

Original research article

A randomized controlled comparative study of flexometallic tube and north facing rae tube in oro-facio-maxillary surgeries

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ABSTRACT

Introduction: Oro-facio-maxillary surgeries are common procedure in tertiary hospital. Anaesthesia during oro-facio-maxillary surgeries carries a high risk and difficult for airway management because of other associated facial injuries, the anaesthetic management becomes more complicated. Flexometallic endotracheal tube and north facing RAE tubes are have their own risks and benefits when compared with each other tubes. This study is undertaken to compare ease of intubation and intra-operative maintenance of respiratory parameters and vitals by using two different types of endotracheal tubes.

Materials and methods: After pre anaesthetic assessment patients were explained about procedure and informed consent was taken from each patient , Patient shifted to operation theatre and monitors connected.

Observation: From our study, we observed that more than one attempt was less in RAE tube as compared to flexometallic tube. Increase in heart rate was found to be less in RAE tube group. No significant differences were found in increase of EtCO₂, peak airway pressure, SPO₂ and blood pressure among two groups after intubation.

Conclusion: We conclude that the north facing RAE tube and flexometallic tube has no significant differences except less number of attempt taken for intubation when using north facing RAE tube compared to flexometallic tube in oro-faciomaxillary surgeries.

Keywords: RAE tube; peak airway pressure; endotracheal intubation; EtCO₂; Flexometallic tube; number of attempts for intubation

INTRODUCTION:

Anaesthesia for oro-facio-maxillary surgeries carries a risk with general anaesthesia and airway complications due to associated facial and upper airway injuries and kinking of endotracheal tube, acute airway obstruction leads to the anaesthetic management becomes complicated. Flexometallic endotracheal tube are one of the the safer technique having advantage of resistant to kinking and compression making them useful in oro-facio-maxillary surgeries. North facing RAE tube are used increasingly nowadays because they provide better surgical manipulation in oro-facio-maxillary surgeries. All these two endotracheal tube have their own risks and benefits when compared with each other. Since not much work done on comparison of these felxometallic tube and north facing RAE tube in oro- facio-maxillary surgeries ,we decided to com[pare between flexometallic tube and north facing RAE tube in oro-facio-maxillary surgeries to achieve the best outcome. Maintaining the airway is an essential step in oro-facio-maxillary surgical cases, which are performed under general anaesthesia. There are various techniques for maintaining the airway ranging from head tilt-chin lift to surgical airway. Endotracheal intubation provides an artificial medium between the atmosphere and the patient's trachea for the purpose of protection of the lungs from aspiration. Laryngoscopy and intubation is a

adverse stimulus, which can cause unaccepted response in the respiratory, cardiovascular systems. Tachycardia and hypertension accompany in direct laryngoscopy and intubation in the light plane of anaesthesia has been reported since 1950. Tachycardia and hypertension in retort to laryngo-tracheal stimulation are due to reflex sympathetic discharge, which in sequence causes increased plasma norepinephrine concentration.

Hence this study designed to compare the number of attempts for intubation, peak airway pressure, EtCO₂, pulse rate, blood pressure, SPO₂ between flexometallic tube and north facing RAE tube in oro-facio-maxillary surgeries.

MATERIALS AND METHODS:

DESIGN: Randomized double blind controlled comparative study

PARTICIPANTS:

One anesthesiologist under the supervision of a senior anesthesiologist & with help of two anaesthesia technicians

CENTRE: Mahatma Gandhi Memorial Government Hospital attached to K.A.P.Viswanatham Government. Medical college, Trichy.

PERIOD: September 2018 – August 2020

SAMPLE SIZE: Sixty (60)

INCLUSION CRITERIA

- ASA Physical status I and II
- Men and Women aged between 18 and 60 Years
- Orofaciomaxillary surgery under GA patients

EXCLUSION CRITERIA

- Emergency Cases
- ASA Physical status III & IV
- Morbid obesity BMI >40
- Patient refusal

METHODOLOGY

- The Study is designed as randomized controlled comparative study. This study would be conducted on 60 patients undergoing orofaciomaxillary surgeries at Mahatma Gandhi Memorial Govt Hospital, Tiruchirappalli.
- This study was confined to the inpatients who was planned for orofaciomaxillary surgeries
- 60 patients age ranging from 18 to 60 years of ASA 1 and 2 selected on the basis of inclusion and exclusion criteria
- Patients were randomly grouped into two groups of 30 each
- group FM ----- Flexometallic ET Tube group
group RAE ----- RAE Tube group
- After pre anaesthetic assessment patients were explained about procedure and informed consent was taken from each patient
- intubation technique was adopted for surgeries for all patients with flexometallic tube and RAE tube with all essential monitors connected

- nasal intubation done with flexometallic and RAE tube for respective groups

PREOPERATIVE PERIOD

After pre anaesthetic assessment patients were explained about procedure and informed consent was taken from each patient

Patient shifted to operation theatre and monitors connected.

