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## CLINICAL INFORMATION

# Awake insertion of a Laryngeal Mask Airway-Proseal™ as alternative to awake fiberoptic intubation in management of anticipated difficult airway in ambulatory surgery



Matilde Zaballos<sup>a,\*</sup>, María Dolores Ginel<sup>a</sup>, Maite Portas<sup>a</sup>, María Barrio<sup>a</sup>, Ana María López<sup>b</sup>

<sup>a</sup> Department of Anesthesiology, Hospital Universitario Gregorio Marañón, Madrid, Spain

<sup>b</sup> Department of Anesthesiology, Hospital Clinic, Barcelona, Spain

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### KEYWORDS

Difficult airway;  
Ambulatory surgery;  
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### Abstract

**Background and objectives:** The decision whether to manage an ambulatory patient with a previously documented difficult airway with a supraglottic device remain controversial. We report an awake insertion of a Laryngeal Mask Airway Proseal™ in a patient with known difficult airway scheduled for ambulatory surgery.

**Case report:** A 46-yr-old woman was programmed as a day case surgery for breast nodule resection. Her anesthetic record included an impossible intubation with cancelation of surgery and subsequent awake fiberoptic intubation. She reported emotional distress with the previous experience and declined this approach. In view of the previous experience, an awake airway control with a Laryngeal Mask Airway Proseal™ was planned after explaining and reassuring the patient. After adequate topicalisation, a size 4 Laryngeal Mask Airway Proseal™ was successfully inserted after two attempts, and their patency was confirmed by capnography. Anesthesia was induced intravenously and the surgery was uneventful.

**Conclusion:** We describe a feasible alternative strategy to awake intubation in a patient with known difficult airway undergoing ambulatory surgery. In this specific clinical situation, if tracheal intubation is deemed unnecessary, awake supraglottic airway might allow adequate ventilation and their use should be considered.

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\* Corresponding author.

E-mail: [mati@plagaro.net](mailto:mati@plagaro.net) (M. Zaballos).

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**PALAVRAS-CHAVE**

Vias aéreas difícil;  
 Procedimentos  
 Cirúrgicos  
 Ambulatoriais;  
 Máscaras Laríngeas

## Inserção de máscara laríngea ProSeal™ em paciente acordado como opção para intubação por meio de fibra óptica para o manejo de via aérea difícil prevista em cirurgia ambulatorial

**Resumo**

*Justificativa e objetivo:* A decisão quanto ao manejo de paciente ambulatorial com via aérea difícil previamente diagnosticada com o uso de dispositivo supraglótico permanece controversa. Relatamos o caso de inserção de máscara laríngea ProSeal™ em paciente acordado, com via aérea difícil prevista, agendado para cirurgia ambulatorial.

*Relato de caso:* Paciente do sexo feminino, 46 anos, programada para cirurgia de ressecção de nódulo de mama com alta hospitalar no mesmo dia. A história anestésica incluía uma intubação impossível, com o cancelamento da cirurgia e posterior intubação com o uso de fibroscópio, com a paciente acordada. A paciente relatou que ficou emocionalmente abalada com a experiência anterior e recusou essa abordagem. Considerando essa experiência anterior, uma abordagem das vias aéreas com a paciente acordada e o uso de uma máscara laríngea ProSeal™ foi planejada, após se explicar o procedimento para a paciente e tranquilizá-la. Após topicalização adequada, uma máscara laríngea (LMA ProSeal™) de tamanho 4 foi inserida com sucesso depois de duas tentativas e a permeabilidade foi confirmada por capnografia. A anestesia foi induzida por via intravenosa e a cirurgia foi feita sem intercorrências.

*Conclusão:* Descrevemos uma estratégia opcional viável para a intubação em uma paciente acordada com via aérea difícil previamente diagnosticada submetida a cirurgia ambulatorial. Nessa situação clínica específica, quando a intubação traqueal é considerada desnecessária, a via aérea supraglótica em paciente acordado pode permitir uma ventilação adequada e seu uso deve ser considerado.

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**Introduction**

The Laryngeal Mask Airway is a well established airway device for most adult and pediatric patients, and its use in day case anesthesia has become more and more common as a part of typical ambulatory surgical procedures.<sup>1</sup> The numbers of patients presenting for ambulatory surgery with predicted difficult airway is increasing.<sup>2</sup> In this specific clinical situation, if tracheal intubation is deemed unnecessary, the use of a supraglottic airway might allow adequate ventilation. Drolet proposed the insertion of the supraglottic device under sevoflurane anesthesia maintaining spontaneous ventilation if its efficacy is not certain after careful evaluation of the patient.<sup>3</sup>

We report the successful awake insertion of a Laryngeal Mask Airway ProSeal™ (LMA ProSeal, Laryngeal Mask Company Limited, Singapore) in a patient with recognized difficult airway undergoing breast surgery in our ambulatory facility. The patient gave written informed consent for publication of this article.

