



## User Guide

**i-gel®** single use supraglottic airway

**Adult and paediatric sizes**

[www.i-gel.com](http://www.i-gel.com)

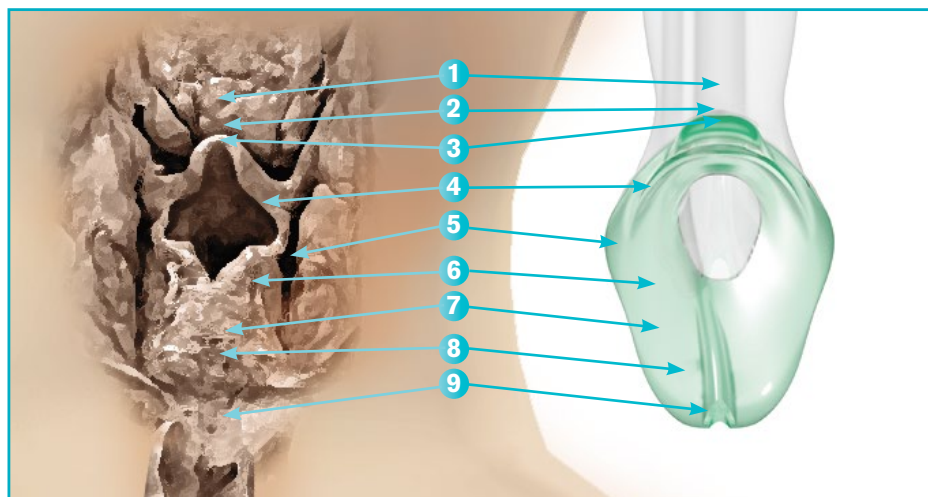
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## 1.1 The i-gel design

The **i-gel** airway is a novel and innovative supraglottic airway management device, made of a medical grade thermoplastic elastomer, which is soft, gel-like and transparent. The **i-gel** is designed to create a non-inflatable anatomical seal of the pharyngeal, laryngeal and perilaryngeal structures whilst avoiding the compression trauma that can occur with inflatable supraglottic airway devices. This device has been developed after extensive literature searches related to supraglottic, extraglottic, periglottic and intraglottic airway devices dating back as far as the 5th century. Dissected and preserved human cadaveric models, fresh cadaveric neck and airway dissections, direct and indirect pharyngo-laryngeal endoscopies, X-rays, CT and MRI imaging data were all studied in detail, scientifically investigated and critically examined. This knowledge was utilised to ensure the **i-gel's** shape, softness and contours accurately mirror and exert the least possible pressure onto the pharyngeal, laryngeal and perilaryngeal framework.

The **i-gel** is a truly anatomical device, achieving a mirrored impression of the pharyngeal, laryngeal and perilaryngeal structures, without causing compression or displacement trauma to the tissues and structures in the vicinity.

The **i-gel** has evolved as a device that accurately positions itself over the laryngeal framework providing a reliable perilaryngeal seal and therefore no cuff inflation is necessary.



