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Case Report

Use of Ambu aScope for tracheal intubation in anticipated difficult airway, a boon

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Introduction

Difficult intubations contribute to considerable morbidity and mortality in anaesthesia.^{1,2} The complications of difficult airways range from upper airway soft tissue trauma to hypoxic brain damage and death.³ A difficult airway is defined as the clinical situation in which a conventionally trained anaesthesiologist experiences difficulty with facemask ventilation of the upper airway, difficulty with tracheal intubation, or both. The difficult airway represents a complex interaction between patient factors, the clinical setting, and the skills of the practitioner.⁴ Fibre optic assisted tracheal intubation by the oral or nasal route is the recommended technique of management of an anticipated difficult airway.⁵

The Ambu aScope is a new flexible scope designed for single patient use. A 6.5-inch reusable liquid crystal display is used to display the video signal from the Ambu aScope. The manufacturer's specification includes a maximum outer diameter of 5.3 mm, a field of view of 80°, a Luer lock channel of 0.8 mm inner diameter for administering local anaesthetic and a tip that can bend $120 \pm 10^\circ$ in each direction. The manufacturer has electronically limited the total operation time of the Ambu aScope to a maximum of 30 min use, from when it is switched on for the first time, but within a timeframe of 8 h, whichever is reached first. The monitor also displays an indicator showing the power level.⁶ Ambu aScope is a single-use, sterile, disposable, flexible intubation scope that can be used to facilitate the placement of a flexible tube into the trachea to maintain an open airway. It can also be used to aid percutaneous dilatational tracheostomy (PDT), and to check the position and patency of airway devices such as endotracheal tubes and tracheostomy tubes. The design and clinical use of Ambu aScope is similar, or equivalent, to other flexible endoscopes, i.e. fibrescopes using fibre-optic technology, or videoscopes using video technology.

Case report

Case 1

47 year old female patient, a case of carcinoma breast right side was planned for Modified Radical Mastectomy (MRM). She was weighing 40 kgs and her vitals and lab parameters were within normal limits. Airway examination revealed mouth opening of

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4.5 cms, Mallampatti Classification of 3 with no neck extension and no side to side movement of the neck. Spine examination revealed kyphosis with X-ray spine confirming severe kyphosis with cobb's angle $>50^\circ$. Surgery was planned under General anaesthesia.

In view of anticipated difficult airway, awake intubation was planned. After thoroughly explaining the procedure to the patient, written consent was obtained. Topical anaesthesia of nasal mucosa was achieved with 4% lignocaine and both nostrils were packed with pledgets of cotton soaked in 4% lignocaine and 1% phenylephrine (3:1). The patient was given inj glycopyrrolate 0.2 mg intravenously 30 min prior and midazolam 1 mg just before the procedure. After the patient was positioned in semi reclining position as she could not lie horizontally (Fig. 1), minimum mandatory monitoring was instituted & bilateral superior laryngeal nerve block with 2 ml of 2% lignocaine on each side of the thyrohyoid membrane and transtracheal block with 3 ml of 4% lignocaine were given. With a 7.0 mm internal diameter (ID) endotracheal tube (ETT) loaded on Ambu aScope, nasal intubation was performed after visualisation of vocal cords, tracheal rings and carina (Fig. 2). Endotracheal intubation was confirmed by ETCO₂ graph on monitor (Fig. 3). Intraoperatively patient was stable. At the end of surgery extubation was done only after the patient was completely awake.

Case 2

A 62 year old female patient a case of toxic multinodular goitre was planned for subtotal thyroidectomy. She was on tablet carbimazole for 5 yrs and presently was euthyroid. She was planned for the same surgery one week prior but after induction, she could not be intubated and the surgery was postponed. She weighed 85 kgs and her vitals, systemic examination and lab parameter were within normal limits. Diffuse swelling in front of neck was noticed and anatomical landmarks in front of the neck were poorly appreciated. Findings on airway examination was mouth opening of 4.5 cms, adequate neck extension, neck circumference of

Fig. 1 – Patient in upright position for awake intubation.

Fig. 2 – Visualisation of carina on Ambu aScope monitor

46 cms & Mallampatti classification of 3. The case was planned under General Anaesthesia after awake tracheal intubation.

On the day of surgery the procedure of awake intubation was explained to the patient and consent obtained. Nasal mucosa anaesthetised with 4% lignocaine and both nostrils packed with pledgets of cotton soaked in phenylephrine (4% lignocaine and 1% phenylephrine at a ratio of 3:1). Inj glycopyrrolate 0.2 mg was given intravenously half an hour prior to the procedure. She was positioned in a ramped up position (Fig. 4). Standard monitoring was established and inj midazolam 1 mg was given intravenously. Laryngeal blocks could not be performed due to the huge goitre in front of the neck. Gargle of 4% Lignocaine was given and gentle laryngoscopy was done and 4% lignocaine spray was done on both tonsillar pillars and pyriform fossa. A 7.0 mm internal diameter ETT was loaded on to Ambu aScope. Through one nostril oxygen was insufflated while through the other nostril Ambu aScope was introduced. In the second attempt the vocal cords could be visualized which were oedematous and tracheal rings also could not be easily recognised. ETT was railroaded over Ambu aScope and endotracheal intubation was confirmed by ETCO₂. Intraoperatively patient was stable.

Fig. 3 – Confirmation of ETCO₂ before withdrawal of Ambu aScope.

Fig. 4 – Endotracheal tube secured after intubation with Ambu aScope.

At the end of surgery decision was taken not to extubate the patient and elective ventilation was done. The patient was extubated successfully the following day.

Discussion

Both cases described above were anticipated difficult airways. Ambu aScope has helped in managing the airways effectively and successfully. The main difference between Ambu aScope and other flexible endoscopes is that the Ambu aScope is a

single-use, sterile, disposable device, while conventional flexible endoscopes are reusable devices that need to be sterilised and stored appropriately. Flexible endoscopes are required for tracheal intubation in patients with difficult airways, and Ambu aScope provides a easy to use, portable and effective alternative for tracheal intubation.⁶

Conflicts of interest

The authors have none to declare.

REFERENCES

1. Caplan RA, Posner KL, Ward RC, Cheney FW. Adverse respiratory events in anesthesia: a closed claims analysis. *Anesthesiology*. 1990;72:828–833.
2. Peterson GN, Domino KB, Caplan RA, Posner KL, Lee LA, Cheney FW. Management of the difficult airway: a closed claims analysis. *Anesthesiology*. 2005;103:33–39.
3. Gannon K. Mortality associated with anaesthesia. A case review study. *Anaesthesia*. 1991;46:962–966.
4. Apfelbaum JL, Hagberg CA, Caplan RA, et al. Practice guidelines for management of the difficult airway: an updated report by the American Society of Anesthesiologists Task Force on Management of the Difficult Airway. *Anesthesiology*. 2013;118:251–270.
5. Pujol E, López AM, Valero R. Use of the Ambu[®] aScope[™] in 10 patients with predicted difficult intubation. *Anaesthesia*. 2010;65:1037–1040.
6. Piepho T, Werner C, Noppens RR. Evaluation of the novel, single use flexible aScope for tracheal intubation in the simulated difficult airway and first clinical experiences. *Anaesthesia*. 2010;65:820–825.