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Comparing Size 3 And 4 I-Gel Supraglottic Airway Devices in Female Patients

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Abstract: The present study aimed to compare the results obtained with size 3 and 4 i-gel supraglottic airway devices in female patients undergoing minor surgery and investigate which is the most suitable size. In the present study, 100 adult female patients undergoing routine minor surgical interventions under general anesthesia were randomized into two groups. For each patient, a standard anesthesia protocol was followed. After adequate anesthetic depth was obtained, the selected i-gel was inserted; the number of insertions, number of attempts, success rate of placement, and hemodynamic response were recorded. Whether the i-gel was placed in an anatomically suitable position was evaluated with a fiberoptic bronchoscope. Then, positive pressure ventilation was administered at a rate that the airway pressure did not exceed 20 mmHg, and oropharyngeal leak pressure was measured. Intraoperative and postoperative complications were also evaluated (after recovery and at the 24th hour). The two groups were similar in terms of the duration of insertion process, number of attempts, oropharyngeal leak pressure, and intraoperative and postoperative complications (after recovery and at the 24th hour) ($p > 0.05$). The increase in mean arterial pressure after induction was found to be higher in the size 4 i-gel group ($p = 0.02$). Successful insertion on the first attempt occurred in 100% of size 3 i-gel patients and 82.5% of size 4 i-gel patients ($p = 0.015$). Optimal insertion verified by fiberoptic bronchoscopic imaging by was seen in 67.3% of patients with size 4 i-gels and 22.5% of patients with size 3 i-gels ($p = 0.00$). Although patients receiving size 4 i-gels had higher hemodynamic response rates than those receiving size 3 i-gels, optimal insertion was higher for those with size 4 i-gels. The rate of successful insertion on the first attempt was 100% for the size 4 i-gels. The fact that the size 3 i-gel insertion success rate was 82.5% and insertion failure rate was 16.2% independent of the weight formulation recommended by the manufacturing firm suggests that when selecting the correct i-gel size, the patient's weight should not be the only basis and criterion.
Keywords: I-gel; supraglottic airway device; fiberoptic bronchoscopy; general anesthesia.

INTRODUCTION

In anesthesia practice, face masks and endotracheal tubes have long been used to achieve adequate ventilation. After various attempts to achieve safe ventilation, supraglottic airway devices (SGADs) have been developed. Laryngeal masks (LMAs) are the prototype of these devices and have been very commonly used in anesthesia practice since their introduction in 1988 [1].

Following LMAs, other new kinds of SGADs have been developed. Characteristics desired in new SGADs are ease of insertion, oropharyngeal leak pressure (OLP) suitable for positive pressure ventilation, lower pharyngeal mucosal pressure than capillary perfusion pressure, uncomplicated air passage to airway, and suitable position for instrumentation [2]. Among these devices, the i-gel (Intersurgical Ltd., Berkshire, UK) SGAD is designed to not exert pressure on laryngeal and pharyngeal anatomic structures. The i-gel device lacks a cuff, has a soft distal part, and a gelatinous, transparent, thermoplastic elastomer structure. It does, however, have a cuff-like thickened structure. The i-gel's other modifications include the following: an additional lumen enabling the

aspiration of abdominal content, an epiglottic rest, and a hard, smooth structure for easier insertion [3].

One of the factors influencing the success and safety of SGADs is device size. Therefore, manufacturing firms have recommended formulations for LMAs and i-gels based on patient weight (for LMA: size 3, 30–70 kg; size 4, 70–90 kg; size 5, > 90 kg; for i-gels: size 3, 30–60 kg; size 4, 50–90 kg; size 5, > 90 kg). A literature review confirmed that gender-based formulations have been tried for selecting the proper size of some SGADs (including classic LMAs), but no previous study has evaluated i-gels.

This prospective randomized controlled study aimed to investigate whether a size 3 or 4 i-gel supraglottic airway device was more suitable for female patients and compare the results obtained in female patients undergoing surgical interventions under general anesthesia.