**Figure 1:** View of the **i-gel** cuff in relation to the laryngeal framework

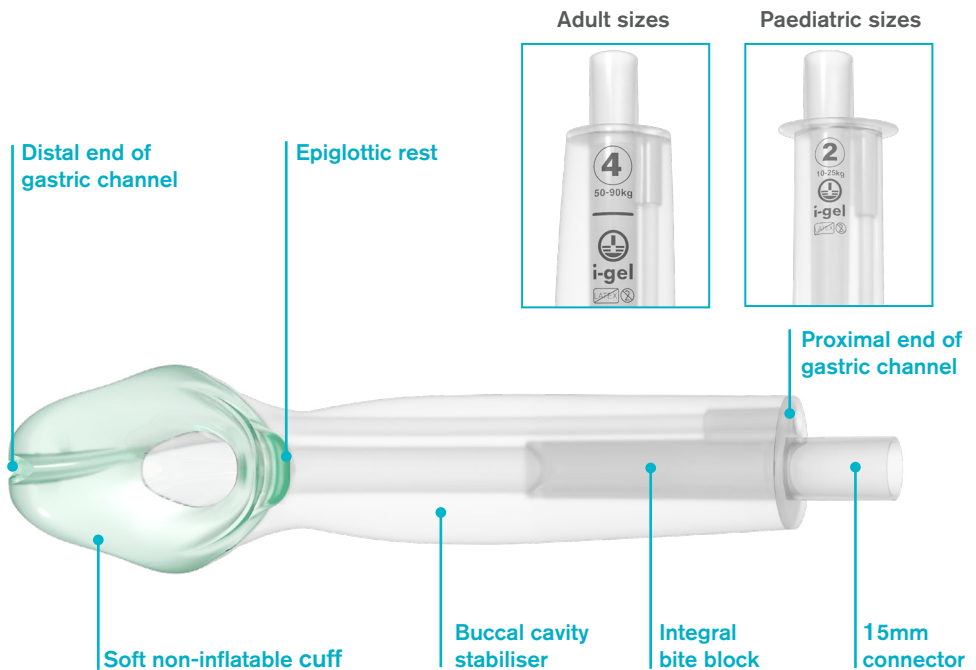
- |                        |                              |
|------------------------|------------------------------|
| 1. Tongue              | 6. Posterior cartilages      |
| 2. Base of tongue      | 7. Thyroid cartilage         |
| 3. Epiglottis          | 8. Cricoid cartilage         |
| 4. Aryepiglottic folds | 9. Upper oesophageal opening |
| 5. Piriform fossa      |                              |

A supraglottic airway without an inflatable cuff has several potential advantages, including easier insertion, minimal risk of tissue compression and stability after insertion (i.e. no position change with cuff inflation). The **i-gel** is designed as a latex free, sterile, single patient use device. The buccal cavity stabiliser has a widened, elliptical, symmetrical and laterally flattened cross sectional shape (but still round airway channel), providing good vertical stability and axial strength upon insertion. This houses a standard airway channel and a separate gastric channel.

The tube section is firmer than the soft bowl of the device. The firmness of the tube section and its natural oropharyngeal curvature allows the device to be smoothly inserted by grasping the proximal end of the **i-gel** which helps glide the leading edge against the hard palate into the pharynx. It is not necessary to insert fingers into the mouth of the patient to achieve full insertion. The smooth contiguous under surface of the device, from the tip of the bowl and throughout the entire tube section, allows the device to easily slide posteriorly along the hard palate, pharynx and into the hypopharynx.

An integrated gastric channel can provide an early indication of regurgitation, facilitates venting of gas from the stomach and allows for the passing of a nasogastric tube to empty the stomach contents.

## 1.2. Key components and their function



**Figure 2:** Key components of the i-gel

**Please note:** the size one i-gel does not have a gastric channel.

## 1.2.1 Soft non-inflatable cuff

The novel, soft non-inflatable cuff fits snugly onto the perilaryngeal framework, mirroring the shape of the epiglottis, aryepiglottic folds, piriform fossa, peri-thyroid, peri-cricoid, posterior cartilages and spaces. Each receives an impression fit, thus supporting the seal by enveloping the laryngeal inlet. The tip lies in the proximal opening of the oesophagus, isolating the oesophageal opening from the laryngeal inlet. The outer cuff shape ensures that the blood flow to the laryngeal and perilaryngeal framework is maintained and helps to reduce the possibility of neurovascular compression. Sliding past the pharyngo-epiglottic folds it becomes narrower and deeper, creating an outward movement to fit snugly into the potential space of the perilaryngeal pouch.



**Figure 3:** Soft non-inflatable cuff

## 1.2.2 Gastric channel

The gastric channel runs through the device from its proximal opening at the side of the flat connector wing to the distal tip of the non-inflatable cuff. Since the distal tip of the device fits snugly and anatomically correctly into the upper oesophageal opening, the distal opening of the gastric channel allows for the passing of a nasogastric tube to empty the stomach contents and can facilitate the venting of gas from the stomach. The gastric channel can also provide an early indication of regurgitation. Please note the size one i-gel does not have a gastric channel.

## 1.2.3 Epiglottic rest

An artificial epiglottis and a protective ridge help prevent the epiglottis from down-folding or obstructing the distal opening of the airway. The epiglottic ridge at the proximal end of the bowl rests at the base of the tongue, thus keeping the device from moving upwards out of position and the tip from moving out of the upper oesophagus.

