



## RESEARCH ARTICLE

**COMPARISON OF MACINTOSH BLADE AND MCCOY BLADE FOR GLOTTIC EXPOSURE AND EASE OF INTUBATION**G.Jebanesh Rose<sup>1</sup>, R.Abishek<sup>2</sup>

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**Received 21 September 2014; Accepted 29 September 2014****ABSTRACT**

**BACK GROUND:** Laryngoscopes forms an important part of general anaesthesia and endotracheal intubation. The aim of laryngoscopy is to obtain good visualization of vocal cords to facilitate smooth endotracheal intubation. The blades used for laryngoscopy should facilitate good laryngoscopic view for smooth endotracheal intubation.

**AIMS AND OBJECTIVES:**

1. To compare the laryngoscopic view.
2. Ease of intubation using Mccoy laryngoscope as compared with conventional Macintosh laryngoscope.

**MATERIALS AND METHODS:** After institutional committee approval 100 adult patients in the age group of 18 to 60 years and ASA status I and II and Mallampati grade I and II undergoing elective surgeries under general anaesthesia were included in this study. The study population was divided into 2 groups with 50 patients in each group. Group I consists of laryngoscopic view of patients intubated with Macintosh blade. Group II consists of laryngoscopic view of patients intubated with Mccoy blade.

**RESULTS:** Most of the patients in both the groups were in the age group of 20-39years. In Group I 66% patients were in ASA I grading and 34% in ASA II grading. In Group II 68% patients were in ASA I grading and 16 % in ASA II grading. In group I 64%patients had ease of intubation of grade I and 18% with grade II.

**CONCLUSION:** Based on the present prospective randomized clinical comparative study the Mccoy laryngoscope with flexitip blade with its levering tip significantly improves the visualisation of larynx and ease of intubation.

**Key words:** Flexitip blade, Macintosh laryngoscope, Mccoy laryngoscope, Glottis.

**INTRODUCTION:**

Macintosh blade is one of the most popular blades. The tongue has a smooth gentle curve that extends to the tip. There is a flange at the left to push the tongue out of the way. In Mccoy laryngoscope the distal end is hinged so that the tip is movable. A lever is attached to the proximal end of the blade. When the lever is pushed towards the handle the tip of the blade is flexed. The tip is less rounded than on the usual Macintosh blade. Flexitip blade is helpful in difficult intubation and conditions where minimal neck movement is desirable. It causes less pressure on the teeth during intubation.<sup>1,2</sup>

In current study comparisons between the glottic exposure using Macintosh blade and Mccoy blade.

**MATERIALS & METHODS:**

After the institutional ethical committee approval 100 adult patients were taken in the study. The study was done for a period of 8 months from October 2013 to May 2014. In the age group of 18 to 60 years and ASA status 1 and 2 and Mallampati grade 1 and 2 undergoing elective surgeries under general anaesthesia were included in this study. The study population was divided into 2 groups with 50 patients in each group. Group 1 consists of laryngoscopic view of patients intubated with Macintosh blade. Group 2 consists of laryngoscopic view of patients intubated with Mccoy blade.



Figure 1: Macintosh laryngoscope



Figure 2: McCoy flexitip laryngoscope

On the day of surgery intravenous line was secured and premedicated with Inj.Fentanyl 1.5µg/kg and Inj.Glycopyrolate 0.2mg intravenous respectively. All patients were pre oxygenated with 100% oxygen for 3 minutes before induction. Induction was achieved with Inj.Propofol 1-3mg/kg intravenous muscle relaxation obtained with Inj.Suxamethonium 1.5mg/kg intravenous and patients were put in sniffing position. Direct laryngoscopy was carried out using Macintosh blade no.3 in group I and McCoy blade no.3 in group II respectively. Intubation was done with disposable, high volume low pressure cuffed endotracheal tube using 7mm internal diameter for females and 8mm internal diameter for males.

**The laryngeal view obtained according to Cormack and Lehane grading<sup>3</sup> were recorded.**

Grade 1 Glottis fully exposed ( i.e) visualisation of entire laryngeal aperture.

Grade 2 Visualisation of only posterior commissure of laryngeal aperture.

Grade 3 Visualisation of only epiglottis.

Grade 4 No glottis structures seen.

**The degree of difficulty with intubation was rated as**

Grade 1 Intubation easy.

