Background:  
- The laryngeal mask airway Supreme® and i-gel® are both single-use second generation devices with gastric access capabilities that are now available in full and half sizes for children.
- In children, both observational and randomized studies with the i-gel [1-4] and LMA Supreme [5-7] have demonstrated similar leak pressures between the devices.
- Our aim was to compare the i-gel with the LMA Supreme in multiple pediatric full and half sizes. We hypothesized that the i-gel would have similar airway leak pressures to the LMA Supreme in pediatric patients.

Methods:  
- IRB approval and written informed consent were obtained prior to enrollment.
- One hundred and seventy six children, ages 3 months to 11 years, 5-50kg in weight, ASA I-III, who were scheduled for surgery in which airway management with a laryngeal mask would be appropriate, were enrolled in this study.
- Each patient was randomly assigned to receive either a LMA Supreme or i-gel. The size of the device selected was based on the patient’s ideal body weight according to the manufacturer’s guidelines.
- The primary outcome measure was oropharyngeal leak pressure.
- Secondary outcome measures included: ease and time for insertion, insertion success rate, fiberoptic grade of view, ease of gastric tube placement, number of airway manipulations, quality of airway during anesthetic maintenance, and complications.

Table 3. Comparative data during anesthetic maintenance and complications associated with the LMA Supreme and i-gel. Values are median (IQR [range]), number, or number (proportion).

Table 2. Comparative data for the LMA Supreme and the i-gel. Values are median [IQR] or number, or number (proportion).

Table 1. Patients’ and operative characteristics for the LMA Supreme and the i-gel. Values are median [IQR] or range (number).

Parameters | LMA Supreme n=85 | i-gel n=83 | p value |
--- | --- | --- | --- |
Number per device size | 1/2/3/4 | 1/2/3/4 | 0.1 |
Time of successful insertion of device (s) | 18/25/35/45 | 18/25/35/45 | 0.99 |
Ease of device placement* | 1/2/3/4 | 1/2/3/4 | 0.01 |
Success rate of insertion | 82 (96%) | 78 (94%) | 0.35 |
First attempt | 82 (96%) | 78 (94%) | 0.35 |
Second attempt | 3 (4%) | 2 (2%) | |
Third attempt | 0 (0%) | 0 (0%) | |
Leak Pressure (cm H2O) | 17 (14-22)/10-40 | 20 (16-25)/40 | 0.001 |
Fiberoptic grading† | 2/3/4/5 | 2/3/4/5 | 0.07 |
Ease of gastric tube placement‡ | 79/85/100 | 78/85/100 | 0.6 |
Overall success rate of gastric tube insertion | 83 (98%) | 83 (100%) | 0.57 |

*All values are expressed as median [IQR] or number (percentage).

A Randomized Equivalence Trial Comparing the i-gel™ and Laryngeal Mask Airway Supreme™ in Children
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Results:  
- There were no statistically significant differences in the time for device insertion, fiberoptic grade of view, quality of airway, and complications.
- The median [IQR] airway leak pressure for the i-gel was higher than with the LMA Supreme, 19 (18-25)/10-40 vs 17 (14-22)/10-40, respectively; p=0.01.
- Median [IQR] time of successful insertion of a gastric tube was faster with the LMA Supreme, 12 (9.2-14.5)/3-4.24/2] s than with the i-gel, 14 (11.1-16.7)/5.25 s; p=0.01.
- The number of airway manipulations during placement was higher with the i-gel than with the laryngeal mask airway Supreme (twelve vs three patients), p=0.02.
- Advancement of the device (12; 7 after placement and 5 during maintenance) with bi-maxillary fixation with downward traction with tape was the most common maneuver reported. This was more common after placement in smaller children (sizes 1.5 and 2.0).

Conclusion:  
- The i-gel demonstrated higher airway leak pressures than the LMA Supreme, and may be a suitable alternative to the LMA Supreme for airway management when a single-use device with gastric access is needed in children.
- The i-gel required a greater number of manipulations to maintain the patency of the airway when compared with the LMA Supreme, and the clinician should take this into account when choosing this airway for anesthetic maintenance.

References:  