MATERIALS AND METHODS

The present study was carried out in the operating theater of Selçuk University after approval was obtained from the ethics committee of Selçuk University's Faculty of Medicine. One hundred adult female patients between the ages of 18 and 65 in ASAI-II categories who were operated on for routine minor surgical procedures under general anesthesia and whose airway management was carried out with i-gel SGADs were included in the present study after giving written informed consent. In the present study, the i-gels were inserted by a single anesthetist who had used the device at least 50 times. Exclusion criteria from the study were as follows: a BMI of 35 kg/m^2, presence of a disease affecting the cervical spine, history of airway difficulties, mouth opening < 2.5 cm, Mallampati score of 3–4, symptoms of upper respiratory tract disease within the last ten days, surgical operation on head-neck or thoracoabdominal cavity, surgical procedure in lateral and/or prone position, and conditions resulting in risk of aspiration, such as gastro-esophageal reflux disease or satiety.

A standard anesthesia protocol was followed in all patients. Patients were brought to the operating room without premedication and routine operating room monitoring including ECG, heart rate, non-invasive arterial blood pressure, and pulse oximeter was carried out. Prior to anesthesia induction, patients received preoxygenation with a face mask for two minutes. Anesthesia induction was made with 2–3 mg/kg propofol and 2 mcg/kg intravenous fentanyl. For anesthesia maintenance, remifentanil at 0.3–0.5 µg/kg/min and propofol at 5–7 mg/kg/hour were administered with a 33% oxygen and air mixture. Ventilation with a face mask was continued until the patients were ready for i-gel placement (loss of eyelash reflex, mandibular relaxation, lack of mobility, and development of apnea); when necessary, intravenous propofol at a bolus dose of 0.5 mg/kg was administered until the necessary anesthesia level was achieved.

Patients were randomized into two groups according to the size of the i-gel used (size 3 or 4). Size 3 i-gels were inserted into Group 1 patients, while size 4 i-gels were inserted into Group 2 patients. Ease of insertion, number of attempts for insertion, and duration of insertion process (from the time that the device was first handled for insertion to the provision of an effective airway) were recorded. Ease of insertion was evaluated at three degrees as follows: degree 1–minimal resistance or lack of resistance, degree 2–serious resistance, and degree 3–unable to insert the device without exerting marked force. Whether effective airway and successful ventilation were obtained was evaluated by observing chest mobility in ventilation, capnography tracing, and > 94% stability of SpO2 (peripheric oxygen saturation). A SpO2 value of 94–91% was considered suboptimal oxygenation, and a value < 90% was deemed unsuccessful ventilation. If position correction maneuvers (head flexion, neck extension) were performed after insertion, these were recorded as well.

If ventilation was inadequate after three attempts, three additional attempts with the other size i-gel were allowed. If these attempts were also unsuccessful, using another airway device was left to the physician's discretion. Cases in which alternative airway devices were used were excluded from the study and reported separately.

After the i-gel was successfully inserted, the anatomic position was observed with a fiberoptic bronchoscope, and the appearance was evaluated using a standard scale as follows: stage 4–only vocal cords visible, stage 3–vocal cords and posterior epiglottis visible, stage 2–vocal cords and anterior epiglottis visible, and stage 1–vocal cords not visible [4]. Stages 3 and 4 were considered optimal positions, while stages 1 and 2 were deemed suboptimal positions [4]. Evaluation with a fiberoptic bronchoscope was made within two minutes of the i-gel being inserted and oxygenation provided.

After proper ventilation was supplied, the adjustable pressure limiting (APL) valve was completely closed in order to evaluate the OLP; while the fresh gas flow was administered at a rate of 5 lt/min, airway pressure was recorded when the sound of a leak was heard or when the airway pressure reached a balance or plateaued. Airway pressure was not allowed to exceed 40 cm H_2O during this measurement.

During the operation, until spontaneous respiration was resumed, positive pressure ventilation was administered at a rate that the airway pressure did not exceed 20 mmHg. Tidal volume was set at 6–10

ml/kg, and peak airway pressure at the chosen tidal volume was recorded every five minutes. The frequency of respiration was set to yield an $ETCO_2$ pressure of 30–40 mmHg, and the maintenance of $ETCO_2$ within this range was deemed to indicate successful ventilation. During the anesthesia process, heart rate, mean blood pressure, minimum O_2 saturation (SpO_2), respiration rate, peak airway pressure, percentage of $O_2(FiO_2)$, end-tidal CO_2 pressure, and end-tidal sevoflurane concentration were recorded every five minutes.

Intraoperative complications such as the inability to insert the device, aspiration, regurgitation, hypoxia (SpO_2 < 90%), bronchospasm, airway obstruction, cough, retching, hiccups, and blood stain on the airway device were recorded. After the i-gel was removed at the end of the operation, patients were administered O_2 at 4 lt/min with a mask. Patients were transferred first to a recovery room and then to a clinic when their conditions were stable.

Patients were interviewed face to face just before leaving the recovery room and 24 hours after their operation. Patients discharged on the day of their operation had their second interview via telephone. In these interviews, patients were asked about the presence of sore throat, neck pain, jaw pain, difficulty and pain in speech, dysphagia, (difficulty and pain in swallowing), tongue numbness, nausea and vomiting, and cough. If these symptoms were present, patients were asked to rate them as mild-moderate or severe.

RESULTS

Overall, 100 patients were included in the present study. Size 3 i-gels were inserted into 50 patients, and size 4 i-gels were inserted into 50 other patients. In the size 3 i-gel group, when ventilation problems occurred in three patients, the size 4 i-gel was tried without success. Of these three patients, ventilation was obtained in two with the placement of an LMA commensurate with the weight formulation recommended by the manufacturer; in the third patient, an endotracheal tube was placed due to the failure of the LMA. These three patients were excluded from the study as the i-gel could not be used (Figure 3.1).

In the size 4 i-gel group, ventilation could not be achieved in two patients, and the size 3 i-gel was tried. Upon repeated failure, an LMA of a size commensurate with the recommendation of the manufacturer was tried, and ventilation was obtained. These two patients were excluded from the study as the i-gel could not be used (Figure 3.1).

Insertion was successful in 40 of the 47 patients receiving size 3 i-gels; in the other 7 patients, ventilation was achieved after switching to a size 4 i-gel. These 40 patients comprised Group 1. Insertion was successful in all 48 patients allocated to receive size 4 i-gels. These 48, along with the 7 additional patients transferred from the size 3 i-gel group (55 overall patients) comprised Group 2 (Figure 3.1). Of the seven patients who were ventilated with a size 4 i-gel despite originally being scheduled to receive a size 3 i-gel, five weighed between 50–90 kg, and two weighed >90 kg; hence, they were suitable for size 4 and 5 i-gels according to the weight formulation recommended by the manufacturer.

