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Proseal Laryngeal Mask Airway v/s Endotracheal Intubation for Gynaecological Laparoscopic Surgeries

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Abstract

Background: Proseal LMA (PLMA), is the latest entrant in the family of LMA designed for positive pressure ventilation and protection against aspiration. These features of PLMA is especially useful in laparoscopy surgeries, which is widely preferred these days and can act as an alternative to Endotracheal tube (ETT). Rigid laryngoscopy during endotracheal intubation (gold standard for safe glottic seal) causes haemodynamic responses which adds to the stress of pneumoperitoneum in laparoscopic surgeries, unlike Proseal LMA which is a supraglottic device and less invasive. *Aim:* To compare the efficacy and safety of Proseal Laryngeal Mask Airway with Portex endotracheal intubation in gynaecological laparoscopic surgeries under general anesthesia. *Setting and Design:* A prospective, randomised study was conducted in 60 females, ASA-I & ASA-II patients undergoing laparoscopic gynaecological surgery under general anesthesia. Ethical clearance and written consent was obtained before the study. Patients were randomly divided into two groups-PLMA (P) and Endotracheal tube (E) depending on the device used to secure airway. Ease, attempt of of insertion, haemodynamic parameters and postoperative complications were studied. *Results:* Insertion rate was 100% in both the groups. Vital parameters like heart rate, systolic bp, diastolic bp and mean arterial pressure were relatively lower with Proseal LMA at 1 min, 3 min and 5 min and after removal as compared to ETT. The difference was statistically significant. There was no significant difference in End tidal CO_2, SpO_2, during baseline, insertion and removal of device, before and after pneumoperitoneum, also in airway pressure during insertion, before and after pneumoperitoneum. Perioperative complication was higher with endotracheal tube. *Conclusion:* The Proseal LMA offers a safe and effective alternative for airway management in patients undergoing gynaecological laparoscopic procedures under general anesthesia.

Keywords: Proseal Laryngeal Mask Airway; Endotracheal Intubation; Laparoscopic Surgeries,

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Introduction

Conventional open surgeries are now progressing to keyhole laparoscopic surgeries. The wide use of laparoscopy has revolutionised open surgical procedure. laparoscopy has increased success rates with decreased morbidity in surgical patients. Few disadvantages due to pneumoperitoneum mainly concerns anesthesia techniques. Thus, different anaesthetic techniques are being practised by modifying use of LMA. LMA has challenged the standard ETT used during general anesthesia.[1]

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Till date, the cuffed tracheal tube was considered as the gold standard for providing a safe glottic seal, especially for laparoscopic procedures under general anesthesia. The disadvantages of tracheal intubation, which involves rigid laryngoscopy, are in terms of concomitant haemodynamic responses and damage to the oropharyngeal structures at insertion. Postoperative sore throat is also a serious concern. This precludes the global utility of the tracheal tube and requires a better alternative.[2]

The Proseal LMA was introduced by Dr. Archie Brain in 2000.[3] The Proseal Laryngeal Mask Airway (PLMA), the latest entrant in the family of LMA, is a useful tool in airway management.[4]

Proseal LMA which is a supraglottic device and less invasive is considered to cause lesser haemodynamic response.[5] The Proseal laryngeal mask airway (PLMA) has a dorsal cuff which pushes the mask anterior to provide a better seal around the glottic aperture and permits high airway pressures without leak. The drain tube parallel to the ventilation tube permits drainage of passively regurgitated gastric fluid.[2] The built in bite block reduces the chances of damage to the device by inadvertent biting by the patient.[1]

In laparoscopic surgeries, increased abdominal pressure from pneumoperitoneum requires higher airway pressures for adequate pulmonary ventilation, for which the PLMA has proved to be adequate in previous studies.[6] PLMAs have been the subject of study by various authors over many years.

From 1981, Dr. Archie Brain's first prototype LMA to the year 2000, a variety of special LMA were released with PLMA being the latest. Since then many studies, like in 2002, J. Roger Maltby, Michael T. Beriault, Neil C. Watson *et al.* conducted, 'The LMA-ProSeal is an effective alternative to tracheal intubation for laparoscopic cholecystectomy', however further studies were required. In 2005, Cook, Lee and Nolan analyzed and summarized the published literature relating to the PLMA. They found that compared to the classic LMA, PLMA insertion takes a few seconds longer, but overall success is equivalent. In 2010, Lalwani J, Dubey KP, Sahu BS, Shah PJ conducted a study Proseal Laryngeal Mask Airway: An alternative to endotracheal intubation in paediatric patients for short surgical procedures and proved that PLMA is a safe and effective alternative to endotracheal intubation.

