

بیمارستان هفتم تیر بهار 1404



## AIRWAY MANAGEMENT



One of the fundamental responsibilities of the anesthesiologist is to mitigate the adverse effects of anesthesia on the respiratory system by maintaining airway patency and ensuring adequate ventilation and oxygenation.

. Traditionally, ventilation via a mask and tracheal intubation have been the foundations of airway management;

however, in the past 40 years, supraglottic airways (SGAs) have emerged as one of the most important developments in airway devices. Because failure to secure a patent airway can result in hypoxic brain injury or death in only a few minutes The most common airway problems were failure, delay, or difficulty in securing the airway; aspiration of gastric contents; and extubation-related complications

Inadequate assessment of the airway, poor planning, and a lack of personal and/or institutional preparedness for difficult airway management were the most common contributing factors

In 1993, the ASA published the first Practice Guidelines for Management of the Difficult Airway, which was written with the intent to "facilitate the management of the difficult airway and to reduce the likelihood of adverse outcomes

the algorithm is structured into three separate scenarios:

(1) predicted difficult airway (awake intubation)

(2) difficult intubation with adequate oxygenation/ventilation (the "non-emergency" pathway);

(3) difficult intubation without adequate oxygenation/ventilation (the "cannot intubate, cannot ventilate" [CICV] scenario or the "emergency" pathway)

#### ASA DIFFICULT AIRWAY ALGORITHM: ADULT PATIENTS

Pre-intubation: Before attempting intubation, choose between either an awake or post-induction airway strategy. Choice of strategy and technique should be made by the clinician managing the airway.<sup>1</sup>







these human factors contribute to an adverse airway outcome in over 40% of cases.

The Vortex approach is one such cognitive aid designed to facilitate management of the unanticipated difficult airway

#### THE VORTEX FOR EACH LIFELINE CONSIDER: MANIPULATIONS: 0 HEAD & NECK LARYNX DEVICE ADJUNCTS SUCTION/O<sub>2</sub> FLOW 0 MUSCLE TONE © Copyright Nicholas Chrimes 2016 MAXIMUM THREE ATTEMPTS AT EACH LIFELINE (UNLESS GAMECHANGER) AT LEAST ONE ATTEMPT SHOULD BE BY MOST EXPERIENCED CLINICIAN CICO STATUS ESCALATES WITH UNSUCCESSFUL VortextApproach.org BEST EFFORT AT ANY LIFELINE © Copyright Nicholas Chrimes 2013, 2016 This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License Α В

## FUNCTIONAL AIRWAY ANATOMY





## AIRWAY ASSESSMENT

Certain details from the patient's history or physical findings can be prognostic of difficulty with mask ventilation, SGA placement, laryngoscopy, tracheal intubation, or the need for a surgical airway.

One of the most predictive factors for difficult intubation is a history of previous difficulty with intubation.

Visual inspection of the face and neck

Assessment of mouth opening

Evaluation of oropharyngeal anatomy and dentition

Assessment of neck range of motion (ability of the patient to assume the sniffing position)

Assessment of the submandibular space

Assessment of the patient's ability to slide the mandible anteriorly (test of mandibular prognathism)



Fig. 40.8 Modified Mallampati classification as described by Samsoon and Young. Classes are differentiated on the basis of the structures visualized: class I—soft palate, fauces, uvula, tonsillar pillars; class II—soft palate, fauces, uvula; class III—soft palate, base of the uvula; class IV—soft palate not visible. (From Mallampati SR. Recognition of the difficult airway. In: Benumof JL, ed. *Airway Management Principles and Practice*. St Louis: Mosby; 1996, p. 132.)

## PHYSIOLOGIC CONCEPTS FOR AIRWAY MANAGEMENT

### PREOXYGENATION

Preoxygenation is typically performed via a face mask attached to an anesthesia circuit. To ensure adequate preoxygenation, 100% oxygen must be provided at a flow rate high enough to prevent rebreathing (10 to 12L/min), and no leaks around the face mask must be present.

### APNEIC OXYGENATION

Apneic oxygenation is a physiologic phenomenon by which oxygen from the oropharynx or nasopharynx diffuses down into the alveoli as a result of the net negative alveolar gas exchange rate resulting from oxygen removal and carbon dioxide excretion during apnea. Oxygen can be insufflated at up to 15L/min with nasal cannulae (nasal oxygen during efforts securing a tube

or with a catheter placed through the nose or mouth with the tip in the pharynx (pharyngeal oxygen insufflation)

These techniques are effective in delaying oxyhemoglobin desaturation in morbidly obese patients and during emergency tracheal intubation.

# AIRWAY MANAGEMENT AFTER THE INDUCTION OF DRUG

Standard Intravenous Induction with Neuromuscular Blockade

Rapid-Sequence Induction and Intubation

Intravenous Induction Without Neuromuscular Blocking Drugs

## MASK VENTILATION



## SUPRAGLOTTIC AIRWAY

The term supraglottic airway or extraglottic airway refers to a diverse family of medical devices that are blindly inserted into the pharynx to provide a patent conduit for ventilation, oxygenation





## TRACHEAL INTUBATION

Tracheal intubation is the gold standard for airway management.

DIRECT LARYNGOSCOPY INDIRECT LARYNGOSCOPY Flexible Intubation Scopes

Video Laryngoscopes