Third generation supraglottic airways: is a new classification needed?

D. M. Miller

London, UK

E-mail: donald.miller@kcl.ac.uk

Editor—I have to admit that I am responsible for the academic use of the word ‘generation’ in a reclassification that was recently published in two places. I also have to admit that it is likely to cause confusion if the same terms are used in different classifications. However, Professor Cook’s use of the term for first generation does not apply to extraglottic airways but only to the laryngeal mask airway by reason of chronology (see precursor to Combitube below). Professor Cook’s second generation is therefore second generation from the laryngeal mask airway point of view alone. Granted, it is a step change for the laryngeal mask airway to include a gastric tube, but it is not a step change in the basic functions of extraglottic airway devices (EADs). Might it be that Professor Cook defines in his letter first generation supraglottic airway devices (SADs) as ‘simple airway tube’ because he is trying to avoid having to exclude sealing in the definition? Would one call a Guedel airway that is a simple airway tube that occupies a supraglottic or extraglottic position an SAD? If Professor Cook’s definition was correct and sealing was not a vital and essential characteristic of all EADs, then I would have no basis to use the word ‘generation’ in a classification. But the fundamental essential characteristic in any EAD is that it is an airway conduit that seals in the pharynx. We understand the implication of the necessary seal without having the need to qualify it by saying extraglottic sealing airway device when we refer to EADs. If it does not seal, it does not qualify as an EAD or SAD. Aspiration protection and intubation through the device are non-essential features that may or may not be present.

Professor Cook’s objection to me using the term ‘generation’ in a classification of EADs appears to be driven by the noble objective of giving full credit to the magnificence of the laryngeal mask airway invention, the first EAD really to change the practice of anaesthesia. However, why Professor Cook’s choice of the term ‘generation’ is inappropriate and an unfortunate choice is explained in the article that Michalek and I wrote. As I see it, I think that the inappropriate use of ‘third generation’ by the commercial references, but not academic references, which Professor Cook refers to in his letter, may suffer from the same issue of referring to improved features (aspiration protection, conduit for intubation, bite block etc.) that do not constitute fundamental step changes in the essential function of extraglottic airways as new generations.

But for the purpose of clarity, let me explain how I see it again in a different way. Please understand that I am not trying to dilute the importance of the laryngeal mask airway by including Combitube in first generation devices. The meaning of the word generation has two components: first, chronology; and second, birth of a new thing that involves a step change. Professor Cook’s use of the word in his classification has neither component, because the second generation was invented before the first generation (Combitube was invented before the laryngeal mask airway) and his second generation has nothing to do with a step change in EADs but in laryngeal mask airway alone. So that is why it would seem to be an unfortunate choice. Improving the laryngeal mask airway to minimize the risk of aspiration is an important provision of an additional feature but not a step change in the concept of EADs. The magnitude of importance is an insufficient basis for it to constitute a step change in concept of EADs even though, from the point of view of the laryngeal mask airway, it may be.

Finally, the classification we proposed is consistent with both requirements to fulfil the role of new generations. The sequential development of devices with three different sealing mechanisms, with the first developed in the 1980s, the second in the 2000s, and the third in the present decade, represents a logical progression, each with different advantages. I would think that the third generation self-energizing sealing devices, such as Baska, do provide us with the potential to use higher inflation pressures, especially if we are to extend the use of EADs to enroach further on the use of tracheal tubes, such as for the morbidly obese, with less risk of neuropraxias. We probably need to wait for more than a million uses to find out whether this is true.

For all these reasons, therefore, I would disagree with Professor Cook regarding his opinion on third generation. Regarding the call for a new updated classification, I would agree with him that this is necessary. A classification of extraglottic airways along the lines we have proposed already would make a good starting point. Regarding what he refers to as second generation devices, I would say that most extraglottic airways have aspiration protection features that should be looked at and classified. I have already done that and built a vomit/regurgitation model to measure the effectiveness of these features for all the different types of EADs, presented at the Difficult Airway Society meeting in November 2013, where Professor Cook was one of the judges.

Declaration of interest

D.M.M. is an inventor of SLIPA and 3gLM airway devices.

