遅延の既往を有する患者に対し，術中疼痛の指標としてHFVIモニタを使用し，オピオイドの使用量を調節しながら全身麻酔管理を行った1例を経験した．覚醒遅延の既往を有する患者にHFVIモニタを用いた全身麻酔管理が有用である可能性がある．

本症例の報告にあたり，患者本人から文書での同意を得た．
本論文に関連して開示すべき利益相反（COI）はない．
第52回日本歯科麻酔学会総会・学術集会にて本論文の要旨を発表した．

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# A Case of General Anesthesia Management Using HFVI（High Frequency Variability Index) Monitoring in a Patient with a History of Delayed Awakening


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## Abstract

The high frequency variability index（HFVI) has recently gained attention for its potential role in managing general anesthesia. HFVI monitoring quantifies high frequency components as a measure of parasympathetic nervous system activity. This approach enables the non-invasive and continuous monitoring of patient stress, including acute pain, during anesthesia. One notable advantage of HFVI monitoring is its potential to prevent intraoperative opioid overdose. We used HFVI monitoring during the anesthetic management of a 30-year-old woman with a history of delayed awakening from previously administered general anesthetics. She had previously undergone a mandibular distraction osteogenesis procedure in 2019 followed by a maxillary osteotomy in 2022. Both of these procedures were performed under total intravenous anesthesia with propofol；afterwards, the patient experienced prolonged arousal times of 29 and 39 minutes, respectively, from the end of surgery until extubation. The delayed awakening was thought to have been associated with the use of opioids（fentanyl, remifentanil) or the intravenous anesthetic（propofol). To reduce the likelihood of delayed awakening, propofol was avoided during the presently reported treatment and opioid dosing was adjusted using HFVI monitoring. This approach resulted in successful anesthetic management without delayed awakening. HFVI monitoring may be valuable as an indicator of pain management during anesthesia.


**Keywords**：HFVI MONITORING, DELAYED AWAKENING, GENERAL ANESTHESIA
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# Perioperative Management of a Patient with Severe Aortic Stenosis Undergoing Surgery for Medication-related Osteonecrosis of the Jaw Prior to Transcatheter Aortic Valve Implantation

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## Abstract

An 80-year-old woman was scheduled to undergo a left maxillary sequestrectomy for medication-related osteonecrosis of the jaw (MRONJ). An aortic stenosis (AS) had been diagnosed when the patient was about 78 years old, and she had been under observation since then. She subsequently developed subjective symptoms of shortness of breath during exertion and was referred to the cardiology department of our hospital. A cardiac ultrasound revealed severe symptomatic AS. Because MRONJ can be a risk factor for infective endocarditis (IE), surgery for MRONJ was performed prior to transcatheter aortic valve implantation (TAVI).

Anesthesia was induced using remimazolam besilate and remifentanil hydrochloride under the continuous administration of noradrenaline, and the patient was managed using total intravenous anesthesia. A single dose of phenylephrine hydrochloride was also administered during the operation to manage her circulation. The patient's hemodynamics were stable during the operation, and the scheduled surgery was completed. After extubation, the patient's circulation and respiration both remained stable, and the patient was returned to the general ward and discharged on postoperative day 8. TAVI was performed 107 days after the surgery for MRONJ. For the perioperative management of patients with severe aortic stenosis, it is important to minimize cardiovascular responses during anesthesia induction, as there is a risk of coronary circulatory collapse and cardiac arrest arising from hypotension. In the presently reported case, the combination of remifentanil hydrochloride, which is unlikely to cause circulatory depression when administered alone, with remimazolam besilate, which is thought to have a smaller effect on circulatory depression, enabled severe hypotension to be avoided, allowing safe perioperative management.

**Keywords**：REMIMAZOLAM BESILATE, AORTIC STENOSIS, MEDICATION-RELATED OSTEONECROSIS OF THE JAW (MRONJ), INFECTIVE ENDOCARDITIS (IE), GENERAL ANESTHESIA
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# Oral Intubation Technique Using McGRATH® MAC Video Laryngoscope with Role Sharing between Two Anesthesiologists

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**Keywords**：McGRATH® MAC, ORAL INTUBATION
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# Update on Bronchoscopy Knowledge for Dental Anesthesiologists

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## Abstract

Because the bronchoscope plays an important role in performing difficult intubations and airway management, all dental anesthesiologists should be familiar with the structure and use of the bronchoscope. This article introduces correct and safe knowledge, techniques, and tips for using a bronchoscope, the method used for bronchoscope-guided intubation, and useful auxiliary tools. This article also introduces the characteristics of single-use bronchoscopes, which have been attracting attention since the COVID-19 pandemic, in addition to various reusable bronchoscopes.

**Keywords**：BRONCHOSCOPY, DIFFICULT AIRWAY, AIRWAY MANAGEMENT, DENTAL ANESTHESIA

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## Establishment of Evidence-based Nasotracheal Intubation Methods

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### Abstract

This paper explores five key aspects of nasotracheal intubation (NTI) from an evidence-based perspective, rather than relying on traditional experience-based methods：(1) disinfection methods, (2) choice of hemostatic agents, (3) intubation routes, (4) selection of laryngoscopes, and (5) pressure ulcer prevention. Studies have shown that benzalkonium chloride (BZK) offers superior sustained antimicrobial effects, compared with povidone-iodine (PVI), making it a promising choice for reducing the risk of bacteremia. Both epinephrine (E) and tramazoline (T) have demonstrated an equivalent efficacy in controlling nasal bleeding, with no significant safety differences observed. Regarding intubation routes, using the right nostril reduced the frequency of nasal bleeding and shortened the intubation times, compared with the left nostril, probably because of anatomical advantages. The McGrath MAC laryngoscope improved visualization and reduced intubation times, compared with the Airwayscope and Macintosh laryngoscopes, with a superior usability reported by both inexperienced and skilled practitioners. Lastly, 3M Microfoam$^{TM}$ surgical tape (3ST) effectively prevented nasal pressure injuries associated with NTI, offering a cost-effective alternative to hydrocolloid products. These studies demonstrate the potential of various methods and tools for improving the safety and efficiency of NTI. However, several research limitations exist, including restrictions in patient populations, study design constraints, and the lack of control groups. Further research is necessary to address these issues. Moving forward, these findings are expected to contribute to the establishment of standardized NTI techniques and the implementation of safer and more effective airway management methods based on scientific evidence.

**Keywords**：DISINFECTION, HEMOSTASIS, INTUBATION ROUTE, INTUBATION EQUIPMENT, PRESSURE ULCER PREVENTION