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Comparative Study Of Laryngeal Mask Airway Igel AndBaska Mask In Patients Undergoing Surgery Under General Anaesthesia.

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ABSTRACT

Minor surgical procedures under general anaesthesia require a patent airway without the use of muscle relaxant .For such procedures, various supraglottic airway devices have been designed and are being used exceedingly. Although endotracheal intubation is the gold standard for airway management, it is being replaced by supraglottic airway devices because they are easy to introduce, better tolerated and results in a lesser haemodynamic response. The purpose of this study is to compare the second generation SGA I-GEL and third generation SGA Baska mask in patients undergoing general surgery. This study includes 60 patients divided into two groups, each of 30 Patients Group I- I-gel insertion &Group B-Baska mask insertion. Number of attempts needed for the insertion of LMA was noted. More than 3 attempts will be considered failure of insertion of LMA and anaesthesia will be provided with the use endotracheal intubation with appropriate size ET tube.cardio-respiratory parameters like heart rate, Blood pressure, and oxygen saturation, EtCO2 were recorded 1mt, 5mt, 10mt after insertion of LMA and after removal of LMA. Categorical variables will be analysed with the Chi-Square Test and Fisher Exact Test. Statistical significance will be taken as $P < 0.05$. By conventional criteria the weight distribution between IGEL group Baska group among the study population is considered to be statistically not significant since $p>0.05$. ASA- PS distribution between IGEL group BASKA group among the study population is considered to be statistically not significant since $p>0.05$. LMA SIZE distribution between BASKA group and IGEL group among the study population is considered to be statistically not significant since $p>0.05$. In our study, no statistical significance was noted with heart rate, oxygen saturation, systolic BP and diastolic BP, EtCO2 between the two groups with the p-value more than 0.05. The i-gel takes a very significantly short time to insert and secure the airway than baska mask as it's shape, softness and contours accurately mirror the perilaryngeal anatomy. The ease of insertion, number of attempts required, haemodynamic responses to insertion, complications are similar in both the devices.

Keywords: Airway device, general anaesthesia, minor surgical procedures.

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INTRODUCTION

Securing the airway and maintaining it throughout the anesthesia is one of the main roles of the anesthetist. Endotracheal intubation is the gold standard for this purpose. Endotracheal intubation provides definite airway and guard from aspiration [1]. But this is not without side effects like provoking stress response and postoperative sorethroat. On the other hand, anaesthethic management can be simply done with the use of anatomical face mask with or without oropharyngeal airways for short procedures [2]. The supraglottic airway devices (SGA) bridge the gap between facemasks and endotracheal tubes [3]. These devices are helpful in securing and maintaining the patentairway and give the anaesthesiologist free hands to cater to the other requirements of the patient apart from holding the face mask [4]. Supraglottic airway devices are mostcommonly used for airway management in short surgical procedures alleviating theneed for endotracheal intubation [5]. It is relatively simple to insert and plays a well-established role in the management of difficult airway, failed intubation also. A variety of SGAs are available, each with new and special feature for improved safety and efficacy [6]. There are many techniques for insertion of each SGA. It is very important to determine the optimal insertion technique of these devices in the airway as unsuccessful and prolonged 2 insertion and multiple attempts are associated with adverse respiratoryevents and more incidence of trauma to the airway [7]. Fiber-optic assessment demonstrates a high incidence of malposition of LMA. Ideal position of LMA during FOB assessment is only around 50% inspite of clinically patent airway. The suboptimal position of LMA can cause partial obstruction as well as inadequate seal around the larynx, thereby increasing the chance of regurgitation [8-10].

