A randomized trial comparing the Ambu® Aura-i™ with the air-Q™ Intubating Laryngeal Airway as Conduits for Tracheal Intubation in Children

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OBJECTIVES:
To compare the Ambu® Aura-i™ (Aura-i™) (Ambu®, USA), Glen Burme with the air-Q™ intubating laryngeal airway (air-Q™) (ConXigns, St. Louis, MO, USA) for fiberoptic-guided tracheal, MD, USA) in children.

BACKGROUND:
The air-Q™ is a supraglottic airway that has been shown to be effective for fiberoptic-guided tracheal intubation in clinical trials1,2, and in children with difficult airways3,4. The Aura-i™ is a newer supraglottic airway also designed to facilitate tracheal intubation, a feature that has not been previously tested clinically. Both devices are disposable, have curved airway tubes, and are intended to accommodate cuffed tracheal tubes (Figure 1). Unlike the air-Q™, the Aura-i™ does not have a detachable proximal connector, and therefore has a narrower orifice for the tracheal tube and pilot balloon to pass through.

METHODS:
After IRB approval, written informed consent was obtained, and 120 children were enrolled. Inclusion criteria were:

- Children 5-20 kg
- 1 month to 6 years of age
- ASA physical status I-III

Exclusion criteria were:

- ASA physical status ≥ III
- Scheduled for elective outpatient surgery

RESULTS:
Device placement, tracheal intubation, and removal after tracheal intubation were successful in all patients. There were no differences in the time to successful tracheal intubation through the Aura-i (32.9 ± 13.0 (7.9-85.6)) and the air-Q (35.5 ± 13.5 (19.9-66.4)) (p=0.89). However, with the size 1.5 Aura-i, the pilot balloon of the tracheal tube was removed in order to facilitate the removal of the device after tracheal intubation.

CONCLUSIONS:
The Aura-i™ may be a suitable alternative to the air-Q™ as a conduit for fiberoptic-guided tracheal intubation in children. Choosing a supraglottic airway device for this purpose may be influenced by the clinician’s familiarity with the device, and whether a cuffed tracheal tube needs to be utilized. The proximal airway balloon of the size 1.5 Aura-i and the implications of its use with cuffed tracheal tubes should be considered when making this decision.

Table 1: Comparison data between the Ambu Aura-i™ and the air-Q™ laryngeal airway

<table>
<thead>
<tr>
<th></th>
<th>Overall Ambu (n=50)</th>
<th>Group 1: 5 to 10 kg Ambu (n=20)</th>
<th>Group 2: 10 to 15 kg Ambu (n=20)</th>
<th>Group 3: 15 to 20 kg Ambu (n=20)</th>
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</thead>
<tbody>
<tr>
<td>Leak pressure (cm H2O)</td>
<td>18.3 ±8.1 (10.4-33.6)</td>
<td>16.3 ±21.5 (8.4-40.5)</td>
<td>16.1 ±15.2 (10-30)</td>
<td>0.01</td>
</tr>
<tr>
<td>Time to tracheal intubation (s)</td>
<td>33.9 ±13.0 (7.9-85.6)</td>
<td>32.9 ±13.3 (16.7-73.3)</td>
<td>35.5 ±13.5 (19.9-66.4)</td>
<td>0.89</td>
</tr>
<tr>
<td>Fiberoptic grade of view</td>
<td>3.2</td>
<td>10 (17)</td>
<td>5 (25)</td>
<td>5 (25)</td>
</tr>
<tr>
<td>Complications n(%)</td>
<td>None</td>
<td>57 (95)</td>
<td>59 (98)</td>
<td>59 (96)</td>
</tr>
</tbody>
</table>

1Grade 1, larynx only seen; Grade 2, larynx and epiglottis posterior surface seen; Grade 3, larynx and epiglottis tip of anterior surface seen, less than 50% visual obstruction of epiglottis to larynx; Grade 4, epiglottis downfolded and its anterior surface seen, greater than 50% visual obstruction of epiglottis to larynx. Overall leak pressures, air-Q (18.3 ±6.1 cm H2O) versus Aura-i (16.1 ±3.5 cm H2O; p=0.05). In Group 1 (5 kg), the leak pressures were higher with the air-Q (23.4 ±7.2 cm H2O) than the Aura-i (16.1 ±5.2 cm H2O; p=0.001). There were no statistically significant differences in the time for removal between the two devices (p=0.11). However, with the size 1.5 Aura-i, the pilot balloon of the tracheal tube was removed in order to facilitate the removal of the device after tracheal intubation.

REFERENCES:

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