

LETTER TO THE EDITOR

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Retrograde intubation: largely ignored technique in difficult airway algorithms



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To the Editor,

Retrograde intubation (RI) is a simple technique and has a fast learning curve among residents if taught as a part of teaching curriculum. It was first described by Butler and Cirillo in 1960 (Butler and Cirillo 1960). It is usually planned awake under regional anesthesia of upper airways. We are describing a case of emergency retrograde intubation under general anesthesia (GA) in a patient of oral cancer scheduled to undergo redo flap reconstruction upon encountering difficult intubation with moderate difficulty in maintaining ventilation. A 57-year-old male patient of oral cancer with a history of flap surgery 2 years back was posted for redo surgery under GA. He had undergone radiotherapy 6 months back for the same. His mouth opening was 3 fingerbreadths; Mallampati grading was II. Sternomental and thyromental distances were 13.5 cm and 6 cm respectively. Since airway examinations were within the acceptable limits, we planned for direct laryngoscopy and endotracheal intubation under general anesthesia and neuromuscular relaxation. In the operation theater, baseline hemodynamic parameters were recorded with NIBP, ECG, and SpO₂ monitors. Patient was given Inj. midazolam 1 mg and fentanyl 100 mcg intravenous (IV), and preoxygenated with 100% oxygen for 5 min. Injection propofol 100 mg IV was given for induction, and patient was checked for adequacy of bag mask ventilation (BMV), which could be achieved with two hands two operators technique with some leaks. We

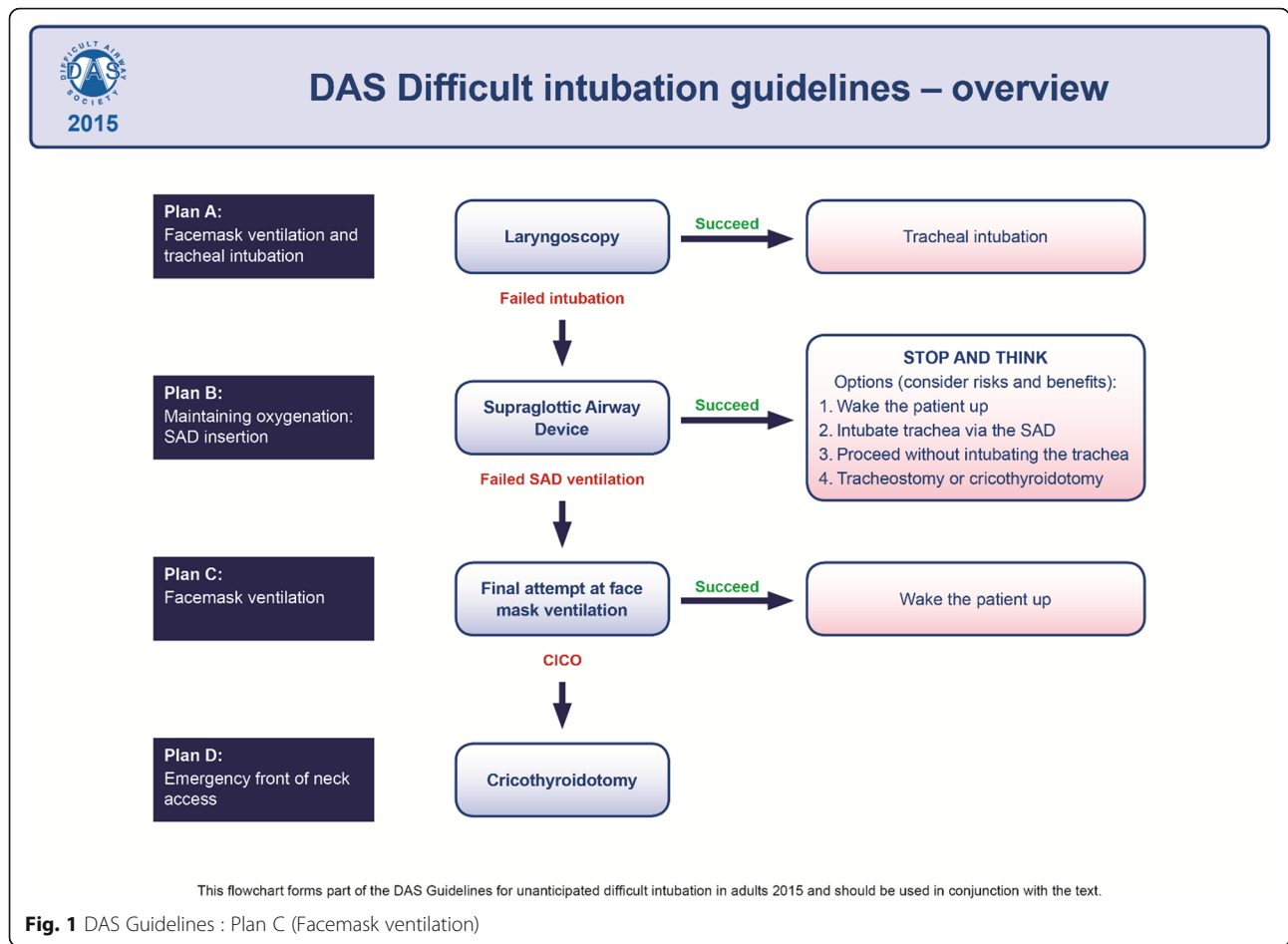
gave Inj. vecuronium 5 mg for muscle relaxation, and after 3 min, direct laryngoscopy was done. Even with the maximum efforts, only upper half of the epiglottis could be visualized, which was adherent to the posterior pharyngeal wall. We tried to negotiate bougie just past the epiglottis, and endotracheal tube (ETT) size 7.5 was railroaded over it. After cuff inflation, manual ventilation started which along with absence of capnogram confirmed the esophageal intubation. We immediately removed the tube, and bag mask ventilation started, which seemed to be a bit more difficult with more leaks around the mask. However, pulse oximeter reading was more than 98%, so we took another attempt at DL. Even with the external laryngeal pressure and use of bougie, this attempt also failed in securing definitive airway. Both the videolaryngoscope and fiberoptic bronchoscope were out of order, and we only had option to either use supraglottic airway (SGA) and maintain oxygenation and then wake up the patient to plan for the next day or to proceed with front of neck access (FONA) (as per the DAS/AIDAA guidelines). We decided to go for RI, as the necessary equipments were quickly available at that time. The cricothyroid membrane was easily identified, and a 16 G hypodermic needle was introduced with a 5-ml syringe filled with normal saline attached. Laryngeal entry was confirmed by aspiration of air bubbles in the saline-filled syringe. A J-tipped guidewire was introduced through it which was seen to be coiled in the mouth and retrieved using Magill

