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"Comparative Study of Propofol/Etomidate for I gel (Second Generation Laryngeal Mask Airway) insertion for General Anaesthesia.

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Abstract
Background:
Supraglotic airway devices widely used for general anaesthesia.Etomidate is relatively used for cardiac patients.we have done present study to evaluate haemodynamic parameters & ease of insertion , attempts of insertion & adverse effects.
Study type: *Randomised prospective comparative observation study*
Study period: *September 2018 to september 2020*
GROUP ALLOCATION:
All 60 patients were divided randomly in 2 groups by odd & even numbers.that numbers were put in sealed opaque envelope.Execution of Randomisation at the time of giving General Anaesthesia.
GROUP P :Inj PROPOFOL 2.5 mg/kg iv
GROUP E : Inj ETOMIDATE 0.3 mg/kg iv
After induction second generation Supragloticdevice Igel was introduced. Various induction parameters, haemodynamic parameters,ease of insertion, attempts to insertion, various pressures like Orophargeal seal pressure ,peak airway pressure,pleatu pressure & various adverse effects were noted.
Results:
Mean Insertion time for I gel was 36.57 sec for group P and 39.06 sec for group E ($p<0.05$). I gel was inserted in first attempt in 28/30 patients of group P and in 26/30 patients of group E. I gel was inserted in second attempt in 2/30 patients of group P and in 4/30 patients of group E. There were no failed attempts in any group.Ease of insertion was higher in group P (93.3%) compare to group E (86.7%) .Difficulty of insertion was encountered lower in group P (6.7%) than group E (13.3%) There was no failure of insertion in any group.
In group P chin lift (3.33%) and head extension and neck flexion (3.33%) manipulations required where as In group E gentle pushing/pulling (6.67%), chin lift (6.67%),jaw thrust(6.67%),head extension and neck flexion(6.67%) manipulations required . Group E required more manipulation compared to group P.
After induction, HR, SBP, RPP decreased from baseline in both group P and group E but the decrease was maximum in group P.($p<0.05$)Immediately after insertion, HR increased in both group P and group E but the increase was maximum in group E ($p<0.05$)At 1, 3 and 5minute HR, SBP,RPP increases gradually in group P where as in group E it decreases gradually, to reach baseline. ($p<0.001$)After 10 minutes, HR, SBP, DBP, MAP reached near baseline values with no statistical significance and was comparable in both group P and group E. ($p>0.05$),Myoclonus (25%), Apnea (50%), Pain on injection (75%) Sore throat (10%) and NauseaVomiting (30%) and in group P.Myoclonus (45%), Apnea (30%), Pain on injection (30%) Sore throat (20%) and Nausea vomiting (45%) in group E.
In group P time to achieve modified aldrete score >8 is 24.43 +/-3.12 minutes.In group E time to achieve modified aldrete score >8 is 24.03 +/-2.6 minutes. (P >0.05)
Keywords: Etomidate, General Anaesthesia, Igel, Modified Alderte score, Propofol, supraglotic airway devices

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I. Introduction

Introduction of general anaesthesia has made it possible to induce a state of unconsciousness in a controlled manner so that a patient is insensitive to pain and has amnesia but are unable to maintain their own airway. Hence management of airway of an anesthetized patient is of utmost importance. A fundamental aspect of GA is maintenance of clean upper airway[19]. Now-a-days airway management has progressed from endotracheal tube to less invasive laryngeal mask airway (LMA). From the last decade supraglottic airway devices (SGADs) are regularly used for both elective and rescue purpose. The first major development since the LMA, i-gel has changed the face of airway management and is now widely used in anaesthesia and resuscitation across the globe[26]. Made from a medical grade thermoplastic elastomer, i-gel has been designed to create a non-inflatable, anatomical seal of the pharyngeal, laryngeal and perilaryngeal structures whilst avoiding compression trauma. Launched in 2007 after years of extensive research and development, i-gel now has an established reputation in anaesthesia. In 2012, the indications for use were expanded to include use as a conduit for intubation (with fiberoptic guidance). The i-gel has a soft, gel-like, non-inflatable cuff, designed to provide an anatomical impression fit over the laryngeal inlet. The shape, softness and contours accurately mirror the perilaryngeal anatomy - an innovative concept meaning no cuff inflation is required. Working in harmony with the patient's anatomy, compression and displacement trauma are significantly reduced or eliminated[16].