Hence, we made an earnest attempt to compare this device with the standard endotracheal tube in gynaecological laparoscopic surgeries for the ease of insertion, haemodynamic changes occurring during insertion, before pneumoperitoneum, after pneumoperitoneum and after removal of the device. We also compared the airway pressure on insertion, on pneumoperitoneum, 10 minutes after pneumoperitoneum, after release of pneumoperitoneum and perioperative complications in both the groups.

Materials and Methods

After obtaining Institutional Ethics Committee clearance, the study was carried out in 60 female patients belonging to ASA (American Society of Anaesthesiologists) grade I and II, aged between 18 to 45 years, scheduled for elective gynaecological laparoscopic surgeries. The design of study was a Prospective, randomized control, comparative study extended over a period of one year in our institute.

We conducted the study on 60 patients, after dividing 30 patients in each group for better validity of results. Keeping the significance level of 5%, power of study at 80% and based on the study by Lim Y *et al.*,[9] the sample size was calculated using Winpepi Statistical package. Randomization was done using a computer generated random number table. After obtaining informed written consent in their own understandable language, patients were randomly assigned to one of the two groups:

Group 'P' (Proseal laryngeal mask airway was used) - 30

Group 'E' (Endotracheal tube was used) - 30

Patients belonging to ASA I or II, between the age of 18-45, mouth opening> 2.5 cms with availability of informed consent were taken and patients with ASA III or more, other comorbidities, URTI, increased risk of aspiration (pregnancy, hiatus hernia, reflux disorders), BMI >30 kg/m^2, posted for emergency surgeries were excluded.

Pre-operative Evaluation

Patients were assessed for routine investigations. The procedure was explained to the patient and written informed consent was taken.

All patients were kept fasting for 8 hours. In the preoperative room, the patient's baseline pulse, blood pressure and heart rate were taken. In the operating room, all monitors were attached - pulse oximeter, ECG and non-invasive blood pressure cuff and a wide bore 20 G intravenous line established. The patients were pre-medicated with

intravenous inj. Glycopyrrolate 0.004 mg/kg, inj. Ondansetron 0.1 mg/kg, inj. Midazolam 0.02 mg/kg, inj. Pentazocine 0.3 mg/kg, then preoxygenated with 100% O_2 for 3 minutes. General anesthesia was induced with inj. Propofol 2 mg/kg and inj. Vecuronium 0.1 mg/kg. After induction, in group P, appropriate size of PLMA (size 3) was used and appropriate size portex cuffed ETT (size 7/7.5 mm internal diameter) was used in group E patients. Same person inserted the PLMA or ETT in all the 60 cases, while the haemodynamic and other parameter monitoring was performed by another person not able to visualise the device. Correct placement of device was confirmed by manual ventilation, auscultation, capnography. Once confirmed, positive pressure ventilation started on closed circuit (tidal volume-8 ml/kg). Maximum 3 attempts were allowed, if more attempts were required case was excluded from the study. Anesthesia was maintained with isoflurane (0.6 - 1 MAC) in 60% N_2O / 40% O_2 mixture. Controlled mechanical ventilation was applied to maintain the end tidal CO_2 between 30-40 mm of Hg. Gastric tube of number 12 or 14 Fr was inserted through the drain tube. Two attempts were allowed before gastric tube insertion was considered a failure and repositioning of PLMA was done.

Haemodynamic responses as pulse rate, systolic blood pressure, diastolic blood pressure, mean arterial pressure, oxygen saturation and end tidal carbon dioxide were recorded prior to induction, 1 min, 3 min, 5 min after endotracheal intubation or PLMA insertion, before and after pneumoperitoneum and after removal of the respective device. The airway pressure was noted on insertion, on pneumoperitoneum, 10 minutes after pneumoperitoneum and after release of pneumoperitoneum in both the groups. After the procedure, reversal was done by using Inj. Neostigmine 0.05 mg/kg and Inj. Glycopyrrolate 0.008 mg/kg. Also perioperative complications like cough, laryngospasm, bronchospasm, aspiration, blood on device and sore throat in both the groups were noted. Time and ease for insertion were also noted for ETT, PLMA and ryles tube.