## 1.2.4 Buccal cavity stabiliser

The buccal cavity stabiliser has a built-in natural curvature and an inherent propensity to adapt its shape to the oropharyngeal curvature of the patient. It is anatomically widened and concaved to eliminate the potential for rotation, thereby reducing the risk of malposition. It also provides vertical strength to aid insertion.

### 1.2.5 15mm connector

The innovative connector serves a number of functions:

- To provide a standard 15mm connection to the anaesthetic system or patient connection.
- A port of entry for the gastric channel – the port is independent of the main 15mm connection and is located on the right hand side of the connector wing. Not applicable to size one i-gel.
- An integral bite block – this function is provided by the distal (below the wing) part of the connector, which runs through the centre of the proximal part of the buccal cavity stabiliser.
- To reduce the possibility of the airway channel occluding – the junction of the distal tip to the body of the connector is V-shaped, which significantly reduces the risk of kinking.
- As a guide to correct positioning – the integral part of the bite-block is marked with a horizontally placed black line, which signifies the optimum position of the teeth while the device is in situ (not applicable to the paediatric sizes).
- Easy visibility of key product information – this includes size and recommended weight. The information is located on the integrated bite block.

### 1.2.6 Important key points

The **i-gel** does not use aperture bars like some supraglottic airways. The cuff creates a deep tunnelling effect whilst in situ, thus making it more difficult for a down-folded epiglottis to block the distal airway channel.

The softness of the **i-gel** is designed to match that of the pharyngeal, laryngeal and perilaryngeal structures whilst being able to retain its shape to facilitate ease of insertion.

The **i-gel** is indicated in:

**Adults**

The i-gel is indicated for use in securing and maintaining a patent airway in routine and emergency anaesthetics of fasted patients, during spontaneous or intermittent positive pressure ventilation, during resuscitation of the unconscious patient, and as a conduit for intubation under fibre optic guidance in a known difficult or unexpectedly difficult intubation, by personnel who are suitably trained and experienced in the use of airway management techniques and devices.

**Paediatrics**

Securing and maintaining a patent airway in routine and emergency anaesthetics for operations of fasted patients during spontaneous or intermittent positive pressure ventilation (IPPV).

**Paediatric i-gel has not, to date, been evaluated in alternative applications and there are currently no data to support its use in such circumstances.**

**However it is believed, as a supraglottic device, it may be appropriate for use in areas where other such devices have proved to be beneficial. Some examples of other potential applications are briefly described below.**

- 1. Use by the ambulance crew in difficult or unexpectedly difficult intubations in a pre-hospital setting in order to quickly establish and maintain a clear airway.
- 2. Securing a clear airway in difficult or unexpectedly difficult intubations in airway management of a patient in the operating theatre.
- 3. In a known difficult or unexpectedly difficult intubation, for intubating the patient, by passing an endotracheal tube (ETT) through the device under fibre optic guidance.

i-gel size	Maximum size of Endotracheal Tube
1	3.0mm
1.5	4.0mm
2	5.0mm
2.5	5.0mm
3	6.0mm
4	7.0mm
5	8.0mm

- 4. In a difficult or unexpectedly difficult intubation, to pass a gum-elastic bougie blindly, but gently, through the device whilst in situ, into the trachea and to rail-road the ETT over it.
- 5. In a known difficult or unexpectedly difficult intubation, to pass a fibre optic scope through the device, to provide visualisation of the glottic opening to aid intubation.
- 6. In the Intensive Care patient for weaning a certain category of the population, in whom an endotracheal tube is not well tolerated.
- 7. In difficult mouth opening situations, i-gel can also be inserted under direct vision with the help of a laryngoscope.

1. Non-fasted patients for routine and emergency anaesthetic procedures.
2. Trismus, limited mouth opening, pharyngo-perilaryngeal abscess, trauma or mass.
3. Do not allow peak airway pressure of ventilation to exceed 40cm H<sub>2</sub>O.
4. Do not use excessive force to insert the device or nasogastric tube.
5. Inadequate levels of anaesthesia which may lead to coughing, bucking, excessive salivation, retching, laryngospasm or breath holding thus complicating the anaesthetic outcome.
6. Do not leave the device in situ for more than four hours.
7. Do not reuse or attempt to reprocess the **i-gel**.
8. Patients with any condition which may increase the risk of a full stomach e.g. hiatus hernia, sepsis, morbid obesity, pregnancy or a history of upper gastro-intestinal surgery etc.
9. Use on a conscious/semi-conscious patient in an emergency setting.