To minimize the excitatory phase and to reduces complications related to the insertion of SGAD i-Gel (second generation LMA) induction anesthesia is required. Inducing agents are drugs that are given intravenously in an appropriate dose, causes rapid loss of consciousness[41]. Induction agents are used to induce anesthesia prior to other drugsbeing given to maintain anesthesia. An ideal induction agent for GA should have hemodynamic stability, minimal respiratory side effects and rapid clearance. Presently Etomidate and Propofol are popular rapid acting inducing agents for General Anaesthesia[39].Etomidate is a carboxylate imidazole-containing compound characterized by hemodynamic stability, minimal respiratory depression, cerebral protective effects and pharmacokinetics enabling rapid recovery[38]. Its lack of effect of sympathetic nervous system, baroreceptor reflex regulatory system and its effect of increased coronary perfusion even on with moderate cardiac dysfunction makes it an induction agent of choice. Etomidate is a hypnotic agent which is cardiostable with no release of histamine. It is short acting drug, used for induction and maintenance of anaesthesia.Propofol is also another commonly used drug for induction of General Anaesthesia. It is an alkyl-phenol currently formulated in lipid emulsion. . Its mechanism of action is likely the enhancement of gamma-aminobutyric acid (GABA) induced chloride currents[34]. Propofol causes a dose dependent decrease in arterial blood pressure through decrease in cardiac output and systemic vascular resistance and produces moderately respiratory depression.

AIM: To evaluate and compare the efficacy and adverse effects of Propofol/Etomidate for IGEL (Second Generation Laryngeal Mask Airway) insertion for General Anaesthesia.

Objectives: To compare induction properties of both agents ,To evaluate the Hemodynamic stability for both agents & the Ease of insertion and number of attempts for both agentsas well as to compare the adverse reactions of both agents& postoperative recovery in both groups.

II. Materials and Methods

The present study was carried out in the Department of Anesthesiology, at tertiary care hospital.

Study design: This was a single centre prospective comparative observational hospital based study.

Study Subjects: After taking consent from Institution review board ,,60 adult patients of ASA grade I/II of either gender for elective surgeries had been enrolled for this study. They were divided randomly into two study groups with 30 patients in each group; Randomisation at the time of general anaesthesia by odd &even numbers put in sealed opaque envelope which was opened at the time of giving general anaesthesia.

Group P (n=30): Inj Propofol 2.5mg/kg iv

Group E(n=30): Inj Etomidate 0.3mg/kg iv

Inclusion Criteria:

ASA grade I/II,Age: 20-60 years, M/F,Weight 40-60kg ,Elective duration 1-1.5hour

Exclusion Criteria: Patients of Mouth Opening <2Finger ,Mallampati score 4,Limited Neck ExtensionRisk of Aspiration (full stomach, hiatus hernia, Gastro esophageal Reflux)Emergency Surgery ,Neck Movement Restriction ,Difficult airway ,Cervical spine disease ,Morbidly obese ,Oral pathology ,Pharyngitis & URTI..After thorough preoperative assessment, general and systemic examination Patients were posted for elective surgery and kept nil by mouth for 6 hours. Prior to operation informed and written consent was taken from patient's relative.

IN OPERATION THEATRE:

- Intravenous cannula was secured and I.V. fluid started.at rate of 4-6ml/kg/hour.
- Vitals (Electrocardiograph, NIBP, SpO_2) were monitored in all patients.

