BRITISH JOURNAL OF HOSPITAL MEDICINE

EDITORIAL

Anaesthetic Allies: The I-gel and Its Rivals—Are We Becoming Less Familiar With the Latter?

Arunita Jha[1,*], Gabriela Pettey[2], Yasser Mandour[1]

[1]Department of Anaesthesia, University College London Hospitals NHS Foundation Trust, London, UK
[2]Department of Anaesthetic, Chelsea & Westminster Hospital NHS Foundation Trust, London, UK
*Correspondence: arunitajha@nhs.net (Arunita Jha)

Abstract

The field of airway management has undergone significant evolution, particularly with the introduction of the i-gel, a second-generation airway device. Initially developed to provide a less invasive alternative to endotracheal intubation, the i-gel gained widespread popularity due to its ease of insertion, rapid deployment, and minimal complications. This editorial compares the i-gel, highlighting its pros and cons. The i-gel offers key advantages, such as the anatomical seal without the need for cuff inflation, and reducing the risk of airway trauma. Furthermore, its reliable performance has been documented across various patient groups, including paediatrics and obese populations. Despite its strengths, there are limitations, such as reduced applicability in difficult airway situations and its lack of compatibility with endotracheal tubes. The choice of airway device should be tailored to the specific needs of the patient and the surgical procedure, emphasising the importance of maintaining familiarity with a variety of devices rather than solely relying on the i-gel. The editorial focuses on the ongoing evaluation of the role of the i-gel in modern anaesthesia, including the need for enhanced training in alternative supraglottic airway devices to ensure optimal airway management.

Key words: airway management; supraglottic airway device; laryngeal masks; general anaesthesia; airway complications; mechanical ventilation

Submitted: 6 March 2024 Revised: 23 September 2024 Accepted: 26 September 2024

Introduction

The quest for optimal, individualised airway management is paramount in modern-day anaesthesia. The introduction of the classic laryngeal mask airway (LMA) fundamentally changed airway management and has since achieved global acceptance. This is due to its provision of a less invasive method for airway control when compared to standard endotracheal intubation. Since then, various prototypes and similar devices have entered the airway industry. With the advent of second-generation supraglottic airway devices (SADs), such as the i-gel, the practice of airway management irrevocably evolved not only in routine anaesthesia but in resuscitation as well.

The 4th National Audit Project (NAP4) study states that 56% of all UK general anaesthetics conducted used an SAD as the primary airway (Woodall and Cook, 2011), of which 10% made use of a second-generation SAD. NAP4 also stated that the i-gel was used more than twice as often as the Proseal.

How to cite this article:
Jha A, Pettey G, Mandour Y. Anaesthetic Allies: The I-gel and Its Rivals—Are We Becoming Less Familiar With the Latter? Br J Hosp Med. 2025. https://doi.org/10.12968/hmed.2024.0085

With the ongoing advancements in airway practice, it is becoming increasingly pertinent to evaluate the utility of an i-gel as a primary device including its key differentiating qualities. These considerations should include the factors that influence the decision of when to use an i-gel as compared to alternative SADs. With its unique non-inflatable cuff and gel-like composition, it stands out as a notable contender among SADs. However, what are the trade-offs?

It is our view that the i-gel is often the first choice of SAD used when planning an anaesthetic or airway invention. However, pertinent factors and considerations should govern this choice with more clarity, particularly as to when alternative SADs would be a more appropriate first choice.

This editorial delves into a comparative analysis of the i-gel against other SADs, highlighting the benefits and drawbacks of its features. With continual advances in airway management and devices, it is crucial to understand the nuances of these various supraglottic devices and explore how the i-gel fairs in comparison to its rivals in anaesthesia practice.

Pros of I-gel

The i-gel presents several advantages over other SADs, particularly in terms of ease of insertion and a reduced risk of complications.

Ease of Use

Its innovative design allows for straightforward insertion even in the inexperienced provider.

NAP4 identified the advantages of the second-generation SAD and recommended their availability in all hospitals for both routine and emergency airway management. The use of a second-generation SAD was subsequently integrated into the Difficult Airway Society (DAS) guidelines.

Rapid Insertion

Due to its cuff-less design, it is ideal for emergency situations and for clinicians with limited airway management. A meta-analysis stated that the i-gel was associated with reduced times to achieve a secure airway compared to other SADs, such as the classic LMA and the Proseal (An et al, 2017). However, it was found to have similar first-attempt insertion times when compared to the LMA supreme (Chen et al, 2013).

Reliable & Versatile

A multi-centre, prospective, cohort study analysed over 2000 routine i-gel insertions and found the failure rate to be <5%. Of these failures, 38% were successful after changing sizes (Theiler et al, 2012).

In the paediatrics population, Maitra et al (2014) reviewed 6 prospective randomised trials comparing the i-gel to alternative SADs (classic LMA and the LMA

Proseal) and found it to be an effective option when comparing leak pressures, ease and speed of insertion, and complication rates.

