Department of Anesthesia Techniques

Title of the lecture: - supra-glottis airway devices (SAD)

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Supraglottic Airway Devices

Supraglottic airway devices are used to ventilate patients above the level of the vocal cords. The SADs are an intermediate between a facemask and an ETT. The main advantages of these devices are that they are less invasive for the respiratory tract, better tolerated by patients with increased ease of placement, improved hemodynamic stability, less sore throat, and less coughing. They provide hands free airway and easier placement even by inexperienced personnel along with a relatively secure airway.

ADVANTAGES OF SUPRAGLOTTIC AIRWAY DEVICE OVER AN ENDOTRACHEAL TUBE

1. Insertion of an SAD may be less stimulating to the sympathetic nervous system than direct laryngoscopy and placement of a semi-rigid ETT into the trachea, thereby decreasing the risk of adverse cardiovascular events in patients with coronary artery disease
2. A SAD is tolerated at lighter levels of anesthesia than an ETT • The incidence of postoperative sore throat is also significantly less in patients receiving a SAD as compared to an ETT (17%—as against 45% for ETT)
3. SAD typically does not require neuromuscular blockade, thereby avoiding any associated morbidity and side effects of the medication or its antagonists
4. Insertion of a SAD requires minimal training, it does not require a laryngoscopy and so it can be easily inserted by a nonclinical during cardiopulmonary cerebral resuscitation (CPCR)
5. It is a rescue device in a cannot ventilate, cannot intubate (CVCI) situation
6. It can be easily inserted in patients with a cervical spine injury without movement and displacement of a cervical spine.

DISADVANTAGES OF SUPRAGLOTTIC AIRWAY DEVICE OVER AN ENDOTRACHEAL TUBE:

1. It is not a definitive airway (a tube in trachea) and so it does not provide absolute protection against aspiration. It is not recommended for electively securing an airway in patients who are not adequately fasting, have delayed gastric emptying, history of gastroesophageal (GE) reflux, etc.
2. It cannot be recommended for use in patients with poor lung compliance because of the lower seal pressures as compared to an ETT. If the pressures required for ventilation are high, it can lead to dislodgement of the SAD and gastric insufflations
3. It is not a choice for restricted mouth opening or upper airway abnormality. An awake fiberoptic bronchoscope (FOB)-guided intubation would be preferred.

****INDICATIONS FOR THE USE OF SUPRAGLOTTIC AIRWAY DEVICES:**

1. Elective ventilation: The SADs can be used as an alternative to mask anesthesia in the operating room or in place of an ETT for short and elective surgical procedures under general anesthesia.

2. Difficult airway

3. In a patient who cannot be intubated or ventilated (CICV), LMA insertion can be attempted while preparing for cricothyrotomy

4. Cardiac arrest

5. Conduit for intubation

6. As a bridge to extubation.

****CONTRAINDICATIONS TO SUPRAGLOTTIC AIRWAY DEVICE USE**

Any patient at risk of aspiration—not adequately fasting, intes-tinal obstructions, patients undergoing emergency surgery

• Patients with obstruction in upper airway such as tumor, abscess, edema and/or hematoma

• Patient with restricted mouth opening—trismus

• Patient with disrupted upper airway, facial or upper airway trauma, burns following caustic ingestion

• Patients who are morbidly obese, more than 14 weeks pregnant, have received prior opioids medication or any condition associated with delayed gastric emptying

• Patients with stiff lungs, i.e. reduced lung compliance/ increased resistive work of breathing, such as pulmonary fibrosis, status asthmaticus.

**Different types of laryngeal mask airways (LMAs).

1. Laryngeal Mask Airway Classic

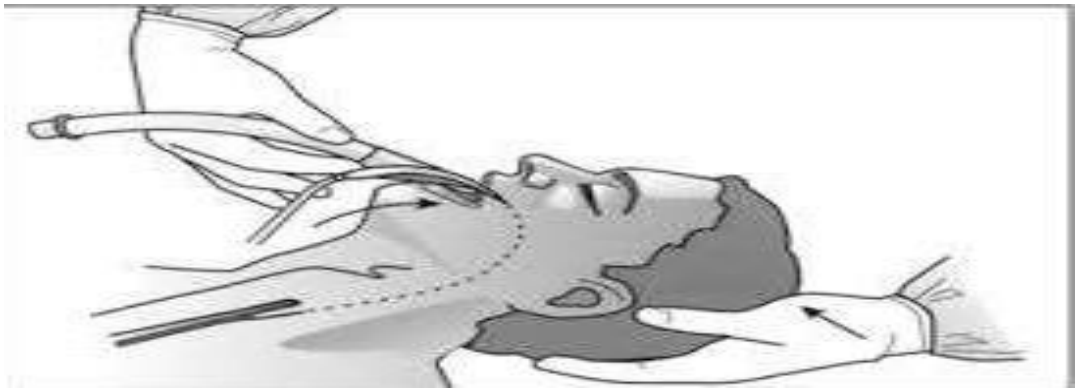
The maximum intracuff pressure inside the silicon cuff of a LMA is recommended to be less than 60 cm H2O, which is the perfusion pressure of the pharyngeal mucosa. Any pressure exceeding this pressure will lead to injury of the pharyngeal mucosa and higher incidence of postoperative sore throat.

