

Oropharyngeal airway

This anatomically shaped airway is inserted through the **mouth** into the **oropharynx above the tongue** to maintain the patency of the **upper** airway. In cases of upper airway obstruction caused by a decreased level of consciousness in a patient. **Decreased** consciousness can lead to **loss** of pharyngeal tone that can result in airway obstruction by the tongue, epiglottis, soft palate or pharyngeal tissues. There are various regularly used types of oropharyngeal airway. The most common type is **the Guedel airway**, named after its developer Arthur Guedel, an American anaesthetist who served in France during the First World War. It is available in up to nine sizes, which have a standardized number coding (the smallest '000' to the largest '6').

Components

- 1.** The **curved body** of the oropharyngeal airway contains **the air channel**. It is flattened anteroposteriorly and curved laterally.
- 2.** There is a **flange** at the oral end to **prevent** the oropharyngeal airway from falling back into the mouth so avoiding further posterior displacement into the pharynx.
- 3.** **The bite portion** is **straight** and fits between the teeth. It is made of **hard plastic** to prevent occlusion of the air channel should the patient bite the oropharyngeal airway.

Mechanism of action

- 1.** The patient's airway is kept patent by preventing the tongue and epiglottis from falling backwards.
- 2.** Oropharyngeal airways are designed in different sizes to fit the majority of patients from neonates to adults.
- 3.** The air channel should be as **large** as possible in order to pass suction catheters.
- 4.** As a good indication, a suitable Guedel airway size can be equivalent to either distance from the patient's **incisors** to **the angle of the mandible**, or **corner of the patient's mouth** to the **tragus**.
- 5.** In **adults**, the Guedel airway is initially inserted **upside down**, with the curvature facing caudad. Once partially inserted, it is then **rotated** through **180°** and advanced until the bite block rests between the incisors. This method prevents the tongue being pushed back into the pharynx, causing further obstruction.
- 6.** In **children**, it is often recommended that the Guedel airway is inserted **the right way round**, using a **tongue depressor** or **laryngoscope** to depress the tongue. This

is done to minimize the risk of trauma to the oropharyngeal mucosa. The same technique can also be used in adults.

7. Bermann airway is another type of oropharyngeal airway, **designed to assist with oral fiberoptic intubation**. It acts to guide the fibroscope around the back of the tongue to the larynx, with the **purpose** of both **maintaining the patient's airway** and acting as a **bite block**, thus preventing damage to the fibroscope. Unlike a Guedel airway, it has a **side opening** which allows it to be removed from the fibroscope, prior to the railroading of the tracheal tube into the trachea.

Problems in practice and safety features

- 1.** Trauma to the different tissues during insertion.
- 2.** Trauma to the teeth crowns/ caps if the patient bites on it.
- 3.** If inserted in a patient whose pharyngeal reflexes are not depressed enough, the gag reflex can be induced that might lead to vomiting and laryngospasm.
- 4.** They confer no protection against aspiration.
- 5.** The degree to which airway patency has been increased after insertion of a Guedel airway should be assessed, not assumed. It should also always be remembered that a badly inserted Guedel airway can make airway patency worse rather than better.

Nasopharyngeal airway

This airway is inserted through **the nose** into **the nasopharynx**, **bypassing the mouth and the oropharynx**. The distal end is **just above the epiglottis** and **below the base of the tongue**.

Components

- 1.** **The rounded curved body** of the nasopharyngeal airway.
- 2.** The bevel is left-facing.
- 3.** The proximal end has a flange. A “safety pin” is provided to prevent the airway from migrating into the nose.

Mechanism of action

- 1.** It is an **alternative** to the oropharyngeal airway when the mouth cannot be opened or an oral airway does not relieve the obstruction.
- 2.** Nasotracheal suction **can** be performed using a catheter passed through the nasal airway.
- 3.** It is **better** tolerated by **the semi awake** patient than the oral airway.
- 4.** A lubricant is used to help in its insertion.

5. The size inserted can be estimated as size **6** for an average height **female** and size **7** for an average height **male**.

6. Once lubricated, it can be inserted through either nares, although **the left-facing bevel** is designed to ease insertion into **the right nostril**. On insertion, it should be passed backwards through the nasopharynx, such that its distal end lies beyond the pharyngeal border of the soft palate but not beyond the epiglottis.

Problems in practice and safety features

1. Its use is **not** recommended when the patient has a **bleeding disorder**, is on **anticoagulants**, and has **nasal deformities** or **sepsis**.

2. Excess force should **not** be used during insertion as a **false passage** may be created.

3. An airway that is too large can result in pressure necrosis of the nasal mucosa, while an airway that is too small may be ineffective at relieving airway obstruction.

Supraglottic (or extraglottic) airway devices

The introduction of the laryngeal mask airway heralded an era of hands-free airway maintenance without the need for tracheal intubation. Many other airway devices that lie outside the trachea and attempt to provide a leak-free seal for spontaneous ventilation, while some provide an adequate seal for positive pressure ventilation_under normal conditions, have been used. These devices are collectively known as supraglottic or extraglottic airways devices.

