ORIGINAL ARTICLE

A Comparative Evaluation of LMA Proseal and I-Gel in Pediatric Patients

Apoorva, Samriti Gulati, Anita Vig, Anupriya Gupta

Abstract

This study was aimed to compare the hemodynamic changes with LMA Proseal and I-gel in pediatric patients and to look for complications related to these devices. Setting: Tertiary care hospital. 60 children of either sex aged 2-10 years belonging to ASA status 1 and 2, undergoing elective short duration surgery under general anesthesia. I-gel is comparable to LMA Proseal of the same size in pediatric patients with respect to hemodynamic parameters, ease of insertion, ease of insertion of gastric tube and post- operative complication. Time taken to insert the device is the only parameter that is statistically significant with I-gel taking less time (9.37±1.13s vs 11.00±2.07s). We conclude that I-gel is comparable to LMA Proseal of the same size in pediatric patients with respect to hemodynamic parameters, ease of insertion, ease of insertion of gastric tube and post-operative complications. Time taken to insert the device is the only parameter that is statistically significant with I-gel taking less time. I-gel is equally safe, efficient and cost-effective in children as compared with LMA Proseal. Therefore, it should be more frequently used in children in both elective surgeries and in procedure requiring anesthesia outside the operating room.

Key Word

LMA Proseal, I-gel , Airway, Rresuscitation

Introduction

As anaesthesiologists, we have a spectrum of airway devices starting from facemask to endotracheal tube to secure the airway and maintain its patency. In recent years, introduction of Supraglottic airway devices has resulted in a paradigm shift in airway management during anaesthesia from a two-choice (face mask vs. ETT) to a three-choice (face mask vs. SAD vs. ETT) model.

After several years of material and design modification, the laryngeal mask airway (LMA) was created and marketed in late 1987.

The laryngeal mask airway has formed a very important part of the airway management in adults and now in children. It is now an important part of the routine and emergency paediatric airway management including use in difficult airway and neonatal resuscitation. Earlier the design of paediatric LMA was a scaled down version of the adult LMA and not anatomically designed for children. Moreover, the range of available sizes was inadequate. Since then, improvements in the design and availability of suitable sizes together with favourable clinical experiences have led to the increasing use of LMA in children (1).

Proseal LMA is reusable with gastric drain port, bite block and a patented introducer and has been used for spontaneous/controlled ventilation, laparoscopies, neonatal and paediatric resuscitation and as a conduit for tracheal intubation in children since 2005 (2). It was the first 2 nd generations SGA with a drain port that allows passage of a drain tube through the oesophagus up to the stomach for emptying fluids/gases so that the intra-gastric volume and pressure are low and the incidence of regurgitation is reduced. The Proseal LMA has been the most reliable and thus most preferred SGA in children (3).

In January 2007 the I-Gel Supraglottic airway was unveiled at the Winter Meeting of the Association of Anesthetists in central London. This very different looking

From the: Deptt. of Anaesthesia Govt. Medical College Jammu. (J&K) -India

Correspondence to : Dr Samriti Gulati, Professor & Head, Department of Anaesthesia , Govt. Medical College Jammu. (J&K)-India

airway with the 'gel' like feel is the culmination of twenty years of hard work by the inventor Dr Muhammed Aslam Nasir and Intersurgical. The mask of the I-Gel is designed anatomically to ?t the perilaryngeal and hypopharyngeal structures without the use of an in?atable cuff. This Supraglottic airway without a cuff has potential advantages including easier insertion and use, minimal risk of tissue compression, stability after insertion (i.e. No position change with cuff in?ation) and manufacturing advantages in terms of simplicity and decreased cost. The I-Gel is designed as a single patient use, disposable device (Levitan RM, Kinkle WC). (4).

Although it has all the advantages and more stability, only a few studies have been conducted to compare it with Proseal LMA in children.We conducted the present study to see which LMA, Proseal or I-Gel, is superior in children.

Materials and Methods

The present study was conducted in the department of Anesthesiology and Intensive care, Government Medical College and Associated Hospitals, Jammu. After obtaining approval of the Ethical Committee of the Institute, the present study included 60 children of either sex aged 2 - 10 years belonging to

status 1 and 2 undergoing elective short duration pediatric surgery (1-2 h) under general anesthesia.

A preanesthetic check-up was done one day prior to surgery and included a detailed history, thorough physical & systemic examination along with routine and relevant investigations.

Exclusion Criteria:

Expected difficult airway due to trismus, limited mouth opening.

-Patients with upper respiratory tract symptoms.

-Patients at risk of gastroesophageal regurgitation.

-Patients for laparoscopic surgeries.

Patients Groups:

Patients were randomly allocated into 2 groups. Each group consisted of 30 patients:

Group I: I-gel group

GroupII: Proseal LMA group

An informed written consent of their parents / guardians was taken. Children were kept fasting for a period of 6 hours preoperatively.

Patients were then premedicated 30 minutes before induction of anesthesia with dexmedetomidine 1mcg/kg body weight, reconstituted from its intravenous formulation. It was divided into 2 aliquots of equal volume and administered in both the nostrils. Patients were then shifted to the operation theatre. In the operation theatre, standard monitors i.e. Pulse oximeter, Non-invasive blood pressure monitor and Electrocardiography monitor, were connected to the child. The degree of sedation was determined. Intravenous line was secured. Glycopyrrolate in the dose of 5mcg/kg was given intravenously. For analgesia, inj. Tramadol 1mg/kg with inj.ondansetron 0.1 mg/kg was given intravenously to the patient.

After preoxygenating the child with 100% oxygen for 3minutes, induction was carried out with propofol 2mg/kg body weight. After ensuring bag and mask ventilation, neuromuscular blockade was achieved with atracurium 0.5mg/kg body weight IV. Patient was ventilated for 3 minutes with halothane 1 %, nitrous oxide and oxygen (50:50) to allow full jaw relaxation. Adequate size supraglottic airway device was inserted in "sniffing the morning air position". Size of the device was selected according to the body weight of the patient.

I-GEL

10-25 kg: 2 size

25-35 kg: 2.5 size

PROSEAL LMA

10-20 kg: 2 size

20-30 kg: 2.5 size

Patients were allocated to either of the two groups randomly. Both the devices were inserted by the anesthesiologist experienced in using supraglottic airway devices. Device was kept ready on the machine after lubrication with a water based lubricant. I-gel or PLMA was introduced by firmly grasping the device such that the cuff outlet was facing the chin of the patient and the device was gently guided along the hard palate until definitive resistance was felt. The cuff was then inflated according to the size of PLMA i.e. 10 ml : 2 size 14ml : 2.5 size.

After connecting the pediatric breathing circuit to the I-gel or PLMA, appropriate placement and ventilation was determined by chest wall movement, auscultation of breath sounds and lack of gastric insufflations. The presence of gastric insufflations was determined by epigastric auscultation. The device was then fixed from maxilla to maxilla. Maintenance of anesthesia was continued with halothane, nitrous oxide (66%) and oxygen (33%). Maintenance doses of 0.1 mg/kg atracurium were given for neuromuscular blockade and ventilation was done with tidal volume of 10ml/kg and 14-18 /min respiratory rate.

The device was inserted in the sniffing position. The ease of insertion was graded as very easy, easy or difficult by the attending anesthesiologist. The following maneuvers were to be included

(I) Cehin lift (II) Jaw thrust (III) Head extension and (IV) Neck flexion.

Table 1. Comparison of Size of the Device Used in Both the Groups

Size	I-Gel Group		Proseal Group		P Value
	Frequency	%	Frequency	%	
2	25	83.3%	20	66.7%	
2.5	5	16.7%	10	33.3%	0.136
Total	30	100%	30	100%	

1. If the device was inserted without any manipulation it was graded as 'very easy'.
2. If one manipulation was required, it was graded as 'easy'.
3. Any difficulty more than that was graded as 'difficult'.

The number of attempts were to be noted and it was considered a failure if the insertion was not successful in

Table 2. Comparison of Number of Attempts in Both the Groups

Number of Attempts	I-Gel Group		Proseal Group		P Value
	Frequency	%	Frequency	%	
1	30	100.0%	29	96.7%	
2	0	0.0%	1	3.3%	1.000
Total	30	100%	30	100%	

Table 3. Comparison of Ease of Insertion in Both the Groups

Ease	I-Gel Group		Proseal Group		P Value
	Frequency	%	Frequency	%	
Difficult	0	0.0%	1	3.3%	
Easy	3	10.0%	6	20.0%	0.313
Very easy	27	90.0%	23	76.7%	
Total	30	100%	30	100%	

Table 4. Comparison of Mean time of Insertion (in seconds) in Both the Groups

	I-Gel Group (n=30)		Proseal Group (n=30)		P Value
	Mean ± SD	Min - Max	Mean ± SD	Min - Max	
Time Taken	9.37 ± 1.13	8 - 12	11.00 ± 2.07	9 - 20	<0.001

Table 5. Comparison of Ease of Insertion of Gastric tube in Both the Groups

Ease of insertion of gastric tube	I-Gel Group		Proseal Group		P Value
	Frequency	%	Frequency	%	
Very Difficult	0	0.0%	0	0.0%	
Difficult	0	0.0%	2	6.6%	
Easy	5	16.7%	8	26.7%	0.197
Very easy	25	83.3%	20	66.7%	
Total	30	100%	30	100%	

Table 6. Comparison of Complications at the Time of Removal of the Device in Both the Groups

	I-Gel Group (n=30)		Proseal Group (n=30)		P Value
	Frequency	%	Frequency	%	
Blood Staining	2	6.7%	4	13.3%	0.671
Trauma	0	0.0%	0	0.0%	-
Hoarse cry	0	0.0%	0	0.0%	-
Any other	0	0.0%	0	0.0%	-

Table 7. Comparison of Complications 24 Hours After Surgery in Both the Groups

	I-Gel Group (n=30)		Proseal Group (n=30)		P Value
	Frequency	%	Frequency	%	
Sore Throat	3	10.0%	4	13.3%	1.000
Hoarseness	0	0.0%	0	0.0%	-
Dysphonia	0	0.0%	0	0.0%	-
Dysphagia	0	0.0%	0	0.0%	-
Any Other	0	0.0%	0	0.0%	-

three attempts. The patient was to be then excluded from the study and trachea to be intubated conventionally. Insertion time was noted. It was defined as the time between picking up the device and obtaining an effective airway which was determined by chest wall movements and auscultation of breath sounds.

After correct insertion of the device was confirmed, well lubricated appropriate size gastric tube was inserted through the drain tube i.e. 8 Fr for size 2 and 10 Fr for size 2.5 airway device. Correct gastric tube placement was assessed by suction of fluid or detection of injected air by epigastric stethoscopy. Ease of gastric tube placement was graded subjectively i.e 1-very easy. 2- easy. 3- difficult . 4- very difficult, by a single anaesthesiologist.

After the surgery, neuromuscular blockade was antagonized with 0.05 mg/kg neostigmine and 0.01 mg/kg of glycopyrrolate. Device was removed once the child was fully awake or easily arousable. The supraglottic airway was observed for any blood staining. The mouth, lips and tongue were inspected for any evidence of trauma. The child was followed up 24 hours after the surgery to elicit the history of sore throat, hoarseness, dysphonia, dysphagia or any other complication.

The following parameters were recorded in our study:

Before administering anesthesia:Baseline parameters including heart rate, systolic blood pressure, diastolic blood pressure, mean arterial pressure, oxygen saturation and degree of sedation were noted.

At the time of insertion

LMA Proseal and I-GEL size

Number of attempts made

Ease of insertion

Hemodynamic responses

Ease of insertion of gastric tube

At the end of the procedure, parameters noted were:

1. Blood staining on the proseal /I-gel
2. Mouth , tongue , lip , hard palate trauma
3. Discomfort in the throat
4. Any other complication

24 hours after surgery, parameters noted were:

1. Sore throat
2. Hoarseness
3. Dysphonia
4. Dysphagia
5. Any other complication

Data Analysis: At the end of the study, all the data so collected was compiled and analyzed using appropriate tests. Inter group comparison was done by paired t-test. A p-value of less than 0.05 was considered significant.

Results

A total of 60 patients belonging to ASA Grade 1 and 11, of either sex, between the age of 2-10 years, who were scheduled for short duration pediatric surgeries, were included in the study. After obtaining an informed written consent, patients were randomly allocated to one of the two groups of 30 patients each-

Group P: use of Proseal Laryngeal Mask Airway (PLMA)

Group I: use of I-Gel

The following observations were noted from the study:

Both the groups were comparable in terms of age, sex, ASA statusand weight distribution and the difference was not statistically significant.

For the two groups hemodynamical study was based onmonitoring of heart rate, SBP, DBP and SPO2.

All these were noted on following parameters and the results were comparable and statistically insignificant.

1. Baseline Parameters
2. Before Insertion
1. 1 Minute after insertion
2. 3 Minutes after insertion
3. 5 Minutes after insertion
4. 10 Minutes after insertion
5. In group I, size 2 I-gel was used in 25 patients (83.3%) and size 2.5 i-gel was used in 5 patients (16.7%).In group P, size 2 Proseal was used in 20

patients (66.7%) and size 2.5 Proseal was used in 10 patients (33.3%).

6.Both the groups were comparable with respect to the size of the device used and the results were statistically not significant.

7.In group I, insertion of the device was successful after first attempt in all the patients (100%).In group P, insertion of the device was successful after first attempt in 29 patients (96.7%) and after second attempt in 1 patient (3.3%).

8.The difference was statistically insignificant.

9.In group I, insertion was very easy in 27 patients (90.0%) and easy in 3 patients (10.0%).In group P, insertion was very easy in 23 patients (76.6%), easy in 6 patients (20.0%) and difficult in 1 patient (3.3%).

10.Ease of insertion of the device was based on the number of manipulations needed.The difference in the ease of insertion was not statistically significant.

11.In group I, mean time taken to insert the device was 9.37±1.13 seconds.

12.In group P, mean time taken to insert the device was 11.00±2.07 seconds.

13.The difference was statistically significant.

14.In group I, insertion of the gastric tube was very easy in 25 patients (83.3%) and easy in 5 patients (16.7%).In group P, insertion of the gastric tube was very easy in 20 patients (66.7%), easy in 8 patients (26.7%) and difficult in 2 patients (6.6%).The difference in the ease of insertion of gastric tube was not statistically significant. The ease of insertion of gastric tube was graded by a single anesthesiologist in order to eliminate observer bias.

15.In group I, blood staining of the device was seen in 2 patients (6.7%).

16.In group P, blood staining of the device was seen in 4 patients (13.3%).

17.The difference in the blood staining of the device was not statistically significant.There was no trauma, hoarse cry or any other complication after removal of the device.

18.In group I, sore throat was present in 3 patients (10.0%).

19.In group P, sore throat was present in 4 patients (13.3%).

20.The difference was not statistically significant.

21.There was no hoarseness, dysphonia, dysphagia or any other complication 24 hours after surgery in both the groups.

Discussion

Control and protection of airway are fundamental considerations in anaesthesia. Many anaesthesiologists consider tracheal intubation to be the gold standard for airway management. However, the gold loses its glitter when situations such as failed intubation, 'can't ventilate, can't intubate', patient refusal of awake fiberoptic assisted intubation, complications following extubation are considered. Also one of the main disadvantages associated with tracheal intubation has been the exaggerated or enhanced pressor response

Thus, over a period of time, new airway devices have been added to the anesthesiologist's armamentarium to tackle these technical problems and this ultimately led to the development of supraglottic airway devices in the form of Laryngeal Mask Airway (LMA) in 1981.The I-Gel supraglottic airway was unveiled I-gel mirrors the shape, softness and contours accurately with the perilaryngeal anatomy to create the perfect fit. This innovative concept means that no cuff inflation is required. The I-Gel works in harmony with the patient's anatomy so that compression and displacement trauma is significantly reduced or eliminated (5). A supraglottic airway without a cuff has potential advantages including easier insertion and use, minimal risk of tissue compression, stability after insertion (i.e. No position change with cuff in?ation) and manufacturing advantages in terms of simplicity and decreased cost. The I-Gel is designed as a single patient use; disposable device (4). The size 4 I-gels were used during cardiac arrest in a study conducted by Soar, J (6). The I-Gel was inserted in less than 10 seconds from opening the packet. The author was able to ventilate the patients lungs easily using a self-inflating bag-valve device connected to the I-Gel. The patient's lungs were ventilated asynchronously during chest compressions with no leak. There was no evidence of aspiration. In addition, this case report confirmed the training of five non-anesthetic trainee doctors to insert the I-Gel and ventilate an anesthetised patient after minimal instruction. All these trainees rated I-Gel easier to insert than a laryngeal mask airway.

Insertion Characteristics

In this study, we found that both PLMA and I-Gel were successfully inserted in all the patients and there was no case of failed insertion in any of the two groups

In PLMA group, 23 patients (76.7%) had very easy insertion, in 6 patients (20%) insertion was easy and in 1 patient (3.3%) insertion was difficult.

In I-Gel group, 27 patients (90%) had very easy insertion and in 3 patients (10%) insertion was easy.

The difference in the ease of LMA insertion was statistically insignificant (p=0.313). The results from our study were similar to those obtained in the study conducted

by Goyal R, *et al* (7), who found that the insertion was easy in majority of the cases in all groups. Similar results were obtained in the study conducted by Dwivedi Y, *et al.* (8), in which insertion was assessed as very easy in all three groups i.e. I-gel, Proseal and Classic LMA. But the ease of insertion was more with group I (29/30) than with group P (25/30) with $p<0.05$ in a study conducted by Singh I, *et al* (9). The difference in the ease of insertion was also significant in a study conducted by Chauhan G, *et al* (10).

The higher number of difficult insertions in the PLMA group may be explained by the relative anatomy of the paediatric oro-hypopharynx and the bowl of the PLMA. The larger bowl of the PLMA is more difficult to insert in the mouth and is more likely to fold over. For the most part, a relatively large tongue, a floppy epiglottis, a cephalad and more anterior larynx and a frequent presence of tonsillar hypertrophy may disturb PLMA insertion in pediatric patients. However, the I-Gel is easier to insert because of a non-inflatable cuff and smaller bowl.

In our study, we found that PLMA and I gel were successfully inserted in all patients and there was no failed case of insertion in any of the two groups. First attempt insertion success rate was 96.7% (29 patients) for PLMA and 100% (30 patients) for I gel which was comparable. Second attempt for device insertion was required in 1 patient (3.4%) in group P. The overall insertion rate was 100% for both devices. Attempts of insertion were comparable for both the groups and the difference found was not statistically significant. In contrast to our study, in the study conducted by Chauhan G, *et al* (10), it was found that none of the patients, in either of the groups, required a second attempt for inserting the device.

Our study shows similar results as were obtained by Sharma B, *et al.* (11)who found that both PLMA and i-gel could be inserted in all patients with no failures in either group. In a global study, involving 50 children undergoing ventilation using the I-Gel paediatric device, which was carried out over two months. In that study the success rate for inserting the device was 80% on the first attempt and 100% after two attempts (12). Other studies of using the paediatric I-Gel Karippacheril JG, *et al* (13) and LMAs Shimbori H, *et al.* (14) have shown similar results. But our results were different from the study conducted by Bosley NJ, *et al* (15), who found that the first time insertion rate with proseal was 86% and with i-gel was 78% and there were four failures in the i-gel group and one in proseal group. The lower first attempt insertion success with proseal in our study maybe due to the fact that when deflated, the semi-rigid distal end of the drain tube formed the leading edge of the LMA proseal, which was more rigid as compared to the softer I-gel.

In our study, the time taken to insert I-Gel (9.37±1.13 seconds) was less as compared to the time taken to insert PLMA (11.0±2.07 seconds) and the difference was statistically significant ($p=0.001$). Similar results were obtained in the study conducted by Chauhan G, *et al* (10) who found that the mean insertion time of I-gel (11.12±1.814) was significantly lower than the mean insertion time of Proseal LMA (15.13±2.91). We took lesser time as compared to the study by Gasteiger L, *et al.* (16). The insertion of I-Gel was faster than PLMA as PLMA requires an introducer for insertion whereas I-Gel can be inserted without an introducer. Moreover, as no cuff inflation was required in I-Gel, time taken to achieve an effective airway was less. Similar results were obtained by Jadhav PA, *et al.* (17) who compared the two devices in sixty adult patients undergoing short surgical procedures. But the results of our study were different from the study conducted by (15) who found that the mean insertion time of i-gel was more(17 seconds) as compared to that of proseal (12 seconds) even though it was not statistically significant($p=0.06$). Even in the study conducted by Theiler LG *et al.* (18), I-gel insertion time was more (42±23 seconds) as compared to LMA Supreme.

In the group I, size 2 was used in 25 patients (83.3%) and size 2.5 in 5 patients (16.7%). In the group P, size 2 was used in 20 patients (66.6%) and size 2.5 in 10 patients (33.3%).

Haemodynamic Variables:

Haemodynamic variables (Heart rate, Systolic blood pressure, Diastolic blood pressure and Mean arterial pressure) were recorded at various intervals during the procedure; baseline, before insertion, one minute after insertion, 3 minutes after insertion, 5 minutes after insertion and 10 minutes after insertion.

HR, SBP, DBP and MAP were comparable in both the groups and statistically insignificant. Our results were similar to the results found in studies conducted by Mitra S, *et al.* (19), who compared size 2.5 I-Gel with PLMA in anaesthetized and paralyzed children undergoing elective surgery. Similar results were obtained in the study conducted by Helmy AM, *et al* (20) comparing I-gel with Classic LMA.

Ease of Insertion of Gastric Tubes:

After correct insertion of the device, well lubricated appropriate size gastric tube was inserted through the drain tube. The difference was statistically insignificantand comparable in both the groups. Similar

results were obtained in the study conducted by Saran S, *et al* (21), who found that the ease of insertion of gastric tube was similar in both groups. But the ease of insertion of gastric tube was significantly higher (p=0.001) in the I gel group as compared to the Proseal group in the study conducted by Chauhan G, *et al (*10), Brimacombe J, *et al* (22) described one case of gastric insufflation with LMA Proseal, wherein the tip of the LMA Proseal had folded posteriorly after insertion, resulting in the failure of the gastric tube to perform its intended function.

Complications at the end of the Procedure:

The difference was statistically insignificant and comparable in both the groups. Our study is correlating with the study done by Helmy AM, *et al* (20)in which they concluded that there was no statistically significant difference found between both I-Gel and classical Laryngeal Mask Airway groups with regard to the assessment of patients after removal of the airway device. Similar results were reported by Teoh WH, *et al* (23), which showed that there was blood on removal of two LMA Supremes and one I-Gel. The result of our study was similar to the study done by Singh I, *et al* (9) in which they concluded that the blood staining of the device was more with LMA-Proseal (6/30) than with I-Gel (1/30) but the results were not statistically significant.

Similar results have been obtained Beylacq L, (24) and Karippacheril JG, *et al* (13).

But in contrast to our study, there were statistically significant differences regarding post-operative complications between the two groups in the study conducted by Chauhan G, *et al* (10). There was higher incidence of blood staining of the device in PLMA group as compared to I-gel group (0.045).

In our study, we also compared the complications 24 hours after surgery in the 2 groups. Patients were asked for sore throat, hoarseness, dysphonia and dysphagia 24 hours after the surgery.

Although i-gel exerts less pressure on the perilaryngeal tissue because of its non-inflatable cuff, the incidence of sore throat is comparable in the two groups. This observation in our study is supported by the study of Seet E, *et al* (25) where they stated that a sore throat could be minimal even with supraglottic devices with an inflatable cuff, if the intracuff pressure remained less than 60 cm H2O. Our study is correlating with the study done by Helmy AM, *et al* (20) in which they concluded that there was no statistically significant difference found between both i-gel and classical laryngeal mask airway groups with regard to sore throat , hoarseness and dysphonia 24 hours after the surgery.

Conclusion

Our aim was to study and compare the hemodynamic changes with LMA Proseal and I-gel in these patients and to look for complications related to these devices.

Patients were randomly allocated into 2 groups of 30 patients each. Group I was the I-gel group and Group P was the LMA Proseal group. The following key observations were made in this study:

1. In the present study, the patients were comparable with respect to age, sex, weight, size of the device used and ASA physical status among the two groups.
2. Proseal LMA and I-gel were successfully inserted in all patients and there was no case of failed insertion in any of the two groups. Although I gel was easier to insert with higher success rate in first attempt than proseal LMA but it was not statistically significant
3. There were no statistically significant differences in oxygen saturation (SpO2) and hemodynamic parameters among the two groups.
4. There were no statistically significant differences in the number of attempts and the ease of insertion but the difference in time of insertion was significant between the two groups. Time taken to insert I-gel was significantly less as compared to LMA Proseal.
5. The difference in the ease of insertion of gastric tube was not statistically significant between the two groups.
6. Blood staining was seen in two patients in group I and in four patients in group P at the time of removal Sore throat was present in three patients in group I and four patients in group P, 24 hours after surgery

From our study, we conclude that I-gel is comparable to LMA Proseal of the same size in pediatric patients with respect to hemodynamic parameters, ease of insertion, ease of insertion of gastric tube and post-operative complications. Time taken to insert the device is the only parameter that is statistically significant with I-gel taking less time. I-gel is equally safe, efficient and cost-effective in children as compared with LMA Proseal. Therefore, it should be more frequently used in children in both elective surgeries and in procedure requiring anesthesia outside the operating room.

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