Preinsertion preparation:

1. The LMA cuff should be deflated completely in order to create the stiff thin leading edge neces-sary to wedge the tip behind the cricoids cartilage.
2. The back of the cuff should be lubricated prior to insertion. Do not lubricate the front as this may result in blockage of aperture bar or aspi-ration of lubricant.
3. Lubricants containing Lidocaine are not recommended for use with the device. Lidocaine can delay the return of the patient's protective reflexes expected prior to removal of the device.

Standard insertion method:

Anesthesia must be deep enough to permit insertion. Do not try to insert immediately following barbiturate induction, unless a relaxant drug has been given.



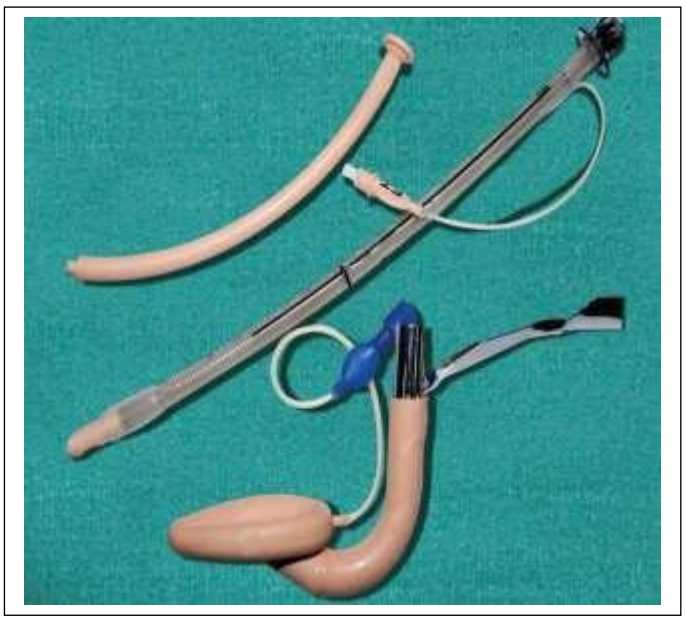
Malposition of mask tip into the glottis may mimic bronchospasm • Avoid moving the device about in the pharynx when the patient is at a light plane of anesthesia.

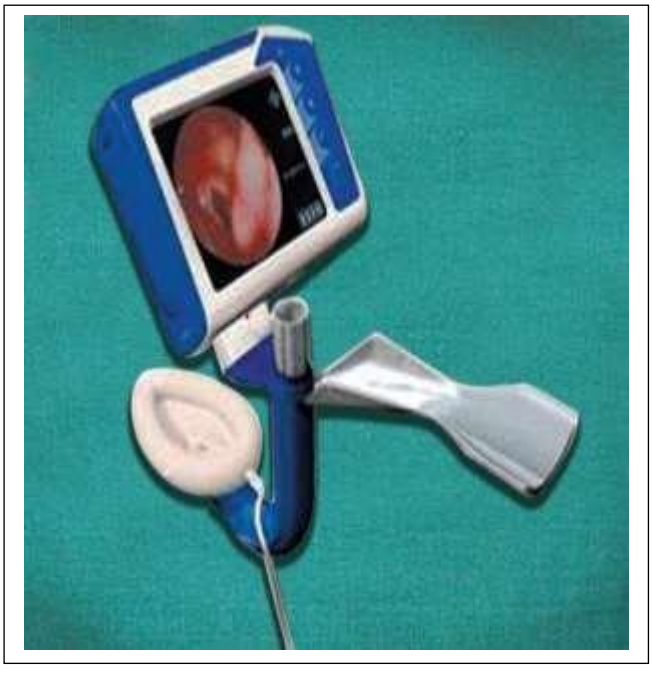
Deflate the cuff completely just prior to removal, although partial deflation can be recommended in order to assist in the removal of secretions.

