A comparison of the Supreme™ laryngeal mask airway with the Proseal™ laryngeal mask airway in anesthetized paralyzed adult patients: a randomized crossover study

Comparaison entre les masques laryngés Supreme™ et Proseal™ chez les patients adultes anesthésiés et curarisés: une étude croisée randomisée

Huae Min Tham, MMed · Su Meng Tan, MMed ·
Kwee Lian Woon, MMed · Yu Dong Zhao, PhD

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Abstract

Purpose The Supreme™ laryngeal mask airway (SLMA) is a new single-use advanced form of the Proseal™ laryngeal mask airway (PLMA). This study tested the hypothesis that the SLMA is equally as effective as the PLMA as a supraglottic ventilatory device in anesthetized paralyzed adult patients.

Methods Size 4 SLMAs and PLMAs were compared in a randomized crossover study involving 60 patients aged 21–75 yr and American Society of Anesthesiologists physical status I and II. Once the patients were anesthetized and paralyzed, the SLMA and the PLMA were inserted into each patient in random order. The primary outcome measure was the laryngeal seal pressure (LSP) at an intracuff pressure of 60 cm H₂O. Secondary outcome measures included the ease of inserting the laryngeal mask airway devices (LMADs) and the fiberoptic position of the airway tube.

Results There was no statistically significant difference in LSP between the SLMA and the PLMA. The mean LSP was 19.6 ± 5.8 cm H₂O and 20.9 ± 6.7 cm H₂O for the SLMA and the PLMA, respectively. There was a similarity between the SLMA and the PLMA regarding the number of attempts required and the duration for insertion. However,

fiberoptic positioning was better with the PLMA than with the SLMA ($P < 0.0001$).

Conclusion The clinical performance of the SLMA as a ventilatory device is comparable with that of the PLMA, as illustrated by the similar LSPs. The inferior position of the SLMA airway tube compared with that of the PLMA does not affect its ease of ventilation.

Résumé

Objectif Le masque laryngé Supreme™ (MLS) est une nouvelle version avancée à usage unique du masque laryngé Proseal™ (MLP). Le but de cette étude consistait à tester l'hypothèse selon laquelle le MLS serait aussi efficace que le MLP en tant qu'appareil ventilatoire supraglottique chez les patients adultes anesthésiés et curarisés.

Méthodes On a comparé des MLS et des MLP de taille 4 dans le cadre d'un essai croisé randomisé mené auprès de 60 patients âgés de 21 à 75 ans et appartenant aux groupes I et II selon la classification de l'état physique de l'American Society of Anesthesiologists. Une fois les patients anesthésiés et curarisés, le MLS et le MLP étaient insérés dans chaque patient selon un ordre aléatoire. Le premier indicateur de résultats était la pression d'étanchéité laryngée (PEL) à une pression intraballonnet de 60 cm H₂O. Les indicateurs de résultats secondaires incluaient la facilité d'insertion des masques laryngés (ML) et la position de la lumière laryngée évaluée à l'aide d'un fibroscope.

Résultats En ce qui touche à la PEL, aucune différence statistiquement significative n'a été observée entre le MLS et le MLP. La PEL moyenne était respectivement de $19,6 \pm 5,8$ cm H₂O et de $20,9 \pm 6,7$ cm H₂O pour le MLS et le

H. M. Tham, MMed (✉) · S. M. Tan, MMed ·
K. L. Woon, MMed
Department of Anaesthesia and Surgical Intensive Care, Changi
General Hospital, 2 Simei Street 3, Singapore 529889, Singapore
e-mail: huae_min@hotmail.com

Y. D. Zhao, PhD
Department of Biostatistics, Singapore Clinical Research
Institute, 31 Biopolis Way, Singapore, Singapore

MLP. On a observé une similarité entre le MLS et le MLP en ce qui concerne le nombre de tentatives requises et la durée de l'insertion. Toutefois, la position évaluée à l'aide d'un fibroscope était meilleure avec le MLP qu'avec le MLS ($P < 0,0001$).

