Comparing Shikani Optical Stylet and Macintosh Laryngoscope for Orotracheal Intubation

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To the Editor: In a randomized controlled trial by Xu *et al*.,[1] comparing the performance of the Shikani Optical Stylet and Macintosh laryngoscope for orotracheal intubation in patients with cervical spondylosis, they showed that Shikani Optical Stylet compared to Macintosh laryngoscope was more clinically beneficial, especially in patients with difficult airways. In our view, however, there are several issues in that study making interpretation of their findings questionable.

First, difficult airways were defined as Cormack-Lehane grades 3–4 with Macintosh laryngoscope. According to the latest difficult airway guidelines by the American Society of Anesthesiologists Task Force on Management of the Difficult Airway,[2] Cormack-Lehane grades 3–4 should be defined as difficult laryngoscopy. Furthermore, the authors described that experienced intubators performed all laryngoscopy and intubation procedures in a sniffing position. However, it was unclear whether the external laryngeal manipulations (not limited to external laryngeal pressure) were allowed to improve the laryngeal visualization with Macintosh laryngoscope or that the exact sizes of Macintosh blade were used. Thus, we could not determine whether an optimal laryngoscopy attempt was performed when defining a difficult laryngoscopy.[3] It is generally believed that only when an optimal laryngoscopy attempt is achieved, difficult laryngoscopy might be readily apparent to a reasonably experienced intubator on the first attempt and therefore be independent of both number of attempts and time.

Second, regarding sample size calculation, the authors stated that as to the success rates in a previous study, a sample size of 135 patients was needed to have at least 90% power to detect a difference between the two groups. It must be emphasized that the sample size calculation is crucial to prevent Type 1 and Type 2 statistical errors in a randomized controlled trial. Before sample size calculation, the minimal clinically important difference of primary outcome parameter must be assessed to reveal a power that is required to achieve clinically important inferences. Other than the power of the study (90%) described in this study, thus, adequate reporting of sample size calculation should also include the success rates of studied devices reported in the previous study, expected minimal clinically relevant difference of primary outcome between groups and risk of Type 1 error. In a recent systematic review assessing the pitfalls of reporting sample size calculation in randomized controlled trials published in leading anesthesia journals, Abdulatif *et al*.[4] showed that despite a high incidence (91.7%) of reported sample size, some of the required basic assumptions for calculation are deficient or not supported by plausible reasoning in 19.7% and 32% of studies, respectively. In our view, this study is not powered to show a difference in the intubation success rates (84.2% vs. 94.1%) between groups in patients with a difficult laryngoscopy. Thus, we believe that addressing this issue would further clarify the transparency of this study.

Third, postoperative sore throat was used as a secondary endpoint for performance comparison of studied devices. However, the authors did not provide the postoperative pain management scheme and analgesic consumption in the two groups. When early postoperative sore throat between groups is compared, standardization of postoperative pain management should be a crucial component of study design.[5] In the absence of comparable postoperative pain management, the study findings and their subsequent conclusions must be interpreted with caution, as they might have been obtained using incomplete methodology.

Fourth, the need of adjuncts was less when using Shikani Optical Stylet than that when using Macintosh laryngoscope, but the authors did not differentiate the adjuncts used for laryngoscopy and intubation. In fact, only the adjuncts used for intubations with two devices are valid variables for performance comparison.

Given that above-mentioned limitations, and comparable intubation success rates and times with two devices, it is better to conclude that performance of Shikani Optical Stylet might not superior to that of Macintosh laryngoscope when orotracheal intubation is performed by experienced anesthetists in patients with cervical spondylosis.

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Conflicts of interest

There are no conflicts of interest.

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