Premedication:
Inj.Ondansetron Hydrochloride 0.08mg/kgiv
Inj. Glycopyrrolate Bromide 0.004mg/kg iv
Inj. Fentanyl Citrate 2mcg/kg iv

TECHNIQUE OF ANAESTHESIA: General Anaesthesia.
All patients were pre-oxygenated for 3 minutes before induction. Vital parameters were recorded just before induction (baseline vitals).
Induction of anaesthesia was done according to group allocation. There was loss of consciousness as patient didn't open their eyes on verbal command. End of induction of anaesthesia was considered by loss of eyelash reflex and jaw relaxation. The size of the device used was decided based on the patient's body weight and manufacture's recommendation. Patient's airway was secured with appropriate size I-gel according to the weight of patients. Before induction posterior surface was lubricated with 2% xylocaine jelly inserted through the oral cavity in "sniffing the morning air" position. The lubricated device was grasped along the integral bite block and was introduced into the mouth in the direction towards the hard palate and was glided downwards and backwards along the hard palate until definite resistance was felt.I-gel was fixed after confirming its proper placement .An effective airway and proper placement of the device was judged by a square wave capnograph trace, normal chest expansion and absence of audible leak. The time for insertion was recorded as time from beginning of insertion of the airway device to the first capnograph trace. Bilateral equal air entry and vitals were recorded and proper position of patient for surgery was given.

EASE OF INSERTION:
Easy insertion: No resistance to insertion in the pharynx in a single maneuver.
Difficult insertion: Resistance to insertion :one or more maneuvers like gentle pushing and pulling of the device, chin lift, jaw thrust, head extension and neck flexion were required..Difficulty was rectified by increasing the concentration of sevoflurane 0.2% incrementally and then manipulations or second attempt done.
Failed insertion: Insertion not possible.
If an effective airway could not be achieved the device was removed and second attempt was done. Total two attempts were permitted before failure of insertion was recorded. The number of insertion attempts was recorded.
Patients were watched for intraoperative complications during insertion like, pain on injection, myoclonus, coughing, gagging, laryngospasm, bronchospasm and if occured were noted.
Maintenance: Anaesthesia was maintained by Spontaneous+Assisted ventilation with Oxygen (50%) + Nitrous Oxide (50%) + Sevoflurane on closed circuit of workstation. Oropharyngeal seal pressure was determined by closing expiratory valve at fixed circle gas flow of 4l/min and recording the airway pressure at which gas leaked into mouth.At the end of operation volatile anaesthetic agent was discontinued and fresh gas flow was increased to 8l/min with 100% oxygen and then I gel was removed.

Monitoring:
Patient's vitals like pulse rate, SBP, SPO2, ETCO2 were measured at baseline, before induction, after induction, immediately after insertion, 1 Minute,3 Minutes, 5 minutes, 10 Minutes, 15 minutes, 30 minutes, 45 minutes, 60 minutes, 75 minutes and 90 minutes after insertion.
Rate Pressure Product (RPP)=HEART RATE (BPM)*Systolic Blood Pressure(mmhg)
RPP was calculated in each patient after 1,3,5 minutes of insertion of I gel.
Certain terms considered in present study were:
HYPOTENSION**:** When the blood pressure is >30% below the baseline
HYPERTENSION**:** When the blood pressure is >30% above the baseline
BRADYCARDIA: When the pulse rate is >20% below the baseline or pulse rate less than 60/min.
TACHYCARDIA: When the pulse rate is >20% above the baseline Suboptimal oxygenation: When Spo2<95%
Intraoperatively patients were watched for any complication like Apnoea, coughing, gagging and if occur (hypertension and tachycardia) then rectified accordingly with deepening of anaesthesia by increasing the concentration of sevoflurane by 0.2% incrementally. Hypotension was corrected by giving IV fluids and inj mephentermine 0.6 mg sos. Bradycardia was corrected by giving Atropine 0.6 mg/kg. Suboptimal oxygenation was rectified by changing the size of I gel or reintroducing the I gel.The change in the size of I gel was noted.After removal of I gel, patient was shifted in PACU.Patients recovery was assessed by Modified alderte score.[33]Modified Aldrete score: Time to achieve aldrete score of > 8 in minutes was noted and patient was shifted in postoperative ward and were watched for complication within 24 hours of the surgery.[33]

Observation

1. Attempts of insertion
2. Overall success rate
3. Ease of insertion
4. Time of insertion
5. Oropharygeal Seal pressure.

