Old Dog New Tricks: An Alternative Technique for the C-MAC D-Blade

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Introduction
Difficult airways are encountered in anesthesia care with the incidence of 1-3% [1], however, they can lead to serious complications including hypoxic brain injuries or death. The invention of the C-MAC had led to improvements of glottis view and an increase in successful intubations attempts. In recent studies [2-3], the success rate was up to a 100% in securing airways with a C-MAC. Improvement of visualization from Cormack and Lehane grade III to IV with direct laryngoscopy to grade I/II were referenced in multiple studies [2-4]. Although the advantages of C-MAC over DL are well documented, there are limitations to using C-MAC D blade. The steep angulation of the D-blade and the relatively large size can pose challenges to endotracheal intubation.

Case report
A 63-year-old male with PMH of hypertension, morbid obesity, and obstructive sleep apnea presents for laparoscopic cholecystectomy. Pre-operative assessment reveals a small mouth opening, Mallampati 4 with thyromental distance less than 6 cm and neck circumference >40 cm. Given patient’s risk factors, intubation with C-MAC D blade was planned. The patient was placed in the sniffing position and adequately pre-oxygenated. Anesthesia was induced, D-blade was advanced midline and grade I view was obtained uneventfully. Difficulty was encountered during the insertion of the endotracheal tube through the steep curvature of the blade which was further exacerbated by the patient’s small mouth opening, as the tube would stay persistently lateral to the vocal cords. The video laryngoscope was then removed, reinserted midline and upon obtaining the view, a left lateral sweep of the D-blade was performed. This resulted in a greater amount of space for the insertion of ETT. The ETT was inserted midline with a significant improvement of the angle of approach to the cords. Endotracheal intubation was performed with a minimal need for readjustment. The procedure was completed successfully. The patient was extubated and transferred to the PACU.

Discussion
Advantages of endotracheal intubation with C-MAC have been well documented, however, disadvantages are rarely discussed. The steep 40-degree angulation and its relatively large size, compared to the conventional laryngoscope, prevents timely insertion of an endotracheal tube into the trachea. The steep angulation of the D-blade may cause difficulty inserting the endotracheal tube, as the tube needs to follow the steep curvature of the blade. C-MACs are usually inserted midline into the pharynx. This can limit the amount of space for insertion of the endotracheal tube. As we encountered during our case, a left lateral sweep of the C-MAC both increases the amount of
space in a patient with a limited mouth opening, allowing for better manipulation of the endotracheal tube and also improves the angle of approach to the glottis, improving the chances of a successful intubation.

Conclusion

A left lateral sweep may be of assistance during insertion of endotracheal tube on the patient with a limited mouth opening.