



Clinical Role of Laryngeal Mask Airway in Perioperative Care

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DESCRIPTION

The laryngeal mask airway has revolutionized airway management in anesthesia, providing a safe, effective and minimally invasive alternative to traditional endotracheal intubation. Introduced in the 1980s, the laryngeal mask airway serves as a supraglottic airway device that allows ventilation, oxygenation and administration of anesthetic gases while minimizing trauma to the airway. Its development marked a significant step forward in perioperative care, particularly for patients with difficult airways, short procedures, or high risk of complications from intubation. Over the past decades, design innovations, improved materials and expanded clinical applications have made the laryngeal mask airway an essential tool in anesthetic practice, emergency medicine and resuscitation.

The laryngeal mask airway is composed of a tube connected to a mask with an inflatable cuff that sits over the laryngeal inlet, forming a seal that permits effective ventilation. Unlike endotracheal tubes, which pass through the vocal cords into the trachea, the laryngeal mask airway is positioned above the glottis, reducing the risk of trauma and postoperative sore throat. Its ease of insertion, rapid placement and reduced hemodynamic response make it particularly advantageous in patients where endotracheal intubation is challenging or unnecessary. Clinicians have observed that the device is associated with shorter induction times, lower incidence of coughing and reduced sympathetic stimulation during airway management.

Over the years, the design of laryngeal mask airways has evolved to improve safety and effectiveness. Modern variants include disposable devices, reinforced versions for prone or difficult positioning and those with integrated gastric drainage channels to reduce aspiration risk. Pediatric and adult sizes accommodate a wide range of patients and specific modifications such as the flexible laryngeal mask airway allow use in head and neck surgeries where conventional devices may be impractical. Innovations have focused on improving the seal, minimizing airway trauma and facilitating positive pressure ventilation without compromising patient safety.

The clinical applications of laryngeal mask airways have expanded beyond routine anesthesia. They are widely used in elective and emergency surgeries, outpatient procedures and settings where rapid airway access is required. In difficult airway management, the laryngeal mask airway serves as both a primary device and a conduit for fibrotic-guided intubation. Its use in resuscitation and prehospital care has improved outcomes for patients in cardiac arrest or respiratory compromise by providing a reliable airway in situations where intubation is not feasible. Additionally, in certain high risk populations such as obese patients or those with limited neck mobility, the laryngeal mask airway offers a safer alternative to conventional techniques.

Anesthesia safety has benefited from the predictable performance of laryngeal mask airways. The reduced stimulation of the airway minimizes cardiovascular responses, making it suitable for patients with cardiovascular comorbidities. The simplicity of insertion allows non-specialist clinicians to secure the airway rapidly in urgent situations, while training in proper placement and verification ensures high success rates. Studies have shown that the incidence of aspiration is low when the device is used appropriately, particularly in elective settings with fasting patients, although careful patient selection and adherence to guidelines remain important.

Monitoring and perioperative management complement the use of laryngeal mask airways. Continuous observation of oxygen saturation, end tidal carbon dioxide and airway pressure ensures effective ventilation and early detection of complications. The development of devices compatible with fibrotic scopes, gastric tubes and advanced ventilator modes has enhanced versatility. Anesthesia protocols increasingly integrate laryngeal mask airways with multimodal analgesia, regional anesthesia and enhanced recovery pathways to optimize patient outcomes and reduce hospital stay.

Despite its many advantages, there are limitations and considerations associated with laryngeal mask airways. They are not universally suitable for all surgical procedures, particularly those with high risk of aspiration, prolonged duration, or need for high airway pressures. Clinicians must be aware of proper

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sizing, insertion techniques and cuff inflation to prevent complications such as airway trauma, nerve injury, or malposition. Ongoing research focuses on improving design, reducing complications and expanding indications to maximize the benefits of this versatile airway device.

In conclusion, the laryngeal mask airway represents a major advancement in airway management that has improved the safety, efficiency and comfort of anesthesia practice. Its ease of

use, adaptability and reduced invasiveness have made it a preferred option in many clinical scenarios. Continued innovations in device design, training and perioperative integration will expand its applications and enhance patient outcomes. The laryngeal mask airway exemplifies how targeted innovations in medical devices can transform practice, reduce complications and provide safer care for patients worldwide.