Timmermann A. *Anaesthesia.* 2011;66(Suppl.2):45-56.

Supraglottic airways in difficult airway management: successes, failures, use and misuse

Supraglottic airway devices have an important role to play in the management of patients with difficult airways

Newer, second-generation supraglottic airway devices, including the LMA® Supreme™ Airway and the LMA® ProSeal™ Airway, may offer clinical advantages over older devices in patients with difficult airways

Introduction

- Supraglottic airway devices can be classified into first- and second-generation devices
  - First-generation devices, so-called 'airway tubes', include the gold-standard LMA® Classic™ Airway and other standard devices
  - Second-generation devices, which have specific features designed to improve safety outcomes (e.g. higher oropharyngeal leak pressures, drain tubes, etc.), include the LMA® Supreme™ Airway, LMA® ProSeal™ Airway and i-gel®

General considerations

- There are five major considerations regarding the use of supraglottic airway devices in the management of difficult airways (Table 1)
- The use of supraglottic airway devices is recommended in numerous societal and national guidelines on the management of difficult airways

Comparison of supraglottic airway devices in the management of difficult airways

- There is a considerable amount of published data on the use of the 'gold-standard', first-generation LMA® Classic™ Airway in patients with difficult-to-manage airways
- Case reports and series describing successful ventilation with newer, second-generation devices in patients with difficult airways are also available

Table 1. Major considerations regarding the use of supraglottic airway devices in the management of difficult airways

CONSIDERATION	EXPLANATION
1	Can be used in situations where anatomical and/or technical factors make facemask ventilation and/or laryngoscope-guided tracheal intubation difficult*
2	Have a dual function in that they can be used as a ventilatory device and for airway intubation
3	Unhurried tracheal intubation is possible while the patient is receiving oxygen and being ventilated
4	Insertion is not associated with any trauma and does not inhibit the successful application of subsequent techniques
5	Are readily available and most anesthesiologists are skilled in their use

* Including (but not limited to) presence of secretions/blood/vomitus, anatomical or dental derangement, application of cervical spine immobilization/stabilization devices and/or suboptimal access to the patient's head

- Although newer devices offer potential benefits, as compared to older devices (e.g. higher airway pressures, reduced risk of gastric insufflation, reduced risk of regurgitation and aspiration, etc.), the clinical advantage of such benefits in patients with difficult airways has not been established
- There is insufficient data to suggest that any one of the newer devices is superior to the others in difficult-to-manage patients

Intubation via a supraglottic airway device

- There is a considerable amount of published data on the use of the 'gold-standard' LMA® Fastrach™ Airway for blind intubation via a supraglottic airway device in patients with difficult-to-manage airways
- Blind intubation via other supraglottic airway devices often fails, necessitating the use of fiber-optic guidance
- Although successful fiber-optic-guided intubation of a difficult airway via other supraglottic airway devices has been reported, there is insufficient robust evidence to show that such devices are superior to the LMA® Fastrach™ Airway

Use of supraglottic airway devices in the pre-hospital setting

- Potentially all airways in the pre-hospital (i.e. emergency) setting are difficult
- Supraglottic airway devices offer benefits over facemask ventilation and tracheal intubation in the pre-hospital setting (Table 2)
- Although several supraglottic devices, including the LMA® Classic™ Airway, LMA® Supreme™ Airway, LMA® Fastrach™ Airway and i-gel®, have been considered for airway management in the pre-hospital setting, there is no evidence to support the routine use of any one device over any other

Table 2. Benefits of the use of an appropriate supraglottic airway device in the pre-hospital setting

BENEFITS VERSUS FACEMASK VENTILATION	BENEFITS VERSUS TRACHEAL INTUBATION
Higher rate of successful ventilation	Higher rate of successful ventilation
Higher tidal volume	Faster to insert
Reduced hand fatigue	Can be inserted without interrupting chest compressions
Less gastric insufflation, regurgitation and aspiration	
Use of an automated ventilator is possible	

Conclusions

- Supraglottic airway devices have an important role to play in the management of patients with difficult airways, and their use in this setting is recommended in several sets of treatment guidelines
- Although newer supraglottic airway devices have benefits versus older devices in difficult-to-manage patients, the clinical advantage of such benefits is yet to be established in well-designed randomized controlled trials
- As yet, there is insufficient data to suggest that any one of the newer supraglottic airway devices are superior to other available devices, including the LMA® Classic™ Airway