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CASE REPORTS

An unanticipated case of laryngeal mask failure due to hypopharyngeal mass: a case report

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Abstract Supraglottic airway devices (SAD) have got popularity in the anesthetic practice owing to easy insertion, rapid airway access and lower incidence of complications. Igel® is a second generation SAD with a non-inflatable cuff and gastric drainage channel. Despite ease of insertion, there are still cases of failure of Igel® insertion to secure airway. We are hereby presenting a case of unanticipated difficulty in Igel® insertion in a 35-years-old female due to a hypopharyngeal growth. This article aims to send a reminder that despite anticipated easy airway, definitive plan for securing airway should always be ready.

Introduction

Ease of insertion, limited training, rapid access to the airway, and lower incidence of complications are the common advantages of supraglottic airway devices (SAD). SADs are commonly used during short surgical procedures and difficult airway scenarios with an inability to intubate.[1] SADs are popularly becoming a device of choice by primary care practitioners in an emergency scenario. I-gel® (Intersurgical Ltd, Wokingham, UK) is a second-generation SAD with an additional lumen for aspiration of the gastric contents. The presence of a non-inflatable cuff, novel pharyngeal drainage, and a bite block make it superior to the classic laryngeal mask airway.[2] After obtaining informed consent from the patient for possible publication, we are presenting an unusual case of I-gel® failure due to hypopharyngeal growth, which can be a dreadful situation in absence of a definitive plan for securing the airway.

Case report

A 35 years old, 54 kg female patient was posted for diagnostic hysteroscopy because of primary infertility. Preoperative airway examination revealed mouth opening three fingers, modified Mallampatti grade 2, adequate neck movements, absence of any neck mass, bucked, or loose teeth. All routine investigations were found within normal limits. Inside

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Table 1 Grades of SAD position after insertion.

Grade 1	Grade 2	Grade 3
1. Perfectly seated	Marginally positioned	Severly malpositioned
2. Epiglottis resting on the outside of the device	Downfolding of the tip of epiglottis may be present	Complete downfolding may occur
3. Normal capnogram	Abnormal capnogram	Abnormal or absent capnogram
4. Bilateral good air entry on auscultation	Bilateral decreased air entry	Inadequate ventilation of both lungs
5. Peripheral oxygen saturation (Spo_2) > 95%	Spo_2 < 95%	Spo_2 < 92%
6. Oropharyngeal leak pressure (OPLP > 25 cmH_2O)	Lower leak pressure First-generation SAD < 20 cmH_2O Second-generation SAD < 25 cmH_2O	Very low OPLP (as low as zero) Severe leak present
7. Intracuff pressure = 40–60 cmH_2O	40 cmH_2O	< 40 cmH_2O
8. Uncommon with blind insertion	Common with blind insertion	Common with blind insertion
9. Ideal position	Can accept with reasonable caution	Clinically unacceptable
10. No correction needed	Use corrective manoeuvres to optimise	Needs urgent correction

the operating room, standard monitors were attached, and an 18G intravenous line was secured. Induction of anesthesia was given as per the standard protocol of our institute. I-gel® was chosen as a first-line airway device to secure the airway. A more definite airway was not attempted because of the relatively short duration of surgery. Though a difficult airway was not anticipated, a difficult airway cart was kept ready.

I-gel® insertion was done, after administering muscle relaxant (0.1 $mg.kg^{-1}$ vecuronium intravenous). I-gel® was then connected to the anesthesia circuit. However, manual ventilation experienced high airway resistance evidenced by a high airway pressure of 36 cmH_2O. On auscultation, bilateral air entry was equal but significantly decreased. No improvement in ventilation occurred even after repositioning of head and neck. A decision was taken to remove the airway device and reinsert it. However, we encountered the same difficulty again. As the end-tidal CO_2 levels were rising (reaching up to 50 mmHg) and SpO_2 had come down to 94%, we decided to switch to endotracheal intubation. During laryngoscopy for intubation, we detected a mass in the hypopharyngeal area. Successful endotracheal intubation was done in a single attempt and adequate ventilation was achieved. After the completion of the surgery, uneventful extubation was done. Postoperatively, the patient was referred to ENT department for further evaluation. This growth was later diagnosed as a hypopharyngeal lipoma.

Discussion

SADs are commonly used for securing the airway during short surgical procedures, emergency airway securing and resuscitation in the intensive care unit, and the prehospital settings. Second-generation SADs as compared to first-generation SADs provide superior airway seal, less failure rate, better protection against aspiration, and can be used as a conduit for orotracheal intubation while oropharyngeal anatomic alterations like restricted mouth opening, presence of oropharyngeal mass, and local trauma could limit its use. In case of difficult SAD placement, fiberoptic guidance can be used to assess and avoid excessive manipulation of the airway. I-gel® features a thermoelastic polymer make and an anatomically designed cuff that mirrors the perilaryngeal and hypopharyngeal structures. The non-inflatable nature of cuff eliminates cuff pressure-induced complications. It has a novel gastric drainage channel to minimize the risk of aspiration, a bite block to minimize the effects of bite and the enlarged lateral diameter to prevent rotation.[3] Positioning of SAD can be classified into three grades, which are summarized in Table 1. Our inference of the position of SAD in this patient was grade II. This is based on the features of the present but decreased bilateral air entry, abnormal capnogram, and SpO_2 reaching up to 94%. After two attempts at insertion of I-gel®, we decided to intubate the patient. Grade II position can though be accepted for ventilation, but caution needs to be exercised as it may lead to various complications. These include ventilatory failure, airway trauma, nerve injuries and difficulty in possible use as intubation conduit.[4] Insertion success rates of 97% have been reported with I-gel®. Despite its ease of insertion, failure of I-gel® placement has been encountered. Risk factors associated with I-gel® failure are male gender, older age, poor dentition, and impaired mandibular subluxation,[5] but in our case none of these factors were present. Failure may occur during its passage past the teeth and tongue or passage through the hypopharyngeal curvature. Other causes for failure include improper size, improperly inflated cuff, too superficial or deep insertion, folding of distal cuff and downfolding of the epiglottis. We could not find any published literature describing its insertion failure caused by pre-existing mechanical obstruction. In our case, it was a hypopharyngeal lipoma that impaired the correct placement of I-gel® resulting in inadequate ventilation. Incidence of lipomas in the oropharynx, hypopharynx and larynx are very rare. Pre-anesthetic evaluation failed to detect this lipoma owing to its obscured position in the normal examination and its (well known) asymptomatic course.

In summary, we report a case of unanticipated difficult I-gel® placement, which was due to a hypopharyngeal growth leading to an improper sealing despite easy placement and correct positioning. So, finally, our report aims to send a reminder to all healthcare practitioners that a definite airway plan should always be ready to overcome unanticipated difficult SAD placement.

Conflicts of interest

The authors declare no conflicts of interest.

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