- **i-gel** must be lubricated according to the instructions for use.
- The patient should always be in the 'sniffing the morning air' position prior to insertion with the assistant helping to open the patient's mouth, unless head/neck movements are considered inadvisable or are contraindicated.
- Optimum depth of anaesthetic must be achieved prior to attempting insertion (i.e. absence of eyelash reflex, easy up and down movement of the lower jaw, no reaction to pressure applied to both angles of the mandible).
- The leading edge of the **i-gel's** tip must follow the curvature of the patient's hard palate upon insertion.
- If there is a failure to achieve complete insertion after utilising the standard insertion technique and a jaw thrust, deep rotation or triple manoeuvre has also failed, then the device should be inserted under direct vision by laryngoscopy or one size smaller device should be used.
- After insertion, **i-gel** should be taped down from maxilla-to-maxilla in accordance with the technique described in section 7.1 of this User Guide.
- Excessive air leak during manual ventilation is primarily due to either sub-optimal depth of anaesthesia or sub-optimal depth of **i-gel** insertion.
- Particular care should be taken with patients who have an ASA or Mallampati score of III and above, or who have fragile and vulnerable dental work, in accordance with recognised airway management practices and techniques.
- As with all supraglottic airways, it is important to ensure the correct size of device is used, lubrication is optimal, the device is inserted and positioned correctly and regularly checked intraoperatively in order to reduce the potential for nerve damage, tongue numbness, cyanosis and other potential complications.
- No attempt should be made to use **i-gel** as a conduit for intubation without fibre optic guidance.



**NB. Additional warnings are provided throughout this User Guide in the section relevant to the issue involved. The user should familiarise themselves with this User Guide before attempting to use the i-gel.**








**Recommendations regarding anaesthetic technique are provided. These are intended as general recommendations only and it remains the responsibility of the user to ensure the procedures and techniques chosen are appropriate to the clinical situation, depending on their level of training and experience of using the device.**

## 5.0

## Preparation for use

### 5.1 Size selection

Select the appropriate size **i-gel** by assessing the patient's anatomy. The **i-gel's** cuff may look smaller than traditional supraglottic devices with an inflatable cuff of the same numerical size.

	i-gel size	Patient Size	Patient weight guidance (kg)
	1	Neonate	2-5kg
	1.5	Infant	5-12kg
	2	Small paediatric	10-25kg
	2.5	Large paediatric	25-35kg
	3	Small adult	30-60kg
	4	Medium adult	50-90kg
	5	Large adult	90+kg

**WARNING:** Whilst size selection on a weight basis should be applicable to the majority of patients, individual anatomical variations mean the weight guidance provided should always be considered in conjunction with a clinical assessment of the patient's anatomy. Patients with cylindrical necks or wide thyroid/cricoid cartilages may require a larger size **i-gel** than would normally be recommended on a weight basis. Equally, patients with a broad or stocky neck or smaller thyroid/cricoid cartilage, may require a smaller size **i-gel** than would normally be recommended on a weight basis. Patients with central obesity, where the main weight distribution is around the abdomen and hips, might in practice require an **i-gel** of a size commensurate with the ideal body weight for their height rather than their actual body weight.

### 5.2 Pre-use checks

- Inspect the packaging and ensure it is not damaged prior to opening.
- Inspect the device carefully, check the airway is patent and confirm there are no foreign bodies or a BOLUS of lubricant obstructing the distal opening of the airway or gastric channel.
- Carefully inspect inside the bowl of the device, ensuring surfaces are smooth and intact and also that the gastric channel is patent.
- Discard the device if the airway tube or the body of the device looks abnormal or deformed.
- Check the 15mm connector fits the patient connection.