For the analysis of quantitative data student t test (for parametric data) or Mann Whitney's U test (for non parametric data) was used. For the analysis of categorical data chi square test of significance was used. The *p* value for statistical significance was set at 0.05.

Results

In this prospective randomised study, sixty female patient aged 18-45 years with ASA I/II fitness undergoing gynaecological laparoscopic surgeries were studied to evaluate haemodynamic changes and post operative complications, after securing airway with proseal or ETT. Surgeries like Diagnostic laparoscopy with dilatation and curettage, Diagnostic laparoscopy with hysteroscopy, Laparoscopic tubal ligation were included. Demographic profile data of patient (age, weight, height) in both groups were comparable and the difference was statistically insignificant (> 0.05). In group P, PLMA was inserted in the first attempt in 27 patients and in second attempt in 3 patients. All patients in the group E were intubated in the first attempt itself. Insertion of PLMA was achieved in group P in 14.30 ± 2.45 seconds and patients in the group E were intubated in 14.57 ± 2.04 seconds. There was no significant difference between the two groups associated with time taken for insertion. (*p* value = 0.07) (Table 1).

Table 1: Insertion of Device

	Group P	Group E	*p* value
No. of attempts of insertion	I = 27 patients II = 3 patients	I = 30 patients II = 0 patients	0.07
Time taken for insertion of device (seconds)	14.30 ± 2.45	14.57 ± 2.04	0.07
Time taken for RT insertion (seconds)	11.0 ± 3.05	12.40 ± 1.47	0.02

Table 2: Comparison of heart rate between two groups

Heart Rate	Group P Mean ± SD	Group E Mean ± SD	*p* Value	Significance
Baseline	81.23 ± 2.97	80.67 ± 4.0	0.53	Not Significant
1 Min After Insertion	83.0 ± 2.72	87.07 ± 1.68	<0.001	Significant
3 Min After Insertion	81.90 ± 2.74	86.0 ± 1.64	<0.001	Significant
5 Min After Insertion	81.17 ± 2.45	85.0 ± 1.64	<0.001	Significant
Before Pneumoperitoneum	80.73 ± 1.92	81.0 ± 2.71	0.66	Not Significant
After Pneumoperitoneum	84.20 ± 2.05	85.0 ± 1.70	0.10	Not Significant
After Removal of Device	82.0 ± 1.68	87.0 ± 1.46	<0.001	Significant

Comparison of Vital Parameters

Relatively lower values were observed in group P than group E at 1 min (p <0.001), 3 mins (p <0.001), 5 mins (p <0.001) and after removal of device (p <0.001), which were found to be statistically significant (Table 2).

Relatively lower values were observed in group P than group E at 1 min (p value <0.001), 3 mins (p value <0.001), 5 mins (p value <0.001) and after removal of device (p value <0.001) and were found to be statistically significant. The difference between the groups at baseline (p = 0.42), before pneumoperitoneum (p value = 0.38) and after pneumoperitoneum (p value =0.07) were not found to be statistically significant (Table 3).

Relatively lower values were observed in group P than group E at 1 min (p <0.001), 3 mins (p <0.001), 5 mins (p <0.001) and after removal of device (p <0.001) which were statistically significant. The differences between the groups at baseline (p = 0.81), before pneumoperitoneum (p = 0.25) and after pneumoperitoneum (p = 0.20) were found to be statistically not significant (Table 4).

Relatively lower values were observed in group P than group E at 1 min (p <0.001), 3 mins (p <0.001), 5 mins (p <0.001) and after removal of device (p <0.001). The differences between two groups were found to be statistically significant. The difference between the groups at baseline (p = 0.33), before pneumoperitoneum (p = 0.17) and after pneumoperitoneum (p = 0.56) were not found to be statistically significant (Table 5 and Graph 1).