Conclusion *Le rendement clinique du MLS à titre d'appareil ventilatoire est comparable à celui du MLP, comme le démontre la similarité de leurs PEL. Lorsqu'on la compare à celle du MLP, la position inférieure de la lumière laryngée du MLS n'influe pas sur la facilité de ventilation.*

The Supreme™ laryngeal mask airway (SLMA) (The Laryngeal Mask Company Limited, Singapore) is an advanced form of the Proseal™ laryngeal mask airway (PLMA) and can be used for the same indications as the PLMA. The SLMA mimics the PLMA given that it has a modified cuff to improve seal and a drainage tube to provide a channel for regurgitated fluid and gastric tube placement.^A There have been numerous case reports regarding protection against aspiration from regurgitation with the PLMA.¹⁻⁶ The development of the SLMA, which was introduced clinically in March 2007, was prompted by the need for a single-use device comparable with the original reusable laryngeal mask airway (LMA; Republic of Seychelles) in the bid to decrease the risk of transmitting preceding infections. Studies have shown that routine cleaning and autoclaving do not remove protein material from reusable laryngeal mask airway devices (LMADs).⁷⁻¹⁰

Compared with the PLMA, the SLMA's design has several refinements. First, it is a single-use latex-free device; each SLMA is prepared in a separate sterile package. Second, the airway tube has an anatomical shape; it is elliptical in cross section and more rigid than the PLMA airway tube. This configuration permits easy and reliable insertion without the need for digital or introducer tool guidance. Third, the airway tube has patented grooves designed to prevent airway tube kinking and consequent airway obstruction. Fourth, the SLMA cuff bowl is designed with additional patented epiglottic "fins", and the drain tube is positioned in the bowl. These two features prevent epiglottic occlusion of the airway tube; therefore, aperture bars are not required. Finally, there is a specially designed rigid tab fixed above the bite-block area that permits a novel fixation method using adhesive tape. In order to prevent leaks around the LMAD cuff or the drain tube, this tab can be manipulated easily to reposition the device to the optimal position. This tab is also an indicator

^A LMA-Proseal Instruction Manual. The Laryngeal Mask Company Limited, 2003.

Fig. 1 Supreme™ laryngeal mask airway. (A) Airway tube (15 mm connector); (B) Drain tube; (C) Fixation tab; (D) Integrated bite block; (E) Elliptical airway tube; (F) Modified cuff; (G) Drain tube opening; (H) Pilot balloon. SLMA = Supreme™ laryngeal mask airway; PLMA = Proseal™ laryngeal mask airway

of correct sizing of the SLMA. A tab positioned flush against the patient's upper lip indicates the need for a larger sized SLMA; and a tab positioned > 1.5 cm from the upper lip indicates the need for a smaller sized device. Figure 1 shows the various components of the SLMA.

In this randomized crossover study, we tested the hypothesis that the SLMA is equally effective as a ventilatory device as the PLMA in anesthetized paralyzed adult patients. Hence, the primary outcome measure was the laryngeal seal pressure (LSP). A secondary objective was to compare the ease of insertion, the fiberoptic laryngoscopic position of the airway tube, the ease of nasogastric tube insertion, and whether the presence of mucosal trauma differed between the two airway devices.

Methods

We screened Asian patients at our institution who were of American Society of Anesthesiologists (ASA) physical status I and II, aged 21-75 yr, and scheduled for elective surgery in the supine position under general anesthesia with a LMAD. Exclusion criteria included patients who had a known or predicted difficult airway, a mouth opening < 2.5 cm, a body mass index (BMI) > 30 kg m⁻², risk of aspiration, decreased pulmonary compliance (e.g. pulmonary fibrosis), or patients who refused to participate. Ethics Committee approval and written informed consent were obtained. All cases were conducted by three anesthesiologists who had considerable prior experience with use of the PLMA but limited experience with the SLMA.

The airways of all patients were managed with both a SLMA and a PLMA in random sequence. Half of the recruited subjects were randomized to have a SLMA

Fig. 2 Profile plot of laryngeal seal pressure

inserted first, and the remaining subjects were randomized to have a PLMA inserted first. A statistician independent of the clinical investigators generated the randomization sequence using a computerized program. To conceal the randomization sequence, an anesthesiologist who was not involved in our study placed the assignment numbers in opaque sealed envelopes. One of the three aforementioned investigators opened the envelopes sequentially after patient recruitment.

The patients were preoxygenated, and anesthesia was induced with fentanyl $1 \mu\text{g}\cdot\text{kg}^{-1}$ and midazolam $0.05 \text{ mg}\cdot\text{kg}^{-1}$, followed by propofol $2.5 \text{ mg}\cdot\text{kg}^{-1}$. Neuromuscular blockade was achieved with atracurium $0.5 \text{ mg}\cdot\text{kg}^{-1}$ and anesthesia was maintained with 1–2% isoflurane and oxygen. The patients' lungs were ventilated using a bag-mask technique for three to five minutes under standard anesthesia monitoring.

