Recent updates for Management of the Difficult Airway

Essay

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In anesthesia

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I always feel indebted to God for his most gracious help“

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Abstract

The greater the degree of difficulty in maintaining the airway patency, the greater the risk of brain or damage or even death. Greater efforts and studies are focus on finding either new devices or techniques for management of difficult airway .There is new guide lines for helping anesthesiologists' in management of difficult airway management is one of the most important skills which must be acquired by anesthesiologists as the conduction of general anesthesia depends mainly on this skill.

Keyword

COPA- ILMA- ***anesthesia*****- LT**

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List of Abbreviations

ACLS	*Advanced Cardiac Life Support*
ASA	American Society of Anesthesiologist.
AT	Airtraq.
COPA	Cuffed Oro-Pharyngeal Airway
ETT	Endotracheal tube
FRC	Forced respiratory capacity
GS	Glide scope.
ID	Internal diameter
ILMA	Intubating Laryngeal mask Airway
LMA	Laryngeal Mask Airway
LT	Laryngeal tube

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Background and Rationale

In the anesthesia practice, failure to maintain a patent airway following the induction of general anesthesia is a major concern for anesthesiologists. For securing the airway, tracheal intubation using direct laryngoscopy remains the method of choice in most cases. However, direct laryngoscopic intubation is difficult in 1% - 4% and impossible in 0.05% - 0.35% of patients who have seemingly normal airway (1).

The unanticipated difficult laryngoscopic intubation places patients at increased risk of complications ranging from sore throat to serious airway trauma. Moreover, in some cases the anesthesiologist may not be able to maintain a patent airway, leading to severe complications such as brain damage or death (2,3,4).

Death and brain damage in claims arising from difficult airway management associated with induction of anesthesia, but not other phases of anesthesia, decreased in 1993–1999 compared with 1985–1992 due to development of additional management strategies for prediction and management of difficult airways improved patient safety (5).

A difficult airway is defined as the clinical situation in which a conventionally trained anesthesiologist experiences a difficulty with mask ventilation, difficulty with tracheal intubation, or both.Difficult face mask ventilation is a situation in which it is not possiblefor the anesthesiologist to provide adequate facemask ventilation due to one or more of the following problems: inadequate mask seal, excessive gas leak,or excessive resistance to the ingress or egress of gas.Difficult laryngoscopy is the condition in which it is not possible to visualizeany portion of the vocal cords after multiple attempts at conventional laryngoscopy.Difficult tracheal intubation is the condition in which tracheal intubation requires multiple attempts, in the presence or absence of tracheal pathology.Failed intubation is when placement of the endotrachealtube fails after multiple intubation attempts (6).

As the management of difficult airway remains one of the most relevant and challenging tasks for the anesthesiologist, great efforts and studies are focus on finding either new devices or techniques for managing this issues and try to implement new guidelines for helping the anesthesiologists in managing this problems in different situations.

While the inability to visualize the vocal cords is a common factor preventing successful intubation, many devices are now available to circumvent the problems typically encountered with a difficult airway using conventional laryngoscope such as endotracheal tube guides, lighted stylets, supra-glottic airway devices, and rigid/video assisted laryngoscopes. Also different alternative techniques have been described to mange difficult airway such as awake intubation under topical anesthesia, fiber-optic intubation, retrograde intubation and percutaneous tracheostomy (7).

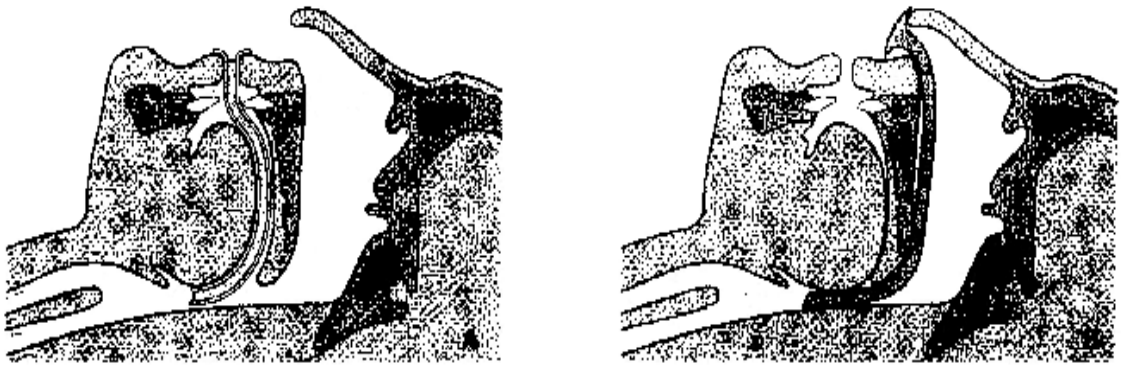
In addition to the new airway devices and techniques that help in management of difficult airway, practical guidelines for managing difficult airway in different situations such as unanticipated difficult airway, different types of trauma or pre-hospital airway management become of great important. These practice guidelines are systematically developed recommendations that assist the practitioner and patient in making decisions about health care. These recommendations may be adopted,modified, or rejected according to clinical needs and constraints.Practice guidelines are not intended as standards or absolute requirements. Practice guidelines are subject to revision aswarranted by the evolution of medical knowledge, technology, and practice. They provide basic recommendations that are supported by analysis of the current literature and by a synthesis of expertopinion, open forum commentary, and clinical feasibility data (8).

