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Original Contribution

Laryngeal mask airway ProSeal provides higher oropharyngeal leak pressure than i-gel in adult patients under general anesthesia: a meta-analysis☆,☆☆,★,★★

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Abstract

Study Objective: i-gel is a single-use supraglottic airway device that has a gastric drain tube similar to laryngeal mask airway (LMA) ProSeal. Randomized trials, when compared i-gel with LMA ProSeal, reported a differing results. Primary objective of this study is to compare LMA ProSeal and i-gel in terms of oropharyngeal leak pressure.

Design: Meta-analysis of randomized controlled trials where i-gel has been compared to LMA ProSeal in adult airway management during general anesthesia.

Setting: Teaching institutions.

Measurements: PubMed, PubMed Central, and Cochrane databases were searched with search words "i-gel," "i-gel laryngeal mask airway," "i-gel ProSeal," and "i-gel LMA ProSeal" to find out the randomized controlled trials that compared i-gel with LMA ProSeal in terms of safety and efficacy. A total of 10 prospective randomized trials have been included in this meta-analysis.

Main Results: LMA ProSeal provides higher oropharyngeal leak pressure than i-gel (mean difference, 3.37 cm H_2O; 95% confidence interval, 1.80-4.95 cm H_2O; $P< .0001$). Time to insert the device, first insertion success rate, and ease of gastric tube insertion are similar with both the devices, but i-gel may be easier to insert. Although the reported complications are not frequent and not very serious, a significantly higher blood staining on the mask has been noted with LMA ProSeal (odds ratio, 0.27; 95% confidence interval, 0.13-0.56; $P= .0004$).

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Conclusion: LMA ProSeal may still remain the supraglottic device of choice over i-gel in adult patients during general anesthesia as it provided better seal against leak pressure with comparable device insertion characteristics.

i-gel [1] (Intersurgical, Wokingham, UK) airway is a relatively newer addition to the armamentarium of supraglottic airway devices of an anesthesiologist. It is different from all other laryngeal masks in that it does not have an inflatable cuff; rather, it has a soft gel–like cuff that is made of Medical grade transparent thermoplastic elastomer SeBS (styrene ethylene butadiene styrene) with a soft durometer [2]. It also has a gastric tube lateral to the airway tube that can be used to suction the stomach. An advantage of i-gel is that being a single-use device is free from the risk of transmission of communicable diseases such as prion disease.

On the contrary, laryngeal mask airway (LMA) ProSeal (The Laryngeal Mask Company, Ltd, Wooburn Green Bucks, UK) is considered the criterion standard [3] of supraglottic devices till date, and its superiority has been established in terms of oropharyngeal leak pressure over LMA Classic [4] and LMA Supreme [5]. Till date, a number of studies have been conducted to compare i-gel with LMA ProSeal in adult patients during routine general anesthesia [2,6–14]. These studies are not unanimous in reporting relative efficacy of these 2 supraglottic devices in adults. A previous meta-analysis found that i-gel provides higher leak pressure than LMA ProSeal in pediatric patients [15]. Another recent meta-analysis has found that second-generation LMAs (LMA ProSeal and LMA Supreme) provide similar leak pressure to i-gel [16]. However, a pooled analysis of leak pressure from LMA ProSeal and LMA Supreme is illogical, and a direct comparison between LMA ProSeal and i-gel was not possible in such analysis. Besides the aforementioned methodological issues, the additional evidence coming from 3 recent randomized controlled trials (RCTs) comparing these 2 devices makes a new meta-analysis necessary. Therefore, a meta-analysis of RCTs was planned, comparing i-gel with LMA ProSeal in adult patients undergoing general anesthesia. Primary outcome was the oropharyngeal leak pressure, and secondary outcomes were time to device insertion, first insertion success rate, ease of insertion, success rate of gastric tube insertion, and reported complications associated with each device.

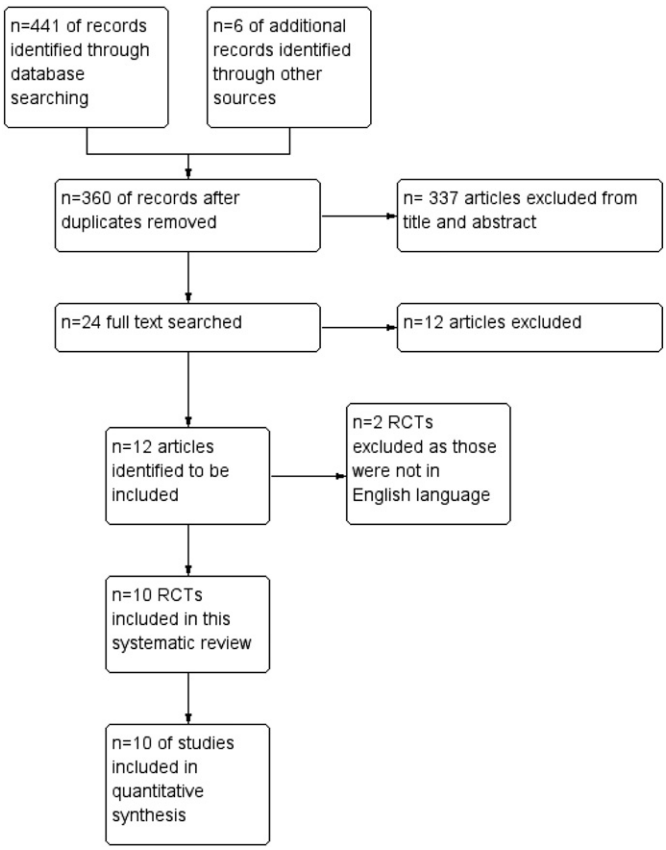

Fig. 1 PRISMA flow diagram for study selection.