CASE REPORTS

The i-gel as a conduit for the Aintree intubation catheter for subsequent fiberoptic intubation

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Abstract

We report a clinical case of an 128 kg, 53 year old male, who was scheduled for sleeve gastrectomy surgery. Video laryngoscope (GlideScope – Verathron) assisted intubation was attempted. Despite repositioning of the head and neck and external laryngeal manipulations, two attempts to lift the epiglottis were unsuccessful. An i-gel (Intersurgical, Wokingham, Berkshire, United Kingdom) supraglottic device was successfully placed and normal oxygenation and ventilation was established with pressure controlled ventilation. An Aintree intubation catheter (AIC, Cook Medical, USA) pre-loaded onto a pediatric fiberoptic bronchoscope (FOB) was advanced through the i-gel. After fiber optic visualization of the vocal cords, the AIC and FOB were successfully placed into the patient’s trachea.

We conclude that the i-gel may not only serve as a substitute for failed tracheal intubation, but is also useful as a conduit for subsequent fiberoptic intubation.

Keywords: difficult intubation, i-gel, Aintree intubation catheter, fiber optic bronchoscope, fiber optic intubation

Introduction

The insertion of a supraglottic airway (SGA) and tracheal intubation through it may be indicated in resuscitation or other scenarios whenever conventional laryngoscopy fails. Various SGA devices have been used as conduits for tracheal intubation, including the intubating laryngeal mask airway (ILMA), C-trach laryngeal mask and the i-gel supraglottic airway. The ‘i-gel’ which has been developed in 2007 has several distinctive features compared to the other supraglottic airways.
the epiglottis were unsuccessful. At this point, the patient started to desaturate and mask ventilation became more difficult. As a method B and escape scenario, the i-gel size 4 (Intersurgical, Wokingham, Berkshire, United Kingdom) supraglottic device was successfully placed, according to the ASA difficult airway algorithm (9). After the placement of the i-gel, normal oxygenation and ventilation was established. At this stage we decided to continue the case, performing fiberoptic assisted intubation (method C). A 4.7 mm inner diameter (ID) Aintree intubation catheter (AIC, Cook Medical, USA) pre-loaded onto a 3.5 mm pediatric fiber optic bronchoscope (FOB) was advanced through the i-gel, using a fiber optic elbow connector, without discontinuation of mechanical ventilation. After fiber optic visualization of the vocal cords, the AIC and FOB were successfully placed into the patient’s trachea, above the carina. The i-gel and FOB were subsequently removed and an 8 mm ID endotracheal tube was successfully railroaded over AIC into the patient’s trachea.

The patient had uneventful surgery and was successfully extubated in a post anesthesia care unit, when he was awake, pain free and cooperative and having normal oxygenation and ventilation.

Discussion

To our knowledge, this is the single case report of successful tracheal intubation using i-gel as a conduit for an AIC fiber optic assisted intubation in an adult patient. There are a few case reports of tracheal intubation through i-gel conduit in the pediatric population [1, 2]. In both cases tracheal intubations were performed using a fiber optic bronchoscope directly through an i-gel conduit without AIC.

We are aware of the three manikin studies comparing FOB guided intubation through both the classic laryngeal mask airway (LMA) and the i-gel, via the AIC sheathed over the FOB or directly over the FOB [3-5]. These studies are equivocal in their conclusions. de Lloyd et al. [3] concluded that the i-gel is likely to be a more appropriate conduit than the classic LMA for fiber optic scope guided intubation irrespective of the intubation method used. The results of Michalek’s study showed that, in manikins, fiber optic intubation through both intubating LMA and i-gel is a highly successful technique. Blind intubation through the i-gel showed a low success rate and should not be attempted [4]. The findings of Ryusuke Ueki et al. study suggest that the AIC is effective in reducing collisions with the tracheal tube and thus will reduce the risk of mechanical injury to the airway [5]. The results of this study also conclude that intubation took longer with the Fastrack-Single Use (FSU), and the FSU had a higher failure rate than the other supraglottic airway devices for tracheal intubation.

The Aintree Intubation Catheter (AIC) (Cook Critical Care, Bloomington, IN, USA) is a semi-rigid hollow catheter that can facilitate bronchoscope-guided tracheal intubation. The device is 56 cm long with an ID of 4.7 mm, which allows the catheter to be pre-loaded onto a 4.0 mm, or smaller, fiberoptic bronchoscope and leaves the distal 3-10 cm of the bronchoscope unsheathed for ease of manipulation. The AIC allows endotracheal tube (ETT) ID 7.0 mm or greater to be inserted. During tracheal intubation, the AIC is mounted over a bronchoscope and the bronchoscope/ AIC assembly is inserted through the intubating SGA device into the trachea. After the bronchoscope and SGA are withdrawn, an ETT is railroaded over the AIC into the trachea. During this process, the AIC can also be used for ventilation through the use of a removable Rapi-Fit adapter.

The i-gel (Intersurgical Ltd, Wokingham, Berkshire, UK) is a SGA device that features a non-inflatable cuff and the possibility to introduce a gastric catheter. Its successful use has been described in randomized controlled studies [6, 7], including studies showing the possibility to intubate through the i-gel [4, 8].

In our case, after routine airway evaluation, traditional approach to intubation was attempted but did not succeed. Thus, an i-gel was inserted according the ASA Difficult Airway Guidelines [9, 10] in order to provide adequate oxygenation and ventilation to the patient. An i-gel allowed stable airway management when ventilation through a mask became difficult.

We conclude that the i-gel may not only serve as a substitute for failed tracheal intubation, but is also useful as a conduit for subsequent fiberoptic intubation.

One of the greatest advantages of the combination of i-gel with AIC is the possibility to provide oxygenation and ventilation to the patient, using i-gel, and at the same time having an opportunity to perform fiber optic intubation through AIC. As a matter of fact, having AIC which was advanced into the trachea fiber optically guided, provided us a greater margin of safety during the passage of the endotracheal tube over AIC.

Financial disclosure and Conflict of interest

Nothing to declare

References

Utilizarea i-gel ca introductor pentru cateterul Aintree premergător intubației fibroscopice

**Resumát**

Prezentăm cazul clinic al unui bărbat în vârstă de 53 de ani și de 128 kg, care a fost programat pentru o intervenție chirurgicală de gastrectomie longitudinală. A fost încercată intubația oro-traheală asistată de videolaringoscop (GlideScope – Verathron). În ciuda repoziționării capului și gâtului și a manipulării externe a laringelui, două tentative de ridicare a epiglotei s-au soldat cu eșec. Un dispozitiv supraglotic i-gel (Intersurgical, Wokingham, Berkshire, United Kingdom) a fost aplicat eficient asigurându-se astfel oxigenarea normală și ventilația pacientului în modul pressure-controlled. Un cateter de intubație Aintree (AIC, Cook Medical, USA), preîncărcat pe un bronhoscop fibrooptic pediatric (FOB), a fost avansat de-a lungul dispozitivului i-gel. După vizualizarea fibrooptică a corzilor vocale, AIC și FOB au fost introduse cu succes în trachee, ulterior plasându-se și sonda de intubație.

În concluzie, dispozitivul i-gel este util, atât ca substituție în cazul intubației eșuate cât și ca ghid în vederea unei intubații fibrooptice consecutive.

**Cuvinte cheie:** intubație dificilă, i-gel, cateter de intubație Aintree, bronhoscop fibrooptic, intubație fibrooptică