Intraoperative Adverse Effects:

Coughing/ Gagging ,Laryngospasm ,Bronchospasm Hypoxia ,Pulmonary aspiration/ Regurgitation ,Apnoea Pain on injection ,Myoclonus

Post op Adverse Effects:

Coughing ,Hoarseness of voice ,Airway trauma [Blood stain on device] Breath holding / Laryngospasm ,Sore throat,Tongue/Lip/ Dental Injuries ,Regurgitation/ aspiration of gastric contents,Numbness of Tongue,Nausea & vomiting

Following side effects were graded by 4 point scale

Sore throat- No,mild moderate,severe as0,1,2,3

Pain on injection- No,mild moderate,severe as0,1,2,3

Myoclonus- No,mild moderate,severe as0,1,2,3

STATISTICAL ANALYSIS:

For comparing numerical variables Unpaired T-Test was used and Categorical variables were compared with Chi Square Test. P value calculated. 'P' value of < 0.05 interpreted as clinically significant, whereas 'P' value of <0.0001 was taken as highly significant. 'P' value of >0.05 is interpreted as clinically non-significant.

III. Observation And Results

This prospective randomized clinical study comprised of 60 patients undergoing various elective surgeries.

GROUP ALLOCATION:

GROUP P (n=30)	Inj PROPOFOL 2.5 mg/Kg iv
GROUP E(n=30)	Inj ETOMIDATE 0.3 mg/Kg iv

Table-I- Demographic Data

	PROPOFOL (n=30)		ETOMIDATE (n=30)		P VALUE
	MEAN	SD	MEAN	SD	
AGE	37.76	1.83	37.7	1.85	0.89
GENDER(M:F)	14/16		17/13		
WEIGHT	55.1	3.73	55.53	3.23	0.63
ASA GRADE (I/II)	13/17		16/14		
DURATION OF SURGERY	41.5	14.03	44.5	12.75	0.38

Table- II Time for Insertion

	PROPOFOL(n=30)		ETOMIDATE(n=30)		
Time for Insertion	MEAN	SD	MEAN	SD	P value
Effective airway Insertion time (Sec)	36.57	1.87	39.06	2.75	0.0001

Table III- Number of attempts

number of attempts	Propofol(n=30)		Etomidate(n=30)	
	NO	%	NO	%
First	28	93.3	26	86.7
Second	2	6.7	4	13.3
Failed	0	0	0	0
Total	30	100	30	100

Table IV shows ease of i gel insertion.

Ease of insertion	Propofol(n=30)		Etomidate(n=30)	
	NO	%	NO	%
EASY	28	93.3	26	86.7
Difficult	2	6.7	4	13.3
Failed	0	0	0	0
Total	30	100	30	100

Table-V Table VManipulation Required during insertion

	Propofol(n=30)		Etomidate(n=30)	
Manipulation Required during Insertion	NO	%	NO	%
Gentle pushing/pulling	0	0	2	6.67
Chin lift	1	3.33	2	6.67
Jaw thrust	0	0	2	6.67
Head extension and neck flexion.	1	3.33	2	6.67

Table-VI=HEART RATE

PULSE	PROPOFOL	PROPOFOL	ETOMIDATE	ETOMIDATE	P VALUE
	MEAN	SD	MEAN	SD	
BASELINE	80.46	3.98	81.36	4.17	0.39
PREMED	76.53	4.13	77.43	4.28	0.41
INDUCTION	70.46	3.98	74.5	4.33	0.0001
INSERTION	76.53	4.13	83.56	4.42	0.0001
1MIN	74.46	3.98	80.63	4.41	0.0001
3MIN	73.43	3.92	79.5	4.38	0.0001
5MIN	76.46	3.98	80.66	4.39	0.0001
10MIN	80.5	4.05	81.73	4.45	0.279

No patient in any group had bradycardia.

