Research Paper

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A Comparison of Proseal LMA with Endotracheal Intubation in Laparoscopic Tubal Ligation

Medical Science

KEYWORDS : Proseal laryngeal mask airway, tracheal intubation, Laproscopic tubal ligation surgery.

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ABSTRACT

Laproscopic procedures have become increasingly popular over last two decades. Our aim is to compare proseal LMA with endotracheal intubation in laproscopic tubal ligation.

Methods: - This study was done on 60 patients undergoing LTL of aged 20-40 year and weight 40-70 kg belonging to ASA I & II. Group A patient were inserted PLMA. Group B patient were inserted ETT.

In all patient general anaesthesia was given after adequate relaxation. PLMA was inserted in group A & ET was inserted in group B. We studied & compare the time taken for insertion, ease of insertion, hemodynamic responses to insertion & removal of both the airway devices were recorded at after insertion, 5,10,15, 20 minute, and after removal & 5 minutes and complication.

INTRODUCTION

Laparoscopic procedures have become increasingly popular over last two decades because of small incisions, reduced post operative pain, early ambulation, and shortened hospital stay. They are often being performed on an outpatient basis or require only an overnight admission thus demanding extreme caution in the anaesthetic technique.

The disadvantages of tracheal intubation with rigid laryngoscopy are hemodynamic responses and damage to the oropharyngeal structures during insertion. Postoperative sore throat is also a serious concern. Tracheal intubation with high volume low pressure portex cuffed tube not provides an effective glottis seal and so not a full proof technique against aspiration of gastric contents. Over a period of time, new airway device have been added to anaesthesiologist's armamentarium. [1]

The PLMA offers several advantages over the CLMA. It provides a better glottis seal at lower mucosal pressures and isolates the alimentary tract from the respiratory tree. It is superior to the CLMA for providing positive pressure ventilation.[2]

This study is therefore undertaken to compare PLMA with standard tracheal tube for the ease of insertion, haemodynamic changes and complications occurring during general anaesthesia in young healthy female patients undergoing laparoscopic tubal ligation surgeries.

Aims & Objectives: -

To compare PLMA with ET portex cuffed tube intubation in 60 patients undergoing Lap TL under general anaesthesia with respect to

1) Time taken for insertion.
2) Ease of Insertion.
3) To compare hemodynamic changes during insertion & removal of devices.
4) Complication.

Material And Methods.

60 Female patients aged 20-40 years and weighing 40-70 kg belonging to ASA grade I-II scheduled for elective laparoscopic tubal ligation surgical procedure were included in this study.

Exclusion Criteria: -

Patients with known difficult airway, cervical spine disease, BMI>35kgm^{2,} , mouth opening < 2.5cm, Risk of aspiration (Full stomach, hiatus hernia, GERD) oral pathology, pharyngitis, URTI were excluded from the study.

Technique: -

60 patients undergoing Lap TL were randomized into two groups.

Group A patients were inserted Proseal LMA device.

Group B patients were inserted Endotracheal cuffed tube.

Premedication: -

All patients were premedicated with :
Inj Ondansetrone 4 mg I.V
Inj. Glycopyrrolate 0.2 mg I.V
Inj. Fentanyl 1ug/Kg I.V

Induction: -

Inj. Sodium Pentothal 6mg/kg (2.5%) I.V
Inj. Succinyl Choline 2mg/kg I.V

Device inserted: -

Group A:

PLMA size was selected according to the weight of patients. Before induction cuffed was fully deflated and posterior surface was lubricated with 2% xylocaine jelly and inserted through the oral cavity using the digital technique.

Group B:

Patients were intubated with Endotracheal portex cuffed tube of appropriate size by standard technique.

Ease of Insertion: -

Group A: Proseal LMA, size ¾

Easy insertion = Insertion at first attempt with no resistance.
Difficult insertion = Insertion with resistance or at second attempts.
Failed insertion = Insertion not possible.

Group B: Endotracheal Intubation, Size: 7/7.5

Grade I: No extrinsic manipulation of larynx required.
Grade II: External manipulation of larynx required.
Grade III: Intubation possible with stylet.
Grade IV: Failed intubation.

(Grade I & II – Easy, Grade III – difficult, Grade IV-Failure)

Monitoring:

Pulse/min
Blood pressure in mmHg

$EtCO_2$
ECG monitoring

SPo_2
Haemodynamic changes

Heart rate, Blood Pressure, $EtCO_2$, oxygen saturation were recorded at various interval

- Pre operative
- Before insertion
- After insertion
- 5,10,15,20 minutes after removal and 5 minutes after removal.

Maintenance:-
Anaesthesia was maintained by Assisted/controlled ventilation with oxygen (50%) + Nitrous Oxide (50%) + isoflurane + Inj. Succinyl chloride (10 mg) intermittently I.V.

Position:-
Lithotomy with 15-20^{o} Trendelenburg position was given.

Extubation:-
At the end of surgery anaesthetic agents discontinued. When the patients awaken proseal LMA/ Tracheal tube were removed after full deflation of cuff and thorough oral suction. After removal of proseal LMA or tracheal extubation, 100% O_2 was administered through a face mask.

Any adverse events (regurgitation, aspiration, bronchospasm, laryngospasm, Desaturation<95% $SPo_{2)}$ were documented. All the patients were questioned after 6 hr for sore throat or hoarseness of voice.