### 5.3 Pre-insertion preparation - Adult i-gel. Sizes 3, 4 and 5.

1. Always wear gloves.
2. Open the **i-gel** package and on a flat surface take out the protective cradle containing the device (*figure 4*).
3. In the final minute of pre-oxygenation, remove the **i-gel** (*figure 5*) and transfer it to the palm of the same hand that is holding the protective cradle, supporting the device between the thumb and index finger (*figure 6*). Place a small bolus of a water-based lubricant, such as K-Y Jelly, onto the middle of the smooth surface of the cradle in preparation for lubrication. Do not use silicone based lubricants (*figure 7*).
4. Grasp the **i-gel** with the opposite (free) hand along the integral bite block and lubricate the back, sides and front of the cuff with a thin layer of lubricant. This process may be repeated if lubrication is not adequate, but after lubrication has been completed, check that no BOLUS of lubricant remains in the bowl of the cuff or elsewhere on the device. Avoid touching the cuff of the device with your hands (*figures 8, 9, 10 and 11*).
5. Place the **i-gel** back into the cradle in preparation for insertion (*figure 12*). **NB. The i-gel must always be separated from the cradle prior to insertion. The cradle is not an introducer and must never be inserted into the patient's mouth.**

### 5.4 Pre-insertion preparation - Paediatric i-gel. Sizes 1, 1.5, 2 and 2.5.

1. Always wear gloves
2. Open the **i-gel** package, and on a flat surface take out the cage pack containing the device (*figure 13*).
3. In the final minute of pre-oxygenation, open the cage pack and transfer the device into the lid of the cage. Place a small bolus of a water based lubricant, such as K-Y Jelly, onto the smooth inner surface ready for use. Do not use silicone based lubricants (*figures 14, 15 and 16*).
4. Grasp the **i-gel** along the integral bite block and lubricate the back, sides and front of the cuff with a thin layer of lubricant. After lubrication has been completed, ensure that no BOLUS of lubricant remains in the bowl of the cuff or elsewhere on the device. Avoid touching the cuff of the device with your hands (*figures 17, 18, 19, and 20*).
5. Place the **i-gel** back into the cage pack in preparation for insertion (*figure 21*).

### WARNINGS:

- Do not place the device onto a pillow or the patient's chest and always use the protective cradle/ cage pack provided.
- Do not use unsterile gauze to help in lubricating the device.
- Do not apply lubricant too long before insertion.
- Remove dentures or removable plates from the mouth before attempting insertion.



Figure 4



Figure 5



Figure 6



Figure 7



Figure 8



Figure 9



Figure 10



Figure 11



Figure 12



Figure 13



Figure 14



Figure 15



Figure 16

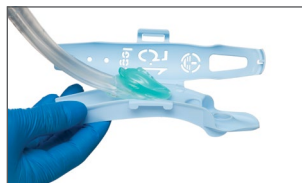


Figure 17



Figure 18



Figure 19



Figure 20



Figure 21

**WARNING:** Ensure full compliance with local and national guidelines for patient monitoring.

Ensuring an adequate depth of anaesthesia is of paramount importance for successful insertion of **i-gel**.

The patient can be checked to ensure they have reached the optimal level for **i-gel** insertion by checking:

- There is a loss of eyelash reflex
- The jaw can be moved up and down easily
- There is no response to a painful stimulus at the angles of the mandible
- Muscle relaxation with the use of a nerve stimulator

## 6.1 Preferred technique

- Pre-medication with anxiolytics or opiates/opioids, preoxygenation and co-induction with midazolam and short acting opioid like fentanyl, alfentanil or remifentanyl.
- Propofol (2.5-3mg/kg) as the induction agent of choice. (Please read the prescribing instructions for its use in various age groups).

**NB: For the purpose of IPPV, a muscle relaxant can be used e.g. atracurium, vecuronium or rocuronium etc.**

## 6.2 Other techniques of induction

- Pre-medication with benzodiazepines and/or opiates/opioids.
- Induction with thiopentone or other barbiturates, etomidate or ketamine.
- Induction should be followed by manual ventilation with a bag and mask with oxygen/nitrous oxide and an inhalational agent preferably sevoflurane or desflurane until jaw relaxation of the patient is achieved prior to attempting insertion of the **i-gel**. A Guedel airway may be useful to facilitate manual ventilation.
- An inhalational technique with oxygen/nitrous oxide/inhalational anaesthetic agent like sevoflurane, desflurane or halothane until jaw relaxation of the patient is achieved for optimising the successful and easy insertion of **i-gel**.
- The most commonly used inhalational anaesthetic technique is with oxygen/nitrous oxide and sevoflurane or oxygen and sevoflurane, particularly in younger children.

