

The I-Gel™ airway for Difficult Intubation

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Abstract

The 'i-gel' is the most recent development in supra glottic airway devices. It was developed in January 2007. Whilst there has been an explosion in the development of supraglottic airway devices in recent years, the i-gel is a new device with some distinctive features that set it apart from many of its competitors. We report a case of 55-years-male, with limited mouth opening due to mucosal fibrosis and fracture nasal bridge posted in emergency operation theatre for fixation of compound fracture of left femur. We decided to go by intubation and subsequently used ProSeal LMA, when intubation failed. However, ProSeal LMA also failed. In the make of difficult airway and failure of intubation and ProSeal LMA, the 'i-gel' than proved to be the saviour device.

INTRODUCTION

The i-gel airway₁ (Intersurgical Ltd, Wokingham, Berkshire, UK) is a single use supraglottic airway device. Of note is its supraglottic component that covers the larynx which is made of medical grade thermoplastic elastomer gel (Styrene ethylene butadene styrene (SEBS)) which does not require inflation with air. The i-gel as an addition to the list of supraglottic devices is designed to match that of the pharyngeal, laryngeal and Perilaryngeal structures whilst being able to retain its shape to facilitate its ease of insertion.

CASE REPORT

A 55 years old, male, weighing 71 kg, met a road traffic accident and arrived in orthopedic emergency with compound fracture left femur for external fixator and immediately posted for emergency surgery. He also had a fracture of nasal bridge, which was packed by surgeon. The patient was a tobacco chewer for last 25 years. There was no significant history apart from tobacco chewing. Airway evaluation revealed restricted mouth opening with inter incisor gap of nearly 2.5 centimetres which was attributed to oral mucosal fibrosis secondary to tobacco chewing. Airway was classified as Mallampatti- III with normal neck movement. Concomitant injuries of chest, abdomen and head were ruled out by surgical consultation.

With the appropriate consent and aspiration prophylaxis, General Anaesthesia was induced intravenously and laryngoscopy using a Macintosh blade revealed a grade-4 view despite repositioning the head and neck and external

laryngeal manipulation. Two attempts at tracheal intubation with a stylet failed. A size 4 ProSeal™ laryngeal mask airway (PLMA) was inserted. But ventilation was not satisfactory. The reason for this failure was unclear, although blood and secretions in the airway due to the previous intubation attempts may have contributed to the failure. So, the PLMA was removed and reinserted after bag-mask ventilation, but placement was still not proper as there was a high resistance in bag when ventilation checked. It was again removed and a size 4 i-gel airway (Intersurgical Ltd, UK) was inserted and ventilation was satisfactory this time. Surgery lasted for nearly 2 hours and the intraoperative period was uneventful. At the end of surgery, neuromuscular blockade was successfully reversed and i-gel removed. The patient was shifted to post-anaesthesia care unit for further management and observation.

DISCUSSION

The Difficult Airway Society guide-lines₂ recommend use of the LMA (laryngeal mask airway) to secure ventilation and oxygenation after failed optimised attempts at direct laryngoscopy, proceeding to secondary tracheal intubation, preferably using a fibroscope. However, fibroscope is usually not available all the times in emergency and in case ProSeal LMA / Classical LMA also fails to serve the purpose than very few options are left. Nasal intubation was not considered in this case in view of nasal bridge fracture. But, we were fortunate enough to have an 'i-gel' that proved to be a saviour in such a critical time.

The 'i-gel' is a truly anatomical supraglottic device. Its soft non-inflatable cuff fits snugly onto the perilaryngeal framework, mirroring the shape of the epiglottis, aryepiglottic folds, piriform fossae, peri-thyroid, pericricoid, posterior cartilages and spaces. Each receives an impression fit, thus supporting the seal by enveloping the laryngeal inlet. The seal created is sufficient for both spontaneously breathing patients and for intermittent positive pressure ventilation (IPPV). It is anatomically widened and concaved to eliminate the potential for rotation after insertion, thereby reducing the risk of mal positioning. When correctly inserted, the tip of the I-gel will be located into the upper esophageal opening, providing a conduit via the gastric channel to the esophagus and stomach. This then allows for suctioning, passing of a nasogastric tube and can facilitate venting. I-Gel provides a reliable clear airway with interventions rarely required. Airway seal is nearly 25 cmH₂O (30±7), between that of the LMA-classic and LMA-ProSeal^{4,5}. Ventilation is highly effective with excellent anatomical positioning and any laryngo-pharyngeal trauma is rare.

Thus, it may prove beneficial in securing a clear airway in difficult or unexpectedly difficult intubations in airway management of a patient in the operating theatre⁶. If confirmed by further positive evaluations, its efficacy may see it expand its role in airway management and it may gain popularity over other supraglottic airway devices currently available.

References

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