MATERIALS AND METHODS

The study was done after getting approval from Institutional Ethical Committee of Tirunelveli Medical College, Tirunelveli. The study was carried out in the department of Anaesthesiology, Tirunelveli Medical College & Hospital, Tirunelveli in the year 2021-2022.This study includes 60 patients divided into two groups, each of 30 PatientsGroup I- I-gel insertion & Group B- Baska mask insertion. After getting the approval of the Institutional ethical committee, Patients undergoing elective short surgical procedures in general surgery theatre at Tirunelveli Medical College And Hospital were assessed for inclusion and exclusion criteria and included in the study after obtaining writteninformed consent for participating in the study. Inclusion Criteria: Age 18 years to 60 years, ASA PS - I & II, Elective short surgeries, Who have given valid informed consent. EXCLUSION CRITERIA: ASA III & IV, Patients not satisfying inclusion criteria., Patients at risk of aspiration. Anatomical abnormalities of the airway, Anticipated difficult airway – Restricted mouth opening <2.5cm,Upper respiratory tract infection, h/o asthma. Patients were examined thoroughly with evaluation of history and clinical examination. All patients were kept fasting overnight and were given acid aspiration prophylaxis with T.Ranitidine 150mg and T.Metaclopromide 10mg thenight before surgery. Anaesthetic machine was checked before starting the procedure. Ensured the availability of working laryngoscope, oral airway, endotracheal tube of various sizes. In operating room routine monitoring including ECG, NIBP, pulse oximeter were attached and baseline vital parameters were recorded. Each Patients were given premedication inj. Glycopyrolate 40mcg/kg intramuscular 45 mts before surgery and inj midazolam 0.05mg/kg intravenous and inj. Fentanyl 2mcg/kg intravenous before induction. Number of attempts needed for the insertion of LMA was noted. Morethan 3 attempts will be considered failure of insertion of LMA and anaesthesia will be provided with the use endotracheal intubation with appropriate size ET tube. Success rate of LMA insertion was assessed by number of attempts needed for the insertion of LMA. Time duration from the removal of face mask to the confirmation of bilateral equal chest expansion was noted. cardio-respiratory parameters like heart rate, Blood pressure, and oxygen saturation, EtCO2 were recorded 1mt, 5mt, 10mt after insertionof LMA and after removal of LMA. Complications during insertion, intraoperative perios and post operative period were noted.At the end of surgery patient was reversed with inj. Neostigmine 50 microgram/kg and inj.Glycopyrolate 0.2mg for each 1mg of neostigmine.Adequate suction was given and LMA was removed after patientregaining consciousness.Patient was shifted to post operative ward for observation.

Statistical Analysis

Descriptive statistics was done for all data and were reported in terms of mean values and percentages. Suitable statistical tests of comparison were done. Continuous variables were analysed with the unpaired t test and ANOVA single factor test. Categorical variables will be analysed with the Chi-Square Test and Fisher Exact Test. Statistical significance will be taken as $P < 0.05$.The data will be analysed using SPSS version 16 and Microsoft Excel 2010

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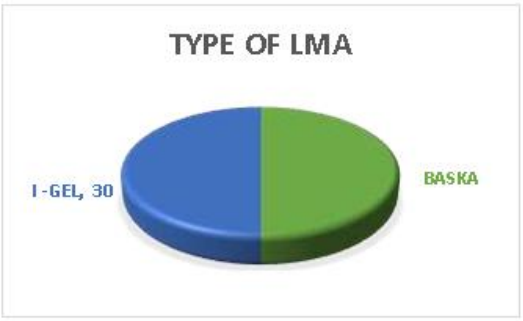
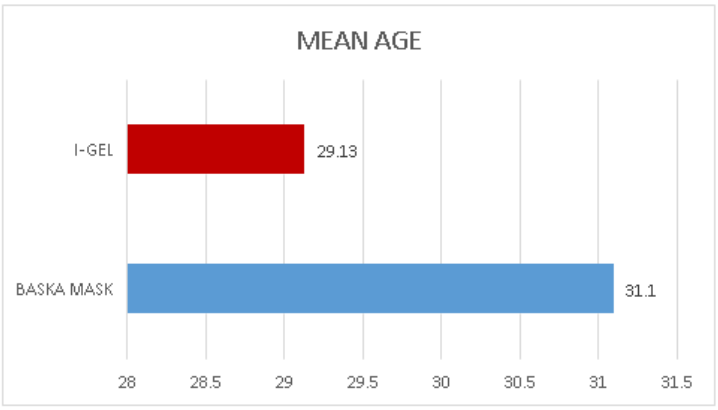
Chart 1: Distribution Of Type Of LMA



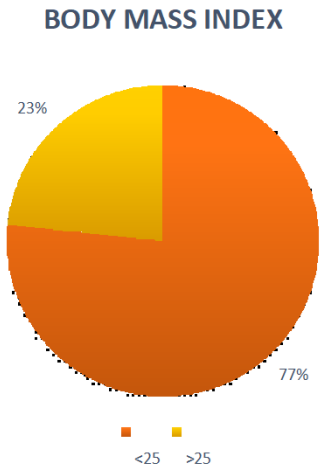
Among 60 patients selected in this study, i-gel was used in 30 patients and Baska mask was used in 30 patients. Among 60 patients in our study population, 35 patients (58%) are between age group 21 to 30 years, 24 patients (40%) are between age group 31 to 40 years and one patient (2%) is above 40 years old

Chart 2: Distribution Of LMA Type Vs Mean Age



By conventional criteria the age distribution between IGEL group and BASKA group among the study population is considered to be statistically not significant since p>0.05.

Chart 3: Distribution Of Body Mass Index



Among 60 patients in our study populatin, 46 patients (77%) having body mass index of less than 25 and 14 patients (23%) having BMI of more than 25%

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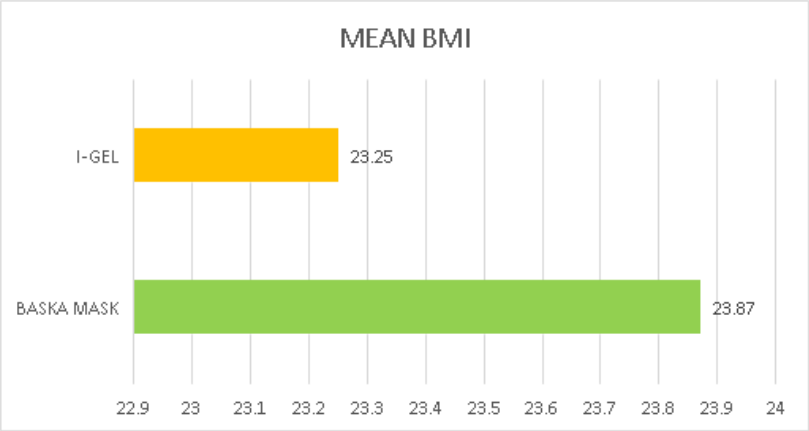
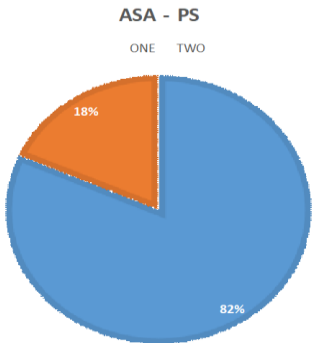
Chart 4: Distribution Of Mean BMI vs LMA Type



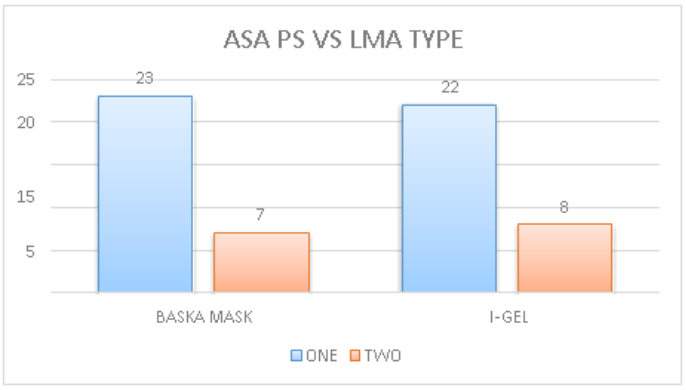
By conventional criteria the weight distribution between IGEL group Baska group among the study population is considered to be statistically not significant since p>0.05.

Chart 5: Distribution Of ASA – Physical Status:



Among 60 patients in our study population, 49 patients (82%) belongs to ASA-1 and 11 patients (18%) belongs to ASA-2 Physical status.

Chart 6: Distribution Of ASA-PS vs LMA Type



By conventional criteria the ASA- PS distribution between IGEL group BASKA group among the study population is considered to be statistically notsignificant since p>0.05.

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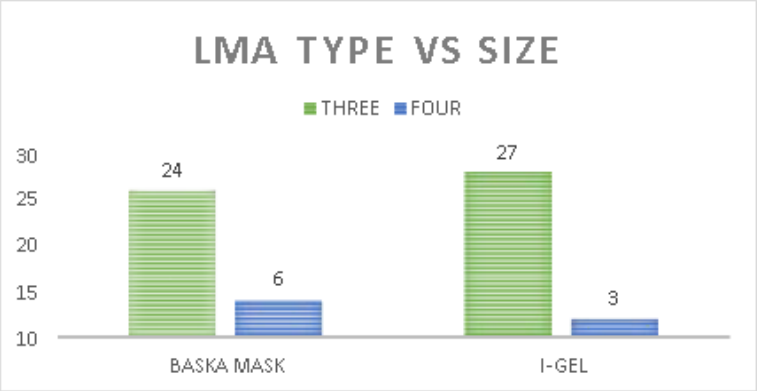
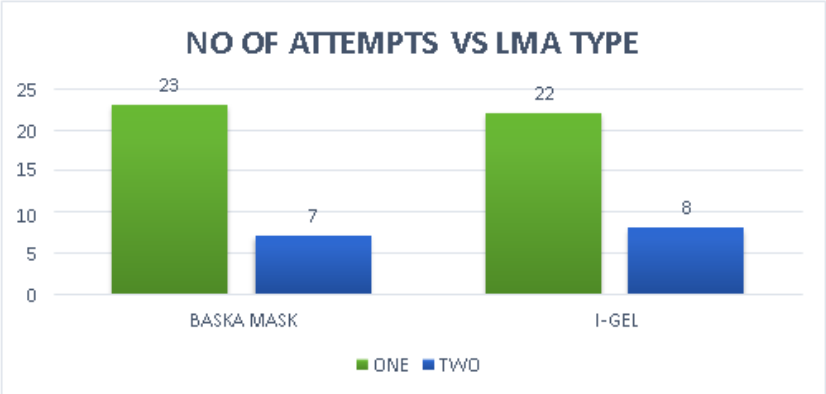
Chart 7: Distribution Of LMA Size vs Type:



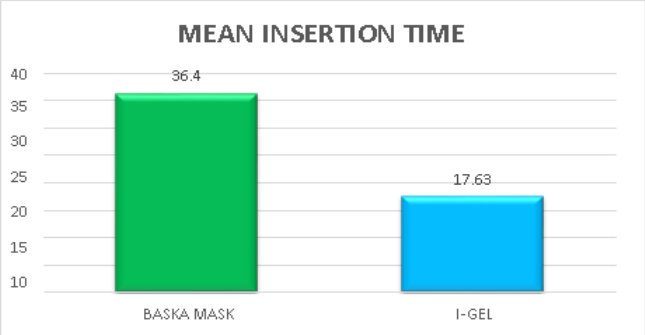
By conventional criteria the LMA SIZE distribution between BASKA group and IGEL group among the study population is considered to be statistically notsignificant since p>0.05

Chart 8: Distribution Of LMA Type vs No. Of Attempts:



By conventional criteria, the Number of attempts between BASKA group and IGEL group among the study population is considered to be statistically not significant since p>0.05.