Each SLMA and PLMA was prepared, inserted, and secured according to the corresponding manufacturer's recommendations. Both devices were deflated fully before insertion. Insertion of the SLMA was performed without digital or introducer tool guidance; whereas, insertion of the PLMA was performed with the aid of the introducer tool as described in the manufacturer's product literature. A size 4 SLMA and a size 4 PLMA were used in random order for all patients, with the first device removed after

testing its performance. Between insertions, the patients' lungs were ventilated once again with a bag-mask technique while being closely monitored to ensure that oxygen saturation never decreased below 95%. The number of insertion attempts was recorded. A failed attempt was defined as removal of the device from the patient's mouth. A maximum of two attempts was permitted with each LMAD before the device was considered a failure. The time between picking up the SLMA/PLMA and obtaining an effective airway was recorded. An effective airway was defined by the presence of normal thoracoabdominal movement and a square-wave capnograph trace. If an effective airway could not be achieved, one attempt with the other device was allowed. After insertion, the SLMA/PLMA mask was inflated to the optimum intracuff pressure of $60 \text{ cm H}_2\text{O}$,¹¹ as this minimized pharyngeal mucosal pressure.¹² The cuff pressure was measured using a handheld high-volume low-pressure mechanical cuff inflator (Portex). The volume of air required to inflate the cuff to this pressure was recorded. The SLMA/PLMA was then fixed in place according to manufacturer's recommendations. The LSP was determined by transiently stopping ventilation and closing the adjustable pressure-limiting valve with a fresh gas flow of $3 \text{ L}\cdot\text{min}^{-1}$ until airway pressure reached a steady state.¹³ The airway pressure was not allowed to exceed $40 \text{ cm H}_2\text{O}$. After measurement of

Table 1 Scoring of laryngeal view

Score	Laryngeal View
4	Only vocal cords visible
3	Vocal cords plus posterior epiglottis visible
2	Vocal cords plus anterior epiglottis visible
1	Vocal cords not visible

the LSP, intermittent positive pressure ventilation was restarted. The fiberoptic position of the airway tube was determined by passing a flexible fiberoptic bronchoscope (Olympus, LFDP, 3.1 mm) through the airway tube of the SLMA/PLMA to a position 1 cm proximal to the end of the tube. Table 1 shows a previously described scoring system used to score the view.¹⁴ A single attempt was made to pass a lubricated 16-French gauge gastric tube through the drain tube of the SLMA/PLMA. Placement of the gastric tube in the stomach was confirmed by aspiration of gastric contents or synchronous injection of air and epigastric auscultation. The time taken to pass the gastric tube was recorded. The first LMAD was removed after the removal of the gastric tube under suction, and then the second LMAD was inserted and assessed in a similar manner as the first. The second device was used for the duration of the surgical procedure. Both LMADs were examined for the presence of visible blood at the time of removal. Any adverse event or problem with the devices was documented. Two anesthesiologists were involved in every case. One was responsible for inserting the LMADs and determining the LSP and the fiberoptic position of the airway tube, and the other ensured that the intracuff pressure was 60 cm H₂O and that all data were recorded. Each anesthesiologist inserted the LMADs in 20 patients.

Based on an expected mean LSP of 30 cm H₂O with a standard deviation of 8 cm H₂O in the PLMA group, a sample size of 60 patients was required to show equivalence between the SLMA and the PLMA in LSP, with an equivalence margin of 6 cm H₂O or 20% difference relative to the expected mean in PLMA, for a type I error of 0.05 and a power of 0.95.

Linear mixed models or proportional odds models were preliminarily fitted to detect if there were significant period and carryover effects. Based on the determination of no significant period and carryover effects from both statistical and clinical perspectives, either a paired Student's *t* test or a paired Wilcoxon signed-rank test was applied. Both statistical tests and graphical methods were used to assess whether a parametric test could be applied. Paired Student's *t* tests were used to compare LSP, volume of air in cuff, and time required to insert a gastric tube. The Wilcoxon signed-rank test was used to analyze the time required to achieve an effective airway and fiberoptic laryngoscopic score (FLS). Since our study involved both

male and female patients, sex effect was investigated by incorporating it into the linear mixed model for LSP and the proportional odds model for FLS. The Mann Whitney U test was also used to compare LSP and FLS between devices within males and females separately.