References


doi:10.1093/bja/aev309
Third generation has not arrived yet

R. Goyal

Pune, India

E-mail: rakhegoyalkumar@gmail.com

Editor—I couldn’t agree more with Tim Cook. The third generation of supraglottic airway (SGA) has not arrived, not as yet. The term, if continued to be used, will be misleading; hence, it should be abandoned forthwith. There is an agreeable overlap of features in the modern SGAs available to us. Some of them have additional safety features, such as the drain tube, while others have features to facilitate additional functions, such as endotracheal intubation, gastrointestinal endoscopy (gastro-laryngeal tube GLT; VBM), easier bending and fixing (flexi LMA and other such), preformed shaft or customized handle introducer (LMA Supreme and LMA Proseal), non-inflating cuff (i-gel), self-pressurizing cuff (Air Q SP), blocker for the oesophagus (Air Q blocker), and in-built cuff pressure monitoring (AES Ultra CPV). The classification suggested by Cook is reasonable and can give a better picture of what to expect to a relatively naive user. To conclude, a perfect classification is desirable, but if it is not available at the moment, it should not be thrust upon us without enough thought. Until then, let each device be known by the name given to it by its originator.

Declaration of interest

None declared.

doi:10.1093/bja/aev311

Pharmacokinetics of intranasal fentanyl in parturient

M. Kokki1,*,†, A. T. Heikkinen2, K. Raatikainen1, V.-P. Ranta1, H. Hautajärvi2 and H. Kokki1

1Kuopio, Finland, and 2Oulu, Finland

*Corresponding author. E-mail: merja.kokki@kuh.fi

Editor—Fentanyl is administered i.v. and as an intrathecal adjuvant of regional analgesia to control labour pain. Intranasal fentanyl is readily absorbed with a high bioavailability, a rapid onset of seven min and a relatively short duration of action (elimination half-life=65 min) with no active metabolites, but its use in pregnant patients has not been established. We have studied pharmacokinetics and –dynamics of intranasal fentanyl in 15 healthy parturient, aged 21–40 yr, with uncomplicated, full-term single gestation pregnancies. The study protocol was approved by the local ethics committee, the Finnish Medicines Agency was notified, and the study was recorded in the European Clinical Trials Database (EudraCT no. 2010-020501-32). Subjects gave written informed consent. Subjects were administered up to five doses of 50 µg of fentanyl (Instanyl® nasal spray 50 µg dose−1, Oy Leiras Takeda Pharmaceuticals Ab, Helsinki, Finland) intranasally at every 15 min when contraction pain was ≥5/10 (numerical rating scale (NRS) 0=no pain, 10=most pain). If pain had decreased by two or more points or if adverse effects developed, intranasal fentanyl administration was stopped. If the pain relief achieved with fentanyl was insufficient or if the subjects needed further pain relief during labour, further pain relief were provided according to the hospital standards, without fentanyl. Venous blood samples for the fentanyl analysis were obtained before the first intranasal fentanyl spray, at five, seven and a half, 10 and 15 min after the previous drug intake, after the last dose up to 180 min and the last sample at delivery. The fentanyl concentration in plasma was measured with an ultra-performance liquid chromatographic system. Ten out of 15 subjects took 250 µg [range 100–250] cumulative dose. It seems that physiological changes, oedema during pregnancy, affect the pharmacokinetics fentanyl mucosal absorption in labouring women. The median of fentanyl concentration in plasma at 15 min after the first 50 µg dose was 0.21 ng ml−1 [0.05–0.57], (i.e. were about one third less than expected based on observations in healthy subjects having the same nasal formulation during dental surgery). The median highest concentration after the last dose was 0.79 ng ml−1 [0.26–1.38], respectively. An analgesic concentration of fentanyl 0.5 ng ml−1 was reached in 10 out of 15 subjects and was sustained between 33 and 140 min (Fig. 1). After the final dose, fentanyl concentrations in plasma declined with an apparent secondary peak in some of the subjects at one to two h after the last dose, indicating that part of the dose was absorbed from the lower pharynx or the small intestine. The decrease in contraction pain appears to be rather modest. Some efficacy was shown with a peak efficacy at 60 min, however most had

doi:10.1093/bja/aev310


4. Scarberry EN. 1980 US patent number 4231365