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## Involvement of Neuron-Nonneuronal Cell Interaction in Orofacial Neuropathic Pain

Department of Physiology, Nihon University School of Dentistry

Koichi IWATA, Suzuro HITOMI, Yoshinori HAYASHI and Masamichi SHINODA

### Abstract

Following trigeminal nerve injury, allodynia and hyperalgesia can occur in a wide area of the orofacial region innervated by the injured and uninjured nerves. Various non-neuronal cells, such as macrophages, T cells, and neurocytes, accumulate in the trigeminal ganglion as well as the injured sites. These non-neuronal cells release a variety of molecules, including cytokines, ATP, and neuropeptides, affecting the neuronal excitability of trigeminal ganglion neurons and causing the TG neurons to become hyperactive. Satellite cells are also activated following trigeminal nerve injury, and the activated satellite cells release a variety of molecules, enhancing TG neuronal activity. The barrage of action potentials generated in TG neurons is

conveyed to the higher central nervous system, such as the trigeminal spinal subnucleus caudalis (Vc) and the upper cervical spinal cord (C1-C2), and the Vc and C1-C2 nociceptive neurons become hyperactive. Various non-neuronal cells, astrocytes, microglia, and oligodendrocytes are subsequently activated. In the Vc and C1-C2 regions, neurons and non-neuronal cells communicate with each other via a variety of molecules, such as cytokines, NO, neurotrophic factors, and neuropeptides. These mechanisms of neuron-non-neuronal cell communication in the TG and Vc and C1-C2 regions are thought to be key mechanisms underlying the development of orofacial neuropathic pain.

**Keywords** : NEUROPATHIC PAIN, TRIGEMINAL GANGLION, TRIGEMINAL SPINAL SUBNUCLEUS CAUDALIS, ASTROCYTE, MICROGLIA

## Anesthesia Management for Oral Cancer Surgery in Patient with Cardiac Resynchronization Therapy Pacemaker

<sup>1</sup>Department of Anesthesiology, Tokyo Dental College Ichikawa General Hospital

<sup>2</sup>Department of Oral Medicine and Hospital Dentistry, Tokyo Dental College Ichikawa General Hospital

Tatsuki HOSHINO<sup>1</sup>, Reina OKADA<sup>1</sup>, Minami HASEGAWA<sup>2</sup>, Mio FUKADA<sup>2</sup>,  
Takashi OUCHI<sup>1</sup> and Nobuyuki MATSUURA<sup>2</sup>

### Abstract

Cardiac resynchronization therapy (CRT) is used for severe heart failure unresponsive to medications. A biventricular pacemaker (CRT pacemaker, CRT-P) can be implanted to address dyssynchrony and improve cardiac function. This case details the anesthesia management of a patient with a CRT-P inserted under general anesthesia.

The patient was a 79-year-old man, 161 cm tall and weighing 38.8 kg. His medical history included a VDD pacemaker (PM) implanted for intestinal obstruction and a complete atrioventricular block, later replaced with a CRT-P for pacing-induced cardiomyopathy (PICM). Preoperative echocardiography indicated cardiac function at the lower limit of the normal range. Segmental resection of the mandible, plate reconstruction, and cricothyroidotomy were planned under general anesthesia for mandibular gingival cancer.

Following a PM check, anesthesia induction included

fentanyl, remifentanyl, propofol, and rocuronium, with nasal intubation. Maintenance anesthesia included desflurane and remifentanyl. In addition to standard monitoring, a BIS monitor and an external continuous cardiac output sensor were used. Surgery commenced after changing the PM mode from DDD to DOO. A bipolar electric scalpel was used to minimize PM interference. Postoperatively, PM settings were restored, and cricothyroidotomy was performed after the extubation, before transferring the patient to the high-care unit.

Ventricular tachycardia is a common arrhythmogenic complication associated with CRT. To mitigate this risk, a defibrillator was kept on standby during anesthesia. Understanding the types and characteristics of PM is essential for developing an effective evaluation and anesthesia plan.