Comparison of $EtCO_2$ between two groups

There was no significant difference in $EtCO_2$ in both the groups at baseline (p = 0.66) 1 min (p = 0.63), 3 mins (p = 0.10), 5 mins (p = 0.77) after insertion of device, before pneumoperitoneum (p = 0.07)

Table 3: Comparison of systolic blood pressure between two groups

Systolic Blood Pressure	Group P Mean ± SD	Group E Mean ± SD	p Value	Significance
Baseline	123.97 ± 1.65	123.60 ± 1.86	0.42	Not Significant
1 Min After Insertion	128.07 ± 1.72	133.03 ± 1.29	<0.001	Significant
3 Min After Insertion	127.0 ± 1.25	132.0 ± 1.53	<0.001	Significant
5 Min After Insertion	125.03 ± 1.79	129.93 ± 1.43	<0.001	Significant
Before Pneumoperitoneum	123.87 ± 1.59	124.37 ± 2.65	0.38	Not Significant
After Pneumoperitoneum	128.73 ± 1.61	129.4 ± 3.75	0.07	Not Significant
After Removal of Device	125.0 ± 1.64	130.0 ± 1.64	<0.001	Significant

Table 4: Comparison of diastolic blood pressure between two groups

Diastolic Blood Pressure	Group P Mean ± SD	Group E Mean ± SD	p Value	Significance
Baseline	84.0 ± 1.64	83.87 ± 2.54	0.81	Not Significant
1 Min After Insertion	86.13 ± 1.57	90.97 ± 1.52	<0.001	Significant
3 Min After Insertion	85.0 ± 1.25	90.0 ± 1.64	<0.001	Significant*
5 Min After Insertion	84.0 ± 1.33	88.0 ± 1.64	<0.001	Significant*
Before Pneumoperitoneum	83.90 ± 1.24	84.8 ± 3.42	0.25	Not Significant
After Pneumoperitoneum	87.0 ± 1.53	87.87 ± 4.56	0.20	Not Significant
After Removal of Device	85.0 ± 1.53	90.07 ± 1.48	<0.001	Significant

Table 5: Comparison of Airway Pressure between two groups

Airway Pressure	Group P Mean ± SD	Group E Mean ± SD	p Value	Significance
On Insertion	21.60 ± 1.99	22.27 ± 1.63	0.16	Not Significant
On Pneumoperitoneum	25.27 ± 1.99	24.60 ± 1.49	0.14	Not Significant
10 Min After Pneumoperitoneum	26.73 ± 2.13	25.80 ± 1.51	0.06	Not Significant
On Release of Pneumoperitoneum	21.67 ± 1.49	22.80 ± 1.51	0.07	Not Significant

and after pneumoperitoneum (p = 0.40) and after removal of the airway device (p = 0.06) (Graph 2).

Comparison of SpO_2 between two groups

There was no significant difference in SpO_2 in both the groups at baseline (p = 0.99) 1 min (p = 0.73), 3 mins (p = 0.17), 5 mins (p = 0.18) after insertion of device, before pneumoperitoneum (p = 0.09) and after pneumoperitoneum. (p = 0.40) and after removal of the airway device (p = 0.58) (Graph 3).

There was no significant difference in the mean airway pressure observed between both the groups at insertion (p = 0.16), on pneumoperitoneum (p = 0.14), 10 min after pneumoperitoneum (p = 0.06) and on release of pneumoperitoneum (p = 0.07) (Table 6 and Graph 4).