Chart 9: Distribution Of LMA Type vs Insertion Time(Sec)



By conventional criteria the mean insertion time between BASKA group and IGEL group among the study population is considered to be statistically significant since p value is less than 0.05

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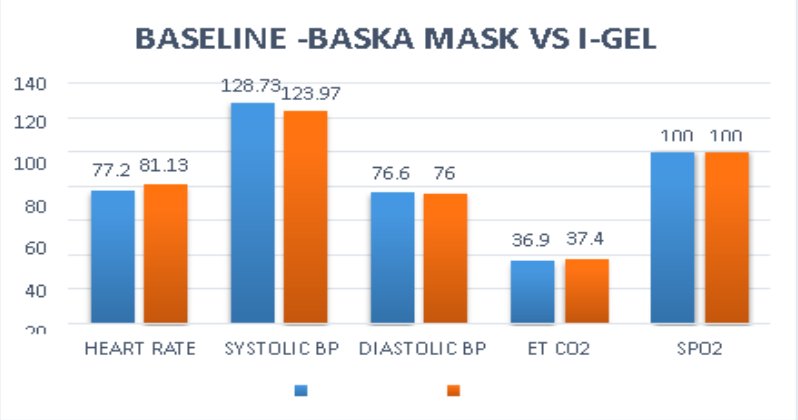
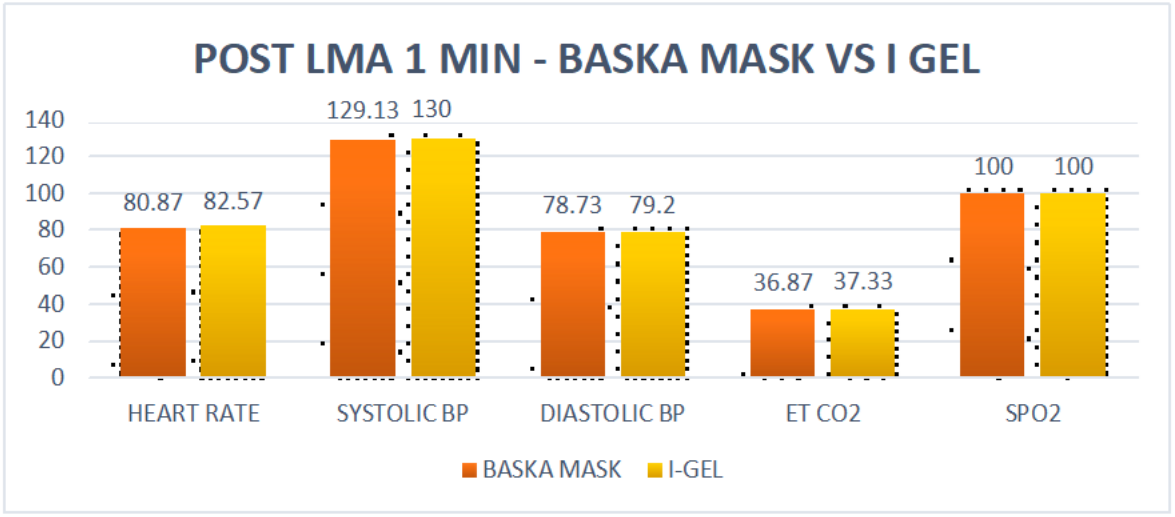
Chart 10: Distribution Of Mean Baseline Hemodynamics Baska Mask vs I- Gel



By conventional criteria the mean baseline haemodyanamics between BASKA group and IGEL group among the study population is considered to be statistically not significant since p>0.05.

