Background:
Recently published difficult airway guidelines suggest the use of a supraglottic airway device (SAD) in children with difficult airways. The air-Q intubating laryngeal airway (air-Q) is a SAD that has been shown to be an effective conduit for tracheal intubation, either blindly or with fiberoptic assistance. We describe a four-step method for tracheal intubation through the air-Q in three infants with a known difficult airway, severe airway obstruction, and risk for aspiration, where the awake placement of an air-Q was used to successfully facilitate a rapid sequence intubation.

Case Report:
All three cases involved infants at risk for aspiration, with Pierre Robin Syndrome (micrognathia, glossoptosis), and severe upper airway obstruction requiring supplemental oxygen. Infant #1 was a 4.1 kg, 6-week old female with double outlet right ventricle, CHARGE syndrome, cleft palate, choanal atresia, vocal cord paralysis, dysphagia and difficulty clearing secretions, presenting for gastrostomy tube insertion, tracheostomy, nasal endoscopy, and bilateral myringotomy with pressure equalizing tube placement. Infant #2 was a 4.0 kg, 3-week old male with dysphagia, gastro-intestinal reflux, and cleft palate presenting for tracheostomy. Infant #3 was a 3.6 kg, 8-week old male with small bowel obstruction presenting for exploratory laparotomy followed by tracheostomy.

Intravenous access was established prior to the start of the case, and the stomach was decompressed with an orogastric tube. First, in the awake infant, the airway was topicalized with 2% lidocaine jelly i) by swabbing the posterior pharynx with the clinician’s finger, or ii) delivered via pacifier with several perforations and placed in the patients’ mouth. Second, the air-Q was inserted, and the functional position was verified by observing a minimum tidal volume of 6ml/kg while making minor adjustments of the device to maintain adequate ventilation. The awake placement of the air-Q was well tolerated by all three infants with minimal reflex activation of the airway (coughing, breath-holding, gagging), relief of their upper airway obstruction, and improved oxygenation. Third, a fiberoptic bronchoscope was placed through the air-Q to verify the laryngeal alignment and adjusted, if needed, to optimize the glottic view. Fourth, after confirming adequate anatomic and functional position, satisfactory reduction of the airway obstruction, and pre-oxygenation, an induction agent (propofol, or ketamine) and succinylcholine 1 mg.kg⁻¹ was administered to facilitate tracheal intubation while visualizing the glottic opening with the fiberoptic bronchoscope. A Size 0.5 or 1 air-Q was utilized for these patients. Once the trachea was intubated, and placement confirmed with the presence of end-tidal carbon dioxide, the air-Q was removed using a removal stylet. Tracheal intubation with an appropriately sized cuffed tracheal tube, and removal of the air-Q were both successful on the first attempt in all patients.

Image 1: Infant with Pierre Robin Syndrome demonstrating severe sternal retractions from airway obstruction

Image 2: Airway topicalization may be achieved by making several perforations in a standard infant pacifier and injecting lidocaine jelly within the nipple then allowing the infant to suckle the pacifier.

Image 3: A size 0.5 air-Q placed in an awake neonate

Conclusions:
In summary, we describe a novel method by which the clinician may be able to overcome the upper airway obstruction in an infant with a known difficult airway and full stomach, and provide a practical option for rapid sequence intubation. Approaching the difficult infant airway in this step-wise manner allows for a safe, controlled process that reduces the stress and risk of potentially ‘losing the airway’ that can be associated with these complicated airway scenarios, even when aspiration is a concern.

References: