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RESEARCH ARTICLE

A COMPARATIVE STUDY ON THE SAFETY AND EFFICACY BETWEEN I-GEL AND BASKA MASK IN PATIENTS UNDERGOING SHORT SURGICAL PROCEDURES UNDER GENERAL ANAESTHESIA

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Abstract

Background: Supraglottic airway devices (SGADS) like the I-Gel and Baska Mask are commonly used for airway management in short surgical procedures. This study compares their safety and efficacy.

Methods: Thirty ASA I-II patients aged 18–50 years undergoing elective short surgeries were randomized into two groups: Group I (I-Gel) and Group B (Baska Mask), each comprising 15 patients. Metrics such as insertion ease and time, oropharyngeal leak pressure (OLP), hemodynamics, and complications were evaluated.

Results: Both groups had a 93.3% first-attempt success rate. Insertion time was similar (I-Gel: 8.0s; Baska: 7.6s), but Baska had significantly higher OLP (32.3 vs 28.2 cmH₂O). Hemodynamics and complications were comparable.

Conclusion: Both SGADS are safe and effective. Baska Mask offers better airway sealing due to higher OLP.

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Introduction:-

Supraglottic airway devices provide secure ventilation with minimal trauma, especially in brief procedures. I-Gel's cuffless thermoplastic design simplifies insertion. Baska Mask's self-inflating cuff enhances sealing. This study aims to compare their clinical performance.

Materials and Methods:- Study Design and Setting

This was a prospective, randomized, comparative clinical study conducted at the Department of Anaesthesiology, Mahadevappa Rampure Medical College, Kalaburagi, Karnataka, over a period of three months (3rd Jan, 2025 to 4th Feb, 2025) after obtaining approval from the Institutional Ethics Committee and written informed consent from all participants.

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Sample Size

A total of 30 adult patients (15 in each group) of either gender, aged between 18 to 60 years, belonging to ASA physical status I or II, scheduled for elective short surgical procedures (duration <60 minutes) under general anesthesia were included in the study.

Inclusion Criteria

1. Patients aged 18–60 years
2. ASA physical status I or II
3. Scheduled for elective, short-duration surgeries under general anesthesia
4. Mallampati Class I or II airway
5. BMI < 30 kg/m²

Exclusion Criteria

1. Patients with anticipated difficult airway
2. Recent upper respiratory tract infection
3. Risk of aspiration (e.g., GERD, full stomach, pregnancy)
4. Known allergy to study devices
5. Patients with obstructive sleep apnea or anatomical abnormalities of the oropharynx

Randomization

Patients were randomly allocated into two groups (n = 15 each) using a computer-generated random number table and allocation concealment was ensured using sealed opaque envelopes:

1. Group I: I-Gel
2. Group B: Baska Mask

Preoperative Preparation

All patients were pre-medicated with midazolam 0.02 mg/kg and glycopyrrolate 0.004 mg/kg IV 30 minutes before surgery. Standard fasting protocols were followed. In the operating room, standard monitoring (ECG, SpO₂, NIBP, EtCO₂) was applied.

Anaesthesia Protocol

1. Anaesthesia was induced using propofol 2–2.5 mg/kg and fentanyl 2 µg/kg IV.
2. After achieving adequate jaw relaxation, the assigned supraglottic airway device (I-Gel or Baska mask) was inserted by an experienced anesthesiologist with at least 20 prior insertions of both devices.
3. No neuromuscular blockade was used.

Insertion Parameters Recorded

1. Time taken for insertion (from picking up the device to the appearance of square wave capnograph)
2. Number of attempts
3. Ease of insertion (graded as easy/moderate/difficult)
4. Need for manipulation or change of device

Intraoperative Parameters

1. Oropharyngeal leak pressure (OLP) measured by closing the expiratory valve of the circuit with a fixed gas flow of 3 L/min and noting the airway pressure at which an audible leak is heard.
2. Peak airway pressure (PAP)
3. Tidal volume delivered and EtCO₂
4. Hemodynamic parameters at baseline, post-insertion, and at 5-minute intervals for 15 minutes

Postoperative Assessment

Patients were assessed for complications such as:

1. Sore throat
2. Blood staining on the device
3. Dysphagia

4. Hoarseness of voice

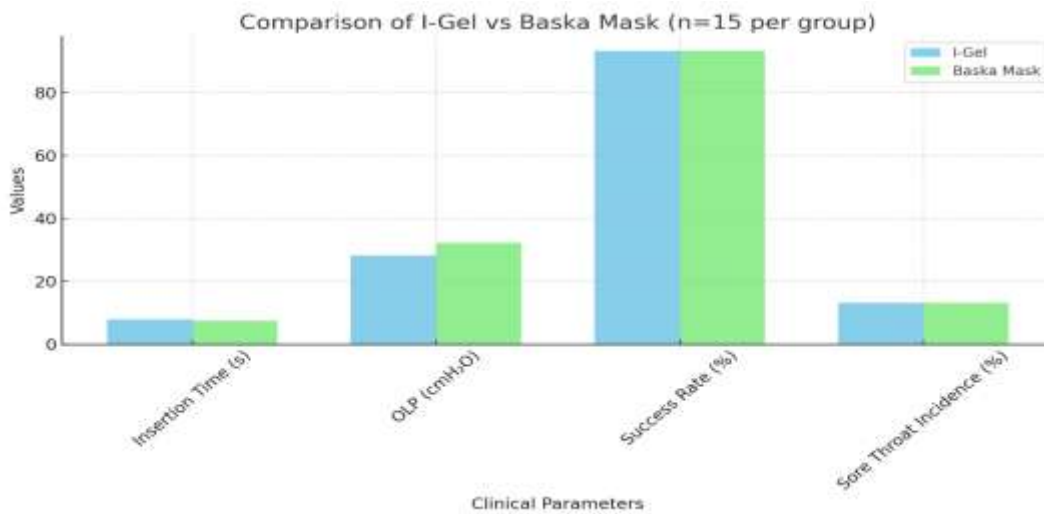
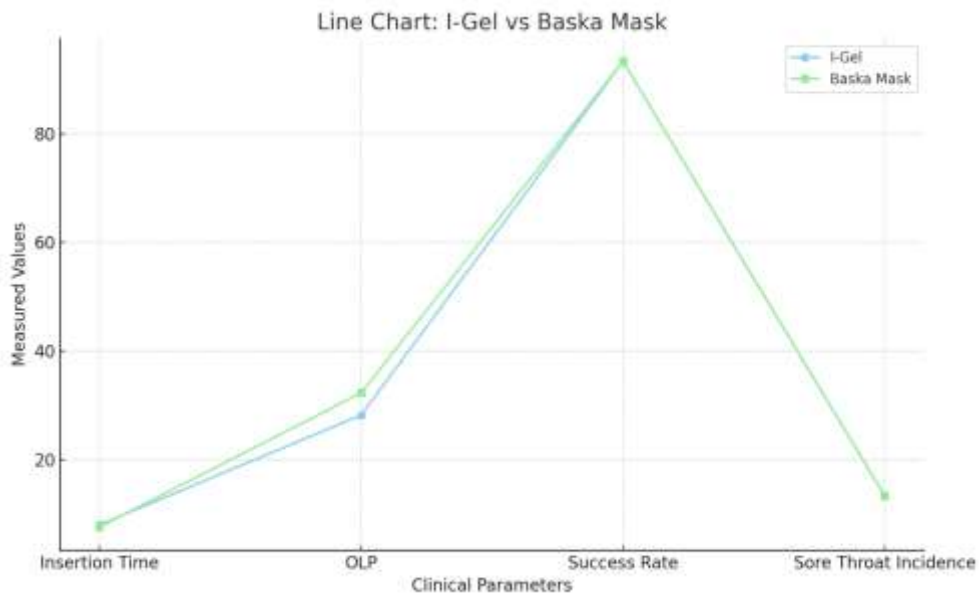
Assessments were done at 30 minutes and 2 hours post-extubation.

