OPTIMAL DOSE OF ALFENTANIL FOR REMOVAL OF SUPREME™ LARYNGEAL MASK AIRWAY DURING EMERGENCE FROM DESFLURANE ANAESTHESIA

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Background
The removal of Supreme™ Laryngeal Mask Airway (LMA) may be associated with adverse events such as coughing, biting, agitation and laryngospasm. Thus, it is advisable to remove the LMA when the patient is breathing spontaneously and when the airway reflexes are still depressed. A number of techniques have been used to prevent this adverse emergence phenomenon, such as removal of the LMA while the patient is in the deep plane of anaesthesia or administration of local anaesthetic and intravenous opioids during emergence from anaesthesia. The administration of intravenous opioids before emergence is useful for preventing cough, agitation and hemodynamic response. Alfentanil has a fast onset of action (four times faster than fentanyl) but very short duration of action (one third duration of action of fentanyl). It is proven to suppress cough and agitation during the endotracheal tube emergence. However, its use in suppressing cough in LMA removal patient has not been evaluated.

Objectives
To determine the optimal dose of alfentanil for Supreme™ Laryngeal Mask Airway removal during emergence from desflurane anaesthesia.

Methods
We studied 30 healthy adults, age between 18 to 46 years, who underwent minor surgical procedures. During emergence from anaesthesia, desflurane was turned off and patients received a predetermined dose of alfentanil when desflurane end tidal concentration reached 2 %. The dose of alfentanil was determined by a modified Dixon’s up-and-down method. The initial alfentanil dose was set as 10mcg/kg and the subsequent up or down titration were 1mcg/kg. This continued until 8 crossover pairs were achieved.

Results
From the modified Dixon’s up-and-down method, the ED50 of alfentanil for successful laryngeal mask removal was 3.88 mcg/kg. From probit analysis, the ED50 and ED 99 were 2.77 mcg/kg (95%CI of 1.92 to 3.45 mcg/kg) and 8.00 mcg/kg (95% CI of 4.31 - 40.57mcg/kg), respectively. There was a statistically significant reduction in heart rate and respiratory rate from baseline after alfentanil was given. No patient developed clinically significant hypotension and bradycardia requiring treatment.

Conclusion
Supreme™ Laryngeal Mask Airway can be successfully removed in 99% of anaesthetized adult without airway complication using 6mcg/kg of alfentanil.