Weber et al (2011) reviewed 50 mild to moderately obese patients and found that the i-gel facilitated the delivery of higher ventilatory pressures to be delivered when compared to a classic LMA. High-risk patients and those with anticipated difficult airways were removed from the sample but still could be deemed a more appropriate option in obese individuals (Weber et al, 2011).

Reduced Airway Trauma

As it is made of thermoplastic elastomer, the i-gel affords a non-inflatable anatomical seal around the peri-laryngeal structures, minimising mucosal pressure and reducing the risk of airway trauma. The integrated bite block also prevents damage and obstruction on emergence (Chen et al, 2013).

Previous systematic reviews and metanalysis have compared the i-gel with the LMA Proseal and have not differentiated insertion parameters but have commented on lower postoperative complaints with the i-gel (Park et al, 2015).

Effective Seal for Positive Pressure Ventilation

The i-gel moulds into the shape of the hypopharynx and tongue, enabling an effective seal and enhancing airway patency. A 2021 British Medical Journal (BMJ) open article assessed four randomised controlled trials (n = 374 patients) and found that pre-warming the i-gel may provide a more effective sealing pressure (Zheng et al, 2021) without affecting the risk of postoperative pharyngeal pain. A study that randomised 150 patients into three groups (i-gel, LMA Proseal or LMA supreme) showed similar oropharyngeal leak pressures during anaesthesia, suggesting that the i-gel is neither better nor worse than other SADs (Van Zundert and Brimacombe, 2012). A paediatric review of 62 published articles compared the i-gel with other SADs. Authors concluded the i-gel is 'at-least equivalent' to other devices and may give higher leak pressures and improved fibreoptic view of the glottis (Smith and Bailey, 2015).

Uppal et al (2009) compared the i-gel with cuffed endotracheal tube during pressure-controlled ventilation and suggested that an i-gel is a reasonable alternative airway when used for ventilating patient with moderate airway pressures. This comparison was made after excluding patients with high body mass index, aspiration risk and at-risk or potentially anticipated difficult airways.

Integrated Gastric Channel

This can allow for gastric decompression and potentially reduce the risk of aspiration events.

NAP4 study attributed only two out of the fourteen SAD-related 'aspiration events' to the use of an i-gel as the primary airway device (Woodall and Cook, 2011).

Use in Various Positions

The use of the i-gel has been documented with patients in various positions other than supine, such as lateral and prone.

A study comparing the use of an LMA in the supine versus lateral position in 100 patients found no significant difference in oropharyngeal leak pressures and fibreoptic views, suggesting its use is safe and can be explored in relevant and appropriate situations (Saracoglu et al, 2018).

Cons of I-gel

While the i-gel offers numerous benefits, it is paramount that as experienced professionals we can recognise and mitigate potential risks that it may pose. Its widespread adoption could raise an important consideration: have healthcare professionals become accustomed to using the i-gel as a default? And could this limit our skills and jeopardise our ability to deliver safe airway management in those times when the i-gel is not effective?

One Size Does Not Fit All

Due to anatomical variability and the blind technique employed during insertion of an SAD, the i-gel may not be appropriate for every individual and fail to achieve optimal positioning within the hypopharynx. A Swiss multi-centre study stated that the i-gel was a reliable device but did fail in approximately 5% of cases (Theiler et al, 2012). Features associated with primary device failure are male gender, impaired subluxation, poor oral dentition and older age. These factors increase the risk of airway management complications, such as hypoxia or hypercarbia.

Limited Use in a Difficult Airway

The i-gel lacks endotracheal tube compatibility, therefore a smooth transition to an endotracheal intubation in the event of a difficult airway has not been described. DAS guidelines state that a ‘SAD’ be used and recommend a second-generation device, not necessarily an i-gel.

Lack of Protection From Aspiration

As with all SADs, it does not afford a protected airway. NAP4 study identified 2 incidences of aspiration related events when an i-gel was used (Woodall and Cook, 2011). A gastric port for suctioning is present, but can be challenging to suction through it, increasing the risk of airway complications. This has now been addressed by the introduction of the i-gel Plus, a second-generation i-gel with a wider gastric port allowing for easier insertion of gastric tubing (Klementova et al, 2021).

Cost Considerations

The single-use i-gel may be more expensive than traditional SADs, which could restrict its application in certain clinical settings globally.

Malpositioning

Inappropriately seated i-gels can result in complications. Although uncommon, they do still occur, leading to repeated airway manoeuvre attempts, suboptimal ventilation due to leaks, glossal/hypoglossal nerve damage, glottic haematoma, laryngo/bronchospasm, and airway occlusion from folding of glottic structures (Theiler et al, 2012).

Vigilance and skill are required when inserting an airway device.

DAS and the RCOA have developed the Tayside Mastery Learning Programme which covers the foundation of airway management, including a module dedicated specifically to supraglottic airway devices.

Is there a role for departmental simulation-based airway training focusing on supraglottic airway device management to afford healthcare providers, in particular anaesthetists, with a safe platform to explore the pitfalls and nuances of the various SAD? Lest they face the pitfalls prior to due consideration- food for thought.