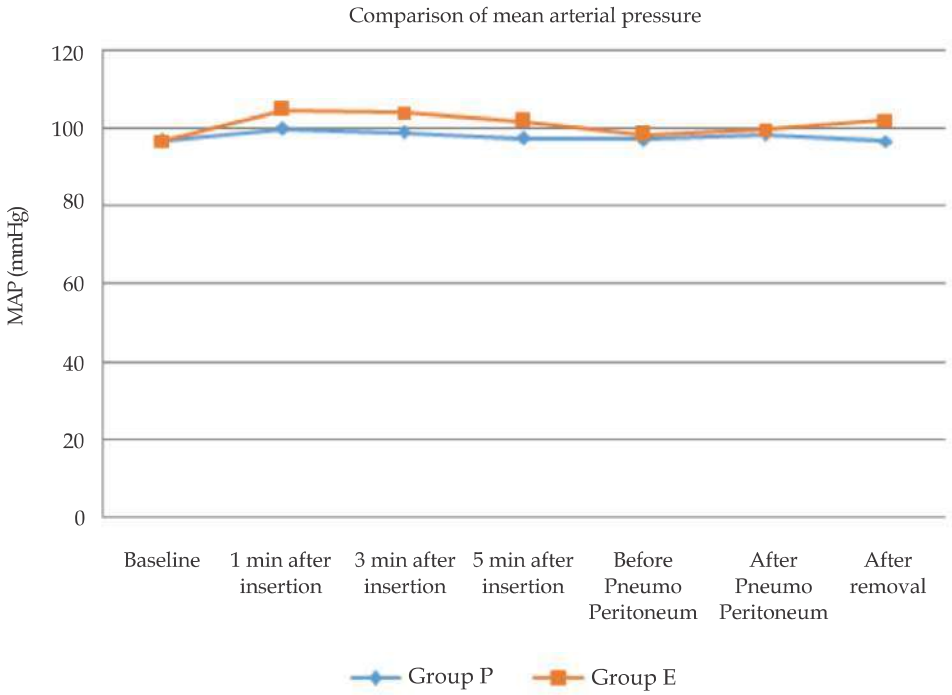
Incidence of perioperative complications in both groups

The difference in the perioperative complications observed between both the groups was statistically significant, with cough (p = 0.04). blood on device (p = 0.03) and sore throat (p = 0.04) lesser in P group.

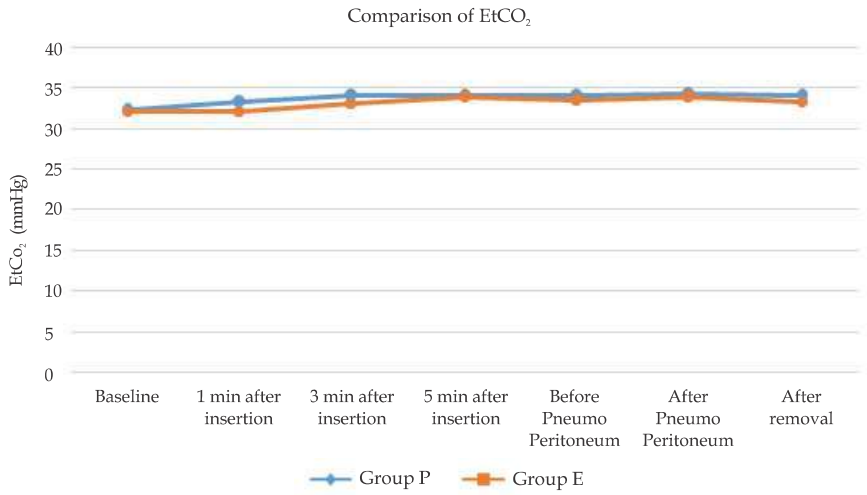
Pie-Charts Showing Incidence of Perioperative Complications (Chart 1)

Table 6: Incidence of perioperative complications in both groups

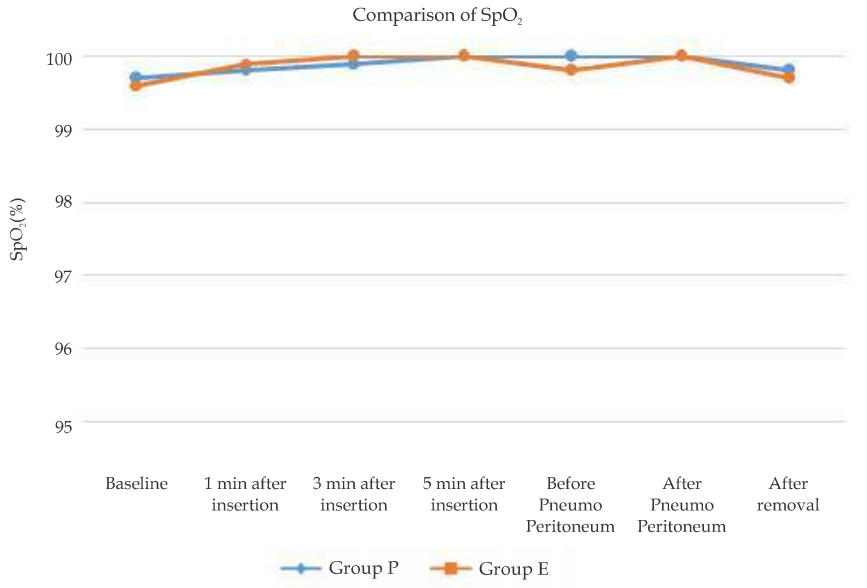
Complications	Group P		Group E		p Value
	Number	%	Number	%	
Cough	2	6.6	5	16.6	0.04
Laryngospasm	0	0	0	0	
Bronchospasm	0	0	0	0	
Blood on device	1	3.3	3	10	0.03
Aspiration	0	0	0	0	
Sore Throat	2	6.6	6	20	0.04



