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RESEARCH PAPER

COMPARISON OF LARYNGOSCOPIC VIEW AND INTUBATION RESPONSE TO LARYNGOSCOPY USING MACINTOSH AND McCOY BLADE

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ABSTRACT Laryngoscopes are most commonly used for endotracheal intubation. Laryngoscopy is known to have profound cardiovascular effects. These include pressor response and tachycardia along with an increase in catecholamine concentration.To ease the process of intubation laryngoscopic blades of different shapes have been designed.The Macintosh is one of the most popular blades. Cervical spine movement is greater with the Macintosh blade compared with the McCoy blade. McCoy blade is modification of standard Macintosh blade incorporating a hinged tip blade. It allows elevation of epiglottis while decreasing overall laryngeal movement.This study is undertaken to compare changes in haemodynamic parameters before,during and after laryngosopy using these two blades. 100 patients of ASA grade I and II in the age group of 18- 45 years of either sex undergoing elective surgeries under general anaesthesia were included after obtaining informed written consent.The visualisation of larynx, using Cormack and Lehane grading was significantly better in McCoy group compared to MacIntosh group with p=0.04.Haemodynamic parameters HR,SBP,DBP,MAP were increased in both the groups but were statistically and clinically significant in MacIntosh group with p= <0.001.McCOY blade improves visualisation of larynx and is associated with significantly less marked haemodynamic response to laryngoscopy in comparison with MacIntosh blade.

KEY WORDS : Intubation response, laryngoscopy, intubation, MacIntosh blade, McCoy blade

INTRODUCTION

Endotracheal intubation is an integral part of balanced anaesthesia. Laryngoscopes are used to view the larynx and adjacent structures, most commonly for the purpose of inserting a tube into the tracheobronchial tree. The wide range of available devices attests to the diverse difficulties encountered in their use. The aim of laryngoscopy is to obtain good visualisation of vocal cords to facilitate smooth endotracheal intubation. In adults and adolescents, the more common response to airway manipulation is hypertension and tachycardia. The arterial pressure rise typically starts within 5 seconds of laryngoscopy, peaks in 1-2 minutes and returns to control levels within 5 minutes.

Thus , the blades used for laryngoscopy should trigger minimal stress response and at the same time facilitate good laryngoscopic view for smooth endotracheal intubation. The design of the Macintosh curved laryngoscope is radical change from the pre-existing straight laryngoscopes.The long axis of the blade is curved and the cross section is a right angled "Z" section, the web and flange are bulky, the tip is atraumatic and the light bulb is shielded by the web. McCoy introduced a Macintosh type laryngoscope with a hinged tip that flexes when a lever on the handle is depressed. It works well in the difficult laryngoscopy situations and there have been many clinical reports of success when the glottis is not visualised with the Macintosh laryngoscope

MATERIALS AND METHODS:

This study is a hospital based prospective randomized clinical comparative study done in Adult patients ASA grade I and grade II requiring endotracheal general anaesthesia at PES institute of Medical sciences and Research, Kuppam during the period of 2 years.

Study Population:

Sample size was 100 patients ASA grade I and grade II requiring endotracheal general anaesthesia.

Inclusion criteria:

-Adult patients ASA grade I & II.
-Patients giving valid informed consent.
-Patients between 18-70 years of age.
-Mallampati grading(I–IV).
-Patients undergoing elective surgery under anaesthesia requiring tracheal intubation.

Exclusion Criteria:

-Patients with history of chronic obstructive pulmonary disease,asthma,cardiac disease and raised intracranial tension.

-Patients allergic to any of the drugs used in the study.
-Patients undergoing emergency surgeries.

Ethical Committee clearance was taken by the institute.

The patients were subjected for detailed pre anaesthetic check up.The patients were also subjected for detailed laboratory work up including complete haemogram and urine routine.Patients were also subjected for HIV,HBsAg,chest Xray and ECG examination.