Table VII- SYSTOLIC BLOOD PRESSURE

SBP		PROPOFOL		ETOMIDATE	P VALUE
	MEAN	SD	MEAN	SD	
BASELINE	123.56	5.05	123.9	4.91	0.79
PREMED	121.5	5.06	121.86	4.96	0.78
INDUCTION	109.63	5.2	117.83	5.01	0.0001
INSERTION	118.76	5.39	131.7	5.27	0.0001
1MIN	119.8	5.43	129.6	5.35	0.0001
3MIN	120.9	5.5	128.6	5.52	0.0001
5MIN	121.8	5.43	127.53	5.71	0.0002
10MIN	123	5.96	125.56	5.61	0.09

SPO2 was measured periodically with various haemodynamic parameters. No patient in any group had desaturated. (Spo2 <95%).

Table-VIII COMPLICATIONS

		yes	no
APNOEA	Propofol	10	20
	Etomidate	6	24

NAUSEA & VOMITING	Propofol	6	24
	Etomidate	9	21
MYOCLONUS	Propofol	5	25
	Etomidate	9	21
PAIN ON INJECTION	Propofol	15	15
	Etomidate	6	24
SORE THROAT	Propofol	3	27
	Etomidate	6	24

TABLE IX- RATE PRESSURE PRODUCT

RPP	PROPOFOL		ETOMIDATE		
	MEAN	SD	MEAN	SD	P VALUE
1MIN AFTER INSERTION	9234	760.5	10454	698.2	0.0001
3MIN AFTER INSERTION	9192	766.7	10231	701.2	0.0001
5MIN AFTER INSERTION	9630	788.8	10286	713.1	0.0013

TABLE X

various pressure	PROPOFOL		ETOMIDATE		
	MEAN	SD	MEAN	SD	P VALUE
OROPHARYNGEAL SEAL PRESSURE	24.3	3.08	24.06	2.91	0.7
PEAK	27.5	1.81	27.4	1.75	0.71
PLATEAU	22.5	1.38	22.7	1.64	0.61

IV. Discussion

General anaesthesia began with inhaled agents like Ether, Nitrous oxide, Chloroform, etc. But in current clinical practice, anaesthesia can be induced with either inhalational or intravenous route[24]. Induction of anaesthesia with intravenous induction agent is becoming standard technique as it provides rapid and smooth induction with minimal side effects[17]. Following induction of anaesthesia, protection and maintenance of airway is of utmost importance for which endotracheal intubation is the gold standard. However, laryngoscopy and endotracheal intubation leads to undesirable side effects like tachycardia, hypertension, cardiac arrhythmias, cardiac arrest, hypoxia, hypercapnia, myocardial ischemia, raise in intraocular pressure and intracranial pressure. These cardiovascular and airway responses are due to sympatho-adrenal activity with an increase in plasma catecholamine levels[19,32]. To avoid such undesirable side effects of laryngoscopy and endotracheal intubation,In January 2007 Dr. Mohammad Aslam Nasir developed I- Gel (inter surgical LTD, UK) a type of supraglottic device which is a good alternative for securing and maintaining a patent airway for surgery requiring general anaesthesia.

Propofol, a widely used anaesthetic induction agent is associated with hypotension due to its effect on reduction of sympathetic activity causing vasodilatation, direct effect on calcium mobilization, inhibition of prostaglandin synthesis in endothelial cells, etc. This effect observed after bolus injection of Propofol is due to vasodilatation with reduction in preload and after load along with myocardial depression[17] .

Etomidate has a unique property of binding and stimulation of α-2B adrenergic receptors with a subsequent vasoconstriction[17]. This makes Etomidate a better choice for induction in patients with ischaemic heart disease, valvular heart disease, etc[9,17,19,42]. However, it has limitations of its own with incidence of myoclonus, reversible adrenocortical suppression, thrombophlebitis, etc. on use.

