

Division of Dental Anesthesiology

Department of Human Biology and Pathophysiology

Outline

Dentist anesthesiologists offer a full spectrum of safe and comfortable anesthesia services for dental care. It is a unique feature of Japanese government policy that specialized dentists are allowed to perform general anesthesia on whomever requires oral surgery or dental treatment. In our hospital, a large variety of oral surgeries are performed, ranging from a major surgery of orofacial cancer accompanied with a reconstructive operation to minor surgeries. In addition, dental treatments of children and handicapped patients under general anesthesia are frequently performed at our hospital.

Sedation is also utilized for treatments of patients with anxiety or some circulatory diseases. Nitrous oxide inhalation and administration of benzodiazepine or intravenous anesthetic agents are used. Sedation not only provides a sedative effect for consciousness but also secures a stable circulation dynamic in patients. The aging of Hokkaido's population is advancing, therefore, the role of sedation is becoming increasingly important. Moreover, no patient should be denied access to quality dental care for lack of adequate control of anxiety and pain.

Pain control encompasses a considerable part of dentist anesthesiologists' duties. We educate students in the safe and effective administration of local anesthesia, using an intelligent local anesthetic injection simulator. Orofacial pain or abnormal sensation are sometimes difficult to diagnose and care. In our pain clinic, we apply Quantitative Sensory Testing (QST), questionnaires and Magnetic Resonance Neurography (MRN) to evaluate the disordered trigeminal nerve, and decide a course of treatment based on our advanced diagnosis.

Faculty members

Professor; Makoto TERUMITSU, D.D.S., Ph.D.

Lecturer; Hiroyo YOSHIMOTO, D.D.S., Ph.D.

Assistant professor; Rie IWAMOTO, D.D.S., Ph.D.

Assistant professor; Hanako OHKE, D.D.S.

Postgraduate student

Kenji GO, D.D.S.

Main research in progress

- 1) Magnetic Resonance Neurography (MRN) for patients with a disordered trigeminal nerve.
- 2) Macrophage imaging *in vivo* in the animal model of neuropathic pain to elucidate the mechanism of neuro-inflammation after nerve injury.
- 3) Multi-institutional joint research for treating orofacial pain in Japan.
- 4) Elucidating central nervous system sensitization in chronic pain.
- 5) Evaluating unpleasantness experienced in a dental treatment by using fractal analysis of an electroencephalogram.
- 6) Novel and safe anesthesia regimens for handicapped patients and children.

Current publications

Okada Y, Ohke H, Yoshimoto H, Kobashi M, Saitoh M, *Terumitsu M. Nasogastric Tube Knotted Around a Nasal Endotracheal Tube in the Nasopharynx: Possible Cause. *Anesthesia Progress* 2020 (06/12/2020 Accepted, in press)

Ohke H, Sato T, Mito K, Terumitsu M, Ishii H*. Effect of the parasympathetic vasodilation on temperature regulation via trigeminal afferents in the orofacial area. *J Physiol Sci* (2020) 70:22. <https://doi.org/10.1186/s12576-020-00749-y>

*Terumitsu M, Hirahara M, Seo K, Dissection of retropharyngeal tissue by Parker Flex-Tip™ nasotracheal tube. *Anesth Prog.* Winter 2017;64(4):240-243. doi: 10.2344/anpr-64-03-05.

*Terumitsu M, Matsuzawa H, Seo K, Watanabe M, Kurata S, Suda, A, Nakada T, High-contrast-resolution Imaging of Posttraumatic Mandibular Nerve by 3DAC-PROPELLER MRI: Correlation with the Severity of Sensory Disturbance. *Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology*, 124(1):85-94, 2017.

*Kumasaka A, Kanazawa K, Ohke H, Miura I, Miura Y. Post-ischemic Intravenous Administration of Allogeneic Dental Pulp-Derived Neurosphere Cells Ameliorated Outcomes of Severe Forebrain Ischemia in Rat. *Neurocrit Care*, 26: 133-142, 2017.

*Kumasaka A, Kanazawa K, Ohke H, Miura I, Miura Y. Post-ischemic Intravenous Administration of Allogeneic Dental Pulp-Derived Neurosphere Cells Ameliorated Outcomes of Severe Forebrain Ischemia in Rats. *Neurocrit Care*, doi:10.1007/s12028-016-0304-4, 2016.

*Seo K, Terumitsu M, Inada Y, Nakamura T, Shigeno K, Tanaka Y, Prognosis after surgical treatment of trigeminal neuropathy with a PGA-c Tube: Report of 10 cases. *Pain Medicine* 17(12):2360-2368, 2016.