The patients belonging to the two groups were prescribed to take

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tablet Alprazolam 0.5 mg the night before the surgery and tablet Ranitidine 150 mg two hours before surgery.On arrival in anaesthetic room monitors were connected and basal parameters recorded.IV access was obtained using an appropriate size cannula.Inj glycopyrolate 0.2mg IV,Inj.Fentanyl 2ug/kg IV were injected ten minutes before induction and parameters were again recorded after this.

All the patients were preoxygenated with 100% oxygen for 3 minutes. induction was done with Inj.Propofol 2 mg/kg.Inj.Vecuronium 0.08 mg/kg is given for muscle relaxation and patient was mask ventilated using face mask with 100% oxygen through Bain breathing circuit.After 3 minutes of giving Inj.Vecuronium, laryngoscopy is performed either by using MacIntosh (group Ml) or McCoy (group Mc) enabling clear view of vocal cords.

Laryngoscopy by using either of blades is performed in sniffing position. While performing laryngoscopy with McCoy blade. The tip lies in the vallecula and epiglottis lifted indirectly. While performing with MacIntosh blade the tip fits into the vallecula and traction is then applied along the handle at right angles to move the base of the tongue and the epiglottis forward.

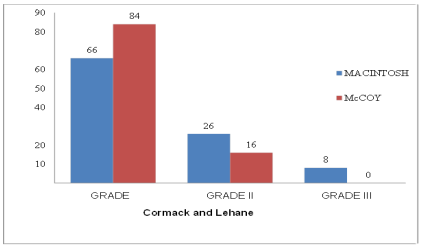
Laryngoscopy with tracheal intubation was performed within 15 seconds.Bilateral air entry was checked clinically and by capnography and tube secured. The surgical procedure including skin incision was delayed for the first 15 minutes after intubation.Haemodynamic parameters were recorded after induction and then after laryngoscopy starting at 1 minute,recorded at 2 minute interval for first 15 minutes.

All the data were collected and statistical analysis done using microsoft Excel data sheet entry and SPSS software.

RESULTS:

A total of 100 cases requiring endotracheal general anaesthesia were included in our study (50 in MacIntosh group and 50 in McCoy group patients) Our study noticed that the visualisation of larynx with Cormack and Lehane grading was better in McCOY group as compared to MACINTOSH group which was found to be statistically significant with p=0.043

FIGURE 1: Comparison of Cormack and Lehane grading in two groups of patients studied



The haemodynamic response in MacIntosh group to laryngoscopy, shown by rise in HR(26.92%), SBP(16.91%), DBP (23.10%), MAP(20.21%) above baseline values and that in McCoy group, shown by rise in HR(22.95%), SBP(10.99%), DBP(11.82%), MAP(11.23%) above baseline values were compared