Demographic parameters: Table I shows comparable demoghraphic parameters. **In study of CHITTA RANJAN MOHANTY et al[4]** comparison of demographic parameters were done and they were statistically not significant (p>0.05)

Induction Characteristics:

Patients in Group P received Injection Propofol 1% (2.5 mg/kg),Group E received Injection Etomidate (0.3 mg/kg)**In ASHISH KANNAUJIA et al[2]** have used propofol as induction agent for I gel insertion with the dose of 2.5mg/kg.

In JITESH KUMAR and SHWETA et al[18] have used propofol 2.5mg/kg versus etomidate 0.3mg/kg as induction agent for LMA insertion and compared both.**HR REHMAN AND T. HUSSAIN** et al[14] have used loss of eye reflex and jaw relaxation as end point of induction for LMA insertion.**CHITTARANJAN MOHANTY et al[4]** have used loss of eye reflex and jaw relaxation as end point of induction for I gel insertion.and noticed inadequate jaw relaxation in 47% in group P and 43%in group E.

Supraglottic Device (I gel) used:

CHITTARANJAN MOHANTY et al [4] have compared etomidate and propofol and thiopentone for I gel insertion.**JITESHKUMAR et al [18]** have compared etomidate and propofol and thiopentone for LMA insertion**ASHISH KANNAUJIA et al[2]** have done preliminary study for I gel insertion under propofol induction.*** I gel insertion time:TABLE II** shows Mean Insertion time for I gel is 36.57 sec for group P and 39.06 sec for group E($p<0.05$).**HASHAAM B GHAFOOR et al [12]** showed insertion time of LMA of 36.43 sec for group P and of 38.23 sec for group E($p<0.05$).**No of attempts for I gel insertion:Table III** shows that I gel was inserted in first attempt in 28/30 patients of group P and in 26/30 patients of group E. I gel was inserted in second attempt in 2/30 patients of group P and in 4/30 patients of group E. There were no failed attempts in any group. **ASHISH KANNAUJIA et al [2]** have used propofol for I gel insertion and in their study 90% of pt. had I gel inserted in first attempt while 10% had in second attempt.**HASHAAM B GHAFOOR et al [12]** showed that in 93.3% and 6.7% pt of group P LMA was inserted in first and second attempt respectively while in 36.7% and 63.3% pt of group E LMA was inserted in first and second attempt respectively

Ease of insertion:

Table IV shows Ease of insertion was higher in group P (93.3%) compare to group E (86.7%).Difficulty of insertion was encountered lower in group P (6.7%) than group E (13.3%). There was no failure of insertion in any group.

In CHITTA RANJAN MOHANTY et al[4] study ease of insertion was (67%) in group P compare to (50%) in group E. Difficulty of insertion was (33%) in group P compared to (50%) in group E. **M D Stoneham, MA, et al (1995)[22]** noticed ease of insertion of (57.5%) in saline group P. and 85%in lignocaine group P. Difficulty of insertion was (35%) in saline group P and 12.5% in lignocaine group P.

Manipulation Required during insertion

Table V shows that In group P chin lift (3.33%) , head extension and neck flexion (3.33%) manipulations required where as In group E gentle pushing/pulling (6.67%), chin lift (6.67%), jaw thrust (6.67%), head extension and neck flexion (6.67%) manipulations required .Group P required less manipulation compared to group E.

ASHISH KANNAUJIA et al[2] showed that 10% of patients required airway manipulation with use of propofol.**CHITTA RANJAN MOHANTY et al study[4]** ease of insertion was (67%) in group P compare to (50%) in group E. Difficulty of insertion was (33%) in group P compared to (50%) in group E which was rectified by airway manipulation and changing the size of supraglottic device.