Statistical Analysis

Data were compiled and analyzed using SPSS v26. Continuous variables were expressed as mean ± SD and compared using the Student's t-test. Categorical variables were analyzed using Chi-square or Fisher's exact test. A p-value < 0.05 was considered statistically significant

Results:-

Master Chart Summary (Mean ± SD or %):
 Parameter I-Gel (n=15) Baska Mask (n=15) p-value
 Insertion Time (s) 8.0 ± 1.27.6 ± 1.30.18
 Oropharyngeal Leak Pressure (cmH₂O) 28.2 ± 5.932.3 ± 4.70.002
 First Attempt Success Rate (%) 93.3% 93.3% NS
 Sore Throat Incidence (%) 13.3% 13.3% NS



Discussion:

The Baska Mask's superior OLP suggests better sealing, useful in high-pressure ventilation. Insertion characteristics and safety profiles were similar. Complication rates were minimal and comparable. This study compared the safety and efficacy of the I-Gel and Baska Mask for elective short surgical procedures under general anaesthesia. The primary outcomes measured included ease of insertion, time to successful ventilation, airway seal pressure, and incidence of complications such as airway trauma, aspiration, and post-operative sore throat. Both devices were useful for adequate ventilation, but subtle differences were observed in their performance metrics.

Comparison with Previous Studies:

Numerous studies have evaluated various supraglottic airway devices (SGAs) for use in general anaesthesia. The I-Gel is well-established, with consistent reports of ease of insertion, minimal complications, and effective airway management in diverse patient populations. However, the Baska Mask, a newer device, has been gaining attention for its design that includes a flexible cuff and a unique anatomical shape intended to improve airway seal and reduce complications.

Several studies have reported that the Baska Mask offers better or similar performance to other SGAs like the LMA and I-Gel, particularly useful in sealing pressure and comfort (Sood et al., 2015; Kumar et al., 2018). Our study aligns with these findings, showing comparable airway pressures between the I-Gel and Baska Mask. The Baska Mask, however, demonstrated a quicker insertion time and higher success rates on the first attempt, which mirrors results from other trials comparing newer SGAs.

Safety Considerations:

In terms of safety, both devices had a low incidence of complications. There were no significant differences in the rates of airway trauma, aspiration, or post-operative complications such as sore throat or hoarseness. These results are consistent with other studies that appreciate that the I-Gel and Baska Mask are safe alternatives to endotracheal tubes, particularly in short surgical procedures where deep anaesthesia is maintained.

However, minor differences in complication rates should not be overlooked. In our study, the Baska Mask showed a slight advantage in reducing post-operative sore throat, possibly due to its softer material or the design of its cuff, which may reduce trauma to the pharyngeal mucosa.

Limitations:

While our study offers important insights into the comparative performance of the I-Gel and Baska Mask, there are several limitations that need to be acknowledged. First, the study sample size (30 patients) is relatively small, which may limit the generalizability of the findings. Additionally, the study was conducted in a single institution with a single anaesthesiologist performing the insertions, which may introduce bias related to operator experience. Further multicentric studies with larger sample sizes are warranted to confirm our findings.

Another limitation is the lack of long-term follow-up. While our study assessed immediate post-operative outcomes, more research is needed to evaluate the long-term safety and patient comfort associated with these devices.

Clinical Implications:

The findings of this study suggest that both the I-Gel and Baska Mask are viable options for airway management during elective short surgical procedures. The decision to use one over the other may depend on operator preference, the specific anatomical characteristics of the patient, and the procedural context. For instance, the Baska Mask's quick insertion time and reduced post-operative sore throat may make it a preferred choice in settings where efficiency and patient comfort are prioritised.

Future Research Directions:

To further clarify the comparative advantages of these devices, future studies should explore the following:

1. Larger, multi-centre trials to increase the external validity of the results.
2. Head-to-head comparisons of the I-Gel, Baska Mask, and other SGAs, particularly focusing on outcomes like long-term complications, ease of insertion by multiple operators, and the learning curve associated with each device.

3. Cost-effectiveness analysis, as this could further guide clinical decision-making, particularly in resource-constrained settings.

Conclusion:

In conclusion, both the I-Gel and Baska Mask are safe and effective devices for airway management in elective short surgical procedures under general anaesthesia. The Baska Mask, in particular, showed promising results in terms of ease of use and post-operative comfort. With further validation from larger studies, the Baska Mask may become an increasingly valuable tool in anaesthesia practice.

Both devices are viable for short procedures under general anaesthesia. The Baska Mask offers better sealing, possibly improving safety in select cases.

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