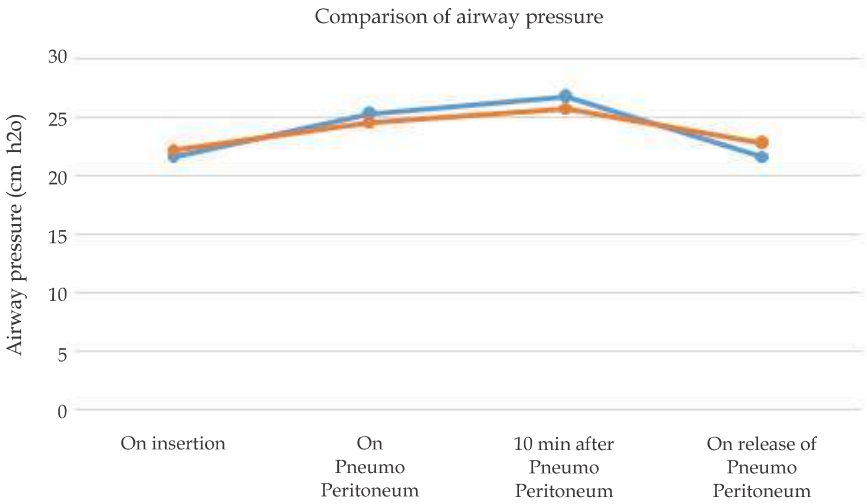
Graph 1: Showing comparison of mean arterial pressure in both the groups



Graph 2: Showing comparison of $EtCO_2$ in both the groups



Graph 3: Showing comparison of SpO_2 in both the groups



Graph 4: Showing comparison of airway pressure in both the groups

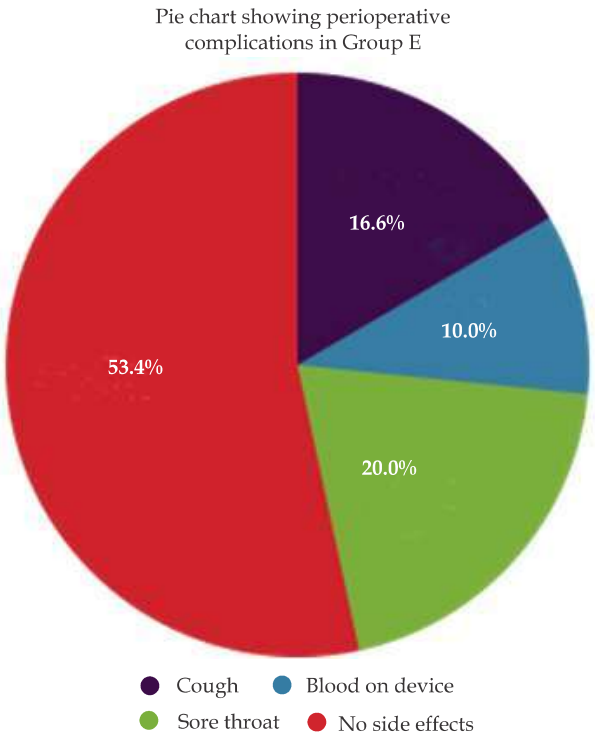


Chart 1: Showing Incidence of Perioperative Complications

Discussion

Laparoscopic surgeries are associated with pneumoperitoneum leading to increase in intra-abdominal pressure and intra-thoracic pressure, thus ETT is considered as the gold standard.[11] Endotracheal tube insertion is associated with haemodynamic changes due to laryngoscopy[12] and postoperative disadvantages like sore throat, cough and hoarseness.[13]

Reid and Brace were the first to describe the haemodynamic changes in response to laryngoscopy and intubation.[14] On direct laryngoscopy, in less than 5 seconds these changes begin, peak at 1-2 minutes and return towards the baseline in 5 minutes.[15]

The Proseal LMA is a new entrant in the family of LMA with added features over the classic LMA. Reduced risk of gastric insufflations, regurgitation and aspiration are associated with usage of PLMA. Maltby *et al.* postulated that laparoscopic surgery was an important test for evaluating the effectiveness of SADs use in positive pressure ventilation.[8]

After approval from the Hospital research and ethics committee, a prospective, randomized, comparative study was conducted on 60 adult female patients undergoing gynaecological laparoscopic surgeries under general anesthesia.