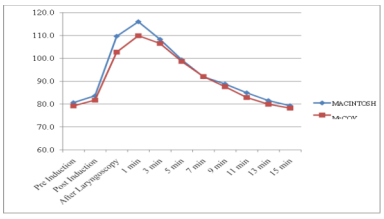


Figure 2 : Comparison of HR (beats/min) in two groups of patients studied

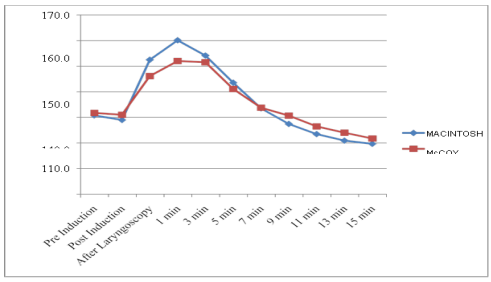


FIGURE 3: Comparison of SBP (in mm of Hg) in two groups of patients studied

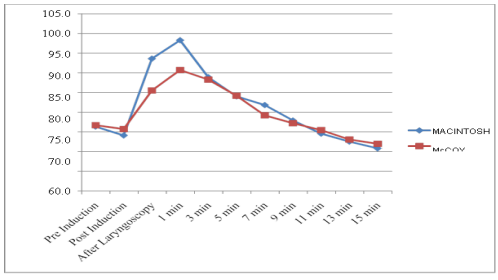


Figure 4 : Comparison of DBP (in mm of Hg) in two groups of patients studied

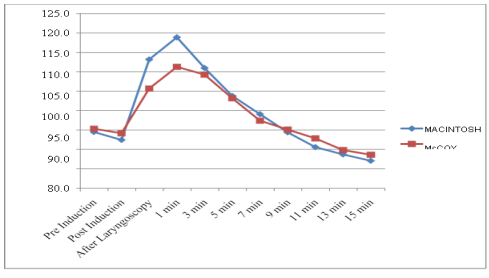


Figure 5 : Comparison of MAP (in mm of Hg) in two groups of patients studied

DISCUSSION:

This is a prospective, randomized study carried out at PES Medical College and Research Institute,Kuppam. One hundred ASA physical status grade I and II patients undergoing elective surgery under general anaesthesia were included in this study. Patients were divided into two groups of fifty patients each (Group Ml and Group Mc) .

Laryngoscopy was performed using No 3 MacIntosh blade in patients belonging to Ml group and using No 3 McCoy blade in patients belonging to Mc group.In this study we have compared the laryngoscopic view using Cormack and Lehane grading, and haemodynamic response between MacIntosh and McCoy laryngoscopes.

Parameters observed include grades of laryngoscopic view, HR, SBP. DBP. MAP. Haemodynamic parameters were recorded prior to induction, post induction, after laryngoscopy and then starting at 1 minute, at 2 minute interval for first fifteen minutes. In this study both the groups were comparable with respect to age, sex, weight,ASA physical status grading and Mallampati grading.

Parameters	MacIntosh group	McCoy group(n=50)	p value
Age (in years) Mean ± SD	31.88 ± 7.56	31.72 ± 8.20	0.919
Weight (in Kgs) Mean ± SD	55.96 ± 6.51	56.70 ± 7.06	0.587
Sex (n) (M/F)	25/25	25/25	1.000

ASA Grade (n) (I/II)	40/10	33/17	0.115
MP Grade (n) (I/II)	31/19	30/20	0.838

The laryngeal view was compared using Cormack and Lehane grading. In MacIntosh group, 33 (66%) patients had grade I view, 13 (26%) patients had grade II view and 4 (8%) patients had grade III view. In McCoy group, 42 (84 %) patients had grade I view and 8 (16%) patients had grade II view.This shows that the visualisation of larynx was better with McCoy blade as compared to Macintosh blade which was found to be statistically significant with p= 0.04.

The haemodynamic response in MacIntosh group to laryngoscopy, shown by rise in HR(26.92%), SBP(16.91%), DBP (23.10%), MAP(20.21%) above baseline values and that in McCoy group, shown by rise in HR(22.95%), SBP(10.99%), DBP(11.82%), MAP(11.23%) above baseline values were compared.This shows that haemodynamic response to laryngoscopy was less in McCoy group compared to MacIntosh group with p<0.001.

The results obtained in our study shows that McCoy blade improves the visualisation of larynx and causes significantly less increase in haemodynamic parameters during laryngoscopy and intubation as compared with MacIntosh blade. Hence it can be used as an additional tool along with pharmacological interventions for obtunding stress response

Limitations:

Need for delaying of surgical procedure for the first 15 minutes after intubation.

CONCLUSION:

Based on the present prospective randomized clinical comparative study, the following conclusions can be made.The McCoy blade (Flexitip blade), which is a modification of the Macintosh blade with its levering tip, significantly

1.Improves the visualisation of larynx and

2.Causes less increase in haemodynamic parameters during laryngoscopy and intubation in comparison to MacIntosh blade.

Thus, McCoy blade (Flexitip blade) provided better visualisation of larynx with less increase in haemodynamic response to laryngoscopy in comparison to MacIntosh blade.

ACKNOWLEDGEMENT:

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