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**Keywords** : CRT-P, GENERAL ANESTHESIA, CANCER IN THE GINGIVA OF THE MANDIBLE, PICM

**Address correspondence to** : Tatsuki HOSHINO, Tokyo Dental College Ichikawa General Hospital (E-mail : hoshinotsuki@tdc.ac.jp)

## Allergic Reaction Induced by Propofol during Induction of General Anesthesia Identified by a Basophil Activation Test : A Case Report

Department of Perioperative Medicine, Division of Anesthesiology, Showa Medical University School of Dentistry  
Saki IMAMURA, Rie NISHIDA, Tamami ITO, Rina MATSUMOTO,  
Saki KIUCHI and Rikuo MASUDA

### Abstract

When allergic reactions occur during general anesthesia, particularly during induction, identifying the causative drug is challenging because multiple agents are administered within a short time. Nevertheless, accurate identification is essential for long-term patient management. Herein, we report the case of a patient who experienced an allergic reaction during the induction of general anesthesia. A basophil activation test (BAT) identified propofol, a drug generally considered to have low allergenic potential, as the causative agent.

A 36-year-old female (height, 160 cm ; weight, 51 kg) was scheduled to undergo bilateral mandibular horizontal wisdom tooth extraction under general anesthesia. Approximately 10 minutes after induction with propofol (100 mg), rocuronium (40 mg), and remifentanyl ( $0.5 \mu\text{g}/\text{kg}/\text{min}$ ), erythema and wheals appeared on her face, neck, and

anterior chest, accompanied by mild hypotension without respiratory compromise. Dexamethasone (6.6 mg) and d-chlorpheniramine maleate (5 mg) were administered intravenously approximately five minutes after the onset of symptoms, which alleviated the symptoms and the surgery was continued without further propofol or rocuronium. The patient recovered uneventfully and was discharged on the following day.

Post-operatively, a skin test was proposed to identify the causative agent, but the patient declined due to the potential risk of anaphylaxis. Alternatively, a BAT was performed 32 days post-operatively, which was negative for rocuronium and positive for propofol. This case suggests that a BAT, combined with clinical findings, is particularly valuable for patients who decline skin testing.

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**Keywords :** ALLERGIC REACTION, PROPOFOL, BASOPHIL ACTIVATION TEST

**Address correspondence to :** Saki IMAMURA, Department of Perioperative Medicine, Division of Anesthesiology, Showa Medical University School of Dentistry (E-mail : [ssimamu@dent.showa-u.ac.jp](mailto:ssimamu@dent.showa-u.ac.jp))

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## General Anesthesia Management for Bimaxillary Osteotomy in a Patient with a History of Stevens-Johnson Syndrome

Department of Anesthesiology, Osaka Dental University

Yukiko ARAI, Toshiko YANASE, Ryosuke NAGAMATSU, Yuuka KANO,  
Miwa NOGUCHI and Yoshihiro MOMOTA

### Abstract

Stevens-Johnson Syndrome (SJS) is considered the most severe type of drug rash often caused by medication. Moreover, it leads to serious aftereffects, such as blindness after recovery, and cases of death have been reported.

This report focuses on the case of a 23-year-old man with a history of SJS who underwent a Le Fort I osteotomy and bilateral mandibular sagittal bifurcation surgery. Inhalational induction with sevoflurane was performed because the patient was afraid of injections and to avoid using sedatives. After the patient fell asleep, an intravenous line was secured and remifentanyl and fentanyl were administered along with tracheal intubation without using muscle relaxants. There was no spontaneous breathing or movement during intubation or surgery as local anesthesia

was effectively maintained with sevoflurane, remifentanyl, and fentanyl. Postoperatively, the patient was carefully monitored for mucosal symptoms. The patient was also examined by an ophthalmologist and otolaryngologist, and no abnormalities were found in the mucosa. Since then, there have been no early symptoms of SJS, and the patient has displayed good progress.

By preparing countermeasures in cases where SJS occurred after surgery and mainly utilizing sevoflurane for general anesthesia with sufficient narcotic analgesics and local anesthetics, we were able to avoid using causative drugs for SJS like sedatives and muscle relaxants, and the perioperative period was safely managed without SJS recurrence.

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**Keywords** : STEVENS-JOHNSON SYNDROME, ORTHOGNATHIC SURGERY, GENERAL ANESTHESIA, SEVOFLURANE, WITHOUT MUSCLE RELAXANTS

**Address correspondence to** : Yukiko ARAI, Department of Anesthesiology, Osaka Dental University (E-mail : arai-y@cc.osaka-dent.ac.jp)

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## A Case of Graves' Disease Diagnosed after the Development of Paroxysmal Atrial Fibrillation during a Cystectomy under Intravenous Sedation

Department of Dental Anesthesiology, Tokyo Dental College  
Ai NAKAKUKI, Kyotaro KOSHIKA, Rie KATO, Moeko SUZUKI,  
Shiori TAYAMA and Tatsuya ICHINOHE