**NB: For the purpose of IPPV use a muscle relaxant e.g. atracurium, vecuronium or rocuronium etc.**

Make sure the appropriate size of **i-gel** has been prepared prior to insertion as described in section 5.0. Always have a smaller and/or larger size of the **i-gel** readily available. Adequate preparation, proper lubrication of the device and correct positioning of the head and neck with optimum mouth opening is the key to a successful insertion of **i-gel**. Always pre-oxygenate.

## 7.1 Recommended insertion technique

**WARNING: The i-gel is supplied in a protective cradle or cage pack to ensure the device is retained in the correct flexion prior to use and also acts as a base for lubrication. The i-gel must always be separated from the cradle or cage pack prior to insertion. The cradle and cage pack are not introducers and must never be inserted into the patient's mouth.**

A proficient user can achieve insertion of the **i-gel** in less than five seconds.

1. Grasp the lubricated **i-gel** firmly along the integral bite block. Position the device so that the **i-gel** cuff outlet is facing towards the chin of the patient (*Figure 22*).
2. The patient should be in the 'sniffing the morning air' position (*Figure 22*) with head extended and neck flexed. The chin should be gently pressed down before proceeding to insert the **i-gel**.
3. Introduce the leading soft tip into the mouth of the patient in a direction towards the hard palate.
4. Glide the device downwards and backwards along the hard palate with a continuous but gentle push until a definitive resistance is felt.



**Figure 22:** Patient in the 'sniffing the morning air' position, just prior to insertion

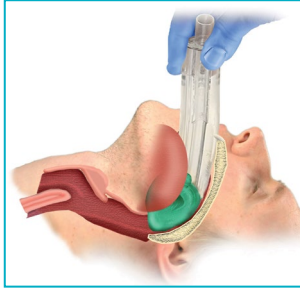
**WARNING: Do not apply excessive force on the device during insertion. It is not necessary to insert fingers or thumbs into the patient's mouth during the process of inserting the device. If there is early resistance during insertion, a 'jaw thrust' (*Figure 23*), 'Insertion with deep rotation' (*Figure 24*) or triple manoeuvre is recommended.**

5. At this point the tip of the airway should be located into the upper oesophageal opening (*Figure 25a*) and the cuff should be located against the laryngeal framework (*Figure 25b*). The incisors should be resting on the integral bite-block (*Figure 25c*).

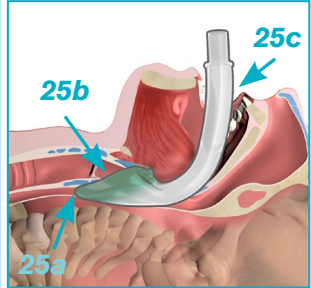
**WARNING: In order to avoid the possibility of the device moving up out of position prior to being secured in place, it is essential that as soon as insertion has been successfully completed, the i-gel is held in the correct position until and whilst the device is secured in place.**



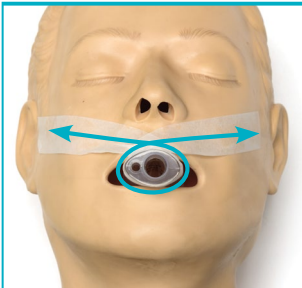
**Figure 23:** Jaw thrust



**Figure 24:** Deep rotation



**Figure 25:** Correct placement of the i-gel



**Figure 26:** Fixing of the i-gel in place using adhesive tape

6. i-gel should be taped down from 'maxilla to maxilla' (Figure 26).
7. If required, an appropriate size nasogastric tube may be passed down the gastric channel (see section 11.0 for further details on use of the gastric channel).

**The i-gel should always be used in accordance with recognised airway management practice for supraglottic airway devices.**

## 7.2 Important notes to the recommended insertion technique

- Sometimes a feel of 'give-way' is felt before the end point resistance is met. This is due to the passage of the bowl of the i-gel through the faucial pillars (pharyngo-epiglottic folds).
- Once resistance is met and the teeth are located on the integral bite block, do not repeatedly push i-gel down or apply excessive force during insertion.
- No more than three attempts in one patient should be attempted.

An inhalation technique involving oxygen, nitrous oxide and halothane/isoflurane/sevoflurane or desflurane is the most commonly used anaesthetic maintenance technique.