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forceps. An airway exchange catheter (AEC) was introduced over guidewire over which ETT size 7.5 was introduced. AEC was removed, and tube position confirmed with bilateral air entry and capnogram. The guidewire was then removed; ETT was secured in place and connected to closed circuit and mechanical ventilation started. The patient was throughout mask ventilated with two hands two operators technique while one anesthetist was attempting RI. The mask was only removed once we had to retrieve the guidewire through the mouth and railroad the ETT over it. The intraoperative period was uneventful, and patient was extubated after fulfilling all the extubation criteria.

In this era of advanced airway management, where we have a platter of airway equipments to choose from, RI seems to be an outdated technique so much so that even the difficult airway societies [including DAS (2015) and AIDAA (2016)] (Ferk et al. 2015; Myatra et al. 2016) have ignored it. These guidelines have mentioned more invasive techniques like cricothyroidotomy and tracheostomy as a last resort, but have not given RI even a single

mention anywhere in the algorithm. ASA difficult airway algorithm (2003) however has mentioned it as an *alternative non-invasive approach to difficult intubation* (American Society of Anesthesiologists Task Force on Management of the Difficult Airway 2003).

According to the authors, it should be included in the DAS and AIDAA guidelines at plan C/step 3 respectively, where attempts at rescue facemask ventilation are successful (Figs. 1 and 2). In our case, we were facing some difficulty in one operator BMV, but it was successful using two hands two operators technique, allowing us sufficient time to plan and execute retrograde intubation.

The technique has gone out of favor due to an unwarranted perception of its invasiveness, though it is much less invasive in comparison to surgical cricothyroidotomy or tracheostomy. We have the opinion that DAS and AIDAA guidelines are now the most followed difficult airway guidelines. Specially in India, AIDAA holds a better ground as it caters Indian infrastructure and patient load. So a procedure like RI should be a part of the difficult