After applying the inclusion and exclusion criteria, the patients were randomly divided into two groups of 30 each using a computer generated random number table.

Our aim was to compare the efficacy and safety of Proseal laryngeal mask airway with portex endotracheal intubation in sixty adult female patients undergoing gynaecological laparoscopic surgeries under general anesthesia.

Ease of Insertion of Device

The first attempt success rate in group P was 90% and 100% at the second attempt, while all patients in the group E were intubated in the first attempt itself. The difference between the two groups was statistically not significant. (p value = 0.07).

In a study conducted by M Misra *et al.*, The Pro-seal LMA and tracheal tube: A comparison of events at insertion of the airway device, showed 100% success at insertion in both the groups with success rate at first attempt 88% for PLMA and 100% for ETT. For PLMA, first/ second/ third attempt observed in 44/ 4/ 1 patients respectively.[7]

Time Taken for Insertion of Device

The mean time taken for insertion of device was 14.30 ± 2.45 seconds in group P and 14.57 ± 2.04 seconds in group E. The difference between the two groups was not statistically significant (p value = 0.07).

The findings observed in our study were concurrent with the study done by Avhad V, Comparison of safety and efficacy of Proseal laryngeal mask airway v/s endotracheal intubation for gynaecological diagnostic laparoscopy, in 2017. The mean time taken for insertion was 18.2 ± 5 seconds for PLMA and 25.6 ± 8.1 seconds in ETT, which was statistically significant. Successful PLMA insertion at first attempt in 35 patients and second attempt in 5 patients, while for ETT, 33 patients in first and 7 patients in second attempt and the difference was observed to be insignificant.[16]

Comparison of Vital Parameters

Comparison of heart rate between the two groups

Values observed in group P were relatively lower than group E at 1 min (p <0.001), 3 mins (p <0.001), 5 mins (p <0.001) and after removal of device (p <0.001), which were found to be statistically

significant.

The differences observed between two groups at baseline (p = 0.53) before peritoneum (p = 0.66) and after pneumoperitoneum (p = 0.10) were not found to be statistically significant.

In 2005, P Shroff, S Kamath in their randomized comparative study between the proseal laryngeal mask airway and the endotracheal tube for laparoscopic surgery observed mean heart rate values with PLMA as 98 ± 22 per min, 104 ± 16 per min, 98 ± 17 per min, 98 ± 17 per min, and 92 ± 13 per min and with ETT as 99 ± 10 per min, 102 ± 11 per min, 99 ± 13 per min, 109 ± 13 per min and 103 ± 7 per min at pre induction, after induction, before and after pneumoperitoneum and postoperatively respectively. The difference observed between the two groups as regards to the mean heart rate was statistically significant.[1]

Comparison of Systolic Blood Pressure:

Values observed in group P were relatively lower than group E at 1 min (p value = 0.42), 3 mins (p value <0.001), 5 mins (p value <0.001) and after removal of device (p value <0.001) were found to be statistically significant.

The differences observed between the groups at baseline (p = 0.42), before pneumoperitoneum (p value = 0.38) and after pneumoperitoneum (p value =0.07) were not found to be statistically significant.

Kalpana Shah, in 2017, studied the Proseal laryngeal mask airway as an alternative to standard endotracheal tube in securing upper airway in the patients undergoing beating-heart coronary artery bypass grafting. In this study, it was seen that all the hemodynamic parameters in PLMA group were better than in the ETT group and this finding was statistically significant (p < 0.05).[10]

Comparison of Diastolic Blood Pressure

Values observed in group P were relatively lower than group E at 1 min (p <0.001), 3 mins (p <0.001), 5 mins (p <0.001) and after removal of device (p <0.001) which were statistically significant.