*Nezu A, Morita T, Tojyo Y, Nagai T, Tanimura A. Partial agonistic effects of pilocarpine on Ca²⁺ responses and salivary secretion in the submandibular glands of live animals. *Exp Physiol*, 100: 640-651, 2015.

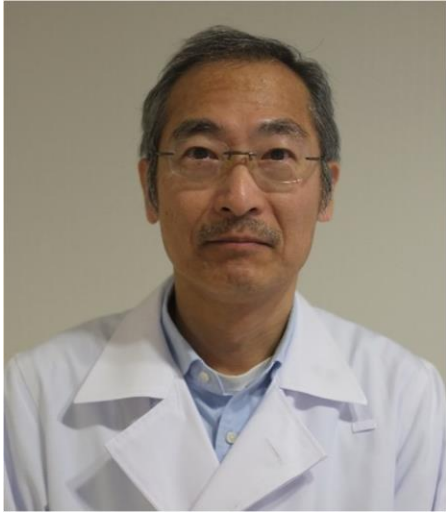
*Miura Y, Kanazawa K, Nasu I. Preischemic Administration of Sevoflurane Does not Exert Dose-dependent Effects on the Outcome of Severe Forebrain Ischemia in Rats. *J Neurosurg Anesthesiol*, 27:216-221, 2015.

*Takahashi N, Yoshizaki T, Hiranaka N, Kumano O, Suzuki T, Akanuma M, Yui, T Kanazawa K, Yoshida M, Naito S, Fujiya M, Kohgo Y and Ieko M. The production of coagulation factor VII by adipocytes is enhanced by tumor necrosis factor- α or isoproterenol. *International Journal of Obesity*, 39: 747–754, 2015

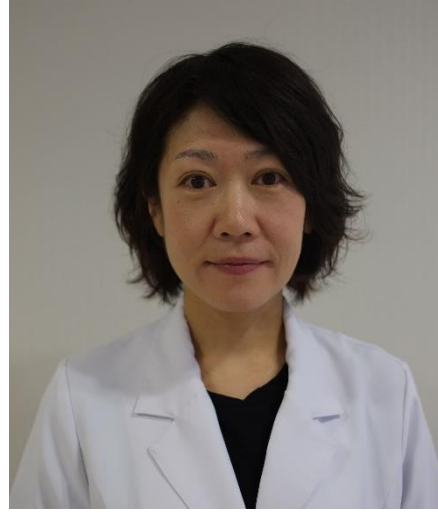
*Nishikawa T, Okamoto K, Matsuzawa H, Terumitsu M, Nakada T, Fujii Y. Detectability of neural tracts and nuclei in the brainstem utilizing 3DAC-PROPELLER. *J Neuroimaging*. 24(3):238-244, 2014.

*Seo K, Inada Y, Terumitsu M, Nakamura T, Shigeno K, Tanaka Y, Tsurumaki T, Kurata S, Matsuzawa H. Protracted delay in taste sensation recovery after surgical lingual nerve repair. *J Med Case Rep*. 7:77. doi:10.1186/1752-1947-7-77, 2013.

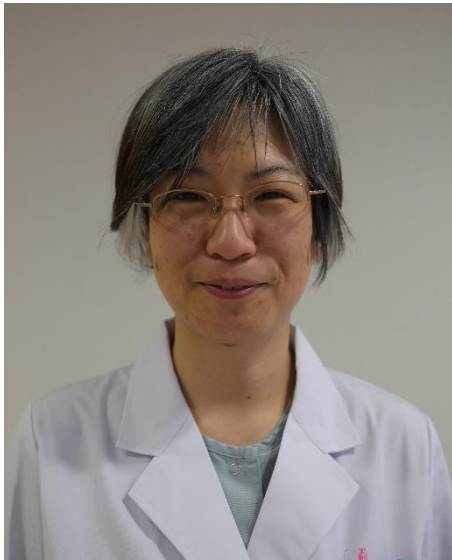
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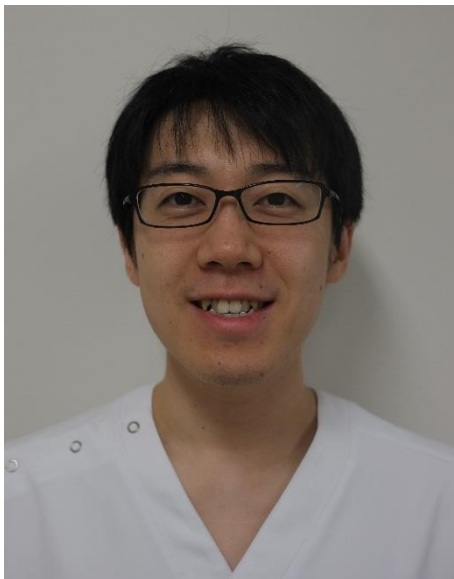
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