Laryngeal spasm may occur if the patient becomes too lightly anesthetized during surgical stimulation or if bronchial secretions irritate the vocal cords during emergence from anesthesia. If laryngeal spasm occurs, do not remove the LMA, but treat the cause. Only remove the device when airway protective reflexes are fully competent.

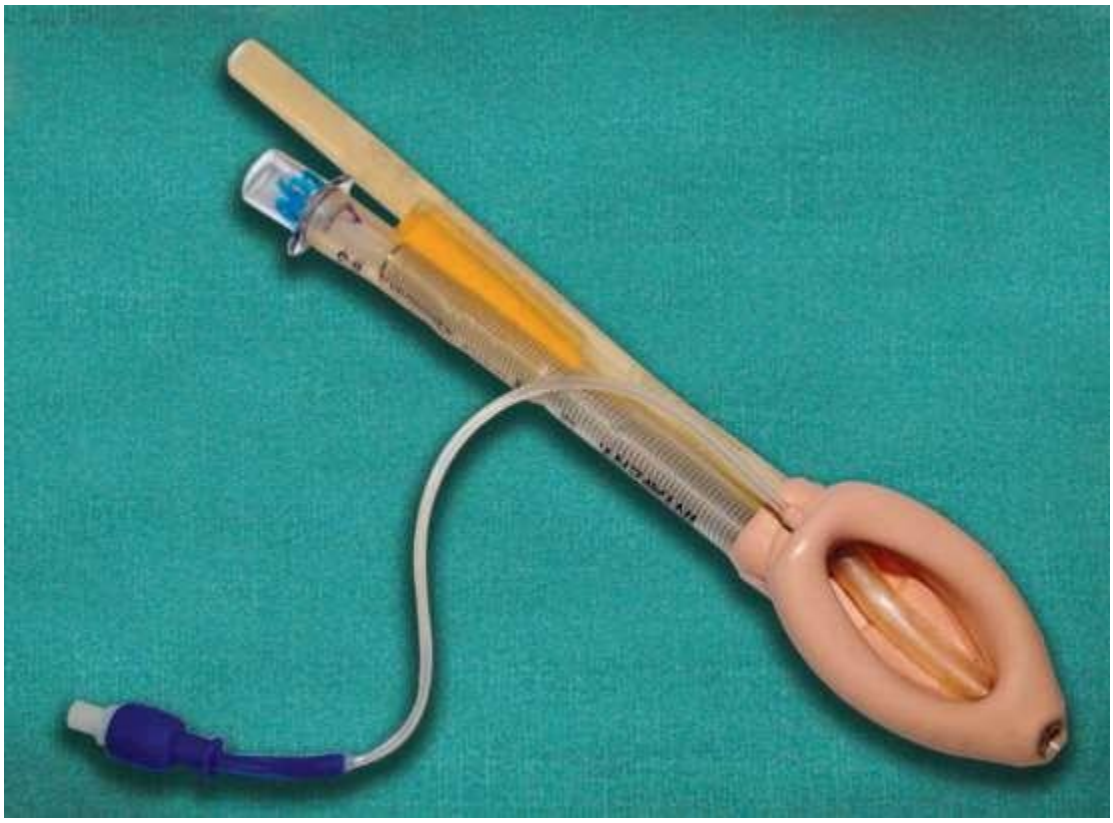
Weight (kg)	*LMA size*	*Air inflation volume (mL)*
<5	1	4
5-10	1.5	7
10-20	2	10
20-30	2.5	14
30-50	3	20
50-70	4	30
70-100	5	40
>100	6	50

Intubating LMA/LMA Fastrach





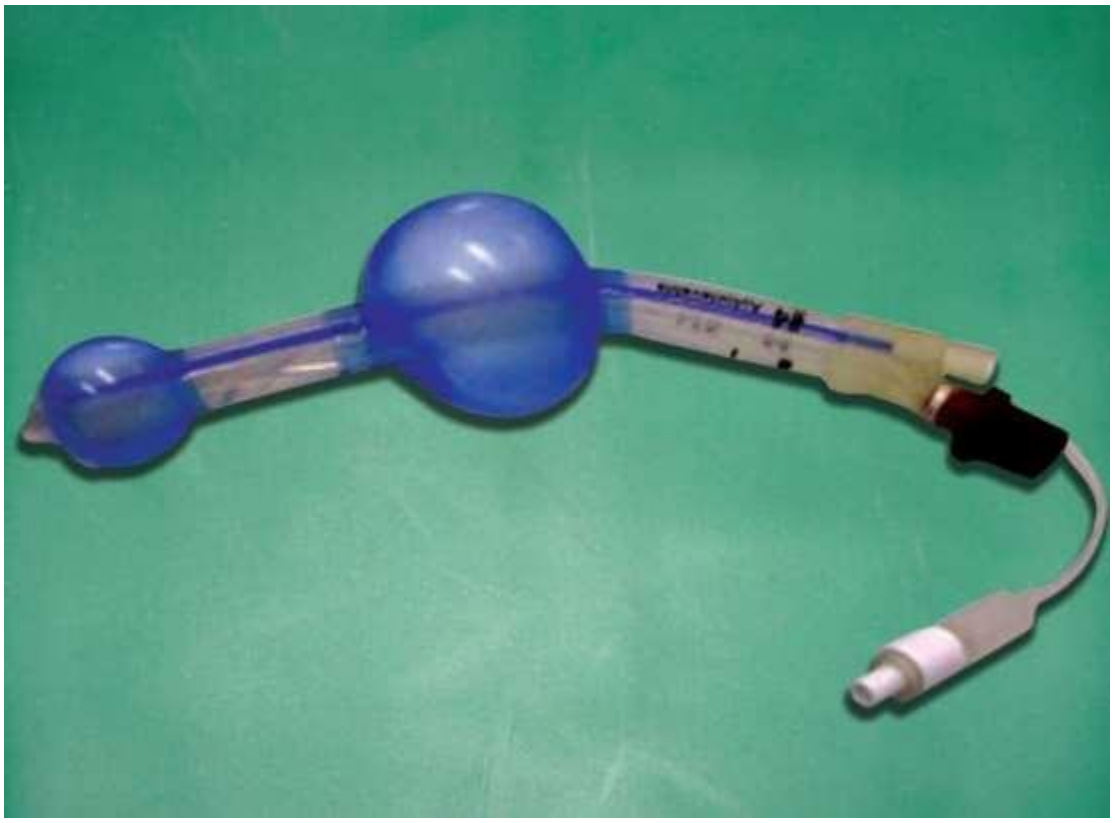
Laryngeal Mask Airway ProSeaL:



A drain tube passes lateral to the airway tube and traverses the floor of the mask, opening at the mask tip opposite the upper esophageal sphincter. The tube is intended to prevent inadvertent gastric insufflations and allows for blind insertion of standard orogastric tubes, in any patient position, without the need to use Magill's forceps. The position of the drain tube inside the cuff prevents the epiglottis occluding the airway tube thereby eliminating the need for aperture bars.

Cobra Perilaryngeal Airway:

Laryngeal Tube (L tube):



Size	patient	Patient weight	Color code
0	Newborn	<5 kg	Transparent
1	Child	5–12 kg	White
2	Child	12–25 kg	Green
2.5	Child/adult	125–150 cm	Orange
3	Adult	<155 cm	Yellow
4	Adult	155–180 cm	Red
5	Adult	>180 cm	Purple

Esophageal–Tracheal Combitube

Contraindications

• Hiatus hernia

• Esophageal pathology

• Patients shorter than 4.5 feet

• Intact gag reflex.

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Baska Mask Airwa:

SUPRAGLOTTIC AIRWAY DEVICES IN SPECIAL SITUATIONS

1. Laryngeal mask airway in prone position: The use of the Classic™ LMA in the prone position is controversial, but the ProSeal™ LMA (ProSeal™ LMA) may be more suitable as it forms a better seal and provides access to the stomach.

2. Laryngeal mask airway in the obstetric patient: The LMA is a part of the difficult airway algorithm for the obstetric difficult airway.

3. Laryngeal mask airway in obesity: The LMA is contraindicated in grossly or morbidly obese patients because of the increased risk of regurgitation and the requirements for high airway pressure ventilation.However, it is indicated for airway rescue in emergency situations and the ProSeal LMA may be used as a temporary ventilatory device before laryngoscope guided tracheal intubation.

4. Laryngeal mask airway in laparoscopy: The LMA ProSeal and Supreme offers a cuff that allows a higher seal pressure than the LMA Classic, and a drain tube that allows venting of the stomach contents, and blind insertion of standard gastric tubes

Thank you