INTRAOPERATIVE PERIOD

Nasal intubation technique was adopted for surgeries for all patients flexometallic and RAE tube for respective group with all essential monitors connected.

During the procedure patients number of attempts for intubation, heart rate, blood pressure, SPo2, ETCo2, Peak airway pressure and mean airway pressure are monitored at 1min, 3min, 5min, then every 5mins throughout the procedure.

STASTICAL ANALYSIS

The information collected from all the selected cases were recorded in a Master chart using Microsoft Excel worksheet. Statistical presentation and analysis of the present study was conducted, using the mean, standard deviation (t. test), and chi-square test by SPSS V.16 and Sigma Stat 3.5 version.

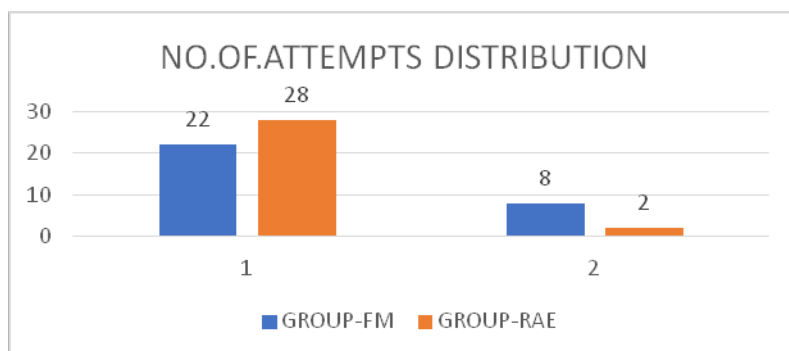
According to the computer program SPSS for Windows. ANOVA test was used for comparison among different times in the same group in quantitative data.

Chi-square the hypothesis that the row and column variables are independent, without indicating strength or direction of the relationship. Pearson chi-square and likelihood-ratio chi-square. Fisher's exact test and Yates' corrected chi-square are computed for 2x2 tables.

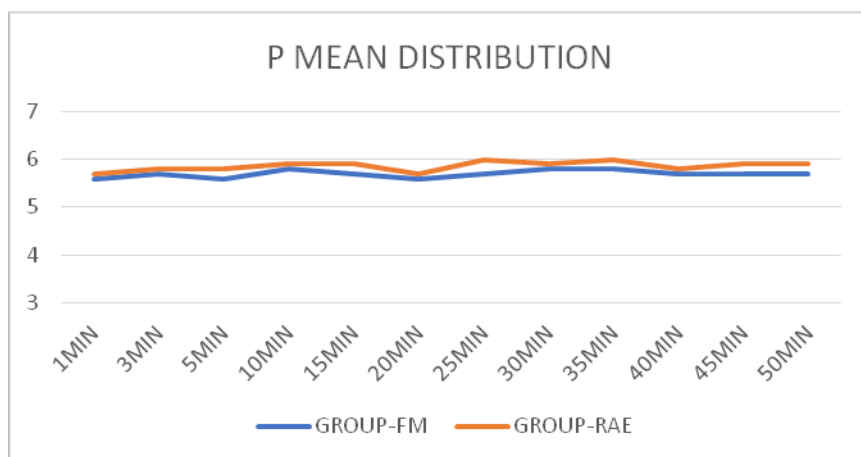
A '**p**' value less than **0.005** is considered to denote significant relationship.

RESULTS:

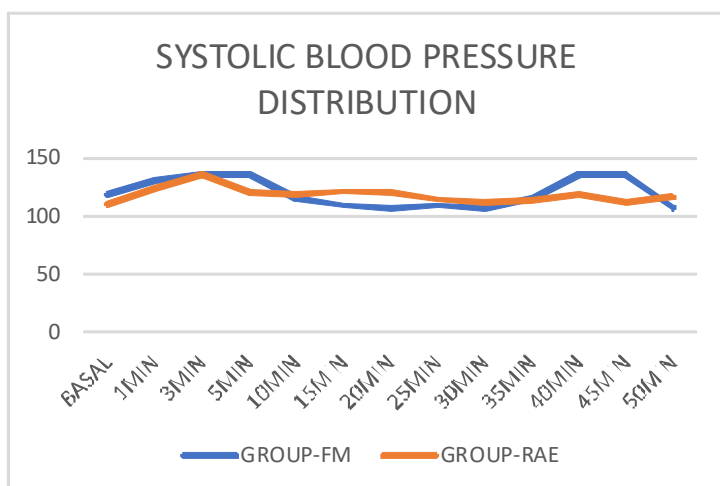
There was no statistical significance found in parameters of age, height, gender, weight



