

LETTER

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# Is KingVision videolaryngoscope with a bougie really an effective solution for emergency intubation?

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See related Letter by See et al., <https://ccforum.biomedcentral.com/articles/10.1186/s13054-018-2184-9>.

The recent article of See et al. [1] introducing the bougie-in-channel intubation technique shows that the use of a KingVision videolaryngoscope with a bougie can result in high first-attempt success in manikin and human trials. However, their manikin and human studies were small single-arm observable studies without a control design. Thus, an important question that remains unanswered in this study is whether this new technique really performs better than other methods for emergency intubation. Other than first-attempt success, moreover, the time required for intubation is also a special concern for critically ill patients requiring emergency intubation, especially patients at risk of hypoxia and aspiration [2]. In their manikin trial, the use of a 2-min cut-off time for successful intubation is evidently inappropriate.

Most importantly, we have several concerns regarding this technique. (a) It may be a time-consuming process and has a long learning curve because a 16-step process is required. (b) Because of a small diameter, the bougie tends to cut across the curve of the guiding channel and pass

posteriorly during passage towards the larynx, leading to failure [3]. (c) The available evidence indicates that a mismatch between the mouth opening and the device because of its bulky design is another main reason for failure of emergency intubation using the KingVision device [4]. After the bougie is shifted laterally out of the guiding channel, moreover, the anterior part of the bulky blade close to the larynx can impede advancement of the endotracheal tube along the bougie into the glottis. (d) The KingVision videolaryngoscope has an angulated channeled blade without an option for direct laryngoscopy. For emergency intubation, a videolaryngoscope combining the benefits of direct and video laryngoscopy in one device is often recommended as the most appropriate choice as intubators can immediately switch to another option to successfully complete the intubation without having to make a second attempt after the first option fails [5]. Thus, we believe that large randomized controlled trials are still needed to validate the true role of the bougie-in-channel intubation technique in emergency intubation.

## Authors' Response

See Kay Choong, Estaras Melanie, Capistrano Rolando, Wong Sui Hua, Sahagun Juliet and Taculod Juvel

We thank Dr. Xue and colleagues for their interest in our article [1]. We fully support broader validation of the bougie-in-channel intubation technique and agree that the KingVision videolaryngoscope is unsuitable for direct laryngoscopy.

Dr. Xue and colleagues raised several discussion points. Firstly, the bougie-in-channel intubation technique could be learnt after a short 15-min demonstration of 16

discrete steps. In comparison, direct laryngoscopy with a bougie would be more complex, as additional neck positioning would be required. Moreover, limited neck extension [6] or a very anterior larynx [3] would preclude a straight oral–pharyngeal–laryngeal axis.

Secondly, the bougie did not cut across the curve of the guiding channel using our described method. Dr. Xue and colleagues quoted a case report where videolaryngoscopy was done using the Airtraq device (Prodol Meditec, Vizcaya, Spain) with a mounted endotracheal tube, followed by bougie insertion [3]. Unexpectedly, the bougie penetrated the tube's Murphy eye, leading to

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intubation failure. The bougie-in-channel intubation technique would avoid this issue, as the bougie would be inserted *before* railroading the endotracheal tube.

Thirdly, mouth-opening required for the KingVision device was not unusually large, nor did its blade impede endotracheal tube advancement. In a recent study, mouth-opening measurements for the channeled KingVision videolaryngoscope and a non-channeled videolaryngoscope (C-MAC D-blade, Karl Storz, Tuttlingen, Germany) were virtually identical [7]. Conversely, in Cavus et al. [4], mouth opening was not measured. Rather, the predominant problem was difficulty in passing the endotracheal tube within the guiding channel, which the bougie-in-channel intubation technique would overcome.

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#### Authors' contributions

FSX, RJG, and LJZS carefully read the manuscript by See et al. and analyzed their methods and data. FSX suggested comment points and drafted this manuscript. RJG and LJZS revised the comment points and this manuscript. All authors had read and approved the final manuscript.

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Not applicable.

#### Consent for publication

Not applicable.

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The authors declare that they have no competing interests.

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