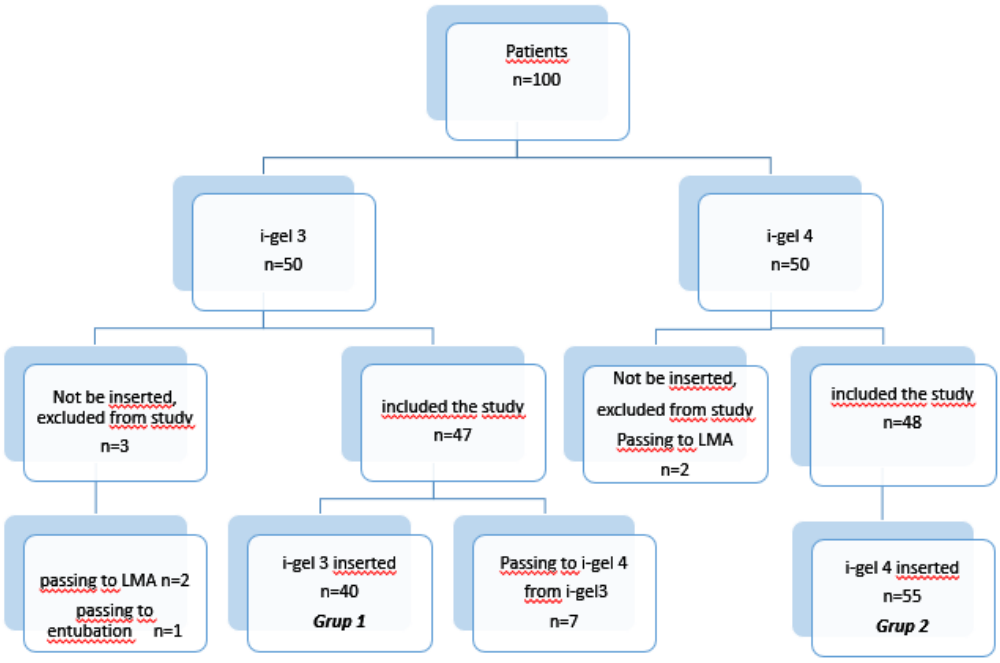

Fig-3.1: Size 3 and size 4 i-gel device groups

When the weight formulation recommended by the manufacturer was considered for Group 1 patients, 7, 28, and 5 patients were suitable for size 3, 4, and 5 i-gels, respectively. In this group, while 33 of 40 patients (82.5%) were supposed to receive size 4 and 5 i-gels, size 3 i-gels were placed successfully. In Group 2, although the manufacturer's weight formulation recommended that 43 of 55 patients were suitable for size 4 i-gels and the remaining 12 patients for size 5 i-gels, size 3 i-gels were inserted successfully (Table 3.1).

Table-3.1: Distribution of patients according to manufacturer's recommended weight formulation

Patient weight (kg)	Group 1 n (%)	Group 2 n (%)	Overall
30–50 (only size 3 i-gel)	*1 (2.5)*	*1 (1.8)*	*2 (2.1)*
51–60 (sizes 3 or 4 i-gel)	*6 (15)*	*10 (18.2)*	*16 (16.8)*
61–90 (size 4 only i-gel)	*28 (70)*	*32 (58.2)*	*60 (63.2)*
>90 (size 5 i-gel)	*5 (12.5)*	*12 (21.8)*	*17 (17.9)*

The distribution of patients according to the manufacturer's recommended weight formulation is demonstrated in Table 3.1. The demographic data of Groups 1 and 2 did not differ. A large proportion of cases underwent endovascular laser ablation surgery.

In Group 1, the i-gel was inserted on the first attempt in all 40 patients (100%), whereas in Group 2, insertion was successful on the first attempt in 46 of 55 patients (83.6%). Therefore, there was a statistically significant difference between Groups 1 and 2 in terms of the number of insertions ($p = 0.015$) (Table 3.2). The difference between the groups in terms of ease of insertion was not statistically significant ($p > 0.05$).

While five patients required position correction in Group 1, seven patients did so in Group 2. This difference between Groups 1 and 2 was not statistically significant ($p > 0.05$).

Stage 3 and 4 fiberoptic bronchoscopic (FOB) appearances, indicating optimal anatomic insertion, were obtained in 9 patients in Group 1 (22.5%) and 37 patients (67.3%) in Group 2. Stages 1 and 2 FOB appearances, indicating suboptimal insertion, were obtained in 31 (77.5%) and 18 (32.8%) patients in Groups 1 and 2, respectively. Stage 3 and 4 FOB appearances were obtained overall in 48.4% of patients and stage 1 and 2 FOB appearances in 51.6% of patients. The difference between Groups 1 and 2 in terms of FOB appearance was statistically significant ($p = 0.00$) (Table 3.2). The difference between Groups 1 and 2 in terms of the duration of insertion was not statistically significant ($p > 0.05$). The difference between Groups 1 and 2 in terms of OLP was not statistically significant ($p > 0.05$).

Table-3.2: Comparison of Groups 1 and 2 in terms of insertion characteristics

		Group 1 n(%)	Group 2 n(%)	
Number of insertions	1st attempt	*40 (100)*	*46 (83.6)*	*p = 0.027*
	2nd attempt	*0 (0)*	*8 (14.5)*	
	3rd attempt	*0 (0)*	*1 (1.8)*	
Fiberoptic bronchoscopic appearance (FOB)	Stage 1	*4 (10)*	*3 (5.5)*	*p = 0.00*
	Stage 2	*27 (67.5)*	*15 (27.3)*	
	Stage 3	*7 (17.5)*	*36 (65.5)*	
	Stage 4	*2 (5)*	*1 (1.8)*	

Stage 1: Vocal cords not visible, Stage 2: Anterior epiglottis and vocal cords visible, Stage 3: Posterior epiglottis and vocal cords visible, Stage 4: Only vocal cords visible

The difference between Groups 1 and 2 in terms of mean arterial pressure after placement (78.85/82.65) was statistically significant ($p = 0.02$) (Table 3.3). The differences between Groups 1 and 2 in terms of SpO_2, tidal volume, peak airway pressure, and heart rate after i-gel placement were not statistically significant ($p > 0.05$).