Oropharyngeal seal pressure: In group P was 24.36 cmH2o and in group E was 24.07 cmH2o which was comparable ($p>0.05$). **KELLER C AND BRIMACOMBE J et al[20]** have assessed oropharyngeal seal pressure for LMA insertion**ASHISH KANNAUJIA et al[2]** have measured oropharyngeal seal pressure for I gel insertion under propofol induction which was around 20 (range 16-40)

PARUL JINDAL et al [28] have have measured oropharyngeal seal pressure for I gel insertion under propofol induction which was around 24 cm of H2O.

GABBOT DA et al[8] have observed oropharyngeal seal pressure, peak airway pressure and plateau pressure for I gel insertion.

TABLE -VI . Shows changes in Heart rate in both groups.

Chittaranjan **Mohaty et al[4]** showed that there was increase in Mean HR immediately after I gel insertion and 1 min after insertion in both group same as our study ($p<0.05$). At 3 and 5minute Mean HR decreased from baseline in group P where as in group E it reached to baseline or above($p<0.05$)**ASHISH KANNAUJIA et al[2]** showed that Mean HR decreases from baseline after insertion of I gel.**JITESH KUMAR and SHWETA et a**l[18] used etomidate /propofol for LMA insertion &measured decrease in heart rate in both group at time of induction, 1 min, 3 min ,5 min after LMA insertion but more decrease was there in group P.**KAVITA MEENA et al[19] & RAJEEV KUMAR DUBEY AND NAYAK SUDHANSHU SHEKHAR et al29** showed that there was decrease in heart rate after induction in both the group same as our study ($p<0.05$). There was increase in heart rate immediately after insertion in both group P and group E same as our study ($p<0.05$). At 1, 3 and 5 minutes Mean HR increased gradually in group P($p<0.05$) and decreased gradually in group E($p<0.05$) same as our study.

TABLE VII shows After induction, Mean SBP decreased from baseline in both group P and group E but the decrease was 11.2% in group P and 5% in group E and hence the decrease was maximum in group P.($p<0.001$)Immediately after insertion, Mean SBP increased in both group P and group E but the increase was 8.3% in group P and 11.7% in group E hence the increase was maximum in group E.($p<0.001$) At 1, 3 and

5minute Mean SBP increases gradually in group P where as in group E it decreases gradually, to reach baseline ($p<0.001$)After 10 minutes, Mean SBP reached near baseline values with no statistical significance and was comparable in both the groups($p>0.05$)**JITESH KUMAR and SHWETA et al**[18] showed more decrease in Mean SBP in group P than group E after induction,at1,3,5minutes after LMA insertion($p<0.001$).**PARUL JINDAL et al**[28] have compared hemodynamic parameters after propofol induction between I gel and LMA and concluded that Mean SBP decreased 12.2% at time of induction and insertion in I gel group whereas Mean SBP increased 12.5% in LMA group. It may be due to soft, non-inflatable cuff of I gel made of thermoplastic elastomer which fit snugly onto the perilaryngeal framework.**KAVITA MEENA et al**[19] **& RAJEEV KUMAR DUBEY AND NAYAK SUDHANSHU SHEKHAR et al29** showed that there was decrease in Mean SBP after induction in both group P and group E same as our study ($p<0.05$). There was increase in Mean SBP immediately after insertion in both the group same as our study ($p<0.05$). At 1,3and 5minutes Mean SBP increased gradually in group P($p<0.05$) and decreased gradually in group E($p<0.05$) same as our study.