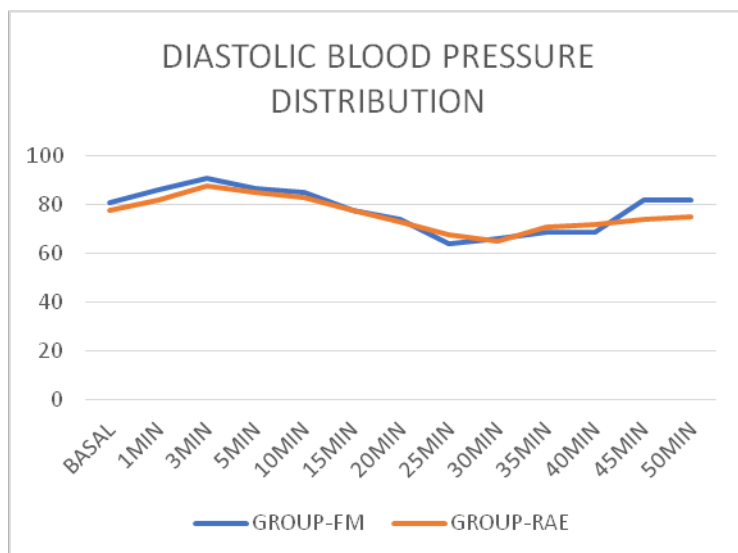
The mean no of attempts in GROUP- FM was found to be 1.26 and that in GROUP -RAE was 1.06. The 'p' value was found to be 0.03818. Hence there is a significant statistical difference between the number of attempts distribution in both groups.



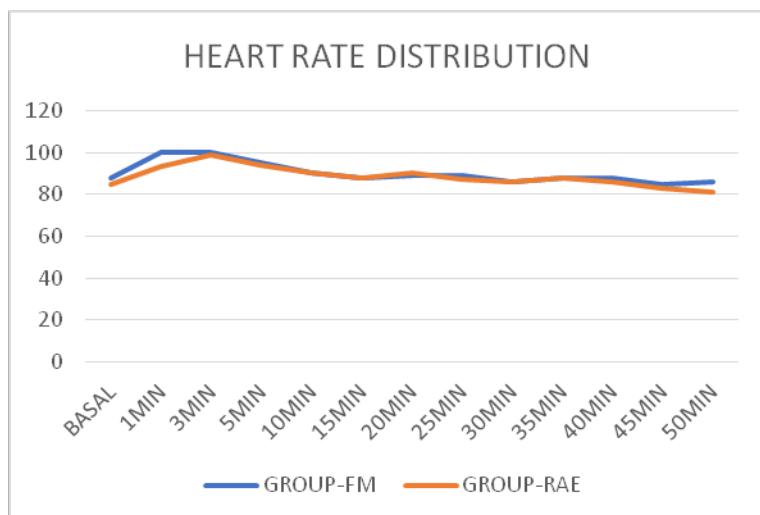
The MEAN AIRWAY PRESSURE in GROUP - FM was found to be 5.6 and that in GROUP - RAE was 5.7. The 'p' value was found to be 0.45677. Hence there is no significant statistical difference between the mean airway pressure distribution in both groups



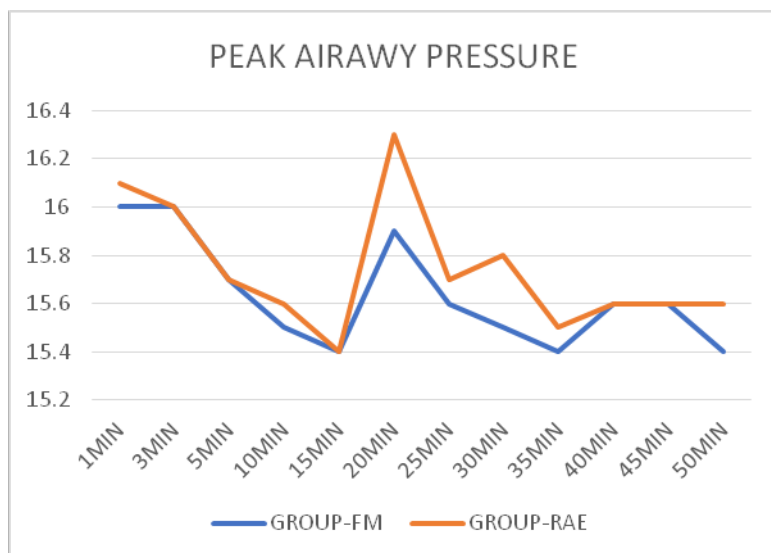
The mean systolic blood pressure in GROUP- FM was found to be 118.85. and that in GROUP- RAE was 120.02. The 'p' value was found to be 0.08957. Hence there is no significant statistical difference between the systolic blood pressure distribution in both groups.