The difference between the groups at baseline (p = 0.81), before pneumoperitoneum (p = 0.25) and after pneumoperitoneum (p = 0.20) were not found to be statistically significant.

Sharma B, Sahai C *et al.*, conducted a study of 100 consecutive cases of laparoscopic surgery. Their results were pre-induction DBP 77.82 ± 12.27 mm of Hg reached to 79.21 ± 16.35 mm of Hg at 1 min and 82.01 ± 16.45 mm of Hg at 5 mins after insertion of PLMA (p-value 0.053), which was statistically significant. They concluded that there were minimum haemodynamic responses to insertion of Proseal Laryngeal Mask Airway.[6]

Comparison of Mean Arterial Pressure

Values observed in group P were relatively lower than group E at 1 min (p <0.001), 3 mins (p <0.001), 5 mins (p <0.001) and after removal of device (p <0.001). The difference between two groups was found to be statistically significant.

The difference between the groups at baseline (p = 0.33), before pneumoperitoneum (p = 0.17) and after pneumoperitoneum (p = 0.56) were not found to be statistically significant.

Saraswat N, Kumar A *et al.* compared Proseal LMA and Endotracheal tube in patients undergoing laparoscopic surgeries under general anesthesia. They concluded statistically significant increase in heart rate and mean blood pressure was observed 10 seconds after intubation and persisted till 3 mins after intubation and also during extubation in the ETT group. However statistically significant increase in PLMA group was seen only 10 seconds after insertion.[2]

Comparison of End Tidal Carbon Dioxide

There was no significant difference in $EtCO_2$ in both the groups at baseline (p = 0.66), 1 min (p = 0.63), 3 mins (p = 0.10), 5 mins (p = 0.77) after insertion of device, before (p = 0.07) and after pneumoperitoneum (p = 0.40) and after removal of the airway device (p = 0.06).

Comparison of SpO_2

There was no significant difference in SpO_2 in both the groups at baseline (p = 0.99) 1 min (p = 0.73), 3 mins (p = 0.17), 5 mins (p = 0.18) after insertion of device, before (p = 0.09) and after pneumoperitoneum (p = 0.40) and after removal of the airway device (p = 0.58).

In 2003, Maltby JR *et al.* conducted a study, LMA – Classic and LMA – Proseal are effective alternatives to endotracheal intubation for gynaecologic laparoscopy. They observed the differences between LMA-C/PLMA and ETT groups for SpO_2, SpO_2 and $PETCO_2$ were not statistically significant before or during peritoneal insufflations.[8]

Airway pressure

There was no significant difference in the mean airway pressure observed between both the groups at insertion (p = 0.16), on pneumoperitoneum (p = 0.14), 10 min after pneumoperitoneum (p = 0.06) and on release of pneumoperitoneum (p = 0.07).

In 2012, Handan G *et al.* studied comparison of haemodynamic and metabolic stress response caused by endotracheal tube and Proseal LMA in laparoscopic cholecystectomy. They concluded that although the peak airway pressures increased after carboperitoneum in both the groups, it did not disrupt ventilation and the difference was not statistically significant.[5]

Perioperative complications

The difference in the perioperative complications observed between both the groups was statistically significant, cough (p = 0.04), blood on device (p = 0.03) and sore throat (p = 0.04) with values higher in E group.

In 2003, Maltby JR *et al.* observed a ten-fold difference in frequency of coughing at removal of the ETT 87% vs LMAC/PLMA 8%, which was statistically significant (P < 0.001). Sore throat 24 hr postoperatively was more common with ETT than LMA-C/PLMA (28% vs 17%; p < 0.05). No patient reported numbness of the tongue or other morbidity attributable to the airway devices.[8]

Conclusion

Proseal LMA was found to be better than ETT in the following ways:

1. Lesser haemodynamic response on insertion and removal.
2. Reduced postoperative complications like cough, blood on device and sore thoat.

The ease and time taken for insertion of Proseal Laryngeal Mask Airway is comparable to endotracheal tube. It provides similar efficiency like ETT for controlled positive pressure ventilation.

Thus the Proseal LMA offers a safe and effective airway management alternative in patients undergoing gynaecological laparoscopic procedures under general anesthesia with controlled ventilation with the added advantage of minimal haemodynamic response and postoperative complications.

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