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SCIENTIFIC ARTICLE

Comparison of the i-gel™ and the Laryngeal Mask Airway Classic™ in terms of clinical performance

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KEYWORDS
Laryngeal Mask Airway Classic;
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Abstract
Purpose: The i-gel™ is one of the second generation supraglottic airway devices. Our study was designed to compare the i-gel and the Laryngeal Mask Airway Classic™ with respect to the clinical performance.
Methods: We compared the performance of the i-gel with that of the Laryngeal Mask Airway Classic in 120 patients undergoing urologic surgery during general anesthesia without muscle relaxant with respect to the number of attempts for successful insertion, insertion time, peak airway pressure, incidence of regurgitation, fiberoptic glottic view and postoperative complications. Second generation supraglottic airway devices were inserted by the same anesthesiologist, experienced in use of both devices (>200 uses and first time failure rate <5%). Methylene blue method was used to detect gastric regurgitation.
Results: There was no statistical difference between the two groups regarding the success of insertion of second generation supraglottic airway device ($p = 0.951$). The laryngeal mask insertion time for the i-gel group was significantly shorter than that for the Laryngeal Mask Airway Classic group (11.6 ± 2.4 s versus 13.1 ± 1.8 s [$p = 0.001$]). The fiberoptic glottic view scores for the i-gel group was significantly better than that for the ones for the Laryngeal Mask Airway Classic group ($p = 0.001$). On fiberoptic view, there was no sign of methylene blue dye at any time point in either group. In addition, there was no difference between the groups in patient response regarding the presence of a sore throat when questioned 24 h after the procedure ($p = 0.752$).
Conclusion: Both devices had good performance with low postoperative complications and without occurrence of regurgitation. The i-gel provided a shorter insertion time and a better fiberoptic view than the Laryngeal Mask Airway Classic.

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PALAVRAS-CHAVE
Máscara laríngea clássica;
i-gel;
Dispositivos supraglóticos

Comparação da máscara laríngea i-gel (i-gel™) com a máscara laríngea clássica (LMA-Classic™) em relação ao desempenho clínico

Resumo
Justificativa e objetivo: A i-gel é um dos dispositivos supraglóticos de segunda geração para o manejo das vias aéreas. Nosso estudo foi projetado para comparar a i-gel™ e a máscara laríngea clássica (Laryngeal Mask Airway Classic™, LMA-C) em relação ao desempenho clínico.
Métodos: Avaliamos os desempenhos de i-gel e LMA-C em 120 pacientes submetidos à cirurgia urológica sob anestesia geral sem relaxante muscular. Comparamos o número de tentativas de inserção bem-sucedidas, o tempo de inserção, a pressão de pico das vias aéreas, a incidência de regurgitação, a visibilidade da glote com o uso de fibra óptica e as complicações no pós-operatório. Os dispositivos supraglóticos de segunda geração foram inseridos pelo mesmo anestesiologista com experiência na aplicação de ambos os dispositivos (> 200 aplicações e taxa de falha na primeira tentativa < 5%). O corante azul de metileno foi usado para detectar regurgitação gástrica.
Resultados: Não houve diferença estatística entre os dois grupos em relação ao sucesso da inserção do dispositivo supraglótico de segunda geração (p = 0,951). O tempo de inserção da máscara laríngea no grupo i-gel foi significativamente menor do que no grupo LMA-C (11,6 ± 2,4 segundos *vs.* 13,1 ± 1,8 segundos, p = 0,001). O escore de visibilidade da glote via fibra óptica do grupo i-gel foi significativamente melhor do que o do grupo LMA-C (p = 0,001). Na visão via fibra ótica, sinais do corante azul de metileno não foram observados em qualquer momento em ambos os grupos. Além disso, não houve diferença entre as respostas dos grupos quando perguntados sobre a presença de dor de garganta 24 horas após o procedimento (p = 0,752).
Conclusão: Ambos os dispositivos apresentaram bom desempenho, com poucas complicações no pós-operatório e sem ocorrência de regurgitação. A máscara laríngea i-gel proporcionou um tempo de inserção mais curto e uma visão via fibra óptica melhor do que a LMA-C.

Introduction

Introduction of Laryngeal Mask Airway (LMA Classic™; [LMA-C] Intavent Orthofix, UK), has changed the practice of maintaining safe airway.[1] Since then, supraglottic airway devices (SGADs) have been used successfully and safely in anesthetic practice with various models, and have undergone rapid development.[2,3] Almost all SGADs, including the LMA-C, use an inflatable cuff to wedge into the upper esophagus and provide a perilaryngeal seal.[4] Accurate positioning and adequate pressure and volume within the cuff are fundamental to achieve optimal function, and to reduce the complications. A limiting factor for the use of SGAD is the lack of airway protection from gastric contents.[5,6] Several SGADs are now marketed that are specifically designed to reduce the risk of aspiration. The i-gel™ (Intersurgical Ltd., UK) is one of the second generation SGADs produced for this purpose. The cuff of the i-gel is constructed from medical-grade thermoplastic elastomer (styrene ethylene butadiene styrene) which does not require inflating the cuff or adjusting intra-cuff pressure. Its design enables a mirrored impression of the pharyngeal and laryngeal structures and provides a perilaryngeal seal without cuff inflation. The potential advantages of the i-gel are easy and rapid insertion and a reduction in the risk of pharyngeal tissue compression due to high cuff pressure. Moreover, it has an inbuilt drainage channel, which allows the insertion of a gastric tube (maximum 14F gauge), to facilitate the eflux of gastric fluid and gas.

This study compares the clinical performance of the i-gel with the LMA-C in terms of insertion time, the number of attempts for successful insertion, peak airway pressure, fiberoptic glottic view, incidence of regurgitation, and postoperative complications which have never been compared in a randomized-prospective study in adults in vivo before.

Methods

This study was conducted between June and September 2013 at Diskapi Yildirim Beyazit Research and Training Hospital. The study (ref: 06/27, date: 12/17/2012) was approved by a local research ethics committee. A total of 120 patients, who underwent urologic surgery in lithotomy position under general anesthesia with ASA physical status I–III (aged 18–70 years, weight 50–90 kg), were assessed and written informed consent was taken from all patients enrolled in the study. Patients with a history of gastroesophageal reflux, hiatal hernia, previous gastric surgery or body mass index (BMI) >35 kg/m^2, and those who take medications for disorders of gastrointestinal motility were excluded from the study. The patients were randomized into two groups (group LMA-C, $n = 60$, or group i-gel, $n = 60$) by a computer-generated random number table. The insertion of SGADs was conducted by the same anesthesiologist experienced in the