



C Mac D blade: Clinical tips and tricks[☆]

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ABSTRACT

The C MAC™ D blade videolaryngoscope is used for difficult airway management under vision. Difficulties with its use can arise at different junctures. We present a comprehensive summary of the common problems and their solutions for efficient trouble shooting during intubation with the C MAC D blade.

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1. Introduction

The C-MAC[®] D-blade (Karl Storz, Tuttlingen, Germany) is a new promising tool in the difficult airway armamentarium [1]. D stands for Volker Doerges (anaesthesiologist in Kiel, Germany) as co-inventor of the D blade and may also denote “difficult” [2]. The conventional CMAC features the normal Macintosh laryngoscope while the C-MAC D-blade videolaryngoscope has an inbuilt pronounced curvature. This increase in angulation from 18° in conventional CMAC (size 3) to 40° in the D blade CMAC necessitates the use of a curved stylet (Fig. 1). This warrants greater manipulation and skill in negotiating the tube through the glottis. Several case reports have recently appeared regarding how the D blade came to the rescue in unanticipated difficult airway situations [3–5]. There can be several bottlenecks during the intubation process with the D-blade videolaryngoscope. We elucidate a few clinical pearls for success and troubleshooting while using this extremely versatile airway management tool. The impediments to passage of

endotracheal tube (ETT) through the vocal cords are different for orotracheal, nasotracheal and endobronchial intubation.

2. Discussion

In C MAC guided orotracheal intubation, bringing just the pharyngeal and laryngeal axes (and not the oral axis) in the same plane, is adequate to view the glottis. This is helpful in limited neck extension cases (cervical spine rigidity/stereotactic localization frame in situ). The tongue is not to be shifted to the right side as with conventional Macintosh laryngoscope, instead the tongue remains in the midline. Essentials for secure videolaryngoscopy are that the three Ts, namely the tip (of the D-blade), target (glottis) and the tube are visualized on the monitor. A styletted tracheal tube is prepared with a curvature matching the D blade. A hockey stick shaped stylet (or S-Guide with its soft orange distal tip, three oxygen outlets and proximal malleable part) maybe beneficial in obese patients (Figs. 2 and 3). The S-Guide should be lubricated and shaped “straight-to-cuff” with a hockey stick bend angle at the black mark approaching 35°. Its withdrawal will move the tip of the tube anteriorly while tube rotation will lead to distal ETT “dancing”. The orange marked tip may protrude past the distal end of the ET Tube. We illustrate below four main scenarios of intubation difficulty and their possible solutions.

1: The whole glottic aperture is visible but the ETT gets impinged at the laryngeal inlet. This could happen when the

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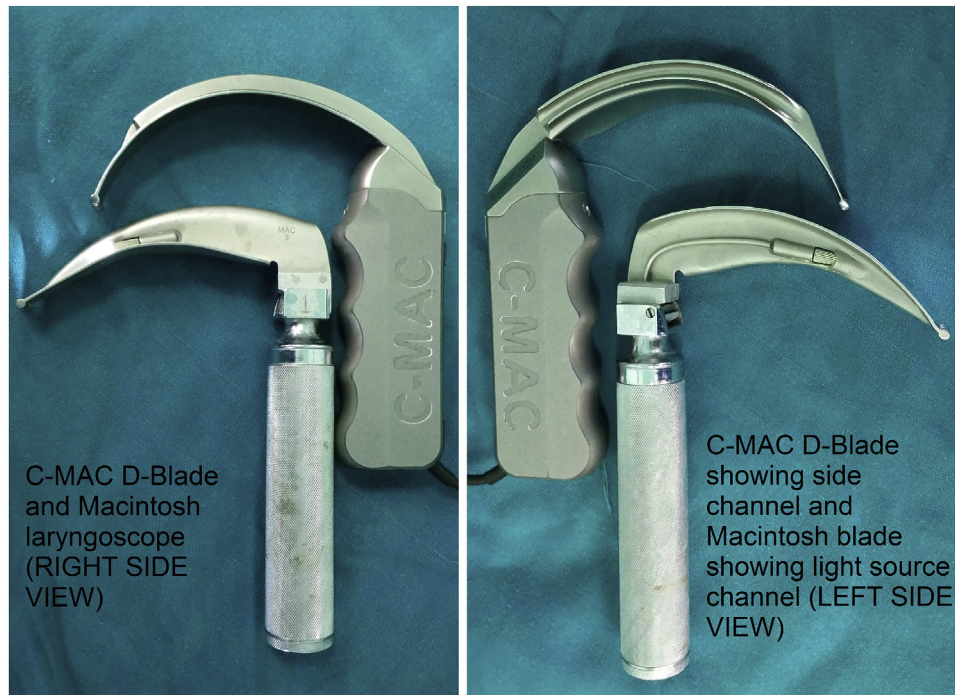


Figure 1. Comparison of C-MAC D Blade and Macintosh laryngoscope.



Figure 2. Hockeystick shaped stylet, D-Blade shaped/accenuated C-shaped stylet, Magill's forceps and the Boedeker's forceps.

angle made by the ETT tip is almost parallel to the plane of laryngeal inlet. Passive flexion of the head and neck results in the ETT making an acute angle with the plane of laryngeal inlet thus facilitating glottic entry (Fig. 3). Secondly, the bevelled tip can repeatedly hit one of the lateral walls or the arytenoids. The solution is rotatory motion of ETT, first clockwise by 90° then anticlockwise by 90°. A 180°/360° degree rotation maneuver to guide the tube tip into the trachea may also work by building a torque (for 180° rotation of the proximal end only about 90° rotation of the distal end occurs).

2: The whole glottis is fully visible on the monitor screen but the ETT tip is unable to enter the glottis as it is repeatedly striking the area posterior to the glottis. This implies that better visualization of the laryngeal inlet does not necessarily mean easier intubation as far as the D Blade is concerned. The D blade has to be withdrawn partially outwards which widens the field view and decreases the Percentage of Glottic Opening (POGO) score, but paradoxically facilitates intubation by changing the angle which the plane of laryngeal inlet makes with the ETT tip. Inflation of the pilot balloon angulates the ETT tip slightly

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