Table-3.3: Hemodynamics comparison between Groups 1 and 2

	Group 1 Mean ± SD	Group 2 Mean ± SD	
HR after i-gel insertion	*68.6 ± 12.37*	*67.76 ± 11.62*	*p > 0.05*
Mean arterial pressure after i-gel insertion (mmHg)	*78.85 ± 10.06*	*82.65 ± 17.17*	*p = 0.02*

There were no significant differences between Groups 1 and 2 with respect to intraoperative complications, such as regurgitation, aspiration, hypoxia, bronchospasm, airway obstruction, cough, retching, and blood stains ($p > 0.05$). No instances of regurgitation, aspiration, airway obstruction, or retching were reported.

There was no significant difference between Groups 1 and 2 with respect to postoperative complications at the 1st and 24th hour postoperatively for sore throat, neck pain, jaw pain, difficulty in speech, dysphagia, tongue numbness, and nausea and vomiting ($p > 0.05$). The most common complications were sore throat and dysphagia.

DISCUSSION

Among the parameters compared in the present study (i.e., the difference between two groups in terms of successful insertion on the first attempt, optimal FOB appearance, and mean arterial pressure after insertion), the rate of optimal FOB appearance and mean arterial pressure were higher with the size 4 i-gels, while the rate of successful insertion on the first attempt was higher with the size 3 i-gels.

While numerous studies in the literature have compared the i-gel with other SGADs in terms of duration time for insertion, ease of insertion, OLP, peak airway pressure, FOB appearance, and perioperative complications, the present study is the first (to our knowledge) to compare size 3 and 4 i-gels that were inserted irrespective of the manufacturer's recommended weight formulation.

In Group 1, although 33 of 40 patients (82.5%) were outside the weight formulation range recommended for the size 3 i-gel (they were considered suitable for size 4 and 5 i-gels), the size 3 i-gel was inserted successfully into those patients. In this context, the rate of successful insertion independent of weight formulation was 82.5%. Conversely, there were seven patients who could have been ventilated with a size 4 i-gel, although they were originally selected for a size 3 i-gel. Thus, the rate of failed insertion was 16.2% independent of weight formulation. In Group 2, 43 of 55 patients (78.2%) had weights suitable for the size 4 i-gel, which was successfully inserted. Although the weight of the remaining 12 patients (21.8%) was suitable for a size 5 i-gel, a size 4 i-gel was successfully inserted. These results suggest that other parameters besides weight can be considered when selecting the proper size i-gel. One study investigating parameters other than weight was conducted using LMAs. The study compared tongue width and weight as the bases for selecting the proper size LMA; it found that the rate of successful insertion, OLP, and optimal FOB appearance were higher in the groups that used tongue width as the basis for selection. The study concluded that mean tongue width might be an efficient alternative method in men for selecting an optimal LMA [5]. A similar study could also be carried out for i-gels.

The rate of successful insertion on the first attempt was 100% in Group 1 and 83.6% in Group 2. In the literature, the rate of successful insertion was calculated based on the overall success rate for all sizes of i-gel without considering i-gels of different sizes separately; the present study is original in this respect. In both groups, the overall insertion success rate was 90% on the first attempt and 98% on the second attempt. In Richez et al.'s study of size 4 and 5 i-gels that only included female patients, the insertion success rate on the first attempt was 97% [6]. In another study comparing ProSeal LMAs and i-gels in 30 patients with paralysis, the corresponding rate was 100% [7]. One study using only size 4 i-gels had a first attempt insertion success rate of 86% [8], and another, which used size 3 and 4 i-gels in 64 patients with paralysis, had an insertion success rate on the first attempt of 78% [9]. Although one study of 50 patients that compared classic LMAs with i-gels showed only a 54% success rate for insertion on the first attempt, the success rate in the same study increased to 84% on the second attempt after the size was changed [10]. In the present study, the success rate for insertion on the second attempt was 98%.

