

Comparison Of Hemodynamic Response And Glottic View To Laryngoscopy And Endotracheal Intubation With Mc Coys Vs. Macintosh Blade

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Date of Submission: 15-07-2024

Date of Acceptance: 25-07-2024

I. Introduction

Laryngoscopy followed by endotracheal intubation is an important part of the administration of general anesthesia. The aim of laryngoscopy is to obtain good visualization of the vocal cords to facilitate smooth endotracheal intubation so that the period of apnoea during intubation can be minimized. Direct laryngoscopic view is best attained in the 'sniffing the morning air' position obtained by placing a pillow under the occiput of the patient. This brings the laryngeal and pharyngeal axes into closer alignment. Subsequent extension of the head at the atlanto-occipital joint aligns the oral axis with pharyngeal and laryngeal axes. To improve the view of the glottis and reduce hemodynamic response to intubation, laryngoscopic blades of different shapes have been designed and studied[1].

RR Macintosh developed the first curved laryngoscope blade in 1943, which was found to be much easier to use. In 1993, the McCoy or flex tip blade modification of the standard Macintosh blade was introduced. The tip of this blade is hinged and has a lever attached to the proximal end. With the tip of the blade in the epiglottic vallecula, pressing on the lever causes the tip to act on the hyoepiglottic ligament which lifts the epiglottis out of view to expose more of the glottis. Many factors are known to influence the laryngoscopic view of vocal cords. These include forward displacement of the mandible, prominent or absent teeth, and backward displacement of the tongue.

Furthermore, laryngoscopy and endotracheal intubation trigger hemodynamic stress responses. Thus, it is desirable that blades used for laryngoscopy trigger minimal stress response and at the same time, facilitate good laryngoscopic view for smooth endotracheal intubation.

II. Aims And Objectives

To compare the glottic view and hemodynamic response elicited by using Macintosh and McCoy laryngoscopes for endotracheal intubation in general anesthesia for elective surgery.

III. Materials And Methods

This was a prospective randomized study conducted in the Department of Anaesthesia in Akash Institute of Medical Sciences and Research Center from November 2022 to April 2023. After obtaining institutional research Ethics Committee approval, patients of ASA grade I and II posted for surgery under general anesthesia were selected for participation in the study. A total of 30 patients were included in the study and were divided into two groups of which group A includes laryngoscopy and endotracheal intubation with Macintosh blade; group B includes laryngoscopy and endotracheal intubation with McCoy (flex tip). A thorough clinical examination was conducted, necessary investigations were sent and results were noted. Airway assessment was done using the Modified Mallampati Score. Hemodynamic parameters were recorded and a Student t-test was performed to find the significance.

IV. Results:

Table 1 shows the basic characteristics of the groups

	Group A	Group B	P value
Age (yr)	28.22±3.5	27.35±2.1	0.82
Weight (kg)	77.54 ±1.2	77.21±3.2	0.06

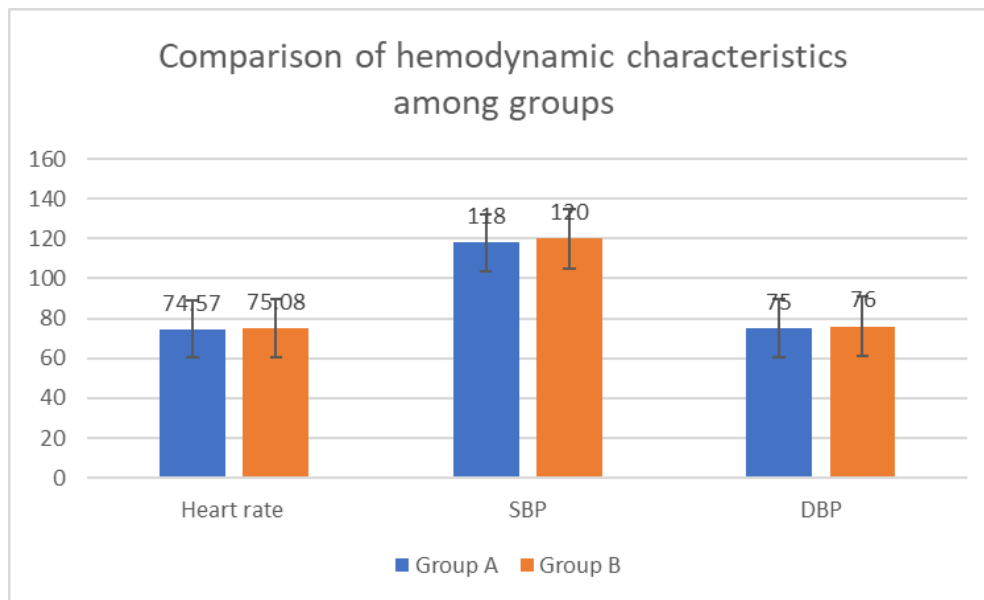
BMI	29.1± 1.8	28.9± 2.8	0.054
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There was no significant difference noted in the age, weight and BMI of the participants of both the groups.

Table 2 shows the glottic view between groups

Group (n=15)	MPC Grade 1	MPC Grade 2	MPC Grade 3	MPC Grade 4
Group A	8	4	2	1
Group B	12	2	1	0

There significant difference noted in the glottic view by the Mc Coy blade than the Macintosh blade as shown in the table ruled out by MPC (Mallampati) Classification with $P < 0.05$ ($P = 0.001$).



Heart rate was found to be significant with $P < 0.01$; whereas SBP and DBP were not significant with $P = 0.37$ and 0.23 .

V. Discussion

Laryngoscope blades of different shapes have been designed to aid and ease the process of intubation. Laryngoscopy and endotracheal intubation trigger major stress response, in the form of increased catecholamines leading to tachycardia and hypertension, which increases myocardial oxygen demand.

Thus can be sometimes catastrophic in patients with cardiovascular disease, geriatric age group, and patients with raised intracranial pressure. The shape of a laryngoscope blade affects the degree of exposure of the larynx, while the amount of force exerted by the operator in attempts to achieve satisfactory exposure of the glottis during laryngoscopy and intubation is the key determinant for mechanical stimulation of stretch receptors present in the respiratory tract. The use of certain types of laryngoscope blades can help in achieving a reduction in the amount of force required for exposure and thus, lower the stimulation of stretch receptors and reduce hemodynamic response[3].

In the present study, we evaluated the laryngoscopic view and hemodynamic response associated with Macintosh and McCoy. The visualization of the glottis was best with McCoy and then Macintosh which was found to be statistically significant. ($P < 0.01$) which are similar to the earlier study reports[4,5]. Heart rate, SBP, and DBP were slightly higher in the Macintosh group than in the McCoy group which was similar to the study done by Mirakur et al, who compared the stress response to laryngoscopy using the Macintosh and McCoy blade by measuring clinical cardiovascular parameters and concluded that stress response to laryngoscopy is less marked with the McCoy blade due to the lesser magnitude of force necessary to obtain a clear view of the larynx [3].

VI. Conclusion

The McCoy blade elicited the least hemodynamic response and better visualisation of glottis during laryngoscopy as compared to Macintosh blade and hence McCoy blade is preferable when difficult intubation is anticipated and less hemodynamic response to intubation is desirable.

References:

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