

## Thrust on airway research - Exploring the publications

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Airway management remains challenging even with various evolving tools and strategies in the airway management armamentarium. Recent years have seen remarkable progress, emphasising a holistic approach and innovative equipment for routine and challenging situations. Much research is being published to improve airway management's safety and success.<sup>[1]</sup> Authors have shared findings from clinical trials exploring diverse airway management methods and employing diagnostic tools/algorithms for airway assessment.

In 2022, the Indian Journal of Anaesthesia (IJA) contributed significantly with 38 articles dedicated to airway management, including 17 randomised controlled trials (RCTs) and four observational studies, two review articles, 16 brief communications, and an editorial on airway management during gastroendoscopic procedures. We could see studies comparing the gadgets and letters to editors to mark innovative ways of tiding over critical situations. The utilisation of a high-flow nasal oxygenation cannula (HFNC) garnered attention through the publication of two RCTs and three brief communications.<sup>[2-7]</sup> As the world emerged from the pandemic, innovative ideas and resourceful adaptations came to the forefront. Authors adapted local equipment due to resource scarcity in remote regions and high medical supply demand, showcasing

innovation under limitations. This scarcity, particularly concerning HFNCs, prompted inventive solutions. Among these innovations, one notable solution involved a creative amalgamation of flow ratios and passive humidification using a Y connector. This approach yielded a prototype facilitating elevated peak inspiratory flows and oxygen concentration delivery.<sup>[2]</sup> In the same issue, an author highlighted the occurrence of atelectasis following hyperoxic pre-oxygenation using HFNC.<sup>[3]</sup> Furthermore, the literature spotlighted the extension of apnoeic time achieved using HFNC.

The journal featured a comprehensive range of articles, including one review, nine studies, and one case series discussing various laryngoscopic techniques, in addition to simulation studies.<sup>[8-20]</sup> Notably, the prominence of video laryngoscopy (VL) as a growing alternative to the standard Macintosh laryngoscope and fiberoptic bronchoscope was evident. These investigations also involved the use of aerosol boxes, introducing additional challenges.<sup>[9,20]</sup> Authors also explored alternate positioning during intubation.<sup>[15]</sup> An insightful review article meticulously examined the pros and cons of VL compared to traditional laryngoscopy.<sup>[8]</sup> While VL offered enhanced airway visualisation and a broader perspective of the larynx, it also posed challenges such as higher costs, limited availability and design complexity. The importance

of maintaining proficiency in direct laryngoscopy was emphasised, highlighting the coexistence of both techniques. Most published studies primarily focused on intubation attempts and times, with some utilising cervical collar-based simulations to simulate difficult airways. However, these simulations fell short of encompassing the full spectrum of airway challenges, such as trauma, bleeding, anatomical variations, paediatric considerations, etc., indicating opportunities for future research and exploration.

Simulation studies are on the rise.<sup>[18,19]</sup> A review article tackled challenges tied to simulation-based education and research.<sup>[18]</sup> Manikin realism directly affects training quality. While manikins and simulators hold significance in airway research, understanding their distinctions from actual patients is crucial. This year, two manikin studies were published.<sup>[9,20]</sup> Another study analysed how video-assisted guidance and replay impact intubation skills among novice anaesthesiologists.<sup>[16]</sup>

Supraglottic airway devices (SGAs) have evolved with novel designs and features, aiming to bolster insertion ease, reduce complications and elevate patient comfort. Still, the design is evolving according to user and patient comfort and is evident in publications during the observation year. SGAs have captured authors' interest, yielding two RCTs on insertion techniques and comparison of SGA types.<sup>[21,22]</sup> The remainder of communications introduced inventive applications of SGAs in diverse airway contexts.<sup>[23-28]</sup>

Ultrasound (US) has risen as a pivotal asset in airway management. In this year, three studies were published investigating the utilisation of US.<sup>[29-31]</sup> Nevertheless, two studies centred on US-guided weaning, evaluating diaphragmatic excursion and the weaning process, while a lone study focused on US-assisted verification of endotracheal tube placement. Despite these areas with substantial global literature, US's potential in airway management remains promising, offering ample room for further exploration.

Another offspring of the coronavirus disease 2019 (COVID-19) era, SAMBU, was conceived by an anaesthesia resident.<sup>[32]</sup> This indigenous contraption emerged to provide ventilation in the absence of AMBU. Aligned with the pursuit of excellence, the path ahead appears promising. Just as children grow into adults, it is time for these COVID-19-born innovations to mature and integrate into clinical practice through rigorous

trials and become standard operating protocols. The pandemic prompted innovative protection for anaesthesiologists from aerosols, yet some ideas were unfulfilled post-COVID-19. Expect a surge of user-friendly, safe, cost-effective and reproducible indigenous designs.

Besides, this year also featured studies looking into modified mask ventilation techniques.<sup>[33]</sup> The journal also witnessed correspondence related to troubleshooting and innovative approaches during elective surgeries.<sup>[34-37]</sup> The journal featured an observational study on intubation practices at a prominent trauma centre.<sup>[38]</sup> Anticipating future multicentre national and global collaborations for comprehensive data.

This year lacked paediatric airway studies, exploration of physiologically challenging airways, innovative airway predictors and human factors influencing airway management. Anticipating forthcoming editions to witness authors closing the gaps in the existing literature.

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