**Case report**

A 46-yr-old, 100-kg, 163 cm, BMI 36.51 kg/m<sup>2</sup>, woman with a breast lump was scheduled as a day case surgery for nodule resection. Past health history included tuberous sclerosis, epilepsy, and hypothyroidism under treatment. Her anesthetic record involved an impossible intubation in a previous mastectomy that was canceled and subsequently performed under an awake fibroscopic intubation. In addition she had

features suggesting a potentially difficult airway, including a Mallampati Class III, thyromental distance of 4 cm, neck circumference >40 cm, and upper lip bite test Class III. The patient reported considerable emotional distress from the previous experience with the awake fiberoptic intubation and declined this approach. She rejected the possibility to perform the procedure under local anesthesia. Owing to the negative previous experience, we offered her the option of an awake insertion of the LMA ProSeal using topical anesthesia and slight sedation, and we obtained her consent. Our alternative plan for failed insertion was to perform an awake tracheal intubation using the Airtraq or fiberscope. An Aintree catheter was prepared in case of failed ventilation during the procedure.

Intravenous atropine 0.6 mg was used as an antisialagogue to enhance effectiveness of the local anesthetic, followed by 4 mL lidocaine 4%, delivered via a nebulizer mask. After preoxygenation, we sedated the patient with midazolam 0.03 mg/kg and the oropharynx was subsequently sprayed with lidocaine 10%. We asked the patient to open the mouth and protrude the tongue, and a size 4 LMA ProSeal was gently advanced with the cuff completely deflated. A moderate gag reflex followed the first attempt, and a second attempt was made by asking the patient to swallow while the mask was slightly pushed into the hypopharynx by the anesthesiologist. The cuff was inflated and the mask was connected to the respiratory circuit. The patency of the airway was confirmed by capnography and observing regular movement of the reservoir bag. The patient tolerated the procedure well, while maintaining spontaneous respiration and she did not experience oxygen desaturation. Anesthesia

was intravenously induced with propofol and remifentanyl and a 16 French orogastric tube was easily introduced through the drainage tube of the LMA Proseal. A fiberoptic bronchoscope was inserted through the airway lumen of the LMA Proseal revealing an omega-shaped epiglottis. The procedure was done by an anesthesiologist with experience in handling supraglottic devices. Surgery lasted 45 min and was uneventful, when the patient regained full consciousness the LMA Proseal was successfully removed. In PACU the patient was calm and denied feeling uncomfortable during procedure, she was discharged home 3 h after surgery. At 24 h we did the routine telephone interview and the patient claimed to be very satisfied with the anesthetic care.

## Discussion

The decision whether to manage an ambulatory patient with a previously documented difficult airway with a supraglottic device remains controversial, despite the proved efficacy of the LMA to rescue ventilation in unpredicted difficult airways. Many factors will influence the decision: the cause of the airway difficulty, the type and duration of surgery, the experience of the operator and finally the patient preferences.<sup>3</sup>

In the case presented we had a previously documented difficult airway in a patient with several anatomical features related with difficult airway management. Local or regional anesthesia may have been a reasonable choice but the patient rejected this option. Awake fiberoptic bronchoscopy is recommended in patients with known or predicted difficult airway, but a supraglottic device could be a reasonable first option in the context of the ambulatory surgery, depending on several factors.<sup>3-5</sup> In our report we have an anticipated short duration of the procedure, a conventional supine position of the patient during the operation, and a surgery routinely managed with a supraglottic airway in our department.

There are no clear criteria to predict success or failure with supraglottic device except situations as very limited mouth opening, or anatomical anomalies.<sup>6</sup> Recently a retrospective observational study of 15,795 patients managed with the LMA Unique™ (uLMA) reported several predictors of failed uLMA function. The uLMA failure was defined as any acute airway event occurring between insertion of uLMA and completion of surgical procedure that required uLMA removal and rescue endotracheal tube placement. The authors showed incidence of uLMA failure of 1.1% and four independent predictors of uLMA failure: intraoperative surgical table rotation, male sex, poor dentition, and increased body mass index.<sup>7</sup> The Mallampati score 3-4, reduced thyromental distance, and thick neck present in our patient were not predictors of uLMA failure. These findings were consistent with previous studies that showed that there is no correlation between anatomical and/or technical factors making mask ventilation and laryngoscope-guided tracheal intubation difficult and ease of LMA insertion and function.<sup>6,8,9</sup> Our patient had an elevated BMI of 36.51 kg/m<sup>2</sup>; however in contrast with the mentioned study, we did not observe difficulties neither during insertion nor in the function of the LMA Proseal. Moreover, several studies and clinical reports have demonstrated the suitability of

the LMA Proseal for morbidly obese patient.<sup>9</sup> However to date, there are not studies that report clinical predictors of the LMA Proseal failure, and we do not know if these are similar to those reflected with the use of other laryngeal masks.

In order to maintain patient safety, we decided to perform an awake insertion and ensure that adequate ventilation was achieved before anesthetizing the patient. Awake insertion of intubating LMA and CTrach has been reported to be easy and well tolerated in different difficult airway conditions, helping successful management while maintaining spontaneous respiration.<sup>10-13</sup> Our case differs in that we choose the LMA Proseal for ventilation as our first option, considering that it was an ambulatory procedure usually managed with supraglottic devices in our unit. As a safety measure, we had additional airway equipment readily available and we left the gastric tube in situ because it can be used to guide the LMA Proseal back into position in case of displacement.<sup>5</sup>

We consider that the decision to proceed with an awake insertion and maintenance of the LMA Proseal in the ambulatory difficult airway patient should be based on personal experience in airway assessment, and practical knowledge of supraglottic airway devices.

In conclusion patients with a known difficult airway undergoing ambulatory surgery may benefit from an awake insertion of a LMA Proseal, whenever we have a systematic approach and a well predefined rescue plan.

## Conflicts of interest

The authors declare no conflicts of interest.

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