### Abstract

A 58-year-old man was scheduled to undergo a cystectomy for a jaw cyst under intravenous sedation. A preoperative interview did not reveal any history of hyperthyroidism or subjective symptoms. After the procedure was started under intravenous sedation, the patient's pulse rate rose sharply to 170 beats per minute during the lesion removal, and an electrocardiogram revealed atrial fibrillation. The procedure was interrupted, and the administration of sedatives was stopped; landiolol hydrochloride was then administered intravenously, but the patient's pulse rate remained at approximately 140 beats per minute. After the procedure was completed, the patient was examined in the cardiology department. Elevated FT3 and FT4 levels and positive results for thyroid-stimulating antibodies and thyrotropin receptor antibody led to a diagnosis of Graves'

disease. Graves' disease is a typical example of hyperthyroidism, characterized by the main symptoms of Merseburg's triad (diffuse thyroid enlargement, exophthalmos, and tachycardia), but these clinical symptoms can become unclear with age, making diagnosis difficult. If no pre-existing or underlying diseases exist or if the patient has no subjective symptoms, identifying Graves' disease can be difficult based on a preoperative interview alone. However, middle-aged and elderly people are prone to unexpected and sudden changes during sedation, so it is important to assess their vital signs before the start of surgery. These patients should receive appropriate monitoring including blood pressure measurements, an electrocardiogram, and pulse oximetry, and any changes in their general condition should be carefully observed during surgery.

**Keywords** : INTRAVENOUS SEDATION, ORAL SURGERY, ATRIAL FIBRILLATION, HYPERTHYROIDISM, GRAVES' DISEASE

**Address correspondence to** : Ai NAKAKUKI, Department of Dental Anesthesiology, Tokyo Dental College (E-mail : hxmnw066@yahoo.co.jp)

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## Effective Postoperative Pain Management Using Ultrasound-Guided Maxillary or Glossopharyngeal Nerve Block in a Case of Facial Region Surgery

<sup>1)</sup>Department of Perioperative Medicine, Division of Anesthesiology, Showa Medical University School of Dentistry

<sup>2)</sup>Department of Dental Anesthesiology, Asahi General Hospital

<sup>3)</sup>Department of Anesthesiology, Asahi General Hospital

Yuhei UBUKATA<sup>1)</sup>, Yuki KOJIMA<sup>1,2,3)</sup>, Satoshi TACHIKAWA<sup>1)</sup>, Yurika WATANABE<sup>1)</sup>,  
Daisuke KIKUCHI<sup>1)</sup> and Rikuo MASUDA<sup>1)</sup>

### Abstract

Postoperative pain management in dental and oral surgeries typically involves the use of acetaminophen, NSAIDs, and opioids. However, patients allergic to acetaminophen and NSAIDs present significant challenges. We report the case of an 80-year-old female undergoing sequestrectomy and tooth extraction under general anesthesia for medication-related jaw osteonecrosis. Due to her allergy history and concerns about postoperative delirium due to opioid use, ultrasound-guided maxillary nerve block (UGMNB) and selective glossopharyngeal nerve block (UGSGB) were performed for pain control. The procedures were performed safely using a linear ultrasound probe with a crossover technique and 0.375% ropivacaine. Postoperatively, the patient experienced no surgical site or pharyn-

geal pain and did not require any opioid analgesics. The pain was well-controlled with minimal use of analgesics. This case highlights the effectiveness and safety of an ultrasound-guided peripheral nerve block as a viable option for postoperative pain management in patients who are unable to receive conventional analgesics. This technique may also help reduce the risk of postoperative complications, such as delirium, in elderly patients. Ultrasound guidance enhances safety by providing real-time imaging, preventing vascular or nerve injury, and allowing bedside application. This method offers a promising alternative for postoperative pain control, especially in head and neck surgeries where epidural analgesia is not applicable.

