Table 1. Diagnostic Signs for Correct Position *versus* Malposition with Airway Obstruction of the *Laryngeal Mask Airway ProSeal*™

	Correct	Distal Cuff in Glottic Inlet	Severe Epiglottic Downfolding	Glottic Compression
Resistance at insertion	Nil	In pharynx	In pharynx or nil	Nil
Location of bite block to incisors	Between	Proximal	Between	Between
Popping out of the mouth	No	Yes	No	No
Airway obstruction	No	Yes	Yes	Yes
Seal	Good	Poor	Good	Good
Drain tube leak	No	Yes	No	No
Drain tube patency	Yes	Yes	Yes	Yes
Esophageal leak	No	Possible	No	No
LMA-P™ pushed in further	No effect	Deterioration	No effect	Deterioration
Sniffing position/jaw thrust	No effect	No effect	Obstruction improved	Obstruction improved
Decreasing cuff volume	No change	No change	Obstruction unaffected	Obstruction improved

From Brimacombe JR[7]; used with permission.

5–15%. Three percent of *LMA-P*™ malpositions occur with the distal cuff of the device in the glottic inlet, severe epiglottic downfolding occurs in $< 0.5\%$, and glottic compression occurs in 0.3%. These types of *LMA-P*™ malposition are associated with airway obstruction as diagnosed in table 1.[6]

The esophageal drain tube is designed to aid the clinician in detecting malposition.[7] Free passage of a gastric tube *via* the drain tube provides information about the position and patency of the drain tube of the *LMA-P*™ or *LMA-S*™. The "bubble test" described by O'Connor and Stix[8] detects misalignment of the distal tip of the *LMA-P*™ or *LMA-S*™ with the glottic inlet. Reseating the *LMA-P*™/*LMA-S*™ with a jaw thrust maneuver may be helpful.[6]

The challenge of attaining expertise and facility with any new airway device remains the clinical problem to solve. This depends, in part, on review of the existing scientific literature as well as ongoing clinical experience. Kleine-Brueggeney *et al.* should be commended for initiating a clinical dialogue about the *LMA-S*™, a new but potentially useful advancement in airway management.

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In Reply:—We thank Osborn *et al.* for starting an interesting debate about the use of new supraglottic devices in clinical practice without solid evidence on their performance.

As described earlier for the *Laryngeal Mask Airway ProSeal*™ (*LMA-P*™),[1] we reported an unexpected acute airway obstruction caused by the *Laryngeal Mask Airway Supreme*™ (*LMA-S*™), which ultimately was interpreted as a medial displacement of the laryngeal inlet by the mask itself, leading to airway obstruction, stridor, and ventilation difficulty.[2]

The patient's head was in the neutral position without head flexion and slightly elevated, as recommended. His height was 1.78 m, he weighed 95.6 kg (body mass index 30.2 kg/m^2). Based on the patient's characteristics and the recommendation in the *LMA-S*™ instruction manual, the *LMA-S*™ size 5 was the correct one. We acknowledge other suggestions regarding how to choose the right size of an *LMA-S*™.

In 2003, Stix *et al.* described malposition of the *LMA-P*™ indicated by the depth of the bite block.[3] Whether this applies to the *LMA-S*™ with its different construction as well is speculative, and we cannot comment on that. In our case, the bite block did not remain outside of the mouth.

We also cannot judge whether an *LMA-S*™ size 4 would have changed the airway problem. Our report was not intended to show all possibilities how to resolve airway obstructions with the use of an *LMA*™, but rather to point out that such obstruction may happen.

Osborn *et al.* mention that the cuff volume of the size 5 *LMA-S*™ should not exceed 45 ml. We completely agree that overinflation needs to be avoided carefully in any cuffed supraglottic airway device. Besides airway obstruction, it might also cause nerve damage.[4] Clinical observation in the operating room showed us that even 45 ml often results in high cuff pressures. The cuff volume in the patient presented was well below 45 ml, leading to a cuff pressure of 60 cm H_2O.

Our clinical practice with the *LMA-P*™ includes the described methods to detect malposition. Whether these also apply to the *LMA-S*™ needs to be proven. In the case described, we had the luxury of having a fiberoptic bronchoscope immediately available to directly visualize the reason for the airway obstruction.

We disagree that previously published findings regarding the performance of the *LMA-P*™ should automatically apply to the *LMA-S*™, as

Osborn *et al.* imply. The *LMA-S*™ should not be confused with the *LMA-P*™. It is not a single-use *LMA-P*™ because substantial details are designed and constructed in a different way to overcome weaknesses of other *LMAs*™, as the producers of the *LMA-S*™ promote their device. The *LMA-S*™'s clinical performance can only be evaluated in clinical trials. First published comparisons with a reasonable sample size between the *LMA-P*™ and *LMA-S*™[5] showed clinically important differences in the seal pressure between both devices.

We affirm our statement that acute airway obstruction of *LMAs*™ can occur at any time, and backup strategies for the failure of the backup device *LMA*™ have to be considered.

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Hypothermia Should Also Have Been Considered to Be a Predictor of Adverse Perioperative Cardiac Events

To the Editor:—I read with interest the article by Kheterpal *et al.*[1] However, I am concerned that they did not control for hypothermia in their analysis. Hypothermia is considered to be a risk factor for morbid cardiac events.[2,3] Without controlling for this variable, the risk assigned to their nine variables may be different than what was reported. For example, suppose the elderly patients became hypothermic more readily than the nonelderly patients. If this was the case, then the risk factor of being elderly may be overestimated, as it could have been the hypothermia and not the age that caused the problem in the elderly patient. I suspect that accurate core temperatures were not measured in most, if not all, patients who did not receive general anesthesia. However, the study population seems large enough to allow for a separate analysis of patients who did have their core temperature recorded. Do the authors have any temperature analysis that was not reported in the article?

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In Reply:—We thank Dr. Roth for his interest in our article and insightful commentary. Previous literature has demonstrated an association between intraoperative hypothermia and cardiac adverse events. However, we did not evaluate this clinical element in our analysis for several reasons. First, previous data regarding hypothermia and cardiac adverse events is limited to high-risk patients who had a preexisting diagnosis of coronary artery disease or several known risk factors for coronary artery disease undergoing high-risk thoracic, intraperitoneal, or vascular procedures.[1] Although our dataset included some high-risk patients, only 9.6% had a previous cardiac intervention and only 22% were undergoing high-risk surgery.[2] As a result, the studied population was dissimilar to previous work, and we were skeptical of being able to identify an association between hypothermia and cardiac adverse events in this more representative population. Second, although our studied dataset was large, we were only able to observe 83 events. As a result, we had to limit the number of independent variables evaluated in the logistic regression full-model fit to reduce the impact of model overfitting.[3] Hypothermia was one of several independent variables that we were unable to assess because of this statistical analysis constraint.

Finally, the absence of a consistent way to separate "hypothermic" *versus* "normothermic" groups in an observational dataset presented the final challenge. There are several ways to define hypothermia. First, we could evaluate median temperatures within 10-min epochs, similar to the presented hypotension analysis. Second, some may advocate that a single temperature measurement below 36°C would qualify as "hypothermic." Third, others may suggest that we employ the absence of active warming to be consistent with prospective, controlled studies.

We agree that intraoperative hypothermia should be evaluated in future studies. We look forward to conducting large, multicenter observational dataset analyses that may offer us the statistical power necessary to do so.