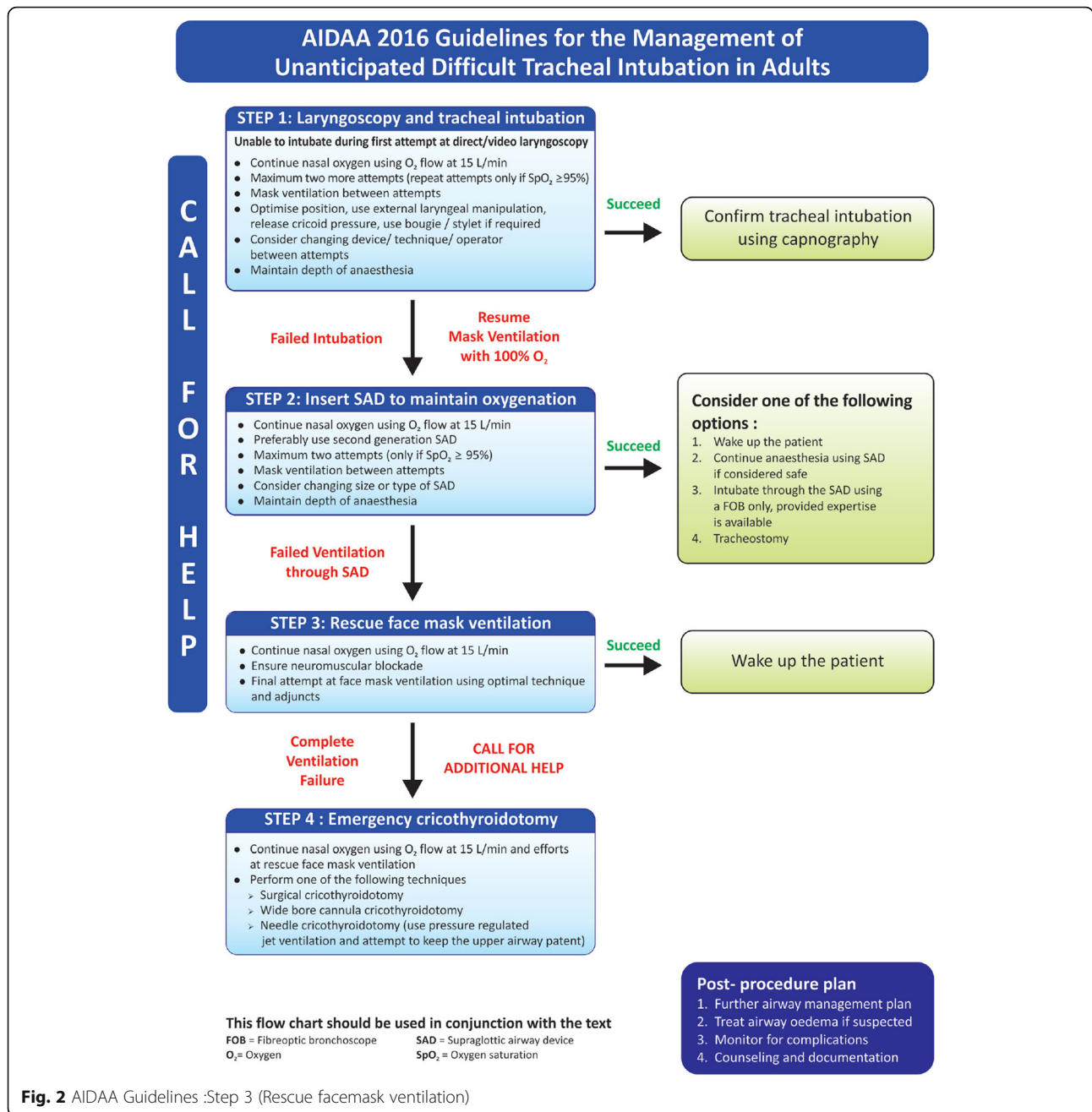


Fig. 2 AIDAA Guidelines :Step 3 (Rescue facemask ventilation)

airway management algorithm, which will make it an integral part of teaching learning curriculum. It is advised that residents should undergo training of RI through audiovisual methods, in manikin simulators or cadavers (Reena 2018). Familiarity with this simple and quick technique will lead to higher success rates even during emergency difficult airway scenarios.

Abbreviations

RI: Retrograde intubation; GA: General anesthesia; ETT: Endotracheal tube; NIBP: Non-invasive blood pressure; ECG: Electrocardiogram; SpO₂: Oxygen

saturation; BMV: Bag mask ventilation; IV: Intravenous; FONA: Front of neck access; DAS: Difficult Airway Society; AIDAA: All India Difficult Airway Association; ASA: American Society of Anesthesiologists; SGA: Supraglottic airway; DL: Direct laryngoscopy

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Consent for publication

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Competing interests

The authors declare that they have no competing interests.

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