Chart 12: Distribution Of Hemodynamics Post LMA 1 Min (Baska Mask Vs I -Gel):



By conventional criteria the mean haemodyanamics at 1minute after the insertionof lma, between BASKA group and IGEL group among the study population is considered to be statistically not significant since p>0.05.

Table 1: Distribution Of Hemodynamics Post LMA – 5 Min (Baska Mask Vs I – Gel)

POST LMA 5 MIN			
PARAMETERS	**BASKA MASK**	**I-GEL**	**P VALUE**
HEART RATE	81.83	81.7	0.884
SYSTOLIC BP	128.8	129.27	0.796
DIASTOLIC BP	79.07	79.8	0.798
ET CO2	37.43	37.33	0.486
SPO2	100	100	0.762

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Chart 12: Distribution Of Hemodynamics Post LMA – 10Min (Baska Mask Vs I –Gel)

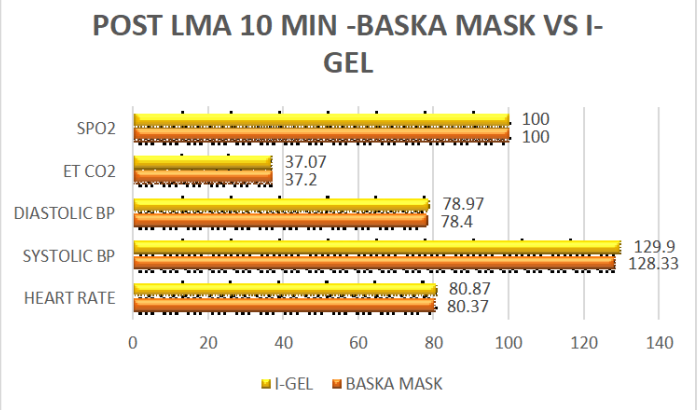
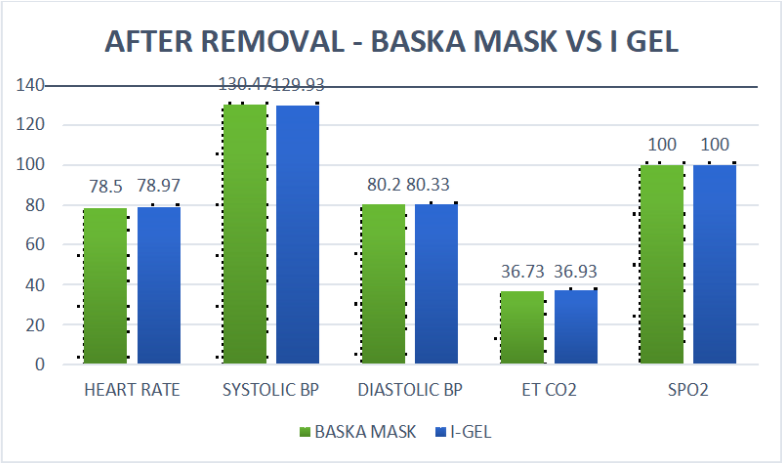
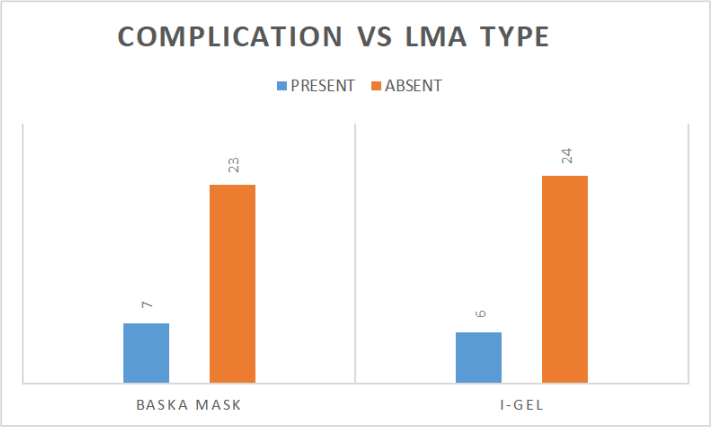


Chart 13: Distribution Of Hemodynamics AfterRemoval (Baska Mask Vs I- Gel)



By conventional criteria the mean haemodyanamics after the removal of lma, between BASKA group and IGEL group among the study population is considered to be statistically not significant since p>0.05.