More recently, 'Total Intravenous Anaesthesia' (TIVA), involving a propofol infusion, along with an infusion of an opioid (fentanyl, alfentanil or remifentanyl), while the patient breathes 30-50% oxygen in air, is gaining widespread popularity.

Patients requiring IPPV will need adequate doses of the chosen muscle relaxant, given either by a continuous infusion or by intermittent boluses, on an 'as and when required' basis, whilst muscle relaxation is monitored by a nerve stimulator.

Towards the end of the surgery and anaesthetic:

### 9.1 Spontaneously Breathing Patients

- If the inhalation technique for the maintenance of anaesthesia was used, the anaesthetic agents should be stopped at the end of the operation (except oxygen). The patient will continue to breathe near 100% oxygen and the residual anaesthetic gases in the breathing system before waking up.
- If TIVA was used then standard practice should be followed with TIVA stopped just after the end of the operative procedure, a longer acting opioid or opiate is given and the patient allowed to wake up whilst breathing near 100% oxygen through the anaesthetic system.

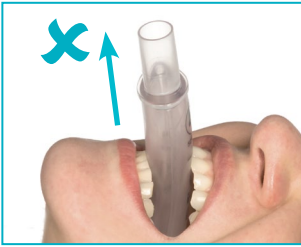
### 9.2 Patients with IPPV

It is advisable to monitor the neuromuscular blockade with a nerve stimulator. At the end of the surgical procedure, either reverse the neuromuscular blockade or let it wear off until the protective reflexes and regular breathing pattern are regained by the patient before the removal of the i-gel.

The patient should continue to breathe higher concentrations of oxygen through an anaesthetic system or T-piece in the recovery room, whilst pulse and oxygen saturation are monitored continuously and the blood pressure is measured at regular intervals.

Once consciousness is regained and protective reflexes such as coughing and swallowing have returned, gently suction around the airway device in the pharynx and hypopharynx. Once the patient is awake or easily arousable with vocal commands, the **i-gel** can safely be removed by asking the patient to open his/her mouth wide, and replaced with an MC (medium concentration oxygen) mask.

In patients with the possibility of a heightened gag reflex (i.e. smokers, asthmatics or patients with COPD), **i-gel** should be removed in deeper planes of anaesthesia and, after removal, the airway maintained with a Guedel airway and oxygen mask until protective reflexes have returned and the patient becomes arousable.



**NB: DO NOT attempt to forcibly remove the device if the patient is biting on it. Wait until the patient, on vocal command, has fully opened their mouth or opens their mouth spontaneously (Figure 27).**

**Figure 27:** Do not attempt to remove the i-gel if the patient is biting on it

Select the appropriate size of nasogastric (NG) tube.

i-gel size	Maximum size of Nasogastric Tube (FG)
1	N/A
1.5	10
2	12
2.5	12
3	12
4	12
5	14

Physiologically, every fasted patient for routine elective procedures has approximately 25-200ml of residual gastric contents at any one time. This group of patients may not have any predisposing factors for regurgitation.

If regurgitation is suspected or noticed during anaesthesia then it is recommended the patient head end of the operating table is tilted down and, if the timing of the surgical procedure allows, the patient is turned onto a left or right lateral position. **i-gel** should then be removed, thorough suctioning of the pharynx and hypopharynx undertaken, and the patient intubated for definitive securing of the airway.

If regurgitation is anticipated, then it is recommended that a nasogastric tube is passed through the gastric channel of the **i-gel** into the patient's stomach and the stomach emptied. The nasogastric tube can be left in situ during the whole duration of the operation/anaesthetic.

### 11.1 DO NOT USE THE GASTRIC CHANNEL IF:

- There is an excessive air leak through the gastric channel
- There are oesophageal varices or evidence of upper gastro-intestinal bleed
- In cases of oesophageal trauma
- There is a history of upper gastro-intestinal surgery
- The patient has bleeding/clotting abnormalities
- Nasogastric tube insertion in the presence of inadequate levels of anaesthesia can lead to coughing, bucking, excessive salivation, retching, laryngospasm or breath holding



