

Laryngeal mask airway Supreme™ for asleep-awake-asleep craniotomy

Editor - The asleep-awake-asleep technique with airway protection using laryngeal mask airway (LMA) has been proved safe for the anesthetic management of awake craniotomies ¹. However, re-insertion of LMA after awake test in a fixed neck position may sometimes be difficult. LMA Supreme™ (SLMA; Laryngeal Mask Company, Singapore) is a new disposable LMA with gastric access and pre-curved shape of the airway integrated with bite block that combines the desirable features of the LMA Unique™, LMA Proceal™ (PLMA) and intubating LMA Fastrach™ (ILMA). We report a successful use of SLMA for “asleep-awake-asleep” craniotomy.

A 65-year-old man (168 cm, 65 kg) was scheduled to undergo awake craniotomy for the removal of a frontotemporal glioma. When the patient arrived at the operation theatre, the position of the patient on the operating table was adjusted with the neck slightly distorted to the right preparing for craniotomy. Anesthesia was induced with target-controlled infusion of propofol and continuous infusion of remifentanyl. A fully-deflated and lubricated size-4 SLMA was smoothly inserted at the initial attempt without any excessive insertion force using a single-handed rotational technique like the LMA Fastrach™ ² by an anesthesiologist standing at the right side of the patient with the downward traction and the thrust of the patient’s jaw by another anesthesiologist. The procedure was set to simulate re-insertion of SLMA after awake test. Oropharyngeal leak pressure higher than 30 cmH₂O was achieved when the cuff was inflated with 25 ml of air. The vocal cords were visible within the view of an endoscope from distal end of SLMA. A well-lubricated 14-French size gastric tube was

inserted successfully through the drain tube at the first attempt, and its position was confirmed by epigastric auscultation. The patient's head was fixed with pins after scalp nerve blockade and local infiltration with a 1:1 mixture of 0.5% lidocaine and 0.375% ropivacaine. At awake test, propofol and remifentanyl was discontinued, and the patient became conscious within 10 minutes. After the removal of SLMA, the neurological testing was performed with the patient being cooperative without any sedatives. The patient complained of no pain or discomfort during awake phase. After the awake test, the re-positioning of SLMA was achieved with almost the same procedure as the previous insertion and succeeded at the initial attempt. At the end of the surgery, no blood was observed on the SLMA, and there was no trauma of lip, tongue or mouth. The patient did not have a sore throat, dysphagia or dysphonia postoperatively. The patient recalled events of awake test, but expressed satisfaction over the anesthetic management.

One of the main concerns of anesthesiologists during awake craniotomy is the airway management. LMA can reduce the respiratory problems during asleep phase of asleep-awake-asleep craniotomy¹. However, it is sometimes difficult to re-insert an LMA because of the fixed neck position of the patient and the position of the anesthesiologists who are unable to stand behind the patient's head³. SLMA is a new extraglottic airway device which has both features of PLMA, which has high seal cuff, gastric access and integral bite block – to facilitate ventilation, airway protection from gastric reflex and airway obstruction, and ILMA, which has fixed curve tube and guiding handle – to facilitate insertion and fixation. The firm, elliptical and anatomically shaped airway tube of SLMA facilitates its

insertion, without placing fingers in the patient's mouth or requiring an introducer for insertion, which are quite advantageous for the anesthesiologists with restricted space during awake craniotomy. The recommended insertion techniques of PLMA by manufacturer include sniffing position, the use of index finger, thumb or solid introducer to press it into the palatopharyngeal curve. However, the pin-fixed head and the surgical drape over forehead may disturb these recommended manipulations. SLMA does not require sniffing position for adequate insertion. The semi-sniffing position is recommended for the most successful insertion of SLMA. Though the neutral position may make the SLMA hard to get around the corner at the back of the tongue, we could manage to insert SLMA without excessive insertion force by using downward jaw traction technique and jaw thrust maneuver. Slightly distorted neck did not affect SLMA insertion. Although steeper curvature of ILMA might be advantageous in the case of fixed head, the ILMA is associated with high airway morbidity⁴ perhaps due to high mucosal pressure. No airway morbidity was reported⁵ on SLMA, presumably because of its flatter and softer characteristics. Gastroesophageal reflex can be one of the serious complications during awake craniotomy. Gastric drainage can decrease inadvertent aspiration during surgery. Oropharyngeal leak pressure of SLMA is similar to that of the PLMA^{6,7}. Taken together, the characteristics of SLMA, that is, its easier insertion during restricted head movement and better protection against gastric reflex is advantageous for awake craniotomy.

We conclude that the SLMA would be most useful during asleep-awake-asleep craniotomy.

Hiroaki Murata, Chikako Nagaishi, Atsushi Tsuda, Koji Sumikawa

Department of Anesthesiology, Nagasaki University School of Medicine

1-7-1 Sakamoto, Nagasaki 852-8501, Japan

TEL: +81-95-819-7370, FAX: +81-95-819-7373

E-mail: h-murata@nagasaki-u.ac.jp

1. Sarang A, Dinsmore J. Anaesthesia for awake craniotomy--evolution of a technique that facilitates awake neurological testing. *Br J Anaesth* 2003; **90**: 161-5
2. Brain AI, Verghese C, Addy EV, Kapila A, Brimacombe J. The intubating laryngeal mask. II: A preliminary clinical report of a new means of intubating the trachea. *Br J Anaesth* 1997; **79**: 704-9
3. Gadhinglajkar S, Sreedhar R, Abraham M. Anesthesia management of awake craniotomy performed under asleep-awake-asleep technique using laryngeal mask airway: report of two cases. *Neurol India* 2008; **56**: 65-7
4. Kihara S, Yaguchi Y, Brimacombe J, Watanabe S, Taguchi N. Routine use of the intubating laryngeal mask airway results in increased upper airway morbidity. *Can J Anaesth* 2001; **48**: 604-8
5. van Zundert A, Brimacombe J. The LMA Supreme--a pilot study. *Anaesthesia* 2008; **63**: 209-10
6. Verghese C, Ramaswamy B. LMA-Supreme--a new single-use LMA with gastric access: a report on its clinical efficacy. *Br J Anaesth* 2008; **101**: 405-10
7. Hosten T, Gurkan Y, Ozdamar D, Tekin M, Toker K, Solak M. A new supraglottic airway device: LMA-supreme, comparison with LMA-Proseal. *Acta Anaesthesiol Scand* 2009; **53**: 852-7