Data collected were entered into an EXCELTM spreadsheet and analyzed using the statistical software, SAS version 9.1 (SAS Institute, Cary, NC, USA). A *P* value of < 0.05 was considered to denote statistical significance. All statistical tests were two-sided.

Results

All eligible subjects were approached for enrolment into our study. Sixty of the 68 patients screened for recruitment were subsequently enrolled and randomized (the eight excluded patients declined trial participation). All 60 patients completed the trial and were included in the data analysis. The following data were recorded: patient characteristics (age, weight, height, BMI and sex), the first airway device used, LSP, number of insertion attempts, time to achieve an effective airway, volume of air required for each device to achieve an intracuff pressure of 60 cm H₂O, FLS, time taken to insert a nasogastric tube, and the presence of blood on the LMAD cuff.

The median age was 33 (21–68) yr. The means for weight, height, and BMI were 66 ± 10 kg, 167 ± 10 cm, and 24 ± 3, respectively. The male/female ratio was 41:19.

Summary data are presented in Table 2. There was no significant difference in LSP between SLMA and PLMA (*P* = 0.236). The mean for LSP was 19.6 ± 5.8 cm H₂O and 20.9 ± 6.7 cm H₂O for SLMA and PLMA, respectively. The mean difference and associated 95% confidence interval were −1.3 cm H₂O (−3.3 cm H₂O – 0.8 cm H₂O). The profiles of LSP are presented in Fig. 2.

There were no failed insertions (within two attempts) of either supraglottic airway. The first-time success rates of both the SLMA and the PLMA were identical (58/60 vs 58/60). A repeat insertion attempt with the SLMA was made for two patients (one male and one female), because an ineffective seal associated with an air leak through the drain tube was present. In one male patient, a similar leak with the PLMA was responsible for a re-insertion attempt. On another occasion, the PLMA cuff was folded; consequently, only ventilation at high pressures was permitted.

The fiberoptic position (FLS of 4) was better for the PLMA (PLMA, 37/60; SLMA 24/60). Vocal cord visibility was also better for the PLMA (PLMA, 57/60; SLMA 51/60). The median FLS was higher for the PLMA (4 for PLMA; 3 for SLMA). Statistically, the FLSs of the PLMA were significantly better than those of the SLMA (odds ratio: 2.6; 95% confidence intervals: 1.7 – 4.1; *P* < 0.0001).

Table 2 Results of comparisons between the Supreme™ laryngeal mask airway (SLMA) and the Proseal™ laryngeal mask airway (PLMA)

	SLMA	PLMA	<i>P</i> value	Diff S-P (95% CI)
Laryngeal seal pressure, cm H ₂ O; mean (SD)	19.6 (5.8)	20.9 (6.7)	0.236	−1.3 (−3.3 – 0.8)
Males	18.7 (5.4)	19.0 (5.9)	0.828	−0.3 (−2.8 – 2.2)
Females	21.5 (6.2) ^a	24.8 (6.6) ^b	0.096	−3.4 (−7.4 – 0.7)
Attempts at insertion <i>n</i> , (%)				
1	58 (97)	58 (97)	1.000	0 (−0.08 – 0.08)
2	2 (3)	2 (3)		
Successful insertion <i>n</i> , (%)	60 (100)	60 (100)	1.000	0 (−0.06 – 0.06)
Insertion time sec; median (range)	20 (13–79)	20 (13–105)	0.882	−0.7 (−2.2 – 0.8)
Volume of air mL; mean (SD)	25.6 (6.1)	24.3 (5.5)	0.071	1.4 (−0.1 – 2.9)
Fibreoptic Laryngoscopic Score 4/3/2/1; <i>n</i>	24/9/18/9	37/9/11/3	< 0.0001	Odds ratio ^c : 2.6 (1.7 – 4.1)
Males	17/6/12/6	28/5/6/2	0.0009	3.0 (1.6 – 5.4)
Females	7/3/6/3 ^c	9/4/5/1 ^d	0.09	1.7 (1.0 – 2.8)
Gastric tube insertion success <i>n</i> , (%)	60 (100)	60 (100)	1.000	0 (−0.06 – 0.06)
Gastric tube insertion time sec; mean (SD)	10.3 (7.7)	11.0 (9.2)	0.342	−0.7 (−2.2 – 0.8)