When comparing ease of insertion, size 3 i-gels were inserted easily (without any resistance) in 85% of patients and size 4 i-gels in 74.5% patients. The overall ease of insertion rate was 78.9% in both groups. In studies using size 3, 4, and 5 i-gels, these rates were found to be 96% [7] and 80% [11], respectively. Polat *et al*.'s study comparing i-gels with LMAs found that insertion was easier with i-gels as their bodies are less flexible than other SGADs [12].

In the present study, duration of insertion was defined as 'the time passing from the first handling of [the] device until ventilation [was] achieved' [13]. The mean duration of insertion was 13.09 sec in Group 1, 14.03 sec in Group 2, and 13.63

sec overall. Among other researchers who used the same duration of insertion definition, Jeon *et al*. reported 26.4 sec, Helmy *et al*. 15.62 sec, and Radaideh *et al*. 15 sec, respectively [14, 15, 11]. Although one study reported a duration of 10 seconds, that study did not include successful ventilation in their definition and duration of insertion was considered to be the time passing from the first handling of the device until correct insertion [16]. Rapid and successful insertion is among the factors influencing the feasibility of SGADs [17]. The efficacy of i-gels in these attributes has led some to suggest that they can be used in cardiopulmonary resuscitation. Based on a study indicating that i-gels can be inserted by inexperienced hands in people and mannequins, Wharton *et al*. proposed that i-gels can be readily used for airway management in cardiopulmonary resuscitation even by inexperienced persons [18].

OLP is an important property for SGADs because it is an indicator of how well the SGAD covers and closes laryngeal structures. High OLP indicates effective SGAD performance in controlled ventilation [19]. Numerous studies have compared i-gels with other SGADs; some reported that i-gels allowed pressure as high as ProSeal LMAs [14], while others reported that ProSeal LMAs were superior in this respect [7]. In the present study, the mean OLP was 27.2 cm H_2O for size 3 i-gels and 25.8 cm H_2O for size 4 i-gels. A study by Shin compared leak pressure in i-gels, proSeal LMAs, and classic LMAs and stated them to be 27 cm H_2O, 30 cm H_2O, and 24 cm H_2O, respectively [9]. Another study of non-paralyzed patients using i-gels found an OLP of 24 cm H_2O [8]. A case series of 2,019 patients reported an OLP of 26 cm H_2O [20], and another study of 71 female patients using size 4 and 5 i-gels reported an OLP of 30 cm H_2O [6]. Our results were congruent with these studies. Komasawa *et al*.'s study demonstrated that due to its thermoplastic structure, higher OLP was reached when the i-gel was heated to 42℃ [19].

In Group 2, stage 3 and 4 FOB appearances (indicating optimal insertion) were found to be significantly higher than in Group 1, while stage 1 and 2 FOB appearances (indicating suboptimal insertion) were significantly higher in Group 1 than in Group 2. Overall, stage 3 and 4 FOB appearances were obtained in 48.2% of patients and stage 1 and 2 FOB appearances in 51.5% of patients. In another study using size 3 and 4 i-gels, stage 3 and 4 FOB appearances were obtained in 50% of patients [21]. Although their device selection was based on weight formulation, the results obtained were similar to those of the present study. The literature also contains studies with higher stage scores, indicating optimal insertion. For example, in Janakiraman *et al*.'s study, stages 3 and 4 were obtained in 90% of patients[10]. Another study that selected devices according to weight formulation obtained optimal FOB appearances in all 100 patients (100%); that study also stated that suboptimal placement was not associated with impaired ventilation [16]. Similarly, in the present study, despite suboptimal placement in 31 patients with size 3 i-gels and 18 patients with size 4 i-gels, no problems were encountered in ventilation, which supports the study mentioned above. In a study using only size 4 i-gels, stage 4 FOB appearances were obtained in 91% of patients. The same study also stated that high rates may indicate that an i-gel can be used as a canal in managing a difficult airway [8]. If used as a canal to manage difficult airways in women, size 4 i-gels may be preferable to size 3, as their optimal positioning is superior.