Objectives

- Discussing the new alternative airway management devices and techniques for difficult airway management and their clinical applications.
- Discussing the guidelines for difficult airway management in different situations as in anticipated difficult airway, unanticipated difficult airway, airway trauma and pre-hospital airway management.

Anatomical Consideration of Upper Airway

There are two openings to human airway, nose and mouth the former leads to nasopharynx and the latter leads to oropharynx. They are separated anteriorly by palate, but joined posteriorly. At the base of the tongue, epiglottis prevents aspiration by covering the glottis during swallowing (figure 1-1).



(Figure 1-1) **A, Orophrangeal airway B, Nasopharangeal airway**

Tongue:

It consists of a buccal and pharyngeal portions, separated by V-shaped groove surface (sulcus terminalis). Under aspect of tongue bears median frenulum linguae. Lingual veins are on either side of it Lingual nerve and lingual artery are medial to the vein but not visible.

Muscles of the tongue:

There are two groups:

- Intrinsic muscles that alter shape of tongue.

- Extrinsic muscles which move the tongue, they include styloglossus (retracts) genioglossus (protruds) hyoglossus (depresses) and palatoglossus (narrow oropharynx).

Nerve supply of tongue:

- Sensory: it is innervated by trigeminal nerve for general sensations

- Motor : all muscles are innervated by hypoglossal nerve except palatoglossus which is supplied by vagus nerve.

Blood supply of tongue:

Lingual branch of external carotid artery.

Clinical features:

Damage of hypoglossal nerve is detected clinically by hemiatrophy tongue and deviation towards paralysed side.

If deeply anaethized person is laid on his back, posterior aspect of tongue drops back to produce laryngeal obstruction, this could be prevented by tonsil position or pushing mandible forwards by pressure on angle of jaw (٩).

Soft palate:

Palate is a partition which separates nasal cavity from oral cavity and made of two parts :

- Hard palate which is a bony septum between nose and mouth.
- Soft palate which is a flesh septum between nasopharynx and oropharynx.

Function of soft palate:

- During respiration soft palate is relaxed allowing passage of air.
- During deglutition it becomes elevated so that its posterior border becomes in contact with posterior wall of the pharynx, thus preventing food and fluids from passing into nasopharynx.

Muscles of soft palate :

- Tensor palate.
- Levator palati.
-palatoglossus.
-palatopharyngeus.
-musculusuvulae.

Nerve supply:

Sensory:

Soft palate is supplied by lesser palatine nerve.

Hard palate is supplied by greater palatine nerve (figure 1 – 4).

Motor:

All muscles are supplied by cranial accessory nerve through the vagus expect tensor palati which is supplied by mandibular nerve (٩).

Pharynx:

Pharynx is a musculofascial tube, acts as common enterane to respiratory and alimentary tract (fig, 1-2). It is divided into three parts:

Nasopharynx:

It lies above soft palate which cuts it from rest of pharynx during deglutition of food through nose.

Two important structures lie in this compartment:

- Orifice of pharyngotympanic or auditory tube (Eustachian canal).
- Nasopharyngeal tonsil (adenoids) (٩).

Oropharynx:

It lies behind mouth and tongue. It extends from uvula of soft palate above to tip of epiglottis below. Its most important contents are palatine tonsils .There is three fold sensory nerve supplies, glossophryngeal nerve posterior palatine branch of maxillary nerve.