Chart 14: Complications With Baska Vs I-Gel:



By conventional criteria the complications arising intraoperatively and post operatively due lma insertion, between BASKA group and IGEL group among the study population is considered to be

statistically not significant since p>0.05.

DISCUSSION

Endotracheal intubation is the procedure carried out for securing airway and administration of general anaesthesia.But direct laryngoscopy and tracheal intubation produces the stress response, due to sympatho-adrenal activity leadingto raise in heart rate and blood pressure [11]. Face masks are routinely used for induction and maintenance of anaesthesia in short duration surgical procedures (TIVA) and for volatile induction [12]. But it has the disadvantage of continuously holding the mask and makes the anaesthetist fatigue [13]. Supraglottic airway devices are used to ventilate patients above the level of the vocal cords. For years, airway management emphasized largely on successful tracheal intubation. The development of the laryngeal mask airway in1981 marked a paradigm shift, changing the focus of airway management, from intubation to oxygenation and ventilation [14]. These devices offer several advantages over the tracheal tube with regards to increased ease of insertion, speed of placement, improved hemodynamic stability during induction and emergence, lower incidence of coughing, sore throat and reduced anaesthetic requirement for airway tolerance with reduced airway morbidity [15] The above advantages leads to increasing use of SGA in shortsurgical procedures [16]. The Classic LMA is the most widely used SAD which belongs to first generation. The newer generation LMA include Proseal LMA, Igel, Baska and other devices which have specific features which provide better safety and efficacy [17]. The current study was designed to find out whether a functional difference exists between the second generation SGA - igel and third generation SGA - Baska mask in terms of their number of attempt at insertion, ease of insertion, haemodynamic parameters, complications [18]. This prospective randomized comparative study was conducted on 60 adultpatients of either ASA-PS I,II scheduled to undergo elective short surgical procedures-fibroadenoma excision, puerperal sterilization, lymphnode biopsy, Incision and Drainage under general anesthesia [19]. The sample size was calculated using G power analysis to get an expected significant difference between the groups in the chosen parameters. The patients were randomly assigned using computer generated random numbers, to one of the two groups of 30 patients each, to be managed with either i-gel and as their airway device.In our study, according to the statistical analysis, the demographic variables were found to be equally distributed among the two groups and we proceeded with the comparison of other variables.In our study, the success rate of insertion at 1st attempt was 73.33% and 76.66% for igel and baska mask respectively and 26.66% vs 23.33% in second attempt [20]. The attempt status was not found to be statistically significant since p value was 0.566.In our study, the time for insertion on an average mean was less for igel (17.63sec) as against baska mask (36.40sec) with p value of 0.001. This was found to be statistically significant [21]. In our study, the incidence of complications studied including laryngospasm, airway trauma, sorethroat, blood stained devices was found to be 20% (i-gel) and 23.33% (Baska) with pvalue of 0.364 which was statistically not significant concluding that complications were not significantly high in any particular group [22]. In our study, the changes in haemodynamic parameters-heart rate, blood pressure and peripheral oxygen saturation, EtCO2 distribution between the two groups were compared and there was no statistical difference with the p value more than 0.05 [23-25].

CONCLUSION

In this study, I conclude that i-gel and baska mask both are is a safe and suitable supraglottic airway devices in short surgical procedures with stable haemo dynamics, adequate ventilation and low incidence of complications.Very short time required for securing the airway makes igel a better choice to beused in short duration surgical procedures.

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