Since SGADs provide better hemodynamic stabilization than endotracheal intubation and extubation, they are being used more commonly in routine anesthesia practice [22]. In the present study, the mean arterial pressure was higher in Group 2 (79.9 mmHg) than Group 1 (71.9 mmHg). A study comparing hemodynamic responses to i-gels, LMAs, and endotracheal tubes (ETTs) found that cardiovascular alterations occurred the least in the i-gel groups, reportedly because i-gels do not have an inflatable cuff structure [23]. In another study that compared LMAs, SLIPAs (The Streamlined Liner of the Pharynx Airway), and i-gels, the cardiovascular response was also lowest in the i-gel group [24]. Jındal *et al*. attributed the lower rate of hemodynamic changes in i-gels (although both SLIPAs and i-gels have a structure without a cuff) to the fact that SLIPAs have a polypropylene plastic structure that does not conform to anatomic structures [25]. A comparison of LMAs, ProSeal LMAs, and i-gels maintained that all three types of SGADs have similar hemodynamic effects [9]. The results of the present study show that i-gels may be a superior option in female patients with cardiovascular disease for whom the hemodynamic response is the greatest concern.

No patients in the present study presented the intraoperative complications of regurgitation, aspiration, airway obstruction, and retching. Similarly, in Jadhav *et al*.'s study, none of the 30 patients in the i-gel groups suffered regurgitation or aspiration [26]. In the present study, while no patients in Group 1 had any blood stains on their i-gels, blood stains were seen on 5.45% of the i-gels in Group 2. In studies comparing i-gels with other SGADs, this rate was found to vary between 0–10%, and the lower rate found in i-gels was ascribed to the i-gel's soft, expandable structure [27, 28]. Hypoxia occurred in only one patient in Group 1, who also experienced bronchospasm. Bronchospasm occurred in two patients in Group 1 and one patient in Group 2. In a multicenter study of 2,019 patients, laryngospasm/bronchospasm occurred in 1% of patients; the authors stressed that this occurrence was related to superficial anesthesia episodes rather than to the i-gel [20]. The fact that the spasms developed

immediately after the fiberoptic bronchoscope was introduced supports this opinion.

The present study found no significant difference between the two groups in terms of postoperative complications. The most commonly encountered complications were sore throat and dysphagia, both of which were more common in Group 2 than Group 1. Sore throat occurred in 20% of patients with size 3 i-gels, 30.6% with size 4 i-gels, and 25.3% overall. In a study with 100 patients without paralysis using only size 4 i-gels, sore throat occurred in 17% of patients [8]. In a study in which size 4 i-gels were inserted in 82 of 103 patients, this rate was 17% [13]. Another study which inserted size 3 i-gels in 53 of 60 patients had a sore throat rate of 3.5% [21]. The reason why the rate of sore throat was higher in the present study than other studies in the literature may be that this study only included female patients. There is a study in the literature reporting that the incidence of postoperative sore throat is higher in women than in men [29]. In the present study, dysphagia occurred in 17.5% of patients with size 3 i-gels, 32.7% with size 4 i-gels, and 25% overall. In various studies, this rate has been reported by Russo *et al.* Keijzer *et al.* and Amini and Khoshfetrat to be 17%, 4%, and 0%, respectively [16, 30, 21].

CONCLUSION AND RECOMMENDATIONS

The fact that the rate of successful insertion was 82.5% while the rate of failed insertion was 16.2% independent of the weight formulation recommended by the manufacturer suggests that other parameters in addition to weight may be considered when selecting the proper size i-gel.

A size 3 i-gel may be the best choice for female patients because its rate of successful insertion on the first attempt is high (100%) and the hemodynamic response to insertion and postoperative complications occurred infrequently. However, a size 4 i-gel may be preferable (to a size 3 i-gel) in females if it will be used as a canal to manage a difficult airway since optimal positioning is superior with a size 4 i-gel.

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