

Evaluation of SaCo Videolaryngeal Mask Airway for Airway Management and Intubation in Morbidly Obese Anesthetized for Elective Surgery

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Background and objectives: Morbidly obese patients pose challenge to operator when airway management is needed. Additionally they are at increased risk of complications related to failed airway management, hypoxia and following brain injury. SaCo videolaryngeal mask airway is a novel third generation supraglottic device allowing for continuous observation of entrance to larynx via inserted in special channel videoscope connected with cable with external monitor. In obese patients airway management can be difficult so use of new devices that improve safety and potentially efficacy of airway management is indicated. In prospective observational study the SaCo VLM will be evaluated in terms of maintaining airway patency and effectiveness of intubation through its lumen in morbidly obese scheduled for elective general surgery under general anesthesia.

Methods: After receiving Medical University of Lodz, Poland ethical committee approval (RNN/104/22/KB) and registration in Clinical Trials Gov (NCT05680909) the study was started. Patients with BMI over 40 kg/m² scheduled for elective bariatric procedure were included.

After induction to general anesthesia SaCo VLM was inserted with continuous visualisation through camera channel and inserted videoscope and mechanical ventilation will be commenced. Ease of SaCo VLM insertion was recorded in 5 grade scale: 1- very easy, 2- easy, 3- neutral, 4 - difficult, 5 - very difficult.

Time of insertion was recorded as time from grabbing device and opening of patient's mouth to connecting SaCo VLM to ventilator and confirming of patient's ventilation. Parameters of mechanical ventilation were recorded: Peak pressure, Lung Compliance - from respirator monitoring system and Seal pressure (measured with following method: fresh gas flow 5 l/min, valve set at 40cmH₂O, manual/spontaneous ventilation mode - with increasing airway pressure when the leak will be recognized achieved maximum pressure will be recorded). The visualisation of entrance to larynx was assessed on device's monitor in 4-grade scale: 1- best view - all structures of vocal cords visible, 2 - vocal cords partially visible, 3 - only lower part of entrance to larynx visible, 4 - no visualisation of entrance to larynx).



Necessary adjustments were recorded like external pressure on thyroid cartilage, changing of SaCo VLM mask position. In case of not adequate ventilation following steps were taken: reposition of SaCo VLM, changing of size of SaCo VLM, endotracheal intubation using videolaryngoscope. After measurements the endotracheal intubation efforts were commenced under continuous visualisation of entrance to larynx with SaCo VLM videoscope system. Time of intubation was recorded. Ease of intubation was recorded in 5 grade scale: 1- very easy, 2- easy, 3- neutral, 4 - difficult, 5 - very difficult. After successful endotracheal intubation confirmed with EtCO₂ the standard general anesthesia was continued. After surgery and anesthesia the possible complications were evaluated: track of blood on device, laryngospasm, sore throat.

Results:

A total number of 141 pts were included into study, but data was analyzed from 129. The demographic data of studied group were: mean age 41.5 SD 10.49 yrs old, mean weight 130.31 SD 19.1 kg, mean height 171.1 SD 8.5 cm. The insertion of SaCo mask was successful in 128 in first attempt, and 1 in second attempt. Mean time of insertion was 18.23 sec. Mean size of mask used was number 4.15. Mean ease of insertion was estimated on 1.31 points. Mean peak pressure was 20.47 SD 4.7 cmH₂O, mean lung compliance 34.6 SD 12.1, and mean seal pressure was 34.9 SD 6.4 cmH₂O. Mean obtained visualization of glottis was 1.49 points. Intubation through SaCo VLM was successful in 124 pts. Ease of intubation was estimated on 1.39 points. No complications were observed. After removing SaCo VLM in 11 cases the blood tracks were observed.

Discussion and Conclusions:

SaCo VLM is effective and safe device for ventilation and intubation under direct control of vision, with high level of sealing pressure in morbidly obese patients