Conclusion

The i-gel represents a significant advancement in airway management, displaying many advantages over the classic LMA and newer innovative designs. It is quick and easy to insert, more likely to form a good seal with minimal trauma on initial insertion and its familiarity across clinical settings make it a good first choice in airway management when appropriate. However, like with all devices, there are benefits and pitfalls.

As airway experts, we should have the ability to use our expertise and lateral thinking to devise a tailored plan, including how to circumvent failures at first insertions, strategies to trouble-shoot and anticipate those patients for whom the i-gel would not be suitable as the primary SAD.

Ultimately, the choice of airway device should be individualised to patient, environmental and surgical needs, including clinical expertise and resource availability, to achieve optimal airway management and not simply default to the use of an i-gel.

Availability of Data and Materials

All the data of this study are included in this article.

Author Contributions

AJ, GP and YM contributed to the conception of the manuscript. AJ and GP drafted the manuscript. All authors contributed to editorial changes of important content in the manuscript. All authors read and approved the final manuscript. All

authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

Not applicable.

Acknowledgement

Not applicable.

Funding

This research received no external funding.

Conflict of Interest

The authors declare no conflict of interest, including with the manufacturer (Intersurgical, Wokingham, UK) of i-gel.

References

An J, Nam SB, Lee JS, Lee J, Yoo H, Lee HM, et al. Comparison of the i-gel and other supraglottic airways in adult manikin studies: Systematic review and meta-analysis. Medicine. 2017; 96: e5801. https://doi.org/10.1097/MD.0000000000005801

Chen X, Jiao J, Cong X, Liu L, Wu X. A comparison of the performance of the I-gel™ vs. the LMA-S™during anesthesia: a meta-analysis of randomized controlled trials. PLoS ONE. 2013; 8: e71910. https://doi.org/10.1371/journal.pone.0071910

Klementova O, Bhoday TK, Werner J, Lopez AM, Donaldson W, Lichnovsky E, et al. Evaluation of the insertion parameters and complications of the i-gel Plus airway device for maintaining patent airway during planned procedures under general anaesthesia: a protocol for a prospective multicentre cohort study. BMJ Open. 2021; 11: e053215. https://doi.org/10.1136/bmjopen-2021-053215

Maitra S, Baidya DK, Bhattacharjee S, Khanna P. Evaluation of i-gel(™) airway in children: a meta-analysis. Paediatric Anaesthesia. 2014; 24: 1072–1079. https://doi.org/10.1111/pan.12483

Park SK, Choi GJ, Choi YS, Ahn EJ, Kang H. Comparison of the i-gel and the laryngeal mask airway pros-eal during general anesthesia: a systematic review and meta-analysis. PLoS ONE. 2015; 10: e0119469. https://doi.org/10.1371/journal.pone.0119469

Saracoglu KT, Demir A, Pehlivan G, Saracoglu A, Eti Z. Analysing the efficacy of the I-gel supraglottic airway device in the supine and lateral decubitus positions. Anaesthesiology Intensive Therapy. 2018; 50: 259–262. https://doi.org/10.5603/AIT.a2018.0028

Smith P, Bailey CR. A performance comparison of the paediatric i-gel with other supraglottic airway devices. Anaesthesia. 2015; 70: 84–92. https://doi.org/10.1111/anae.12830

Theiler L, Gutzmann M, Kleine-Brueggeney M, Urwyler N, Kaempfen B, Greif R. i-gel™ supraglottic airway in clinical practice: a prospective observational multicentre study. British Journal of Anaesthesia. 2012; 109: 990–995. https://doi.org/10.1093/bja/aes309

Uppal V, Fletcher G, Kinsella J. Comparison of the i-gel with the cuffed tracheal tube dur-ing pressure-controlled ventilation. British Journal of Anaesthesia. 2009; 102: 264–268. https://doi.org/10.1093/bja/aen366

Van Zundert TCRV, Brimacombe JR. Similar oropharyngeal leak pressures during anaesthesia with i-gel, LMA-ProSeal and LMA-Supreme Laryngeal Masks. Acta Anaesthesiologica Belgica. 2012; 63: 35–41.

Weber U, Oguz R, Potura LA, Kimberger O, Kober A, Tschernko E. Comparison of the i-gel and the LMA-Unique laryngeal mask airway in patients with mild to moderate obesity during elective short-term surgery. Anaesthesia. 2011; 66: 481–487. https://doi.org/10.1111/j.1365-2044.2011.06682.x

Woodall NM, Cook TM. National census of airway management techniques used for anaesthesia in the UK: first phase of the Fourth National Audit Project at the Royal College of Anaesthetists. British Journal of Anaesthesia. 2011; 106: 266–271. https://doi.org/10.1093/bja/aeq339

Zheng J, Du L, Wang J, Zhang L, Chen G. Prewarming i-gel laryngeal mask for mechanical ventilation: a meta-analysis of randomised control trials and trial sequential analysis. BMJ Open. 2021; 11: e045461. https://doi.org/10.1136/bmjopen-2020-045461