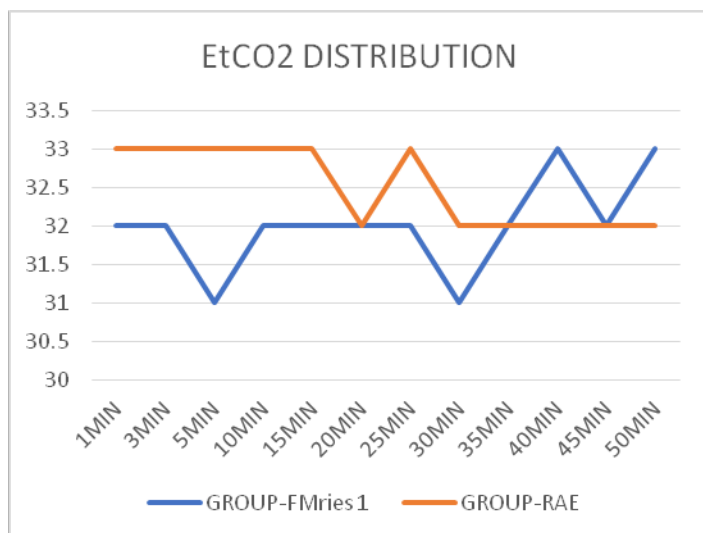
the mean diastolic blood pressure in GROUP - FM was found to be 81.66. and that in GROUP - RAE was 78.33. The 'p' value was found to be 0.07946. Hence there is no significant statistical difference between the diastolic blood pressure distribution in both groups.



The mean heart rate in GROUP - FM was found to be 88.06. and that in GROUP -RAE was 85.66. The 'p' value was found to be 0.14383. Hence there is no significant statistical difference between the heart rate distribution in both groups.



the mean peak airway pressure in GROUP - FM was found to be 16.03. and that in GROUP - RAE was 16.16. The 'p' value was found to be 0.59159. Hence there is no significant statistical difference between peak airway pressure distribution in both groups.



The mean ETCo2 in GROUP- FM was found to be 32.23 . and that in GROUP- RAE was 33.33. The 'p' value was found to be 0.14976. Hence there is no significant statistical difference between the ETCo2 distribution in both groups.

DISCUSSION:

In our study comparison was done between the two tubes namely north facing RAE tube and flexometallic tubes for various parameters like number of attempts for intubation, heart rate, blood pressure, peak airway pressure, mean airway pressure, ETCo2 during oro facio maxillary surgeries before intubation and one minute, 3 minutes, 5 minutes and every 5 minutes during the procedure. There was no change in heart rate , systolic and diastolic blood pressure during the procedure in group FM and group RAE which was also comparable with Sharma et al study which showed that increase in heart rate was found to be less in RAE tube as compared to flexometallic and PVC tube. The peak airway pressure showed no change in group FM and group RAE which was compared with Sharma et all study showed the same. There was no change in ETCo2 during the procedure in group FM and group RAE which was also comparable with Sharma et all study which showed that no significant

differences were found. In our study more than one attempt for intubation was less in group RAE as compared to group FM, stylet used was less in RAE tube as compared to flexometallic tube. There was no intraoperative tube adjustment was done in both the groups. There was no occurrence of epistaxis or pressure sore in our study. The disadvantage that was encountered with RAE tube was that suction catheter was not passed the tube easily when required. Despite the disadvantage of fixed intraoral length, RAE tube was preferred over flexometallic tube by anesthesiologist as well as surgeon due to maintenance of a patent airway and providing clear operation field. Based on the result of the study, we recommend the use of RAE tube over flexometallic tube and PVC tube in orofacio maxillary surgeries to provide good surgical field view.

CONCLUSION:

More than one attempt for intubation was less in north facing RAE tube as compared to flexometallic tube and no statistical difference noted in values of heart rate, mean airway pressure, blood pressure in both the groups. Moreover north facing RAE tube providing better access for operation field. Based upon our study, in terms of ease of intubation and better access for surgical field, we recommend the use of RAE tube over flexometallic tube.

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