

Prolonged Use of Supraglottic Airway Device for Mechanical Ventilation in the Intensive Care Unit

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Sir,

Supraglottic devices are routinely used as ventilating devices inside an operation theater and are rapidly gaining importance as an essential tool during emergency airway management, especially in Cannot Intubate and Cannot Oxygenate (CICO) situations. However, the use of these devices to facilitate prolonged mechanical ventilation in intensive care units (ICU) is very uncommon and not well reported in the literature.

A 65-year-old, 57-kg female patient was operated for the fractured shaft of the femur. During surgery, the patient had an episode of hypotension, which was managed with colloids and 1 unit of packed red cell blood transfusion. About 6 hours after completion of the surgery, she was found to be unresponsive. She was rushed to the surgical ICU nearby. Her hemodynamic parameters had worsened, and infusion noradrenaline was started to keep the mean arterial pressures above 65 mm Hg. In order to protect her airway, emergency endotracheal intubation was planned. During laryngoscopy, she was found to have a Cormack and Lehane grade of 3b. Despite multiple attempts and use of airway adjuncts such as gum elastic bougie and stylets, intubation could not be performed. With the patient now desaturating, I-gel size 3 (Intersurgical Limited, Wokingham, UK), was introduced as a rescue device. Gastric decompression was done, and after confirming satisfactory ventilation and a good seal, ventilation was started on the volume control mode with a tidal volume of 350 mL, respiratory rate of 16 min⁻¹, and FiO₂1. The pressure limit was kept at 30 cm of H₂O. Her oxygen saturation improved; however, she was still not responsive to the command.

I-gel can be used as a conduit for intubation. However, the only fiberoptic bronchoscope available at our institute was not functional at the time. Considering the difficulty faced during attempts at laryngoscopy, risk of vocal cord edema and injury, and noting the adequacy of ventilation by i-gel, the consensus was to avoid any further attempts at intubation at that time. We had been assured of the availability of a spare bronchoscope within 1 day. The plan of management thus was to ventilate the patient using I-gel till the time a bronchoscope was made available.

The patient was thus ventilated using I-gel for 27 hours. During this period, the patient's hemodynamic parameters had stabilized, and arterial blood gases had improved, although her level of consciousness still warranted endotracheal intubation. Once the fiberoptic bronchoscope was available, we managed to intubate the patient through the I-gel without much difficulty. This patient

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improved gradually over the next few days and was extubated on the fifth postoperative day.

I-gel, a supraglottic airway device, has some useful features that include a soft, noninflatable cuff that fits snugly onto the perilaryngeal framework enveloping the laryngeal inlet and supports a good seal. It is very easy to insert and is stable after insertion.¹ Not many authors have reported the use of I-gel for prolonged periods of ventilation in an ICU although some case reports suggest that a laryngeal mask airway (LMA) could be used for 10 to 24 hours without any evidence of adverse effects to the patients.²

The use of a supraglottic device in young children has also been described. Yao et al. used a supraglottic device in a neonate with Pierre Robin syndrome for 6 days.³ Other authors have also used it in neonates for a period of 4 to 8 days.⁴ The supraglottic device, when used for prolonged periods, necessitates close monitoring of respiratory functions. There is a chance of supraglottic mucosal damage due to constant pressure on soft tissue structures, and pressure symptoms such as sore throat, vascular compression, nerve damage, and risk of aspiration. Yao and colleagues changed their device every day for 6 days to relieve mucosal pressure caused by the device.³ A heat and moisture exchanger should be added to the circuit.

I-gel and other supraglottic devices are extensively used these days with good evidence of their safety with respect to risks of

aspiration. Uppal et al. compared the safety and efficacy of the I-gel vs tracheal tube using pressure control ventilation and concluded that I-gel was not inferior to the tracheal tube.⁵

Supraglottic devices have a proven utility as a rescue device and as a conduit for endotracheal intubation during difficult airway management. Our case suggests that they can also safely be used for mechanical ventilation for up to at least 27 hours. We, therefore, suggest that a supraglottic device such as I-gel should always readily be available in all ICUs.

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