Grade 2 Intubation requiring an increased anterior lifting force and assistance to pull the right corner of the mouth upwards to increase space.

Grade 3 Intubation requiring multiple attempts and a curved stylet.

Grade 4 Failure to intubate with the assigned laryngoscope.

Patients were connected to Bain's circuit and anesthesia was maintained with oxygen(33%) and N<sub>2</sub>O(67%) halothane 0.5% and non depolarising muscle relaxant vecuronium bromide and IPPV. Adequacy of ventilation was monitored clinically and SpO<sub>2</sub> was maintained at 99 to 100%.At the end of surgery reversal was done with Inj.Neostigmine 0.05mg/kg and Inj.Glycopyrrolate 0.01mg/kg i.v.

**Data analysis:**

Done using chi square test for demographic profile, ASA, Mallampati grading and laryngeal visualisation grading. P value < 0.005 was considered as statistically significant.

**RESULT:**

Most of the patients in both the groups were in the age group of 20-39years. Male and female patients were equally distributed. Mean weight in Group I was 53.4 ± 7.2 kg and in Group II 55.94 ± 6.9 kg. In Group I 66% patients were in ASA I grading and 34% in ASA II grading .In Group II 68% patients were in ASA I grading and 16 % in ASA II grading . In Group I 66% Mallampati I grading 34% Mallampati II grading .In group 2 48% in mallampati 1 grading 52% in mallampati II grading .In group 1 64%patients had ease of intubation of grade 1 and 18% with grade II .In group II 82% patients had ease of intubation of grade 1 and 18% with grade II.

Table 1: Age wise Distribution

Age wise distribution(years)	Group I	Group II
20-29	26	23
30-39	12	13
40-49	6	7
50-59	6	7
Total	50	50

P – value = 0.74

Their is no statistical significant difference in the age in both the groups.

**Table 2: Sex wise Distribution and Weight Distribution**

Sex wise distribution	Group I	Group II
Male	25	25
Female	25	25
Total	50	50
Weight (kgs)	Group I	Group II
Range	40-65	40-70

**Table 3: ASA Grading**

ASA Grade	Group I	Group II
Grade I	33	34
Grade II	17	16

P – value = 0.8

There is no statistical significant difference in the ASA grading in both the groups.

**Table 4: Mallampati Grading**

Mallampatti Grading	Group I	Group II
Grade I	33	24
Grade II	17	26

P – value = 0.06

There is no statistical significant difference in the Mallampati grading in both the groups

**Table 5: Ease of Intubation**

Grading	Group I	Group II
Grade I	32	41
Grade II	18	9

P - value = 0.04

There is a statistical significant difference in the ease of intubation in both the groups.

**DISCUSSION:**

The ease of intubation was better in Group II (Mccoys blade) as compared to that of Group I (Macintosh blade). 18 patients in group I and 9 patients in group

II required increased anterior lifting force with pressure on larynx.

Leon O et al<sup>4</sup> in their study showed that flexitip blade significantly improved intubating conditions. The laryngoscopic view was compared in 100 patients with the flexitip blade first in its normal position and after levering the distal part of the blade. All patients were in Mallampati class I and II. Among them 16% were classified as Cormack and Lehane grades 3 and 4 when using the blade in normal position. The levering tip of the distal part of the blade significantly decreased the incidence of Cormack and Lehane grades 3 or 4. The flexitip blade significantly improves intubating condition.<sup>3</sup>

**CONCLUSION:**

Based on the present prospective randomized clinical comparative study the Mccoys laryngoscope with flexitip blade with its levering tip significantly improves the visualisation of larynx and ease of intubation.

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**REFERENCES**

1. Dorsh JA, Dorsh SE. Laryngoscopes. In: Understanding Anaesthesia Equipment, 4<sup>th</sup> Edition. Baltimore: Williams and Wilkins 1998:505-56
2. Gal TJ. Airway management. In: Miller RD. Millers Anaesthesia, Philadelphia Elsevier, Churchill Livingstone, 2005;6:1617-52
3. Cormack RS, Lehane J. Difficult tracheal intubation in obstetrics. Anaesthesia 1984;39:1105-11
4. Leon o. Benhamou D. Improvement of glottis visualisation with a Mccoys blade, 1998;17(1):68-71