OBSERVATION & RESULTS
All the quantitative data were analysed using unpaired t-test. The result were expressed as Mean+SD. 'P' value <0.05 was taken as statistically significant and 'P' values <0.001 were taken as highly significant.

Table – 1
DEMOGRAPHIC DATA

Variable	Group A (M+SD)	Group B (M+SD)
Age (Yrs)	29.2+3.925	30.06+5.08
Height (cm)	144.56+3.3	149.97+3.75
Weight (Kg)	49.03+2.67	50.46+3.78

There were no significant difference between both groups regarding to Age, Height and Weight.

EASE OF INSERTION
Ease of insertion is more with Group A (86.66%) than Group B (76.66%).

PULSE RATE

Time	Group A (M+SD)	Group B (M+SD)	P Value
Before Insertion	91.06+10.22	90.26+10.74	0.80
After Insertion	96.86+9.13	108.53+12.04	0.00
After Removal	91.8+7.49	104.33+10.82	0.00

Pulse rate was increased in Group B (ETT) group, while there is no change in Group A (PLMA). Pulse rate reached baseline after 5 minutes of removal in group A (PLMA) while in group B (ETT) it was not reached to base line.

MEAN ARTERIAL BLOOD PRESSURE

Time	Group A (M+SD)	Group B (M+SD)	P Value
Before Insertion	91.02+7.78	90.94+5.67	0.0956
After Insertion	94.77+8.49	105.72+10.19	0.00
After Removal	90.86+5.86	103.73+6.16	0.00

After insertion MAP was more increased in group B (105.72+10.19) as compared to group A (94.77+8.49).

Complications:-
Airway trauma was noticed in 16.6% of patients in PLMA group & 23.3% of patient in ETT group. Cough & sore throat were more with group B (ETT) as compared to group A (PLMA) & vomiting & hoarseness were noted with group B (ETT).

DISCUSSION
They produce less hemodynamic effect and also provide "Hands Free" ventilation. They are of great value in anaesthetizing professional singers, public speakers etc as they are less traumatic as compared to endotracheal tube.

Proseal LMA is a new entrant to the family of LMA with some added featured over the classic LMA such a low mucosal pressures and drain tube to vent out air and regurgitant material from the stomach. They produce lower hemodynamic instability during placement as they avoid stimulating the infraglottic structures. There is ease insertion and smooth awakening.

This study was conducted with an aim of comparing PLMA and ETT as an airway device in 60 patients undergoing laparoscopic tubal ligation.

Our study included 60 adult female patients' belongings to ASA grade I and II between the ages of 20-40 years, weighted between 40-70 kg posted for laparoscopic tubal ligation under general anaesthesia.

There was no significant difference in demographic data between the two groups. The mean age was 29.2+3.92 years in group A &30.06+5.08 years in group B. The mean weight was 49.03+2.67 in group A &50.46+3.78 in group B.

The mean time taken for successful placement was 18.1 s &18.8 s for group A and group B respectively. There were no statistically significant differences between two groups and p value is 0.307 which is >0.05.

Namita saraswat et al [1] found that Mean time for successful placement was 15.77s and 16.93 s for PLMA and ETT groups.

Ease of insertion was more with PLAM (86.66%) than ETT (76.66%) .There was difficult insertion in 23.33% of patients in group B. There were no failed insertion in any patients of both the groups.

Dr. Bimla sharma et al[2] found that PLMA was easy to insert with high success rate.

Namita saraswat et al [1] found that easy to insert with higher success rate (86.67%) in first attempts of PLMA than ETT (83.33%).

The hemodynamic responses were lower for the placement of PLMA than ETT.The mean pulse rate increased from baseline value of 91.06+10.22 to 96.86+9.13 and 90.26+10.74 to 108.53+12.04 after the placement of PLMA and ETT intubation respectively. The mean pulse rate returned to the baseline value after 10 minutes in group B.The The mean pulse rate was not changed after removal of PLMA in group. This is because laryngoscopy was not required or removal of PLMA

The MAP increased from a baseline value of before insertion 91.02+7.78 to 94.77+8.49 and 90.94+5.67 to 105.72+10.19 after the placement of PLMA and ETT and 89.55+6.23 to 90.86+5.86 and 94.08+6.22 to 103.73+6.16 after removal of PLMA and ETT. The increase in the MAP was statistically significant (P<0.05) in both groups after insertion 5,10 min. and after removal. And value reached baseline after 5 minutes of removal in group A (PLMA)and this value is statiatically significant(p<0.05).

Abdel El-Ganzouri et al[3] found that PLMA has hemodynamic advatages over ETT during intubation that was due to increased sympathetic responses to laryngoscopy and tracheal intubation.

Y Lim et al [8] studied and they found that hemodynamic responses to placement and removal were lower for the PLMA then ETT group.

PLMA has hemodynamic advantages over ETT during intubation that was due to increased sympathetic responses to laryngoscopy and tracheal intubation.

Jaya lavani et al[10] There was no significant difference in Spo_2 and $EtCO_2$ level recorded at different time interval.

The incidence of airway trauma was more noticed in ETT group (23.3%) than in PLMA group (16.6%).Cough and sore throat are more with group B (ETT) as compared to group A (PLMA). Vomiting and Hoarseness were noted with group B (ETT) only.

Meltby et al [4] also reported that the incidence of cough was higher after extubation.

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