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ORIGINAL ARTICLE

Comparison of Frequency of Complications of i-Gel and Laryngeal Mask Airway Supreme™ in Laparoscopic Cholecystectomy

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ABSTRACT

Aim: To compare the frequency of complications of i-gel versus laryngeal mask airway supreme™ (LMA Supreme) in laparoscopic cholecystectomy.
Study Design: Randomized Controlled Trial
Place and Duration of Study: Department of Anesthesia, Jinnah Postgraduate Medical Institute Karachi from 16th September 2019 to 15th March 2020.
Methodology: One hundred and fifty four patients having gallstones ≤5 in numbers (size <2cm) on ultrasound for >6 months requiring cholecystectomy and planned for elective list under general anesthesia of age ranges from 25-55 years of both gender were included. Patients with known or predicted difficult airway, oropharyngeal pathology, cervical spine fracture, GERD and hiatus hernia were excluded. In group A, airway was secured with i-gel while in group B, airway was secured with laryngeal mask airway supreme™. In all patients, anesthesia was given by one consultant anesthetist (at least 3 years 0f post-fellowship experience). All patients were followed by the researcher in the first 24 hours for presence or absence of dysphagia and sore throat.
Results: The mean age was 34.78±6.30 years in group A and 34.38±6.37 years in group B. Majority of the patients 119 (77.27%) were between 25 to 40 years of age. There were 54 (35.06%) males and 100 (64.94%) were females with male to female ratio of ratio of 1:2.9. The complications of i-gel vs laryngeal mask airway supreme™ were found to be as follows; dysphagia on 0.0% vs 6.49% (p-value = 0.023) and sore throat in 3.90% vs 20.78% (p=0.001).
Conclusion: The frequency of dysphagia and sore throat is less after i-gel use in laparoscopic cholecystectomy as compared to laryngeal mask airway supreme™.
Keywords: General anesthesia, I-gel, Dysphagia

INTRODUCTION

General anesthesia (GA) is a reversible condition induced by a drug which includes some specific traits such as: unconsciousness, analgesia and amnesia with stability of respiratory, autonomic and cardiovascular systems.[1] Respiratory system maintenance is an important part of GA. Several devices are available for airway supply during surgeries, called supraglotic airway devices (SAD).[2]

A specific type of SAD, i-gel has been frequently used for general anesthesia. The I-gel is made up of thermoplastic elastomer, reduce high cuff pressure and does not involve cuff inflation.[3] Another type of SAD is laryngeal mask airway (LMA) that has upper esophageal sphincter.[4] Laryngeal mask airway is an airway device that retains airway open during unconsciousness or surgery. Laryngeal mask consists of a tube which is inserted into windpipe through patient's mouth, provides an airtight closure of glottis. It is most commonly used worldwide during numerous surgeries by anesthetists.[5]

Significant data is available regarding SAD efficacy and safety during various surgical procedure.[5-7] In laparoscopic cholecystectomy (LC), changes in airway mechanics occurred, results in elevated respiratory pressure that sometime exceed from the pressure of the device which is being used. Assessing the effectiveness of SAD during laparoscopic surgeries is still a big challenge for medical technicians.[8-10]

There is paucity of data regarding this issue from developing countries especially from Pakistan. The aim of this study is to highlight the implications associated with the use of i-gel and LMA during laparoscopic cholecystectomy.

This study will provide statistics of local population in order to provide recommendations and to reduce morbidity.

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MATERIALS AND METHODS

In a randomized controlled-trial performed at Department of Anesthesia, Jinnah Postgraduate Medical Institute Karachi from 16th September 2019 to 15th March 2020 and after permission from IRB enrolled 154 patients who were admitted for laparoscopic cholecystectomy. They were divided in two groups; group A, i-gel was used for securing the airway and group B, airway was secured with laryngeal mask airway supreme™ (LMA Supreme). All patients having gallstones ≤5 in numbers (size <2 cm) on ultrasound for >6 months requiring cholecystectomy and planned for elective list under general anesthesia, age 25-55 years of either gender and ASA status I & II were included. Patients with a BMI value as >35 kg/m^2, history of known or predicted difficult airway, oropharyngeal pathology, cervical spine fracture or instability and gastroesophageal reflux disease, hiatus hernia and restricted mouth opening less than 2.5 centimeters were excluded. In all patients, anesthesia was given by one consultant anesthetist (at least 3 years of post-fellowship experience). All patients were followed by the researcher in the first 24 hours for presence or absence of dysphagia and sore throat as per-operational definition. This all data (age, gender, ASA status (I/II), place of living (rural/urban), dysphagia and sore throat (present/absent)) was recorded. Analysis of statistics was done by using SPSS version 22. The dysphagia and sore throat of the two study groups were compared by Chi Square test and P≤0.05 was considered as significant.