## 12.1 Incorrect position

A horizontal line (Adult sizes 3,4 and 5 only) at the middle of the integral bite-block represents the correct position of the teeth (**Figure 28**). If the teeth are located lower than the distal tip of the bite block, then it is likely the device has been incompletely inserted. In this instance, remove the **i-gel** and reinsert with a gentle jaw thrust applied by an assistant. If that does not resolve the problem, use one size smaller **i-gel**. The paediatric sizes of **i-gel** (sizes 1 to 2.5) do not have a horizontal line on the integral bite block. This is due to the greater variability in the length of the oro-pharyngeal-laryngeal arch in children. As a result, insertion should continue, as with the adult sizes, until definitive resistance is felt. Once it has been established that ventilatory parameters are satisfactory and there is no leak through the gastric channel (except size 1 which does not contain a gastric channel), the **i-gel** should be held in place whilst the device is secured with tape 'maxilla to maxilla' (**Figure 26**).



**Figure 28:** Ideal position of teeth - (adult sizes only)

## 12.2 Coughing and breath holding

In the presence of inadequate anaesthesia at insertion or during maintenance of anaesthesia, coughing and breath holding may occur, signifying an inadequate depth of anaesthesia. In this situation, anaesthesia must be deepened by an intravenous injection of an agent like Propofol or with an inhalational anaesthetic agent (e.g. Sevoflurane). If the patient is being paralysed and ventilated, then the adequacy of the muscle relaxation must also be checked with a nerve stimulator. Should a patient show signs of gagging or coughing during the recovery phase, remove the **i-gel** and adequately suction the pharynx before reinserting the **i-gel**.

## 12.3 Air leakage through the gastric channel

A small air leak, air venting, through the gastric channel may be a useful mechanism to protect against gastric insufflation, but an excessive leak means the device is incompletely inserted. In such instances, remove the device and reinsert with a gentle jaw thrust applied by an assistant, a deep rotation or triple manoeuvre to achieve an optimum depth of insertion.

## 12.4 Inadequate seal pressure

If a higher seal pressure is desired, it is advised that a larger size than that recommended on weight basis is used. However, even if the seal pressure in a given patient would allow it, peak airway pressure of ventilation must not exceed 40cm H<sub>2</sub>O in order to prevent barotrauma.

### Excessive air leak during IPPV

If an excessive air leak during IPPV is noticed, use one or all of the following:

1. Hand ventilate the patient with gentle and slow squeezing of the reservoir bag.
2. Limit tidal volume to no more than 5ml/kg.
3. Limit the peak airway pressure to 15-20cm of H<sub>2</sub>O.
4. Assess the depth of anaesthesia and muscle relaxation.
5. Use pressure controlled ventilation.

If all of the above fail then change to one size larger **i-gel**.

The anatomical design and soft material of the **i-gel** are less likely to cause adverse outcomes when compared with other supraglottic devices. As the **i-gel** is manufactured from a soft gel-like material, it is unlikely to cause any trauma during insertion or whilst in situ, thereby reducing the risk of postoperative complications and co-morbidity. The clinical evidence currently available suggests **i-gel** may cause fewer secretions in the pharynx and hypopharynx than some other supraglottic airways.

Some of the known risks and complications of the use of supraglottic airway devices include laryngospasm, sore throat, trauma to the pharyngo-laryngeal framework, gastric insufflation, regurgitation and inhalation of the gastric contents, nerve injuries, vocal cord paralysis, lingual or hypoglossal nerve injuries, tongue numbness and cyanosis.

The risk of rotation and malpositioning leading to partial or complete airway obstruction is extremely low with the **i-gel** compared with other supraglottic devices. Down-folding of the epiglottis can occasionally occur and may be more common in children, but the **i-gel**'s cuff and airway channel have been designed in such a way that the chances of obstruction to the fresh gas flow (FGF) are minimal.

If the **i-gel** is placed too high in the pharynx, this may result in a poor seal and cause excessive leakage. If the FGF is forced in too hard by squeezing the reservoir bag too quickly, this may cause gastric insufflation and distension, which will increase the risk of regurgitation and postoperative nausea and vomiting.

If the tip of the **i-gel** enters into the glottic opening, this can lead to an excessive air leak through the gastric channel, which may result in obstruction to the FGF. If an NG tube is then inserted through the **i-gel**, it will enter into the trachea and lungs. It is recommended that if this situation is suspected, the **i-gel** is removed and reinserted with a gentle jaw thrust and correct placement checked.

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