Efficacy of Different The Laryngeal Mask Airway Devices with and without Aperture Bars

Luis Gaitini, M.D., Boris Yanovski, M.D., Mustafa Samri, M.D., Karam Keresh, M.D., Riad Toame, M.D.
Anesthesiology Department, Bnai-Zion Medical Center,
The Bruce Rappaport Faculty of Medicine,
Technion, Israel Institute of Technology, Haifa, Israel

Background

The Laryngeal Mask Airway LMA has come to be used in a wide variety of patients and under a wide variety of clinical conditions. Aperture bars at the junction of the mask and the tube were designed to prevent the epiglottis from occluding the airway. Recently the new generation of devices, similar to the Laryngeal Masks but without aperture bars, was introduced to the market.
This prospective, randomized study compares the LMA "Unique" with four new LMA: Portex Soft Seal, Solus Intersurgical, Laryngeal Airway Amstrong and Laryngeal Mask Ambu in adult patients during general anesthesia with spontaneous ventilation. The specific variables measured were fiberoptic view, oxygen saturation and end tidal CO2 (ETCO2).

Materials and Methods

LMA "Unique" Portex Soft Seal Solus Intersurgical LA Armstrong LMA Ambu

One hundred and twenty five adult patients undergoing general anesthesia for routine minor surgical procedures were randomly assigned to either LMA "Unique" (n=25), Portex Soft Seal (n=25), Solus Intersurgical (n=25), Laryngeal Airway Armstrong (n=25) or LMA Ambu (n=25) for airway management. Anesthesia was induced with up to 3 µg/ kg of Fentanyl and 2-3 mg Propofol and maintained with 70% Nitrous Oxide/ 30% Oxygen and Isoflurane.

The devices were blindly inserted and cuffs inflated with monometer with 60 cm H20 pressure. The position of the devices in relation to the glottic opening was accessed using fiberoptic bronchoscope. The fiberoptic view was scored according to an established scoring system: 4 = only vocal cords; 3 = vocal cords plus epiglottis; 2 = vocal cord plus anterior epiglottis; 1 = vocal cords not seen but device functions adequately; 0 = vocal cords not seen and device function is not adequate. Oxygen saturation and end-tidal carbon dioxide were measured and recorded automatically using the AS/3 TM monitor.

Results

Device	Oxygen Saturation (%)	End-Tidal CO2 (mm Hg)	Fiberoptic Score (n in each score group 4/3/2/1/0)
LMA "Unique"	97.2 ± 2	40.1 ± 6	5/15/5/0/0
Portex Soft Seal	96.3 ± 5	41.2 ± 5	3/12/10/0/0
Solus Intersurgical	97.0 ± 6	43.3 ± 6	2/9/14/0/0
Armstrong	96.5 ± 3	41.2 ± 7	3/10/12/0/0
Ambu	97.1 ± 2	42.8 ± 6	2/11/12/0/0

Conclusions

The five studied devices appear to be equivalent with regard to the position in the larynx inlet and in respect to oxygenation and ventilation during spontaneous breathing in minor surgical procedures. These results suggest that absence of the aperture bars in the new devices does not affect their clinical performance.

E-mail: luis.gaitini@b-zion.org.il