CHANGES IN RPP:TABLE NO-XII showed changes in RPP at 1,3,5 minutes after insertion in both the groups($p<0.001$).In group E Mean RPP was 10454,10231,10286 at 1,3,5 minutes respectively where as in group P it was 9234 ,9192,9630 at 1,3,5 minutes respectively Rate Pressure Product <20,000 was observed in both the groups in our study.Rate Pressure Product is used in cardiology and exercise physiology to determine the cardiovascular risk of subjects.Rate Pressure Product (RPP)=HEART RATE (BPM)*Systolic Blood Pressure (MMHG)Rate Pressure Product is a measure of the stress put on the cardiac muscle. Increase in Rate Pressure Product increases risk of myocardial ischaemia leading to myocardial infarction, acute cardiac failure, pulmonary edema and arrhythmias. Therefore, Perioperative measurement of rate pressure product is of vital importance.Value higher than 20000 is associated with increased myocardial risk of ischaemia.No patients of any group experienced any abnormal ECG changes**GOBEL FL, NORSTROM LA, NELSON RR, JORGENSEN CR, WANG Y**[11]**.**The rate pressure product as an index of myocardial oxygen consumption during exercise in patients with angina pectoris.**PARUL JINDAL et al**[28] have used propofol for I gel /SLIPA/LMA insertion and showed that RPP decreases more at time of induction and at 5 minutes of induction in I gel group compared to SLIPA and LMA.

Complications likeMyoclonus (25%), Nausea Vomiting (30%), Apnea (50%), Sore throat (10%) and Pain on injection (75%) noticed in group P.Myoclonus (45%), Nausea vomiting (45%), Apnea (30%), Sore throat (20%) and Pain on injection (30%) in group E.No patients of any group experienced coughing or gagging as we have used fentanyl 2mcg/kg.**UZUN et al**[44] have noticed 4% incidence of coughing and 8% incidence of gagging in group P where as.20% incidence of coughing and 32% incidence of gagging noticed in group E. They have used remifentanyl as premedication **ASHISH KANNAUJIA et al**[2] have noticed 4%incidence of coughing in group P. **AMIT KUMAR et al**[1] have noticed pain on injection in 50%in group P, 18% in group E.($p<0.01$), Nausea and vomiting in 30% in group P, 22% in group E. Myoclonus 0%in group P and 6% in group E.**CHITTA RANJAN MOHANTY et al** [4] have noticed apnoea in 30%in group P,6%($p<0.05$) in group E., Nausea and vomiting in 3% in group P,6% in group E, inadequate jaw relaxation in 47%in group P 43% in group E, Gagging was 7% in group P and 13% in group E, coughing was27%in group P and 20% in group E, Limb movement was 27% in group P and 33% in group E. No incidence of laryngospasm in any group.**SUPRIYA AGGRAWAL AND VIPIN GOYAL et al**[41] have noticed apnoea in 76%in group P,66% in group E, Myoclonus in 0% in group P,18% in group E ($p<0.05$), Pain on injection 50% in group P ,4% in group E($p<0.05$).**DR VIJAYKUMAR T.K et al**[6] have noticed myoclonus in 7.5%in group P and 40% in group E.($P<0.005$)**JITESH KUMAR et al**[18] showed that incidence of myoclonus was0% in group P and 33% in group E($P<0.05$)**ASHISH KANNAUJIA et al**[2] have noticed 4%incidence of sore throat in group P.

TIME TO ACHIEVE MODIFIED ALDRETE SCORE MORE THAN >8: In group P time to achieve MAS >8 is 24.43 +/-3.12 minutes,In group E it is 24.03 +/-2.6 minutes.($P>0.05$)**SANSAYA MAHAPATRA AND NITIN CHOUDHARY et al**[33] have used measured recovery by MAS score in their study of desflurane /sevoflurane with fentanyl for ambulatory surgeries using supraglottic device.

LIMITATIONS: We have not measured serum cortisol levels.We have done study in normotensive patients ,not in hypertensive patients.We have not done Bispectral Index monitoring as it was not continuously available for each patient .

CONCLUSION :In nutshell both Etomidate and Propofol provide comparable induction characteristics, clinical conditions for I gel insertion and recovery profile.Propofol provides cost effective induction but is associated with adverse effects like apnoea and pain on injection.Etomidate provides better haemodynamic stability but is associated with adverse effects like myoclonus and nausea, vomiting.

Etomidate could be safe alternative to Propofol for I gel insertion in patients with unstable hemodynamics.

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