**Difficult Airway Society guidelines for awake tracheal intubation in adults – is lidocaine topicalisation safe?**

Recent DAS awake tracheal intubation (ATI) guidelines [1] recommend that “effective [lidocaine] topicalisation must be established and tested” and that “sedation must not be used as a substitute for inadequate airway topicalisation”. We are concerned this is a flawed approach that may, of itself, precipitate airway obstruction.

The fundamental principle of ATI is to maintain patency of the upper airway. The adult human pharynx is a collapsible tube suspended between two rigid tubes, the nose and trachea. Together, these three elements constitute a Starling Resistor with pharyngeal patency determined by three factors: tone of the pharyngeal musculature; extra-luminal pressure; and intra-luminal pressure

Adequate pharyngeal muscle tone is crucial for maintenance of airway patency during breathing. During unopposed inspiration, sub-atmospheric intra-luminal pressure causes the pharynx to narrow and collapse. This is counter-balanced by a reflex increase in pharyngeal muscle tone to stiffen the airway and maintain patency. The afferent arc of this pharyngeal reflex is triggered by mechanoreceptors in the pharynx and larynx. The efferent arc is signalled through the superior laryngeal, lingual and glossopharyngeal nerves.

Pharyngeal and laryngeal topical local anaesthesia attenuates the pharyngeal muscle reflex, increasing the risk of airway collapse [2]. Pharyngeal topicalisation in healthy subjects has been shown to result in airway compromise, with an 81% increase in airway flow resistance [2]. The duration of action for topicalised lidocaine is over 30 min and is non-reversible.

In a pathologically narrowed airway, maximal reflex pharyngeal dilator muscle tone may not be sufficient to counterbalance the negative inspiratory intra-luminal pressure. Consequently, zones of critical instability arise within the pharynx that may evolve into complete airway obstruction. In such patients reflex contraction of dilator muscles alone may not generate sufficient tension in the pharyngeal wall. Patients frequently adopt a sitting posture to increase neck flexion and head extension in order to stretch the pharyngeal musculature and augment resting airway tone. Such patients are likely to be very sensitive to iatrogenic local anaesthetic-induced airway collapse. This theoretical concern is borne out in multiple case reports of airway collapse following lidocaine topicalisation for awake tracheal intubation in which several patients required emergency front of neck airway access [3].

We argue that the propensity of airway topicalisation to impair the reflex contraction of pharyngeal dilator muscles mean that use should be contraindicated in patients with partial airway obstruction and used with caution in functionally normal upper airways. Instead, we suggest that remifentanil is a preferable alternative. Unlike topicalised lidocaine, remifentanil does not precipitate airway obstruction, even in vulnerable patients with obstructive sleep apnoea [4]. Remifentanil can induce central apnoea but this is predictable and readily managed by reminding the patient to breathe. Remifentanil has unique pharmacokinetic properties, including a half-life of 4 min and is antagonised by naloxone, such that effects can be rapidly and completely reversed. Our literature review identified only one serious complication of remifentanil use during ATI, in which temporary asystole occurred after induction with propofol and vecuronium and did not re-occur during a subsequent ATI after their beta-blockers and calcium channel blockers were discontinued [5]. We contend that a single agent remifentanil technique [6] has a better safety profile than topicalised lidocaine for ATI and should be given more prominence in the guidelines. In our opinion, local anaesthetic topicalisation has been advocated by DAS in the absence of high-quality evidence and we suggest that the 2019 DAS guidelines for ATI require urgent revision to include the ‘single agent’ remifentanil technique.

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