These devices provide the following

1. The ability to be placed **without** direct visualization of the larynx.

2. **Increased speed** and **ease** of placement when compared with tracheal intubation, both by experienced and less experienced operators.

3. **Increased cardiovascular stability** on insertion and emergence.

4. During **emergence**, **improved oxygen saturation** and **lower frequency of coughing**.

5. **Minimal** rise in intraocular pressure on insertion.

6. When the device is properly placed, it **can** act as a **conduit for oral tracheal intubation** due to the anatomical alignment of its aperture with the glottis opening.

7. In the 'can't intubate, can't ventilate' scenario, the decision to use such devices should be made early to **gain time** while attempts are made to secure a definite airway.

8. Such devices normally provide **little** or **no** protection against aspiration of refluxed gastric contents, and are therefore **contraindicated** in patients with **full stomachs** or **prone to reflux**. However, second-generation devices (e.g. LMA-ProSeal, LMA-Supreme, and i-gel) offer many improvements such as high cuff seal, second seal, gastric access and drain tube. These allow for rapid drainage of gastric fluids or secretions and reduce the risk of gastric gas insufflation during ventilation. Future indications might even be in emergency medicine, where gastric vacuity is unknown, and in cases of increased risk of regurgitation.

9. Extraglottic airways would normally elicit airway reflexes such as the gag reflex, and therefore require depression of pharyngeal reflexes by general or topical anaesthesia.

10. These devices are increasingly **used** in a variety of settings, including **routine anaesthesia**, **emergency airway management** and as an **aid to intubation**.

Fig. An oropharyngeal (Guedel) airway.



Fig. A range of Bernmann airway.

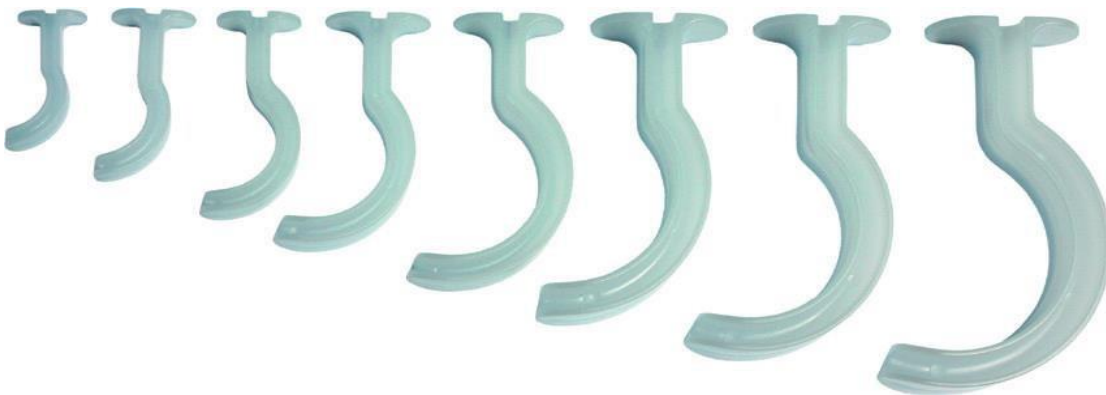


Fig.

Nasopharyngeal airway. The safety pin is to prevent the airway from migrating into the nose.



Fig. A range of different sized laryngeal masks (non-reinforced).

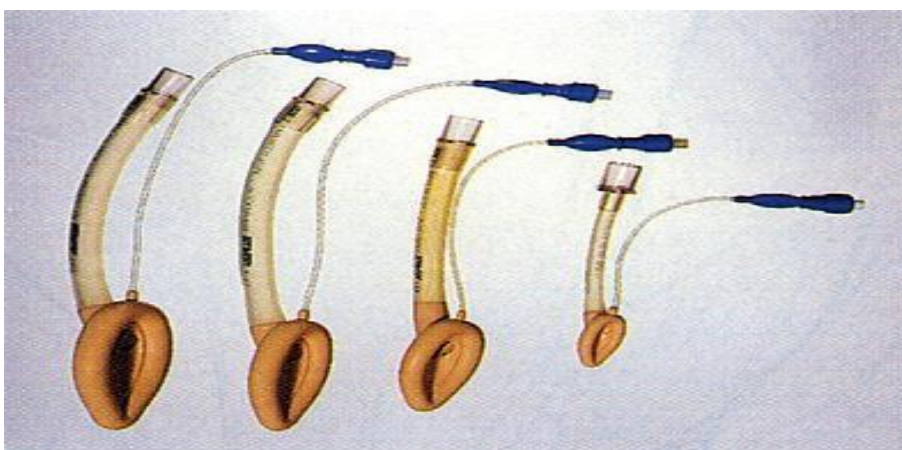


Fig. LMA-Supreme. Note the drainage lumen.



Fig. Smith's Portex single-use Soft-Seal laryngeal mask.



Fig. Reinforced laryngeal mask, single use (left) and reusable (right).

