"AZ Airway Concept"

Second Generation Trial
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ABSTRACT

The AZ configuration of supraglottic airway devices (SAD) has been trialed before. We have extended our study to investigate if it is possible to implement the AZ concept on a second generation SAD without disruption of gastric tube entry. For this purpose three SAD were compared after implementing the AZ airway structural change. The modification was done on the Aura Gain®, LarySeal Pro®, and i-gel®. The circuit connection, as well as the gastric tube suction was compared in this alteration to the original SAD and ease of operation and the amount of kinking in each tube was evaluated. The results indicate addition of a gastric tube, as a second generation of SAD, is possible in all three configurations.

BACKGROUND

The novel AZ- airway concept was introduced at the DAS 2016 and results of a clinical trial on two SAD was reported in DAS 2017. The AZ modification allows interchangeable supraglottic (SG) and endotracheal (ET) ventilations without disruption of ventilation. Since a significant portion of the consumers tend to utilize second generation SAD (with gastric suction port) we attempted to implement the AZ modification on three currently available second generation SAD and evaluate the effect on gastric inlet attachment and suction.

METHODS

The original Cleveland Clinic Institutional Review Board approval for the alteration of SAD to implement the AZ configuration was used for this study. Three second generation SAD platforms were included: the LarySeal Pro® from Flexicare, the i-gel® from Intersurgical®, and the AuraGain® from Ambu®. All three SAD were altered according to a 3D printed prototype previously presented as the AZ modification (Fig. 1). The gastric tube inlet in all three SAD are attached to a common plate that also incorporates the ventilation inlet (Fig. 2). However, there are some structural variation in the gastric suction tube inlet system in relation to the ventilation inlet. After the construction of the R-Adapter the gastric tube was introduced in the inlet and the amount of angulation was compared in each SGA (Fig. 3).

RESULTS

In all three SAD the AZ modification was achieved by a longitudinal opening in the body of the SAD shaft, and an R-Adapter was made using the proximal portion of a large ETT. The Flexicare LarySeal® Pro airway is unique in that the gastric suction port ends in a complete tube within the stem of the SAD. In comparison with the other two SAD which only need modification in the inlet part, this configuration of LarySeal® Pro necessitates adding a separate tube parallel to the R-Adapter, resulting in two separate tubes attached to the proximal portion, one as a gas conduit and the other to the gastric suction inlet. The tubes were aligned such that at the time of connection each conduit coaxially entered to its correlating original tube on the body of the SAD. All three SAD allowed the gastric tube incorporation without compromising ventilation or suction.

DISCUSSION

Currently the patented AZ modification is the only way to provide a single device that allows both a SG and ET ventilation interchangeably in a coaxial fashion. This device can provide a true staged extubation, since contrary to the previously described methods that utilize a tube exchanger, this method will not interrupt ventilation. The use of tube exchanger will result in a period of unprotected airway, but in AZ method the airway is continuously protected. This study was to show that the AZ modification is not limited to first generation SAD. Addition of a gastric tube not only can decrease chance of aspiration of gastric contents, but also theoretically enhance conversion of SG ventilation to ET ventilation by obstructing the gastric inlet and guiding the endotracheal tube more towards the laryngeal opening during intubation. This hypothesis should be examined in a separate study.

In conclusion despite structural differences in second generation SAD, the AZ modification is possible in these three samples.

REFERENCES

1) R. Avitsian, A. Zura, British Journal of Anaesthesia, Volume 119, Issue 3, 1 September 2017, Pages e31–e47