^a *P* = 0.134 to compare SLMA laryngeal seal pressure between males and females. ^b *P* = 0.002 to compare PLMA laryngeal seal pressure between males and females. ^c *P* = 0.770 to compare SLMA fibreoptic laryngoscopic scores between males and females. ^d *P* = 0.154 to compare PLMA fibreoptic laryngoscopic scores between males and females. ^e Cumulative odds ratios were estimated using a proportional odds model. CI = confidence intervals; SD = standard deviation

Gastric tube insertion was successful in all patients. The mean times to insert the gastric tube were 10.3 ± 7.7 sec and 11.0 ± 9.2 sec for the SLMA and the PLMA, respectively. The medians were 9 (5–63) sec and 9 (4–61) sec, respectively.

Both airway devices were tolerated well, and there were no complications, e.g. coughing or laryngospasm, with either device. None of the devices was detected to have any blood after removal.

Regression analyses showed no interaction effect between sex and device to both LSP (*P* = 0.486) and FLS (*P* = 0.164). Statistically, however, it was noted that females had a significantly higher LSP than males (*P* = 0.045). The difference of the least square means of LSP and the associated 95% confidence interval adjusted for sex was almost equivalent to the unadjusted. Subgroup analysis to compare the LSP between the SLMA and the PLMA in each sex group did not show a statistically significant difference. There was no significant difference in FLS between the two sexes (*P* = 0.342). In males, there was a significant statistical difference in FLS between the SLMA and the PLMA (*P* = 0.0009); whereas, there was no statistically significant difference in females (*P* = 0.09), perhaps due to the small number of female subjects.

Discussion

The Supreme™ laryngeal mask airway is currently the only single-use LMAD with built-in gastric access. Its design combines the desirable features of the Fastrach™

laryngeal mask airway (the rigid anatomically curved airway tube that provides ease of insertion without introducing the user's fingers into the patient's mouth), the Proseal™ laryngeal mask airway (the provision of higher LSPs with gastric access and integrated bite-block), and the Unique™ laryngeal mask airway (its single use to prevent disease transmission).

Vergheze and Ramaswamy¹⁵ and Eschertzhuber *et al.*¹⁶ previously published data examining the clinical performance of the SLMA in anesthetized paralyzed patients. They conducted a randomized crossover study in 36 and 94 female patients, respectively. Our study considered the clinical performance of the size 4 SLMA in both male and female patients.

It is noteworthy that the three anesthesiologists involved in this study had gained similar prior experience inserting both the PLMA and the SLMA, and they inserted the LMADs under uniform conditions. Therefore, the 60 paired observations can be regarded as independent with a negligible clustering effect.

Although the investigators were less experienced with the SLMA than with the PLMA, our results showed that the SLMA was inserted as easily and quickly as the PLMA. Our observed 97% first-time success rate with the SLMA is comparable with that observed in Eschertzhuber *et al.*'s study¹⁶ at 95%. This first-time success rate could be attributed to the rigid anatomically shaped and elliptical airway tube of the SLMA that facilitated rapid and reliable insertion without the need for introducer tool guidance, as is the case with the PLMA.

The maximum recommended cuff inflation volumes for the size 4 SLMA and the size 4 PLMA are 45 mL and 30 mL, respectively. Our study confirmed that the median volume of air to achieve an intracuff pressure of 60 cm H₂O is usually much less than the recommended volume for both devices. Verghese and Ramaswamy¹⁵ also reported this finding: the median volume of air for cuff inflation to 60 cm H₂O was 21.9 mL for a size 4 SLMA and 22.4 mL for a size 4 PLMA.

The LSP was our primary outcome measure, and our results showed that the SLMA was comparable in providing the same amount of glottic seal as the PLMA. However, the mean LSP provided by the size 4 SLMA was only 19.6 cm H₂O. This is actually much lower than the 28–35 cm H₂O range reported by other studies.¹⁷ We believe that this lower LSP could possibly be the result of having a larger proportion of male patients in our study population, where perhaps a size 5 SLMA would provide a better hypopharyngeal fit. Tan, Sim, and Koay demonstrated that the use of a size 5 PLMA resulted in a better glottic seal in Asian men.¹⁸ In Asian males, the mean LSP for a size 4 PLMA was 18.7 cm H₂O, and the mean LSP for a size 5 PLMA was 26.2 cm H₂O. This finding could perhaps be extrapolated to the SLMA. To support this line of reasoning, there were occasions in our study when it was observed that the fixation tab was flush against the upper lip of male patients, indicating that a larger size SLMA should have been used. Strube pointed out that seal pressures similar to the PLMA could be achieved if the SLMA was held firmly in position (Strube P.J., personal communication, 2009). This would probably explain why the Laryngeal Mask Company had designed the size 5 SLMA to achieve a similar cuff size as the size 4 SLMA, but with a longer stem. A size 5 SLMA was not available at the time of this trial. Further trials using a size 5 SLMA would be required to confirm this clinical impression.

Our study results suggested that the anatomical positioning of the SLMA was inferior to that of the PLMA in both sexes. Also, Hosten *et al.*¹⁷ demonstrated that the fibreoptic view was better in the PLMA group than in the SLMA group. This was the case despite the modified cuff of the SLMA being similar in size and shape to that of the PLMA. A possible explanation could be that the use of an inappropriately sized SLMA may result in suboptimal conformation to the contours of the hypopharynx. This suboptimal conformation may lead to downfolding of the epiglottis and resulting poorer visibility of the vocal cords. Another plausible reason for the inferior fibreoptic laryngeal view with the SLMA could be that the rigid airway tube may push the inflatable cuff downwards onto the epiglottis. On the other hand, the flexible reinforced airway tube of the PLMA may cause less epiglottic downfolding with its cuff, resulting in less obliteration of the view of the

vocal cords. Ease of ventilation was similar with both the SLMA and the PLMA, suggesting that the inferior fibreoptic position of the SLMA did not impede its performance as a ventilatory device. Most studies showed little or no correlation in LMADs between fibreoptic position and function.¹⁹

For both devices in all 60 patients, gastric access was achieved readily using a lubricated 16-French gauge gastric tube at the first attempt. This would indicate in all cases that the reinforced tip of the SLMA and the PLMA containing the drain tube was never folded over.

Lastly, as evidenced by the absence of blood on the cuff of both devices in all the patients, inserting the SLMA and the PLMA were found to be equally atraumatic. No data about postoperative sore throat were collected in this study, as both devices were inserted into each patient. However, we speculated that the incidence of sore throat caused by SLMA insertion should not be higher than that caused by PLMA insertion. Timmermann *et al.* performed an evaluative study with the size 4 SLMA on 100 women, and they found that eight patients (8.1%) complained of mild sore throat—not associated with blood on the device—two hours postoperatively. The cuff pressure was limited to 60 cm H₂O.²⁰

Every crossover design bears the risk of a period effect and a carryover effect of the first treatment to the second. In our study, statistical computing showed no significant period effect and an equal carryover effect, if indeed it exists. This result is in contrast to the period effect described by Verghese and Ramaswamy in a study of 36 women.¹⁵ A carryover effect would suggest a longer insertion time for the second insertion due to tissue edema from the airway manipulation. We did not observe any clinical influence on the second device after the first device was inserted.

Our study had several limitations. First, we did not include patients with significant comorbid diseases, i.e. patients with ASA status III or more. Therefore, we are unable to make any conclusion regarding the feasibility of the SLMA for specific subgroups of patients. Second, our patients were paralyzed; thus, our results may be less applicable to patients who are not paralyzed. Third, since three experienced LMAD users conducted all insertions, our results may not be applicable to inexperienced personnel. Fourth, measurements of LSP were taken only at the beginning of anesthesia before positive pressure ventilation began. For various reasons, e.g. proximal migration or displacement of cuff, the LSP might alter during the entire anesthesia. Whether this could happen and pose certain clinical relevance should be addressed in future studies. Fifth, the recommended weight range for the size 4 SLMA/PLMA is 50–70 kg, and the weight of 20 of the 60 patients in our study fell outside of this range. This factor

could have contributed to the lower than expected LSP observed in this study. Sixth, the lower confidence limit for the mean difference in LSP might not be satisfactory to show non-inferiority of the SLMA. Perhaps this is due to our sample size calculation being based on an expected mean LSP of 30 cm H₂O and an equivalence margin of 6 cm H₂O. A larger sample size is needed for a narrower confidence interval with a smaller and more meaningful equivalence margin for a smaller mean LSP. Finally, the data were collected by an unblinded observer, a potential source of bias.

We conclude that the SupremeTM laryngeal mask airway in anesthetized paralyzed adult patients is easy to insert; it forms LSPs similar to those of the ProSealTM laryngeal mask airway and facilitates easy access to gastric fluids.

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Competing interest None declared.

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