Comparative Evaluation of Miller and Macintosh Laryngoscope Blades for Laryngoscopic View and Ease of Intubation in Infants and Small Children

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Title: Comparative evaluation of Miller and Macintosh laryngoscope blades for laryngoscopic view and ease of intubation in infants and small children.

Background: The anatomical and physiological differences between pediatric and adult population, which are significant in children up to 2 years age, requires understanding and skills for pediatric airway management. This necessitates emphasis on the technique and laryngoscope blade to be used by anaesthesiologist for facilitating endotracheal intubation. There is widespread use of Miller blades in paediatric anaesthesia especially in infants, without many studies to support the superiority of the Miller straight blade over the Macintosh curved blade in paediatric age group.

Material and methods: We designed a prospective randomized study with 60 patients allocated into two groups. All children were exposed to laryngoscopy by both the blades. Group ML (n=30) - Miller laryngoscope was used for first laryngoscopy followed by Macintosh blade for second laryngoscopy and intubation. Group MC (n=30) - Macintosh laryngoscope was used for first laryngoscopy followed by Miller blade for second laryngoscopy and intubation. Anaesthesia was induced by standard anaesthesia technique. The laryngoscopic view with both blades tips placed at vallecula, one after other, was graded using Cook's modification of Cormac and Lehane grading. Optimal external laryngeal manipulation was done if laryngoscopy grade is 2a or above. The best view was used for comparison. Trachea was intubated using an uncuffed endotracheal tube after second laryngoscopy. The ease of intubation was recorded as easy or difficult and time for intubation was noted.

Results: 83% laryngoscopies with Miller blade without OELM were Good as compared to 66% laryngoscopies with Macintosh blade without OELM. This difference was statistically significant between two blades (p=0.035). Application of OELM resulted in 96.67% laryngoscopies as Good view with Miller blade as compared to 98.33% laryngoscopies as Good view with Macintosh blade. The difference of CL grading as Good view (CL 1 and 2a) after application of OELM was statistically insignificant (p=0.559). The comparison of time to intubation, number of intubation attempts and ease of intubation between Miller and Macintosh blades was statistically insignificant.

Conclusion: Laryngoscopic view in infants and small children with Miller blade is better than Macintosh blade when OELM was not used. Laryngoscopic view is similar between Miller and
Macintosh blade when OELM was used. Miller blade resulted in more patients having CL 1 grade as compared to Macintosh but when OELM was applied for the best view in CL grade 2a or above, both the blades were comparable. Time to intubation, number of intubation attempts and ease of intubation were similar with Macintosh and Miller blades.