TABLE Patient characteristics, anesthesia and surgical procedures

| | *LCT/MCT 2%* | *Control* |
|---|---|---|
| *Patient characteristics* | | |
| No. | 30 | 29 |
| Sex, M/F (% F) | 20/10 (33%) | 15/14 (48%) |
| Age, yr | 57.7 ± 11.4 | 58.4 ± 12.2 |
| Body weight, kg | 76.7 ± 12.1 | 72.2 ± 12.7 |
| *Anesthesia* | | |
| Mean propofol dose, $mg \cdot kg^{-1} \cdot hr^{-1}$ | 6.48 ± 1.48 | 6.39 ± 1.55 |
| Cumulative propofol dose, mg | 938 ± 449 | 842 ± 333 |
| Cumulative lipid infusion, g | 4.69 ± 2.24 | 4.13 ± 1.70 |
| *Outcome* | | |
| Anesthesia maintenance, min | 109 ± 49 | 106 ± 44 |
| Time to extubation, min | 16 ± 10 | 13 ± 5 |
| Length of stay in surgical ward, days | 6 ± 3 | 7 ± 8 |

Data are expressed as mean ± SD. There were no significant differences in any of the variables.

was performed. A continuous propofol infusion followed, targeted to maintain a BIS of ≤ 45. The propofol infusion rate during anesthesia maintenance was increased stepwise by 0.25 $mg \cdot kg^{-1} \cdot hr^{-1}$ when signs of inadequate anesthesia developed (i.e., BIS value > 50). Plasma triglyceride concentrations were measured before and after anesthesia.

Continuous variables were analyzed using repeated-measures analysis of variance, categorical data analyzed using $\chi^2$ test.

Patient characteristics, cumulative and mean drug dosages in the two groups were similar (Table). The two formulations were equivalent for hypnosis [dose ratio 1.0136 $mg \cdot kg^{-1} \cdot hr^{-1}$; 95% confidence interval (CI) 0.8966–1.1464; predefined range 0.8–1.25] and in their hemodynamic effects.

Although pain on injection was less in the LCT/MCT group 17/30 *vs* 23/29 patients [relative risk (RR) 0.71; 95% CI 0.48–1.02] and for moderate or severe pain 10/30 *vs* 14/29 patients (RR 0.69; 95% CI 0.36–1.28) this difference did not reach statistical significance. This non-significant difference in pain perception is possibly due to a type II error given the small number of subjects.

The increase in plasma triglycerides from baseline in the control group (34.4 ± 30.3 $mg \cdot dL^{-1}$) was significantly higher than that in the LCT/MCT group (16.6 ± 32.5 $mg \cdot dL^{-1}$; $P < 0.001$; time × drug interaction, $P = 0.029$). There was no correlation between plasma triglyceride level and mean propofol dose per hour.

The smaller increase in plasma triglyceride concentration with LCT/MCT propofol 2% observed after a relatively brief administration could be important for prolonged sedation purposes.

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# *cLMA and PLMA for laparoscopic surgery*

To the Editor:
I wish to comment on Dr. Cooper's editorial regarding the use of laryngeal mask airways (LMA) for laparoscopic surgery.[1]

Firstly, avoiding a LMA will require tracheal intubation. This will lead to a 1.8% likelihood of difficult intubation, 0.3% failed intubation, 0.011% failed intubation with difficult ventilation and associated complications.[2]

Tracheal intubation prevents aspiration, while the tube is in the trachea. Warner *et al.* studied 67 cases of aspiration during 215,488 operations.[3] Aspiration incidence (0.11% emergency and 0.025% elective) was higher than for the classic LMA (cLMA; 0.009%).[4] Aspirations occurred during laryngoscopy in 32.9%

and during extubation in 35.9%. As these are essential components of anesthesia, the assumption that a tracheal tube is safer than the LMA is open to debate.

The second point is that Dr. Cooper does not distinguish between the cLMA and ProSeal LMA (PLMA). The PLMA is designed to separate the gastrointestinal and respiratory tracts and improve mechanical ventilation. There is increasing evidence these aims are achieved.[5]

Dr. Cooper hopes that evidence of safety will be available from randomized controlled trials (RCT). Detecting a 50% reduction in aspiration between cLMA and PLMA would require approximately 1.3 million patients per group.

Arguments therefore exist that, for laparoscopic surgery, each of the available airways is the best choice. No RCT will adequately inform which is best for a given group of patients. Even if it did this will not ensure that a specific device is the best choice for an individual patient presenting for anesthesia. Anesthesiologists must continue to analyze the currently limited 'best available evidence' and make their own balanced decision.

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## *Reply:*

*I would like to thank Dr. Cook for his comments on my editorial.[1] Use of a laryngeal mask airway (LMA) may avoid difficult laryngoscopies and failed intubations, but it does not guarantee correct placement, adequate ventilation and a secure airway in every patient. As I stated in my editorial, there is an enormous range in reported LMA-associated complications. Even in the hands of experts, including Cook et al.,[2] successful insertion was not possible with the ProSeal laryngeal mask airway (PLMA) in 2/178 patients and required more than one attempt in 20% with the PLMA and 10% with the LMA-Classic. Virtually identical results were obtained by Brimacombe and others.[3] Multiple attempts increase the potential of laryngospasm, regurgitation, desaturation, trauma, coughing and hemodynamic disturbances. I suspect that these complications are a part of general anesthesia, whether they involve intubation or LMA insertion. Because of the published range in complication rates, it will be difficult to compare the safety of techniques.*

*Development of the PLMA was welcomed. Hopefully evidence will continue to mount, supporting its effective separation of the respiratory and alimentary tracts. It can only provide such protection if it is properly inserted and it is imperative that users be fastidious in their insertion, fixation and confirmation techniques. I reported a case of a patient in whom aspiration occurred despite an apparently correctly placed PLMA.[4]*

*I agree with Dr. Cook that it is unlikely that the comparative safety of intubation vs LMA insertion will be established by randomized controlled trials, but when such trials are performed, we must examine them critically. Can the reader safely adapt the technique into his practice? Will it enhance patient safety? As we continue to apply the technique to higher risk patients (laparoscopy, obesity, gastro-esophageal refux), we may compromise its impressive safety record.*

*It is not my intention to argue against the use of LMA devices. My interest is enhancing patient safety, which I believe can best be achieved by a constant striving to improve technique and the appropriate matching of the device to the patient and surgical procedure.*

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## References

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