RESULTS

Patients of group A had a mean age as34.78±6.30 years and in group B was 34.38±6.37 years. Majority of the patients 119 (77.27%) were between 25-40 years (Table 1). There were 54 (35.06%) were male and 100 (64.94%) were females with male to female ratio of ratio of 1:2.9 (Fig.1). Distribution of patients according to ASA status is shown in Table 2. Mean duration of

surgery was 27.31±5.63 minutes (Table 3).Distribution of patients according to place of living is shown in Table 4. The complications of i-gel vs laryngeal-mask-airway supreme™ were found to be as follows; dysphagia on 0.0% vs 6.49% (p=0.023) and sore throat in 3.90% vs 20.78% (p=0.001) respectively (Table 5).

Table 1: Age distribution for both groups (n=154)

Age (years)	Group A (n=77)		Group B (n=77)		Total (n=154)	
	No.	%	No.	%	No.	%
25-40	59	76.62	60	77.92	119	77.27
41-55	18	23.38	17	22.08	35	22.73
Mean±SD	34.78±6.30		34.38±6.37		34.42±6.32	

Table 2: Distribution of patients according to ASA status (n=154)

ASA	Group A (n=77)		Group B (n=77)		Total (n=154)	
	No.	%	No.	%	No.	%
I	42	54.55	37	48.05	79	51.30
II	35	45.45	40	51.95	75	48.70

Table 3: Distribution of patients according to duration of surgery (n=154)

Duration (minutes)	Group A (n=77)		Group B (n=77)		Total (n=154)	
	No.	%	No.	%	No.	%
≤30	50	64.94	52	67.53	102	66.23
>30	27	35.06	25	32.47	52	33.77
Mean±SD	27.38±5.72		27.29±5.60		27.31±5.63	

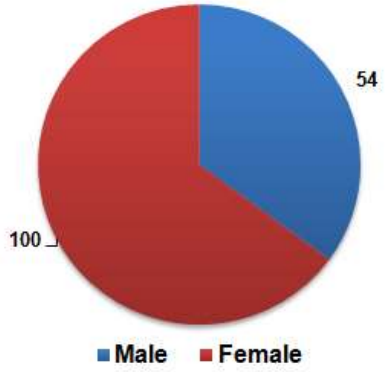
Table 4: Distribution of patients according to place of living (n=154)

Living	Group A (n=77)		Group B (n=77)		Total (n=154)	
	No.	%	No.	%	No.	%
Rural	36	46.75	37	48.05	73	47.40
Urban	41	53.25	40	51.95	81	52.60

Table 5: Comparison of frequency of complications in both groups

Complication	Group A (n=70)		Group B (n=70)		P value
	No.	%	No.	%	
Dysphagia					
Yes	-	-	5	6.49	0.023
No	77	100.0	72	93.51	
Sore throat					
Yes	03	3.90	16	20.78	0.001
No	74	96.10	61	79.22	

Fig.1 Distribution of patients according to Gender (n=154)



DISCUSSION

In the last few decades, concerns regarding respiratory management have been resolved with the introduction of several SAD in replacement of tracheal intubation. Several advantages have achieved with the invention of numerous supraglottis airway devices such as: stable hemodynamics, easy insertion and decreased airway morbidity.[11-18]

In current study, mean age of study participants was 34.78±6.30 and 34.38±6.37 years in group A and group B, respectively. Females were present more in number (64.94%) as compared to the males (35.06%). Various complications were observed with the use of I-gel and LMA with sore throat (20.78%) reported to be the main outcome.[10]

Ragazzi et al[17] highlighted that sore discomfort was frequently observed in LMA group in contrast to I-gel group.[20] On the other hand, study reported by Mukadder et al[21] reports few cases of sore throat, similar findings were also documented.[22,23] Structure of i-gel reducing the chances of neurovascular compression, thus decreasing the occurrence of respiratory complications.[24,25]

Chen et al[26] compared the results of LMA and i-gel. They described that both these devices showed similar results. Contrary, another study[27]proved that sore throat incidence was greater in i-gel group as compared to LMA. Throat discomfort was observed in 26%I-gel study group whereas 6.6% reported in LMA group. Similarly, Ragazzi et al[23] and Park et al[7] reported the similar results with less sore throat and chances of blood stain on device in LMA as compared to i-gel device.

CONCLUSION

The frequency of dysphagia and sore throat is less after I-gel use in laparoscopic cholecystectomy as compared to laryngeal mask airway supreme™. So, we recommend that I-gel should be used routinely in every patient undergoing surgery under general anesthesia in order to complications.

Conflict of interest: None to declare

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