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**Keywords :** ULTRASOUND NERVE BLOCK, MAXILLARY NERVE BLOCK, GLOSSOPHARYNGEAL NERVE BLOCK, POSTOPERATIVE ANALGESIA, ALLERGY

**Address correspondence to :** Yuhei UBUKATA, Department of Perioperative Medicine, Division of Anesthesiology, Showa Medical University School of Dentistry (E-mail : ubukatay@dent.showa-u.ac.jp)

## Nasal Intubation under General Anesthesia Using Suction-SAFE™ in a Child with Severe Trismus

Division of Dental Anesthesiology, Department of Reconstructive Oral and Maxillofacial Surgery,  
School of Dentistry, Iwate Medical University

Mami CHIKUDA, Haruka YANAGIMACHI, Satsuki MAESAWA, Mayuko OHNO,  
Sho TAMURA and Kenichi SATO

### Abstract

We report the anesthetic management of a child with ankylosis of the temporomandibular joint who had significant difficulty opening his mouth before surgery; consequently, the patient was intubated using a fiberscope. The patient was a 10-year-old boy who had been diagnosed as having right mandibular dysplasia. Mandibular joint mobilization surgery under general anesthesia was scheduled because the opening was less than 3 mm. The patient underwent a slow induction of anesthesia. After confirming that the use of mask ventilation was possible under spontaneous breathing, rocuronium was administered. A 5.5-mm diameter tracheal tube with a cuff was inserted through the nasal cavity, and a Suction-SAFE™ connector was attached. Next, the breathing circuit of the anesthesia machine was connected to the Suction-SAFE connector, and a bronchoscope was inserted through the suction port to

enable visualization of the glottis while performing manual ventilation. The intubation time with the fiberscope was about 5 minutes, but the use of bag ventilation prevented any decrease in SpO<sub>2</sub>. The patient was extubated after confirming that he was fully awake from the anesthesia. It is important to plan anesthesia carefully and to take measures based on a thorough preoperative medical examination. The difficulty in the present case was that the combination of the inner diameter of the endotracheal tube and the outer diameter of the fiberscope could cause ventilatory failure if a Suction-SAFE connector is used. The use of the thinnest fiberscope available allowed intubation without ventilatory failure. Use of the Suction-SAFE connector might be an option for nasal fiber intubation under general anesthesia.

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**Keywords** : GENERAL ANESTHESIA, DIFFICULT INTUBATION, FIBERSCOPE INTUBATION, TEMPOROMANDIBULAR JOINT ANKYLOSIS, MOUTH OPENING DISORDER

**Address correspondence to** : Mami CHIKUDA, Division of Dental Anesthesiology, Department of Reconstructive Oral and Maxillofacial Surgery, School of Dentistry, Iwate Medical University (E-mail : mchikuda@iwate-med.ac.jp)

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## A Case of Anaphylactic Shock with Discordant Results between a Basophil Activation Test and an Intradermal Test

Department of Dental Anesthesiology, Tokyo Dental College

Mio KANAI, Kyotaro KOSHIKA, Azusa SHIMAMURA, Wataru HASHIMOTO,  
Kaori YOSHIDA and Nobuyuki MATSUURA

### Abstract

We report a case of anaphylactic shock occurring immediately after the induction of general anesthesia. Intradermal testing and a basophil activation test (BAT) were performed to identify the causative agent ; however, the two tests yielded discordant results. A 20-year-old woman was scheduled for plate removal and genioplasty under general anesthesia. The patient had no significant medical history and had previously undergone orthognathic surgery under general anesthesia without complications. Induction for the present procedure was the same as before : propofol and remifentanyl, followed by rocuronium. Immediately after the administration of the rocuronium, however, the patient's blood pressure fell to 50/27 mmHg. Nasotracheal intubation was promptly performed. The administration of ephedrine and phenylephrine were ineffective. Generalized flushing was noted. Epinephrine (0.05 mg IV) was administered twice, resulting in improvements in both hemody-

namics and cutaneous symptoms. The patient's serum histamine (41.6 ng/mL) and tryptase (19.6  $\mu$ g/L) levels were markedly elevated, confirming the diagnosis of anaphylactic shock. The postoperative course was uneventful, and the patient was discharged. A BAT was negative for both propofol and rocuronium. Intradermal testing was negative for propofol and remifentanyl, but positive for rocuronium, suggesting that rocuronium was the most likely trigger. During a repeat operation performed three years later, rocuronium was avoided, and an anaphylactic reaction did not occur. In the present case, BAT and intradermal testing yielded discordant results with respect to rocuronium, with intradermal testing identifying rocuronium as the causative agent. In light of previous reports in which BAT was successfully used to identify causative agents of anaphylactic shock, our case suggests that a combined testing approach may be beneficial.

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**Keywords :** GENERAL ANESTHESIA, ANAPHYLACTIC SHOCK, ROCURONIUM, BASOPHIL ACTIVATION TEST, TYPE I ALLERGIC REACTION

**Address correspondence to :** Mio KANAI, Department of Dental Anesthesiology, Tokyo Dental College (E-mail : kanai mio@tdc.ac.jp)