Recent Concepts in Supraglottic Airway Devices

Essay

Submitted for Partial Fulfillment of Master Degree
in Anesthesia

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2016

Acknowledgement

First of all, I wish to express my sincere thanks to **GOD** *for his care and generosity throughout my life.*

I would like to express my sincere appreciation and my deep gratitude to **Prof. Dr. Amir Ibrahim Mohamed Salah,** *Professor of Anesthesia, Ain Shams University for his faithful supervision and guidance.*

I am also deeply indebted to **Dr. Mohamed Mohamed Nabil El Shafei,** *Assistant Professor of Anesthesia, Ain Shams University for his great support throughout the whole work.*

I would like to express my great thanks to **Dr. Eman Abubakr Elsiddik Ahmed Bayumi,** *Lecturer of Anesthesia, Ain Shams University for the tremendous effort she has done in the meticulous revision of this work.*

At last, I am indebted for my family.

Moataz Abuali

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List of Abbreviations

Abb.	Full term
AIC	Aintree intubating catheter
AMD	Airway management device
ASA	American Society of Anesthesiologists
BMI	Body mass index
CI-CV	Cannot intubate- Cannot mask ventilate
COPA	The cuffed oropharvngeal airway
CPAP	Continous positive airway pressure
ETT	Endotracheal tube
FIS	Flexible intubating scope
GERD	Gastroesophageal reflux disease
ID	Intubating device
ILA	Intubating laryngeal airway
IV	Intravenous
LMA	Laryngeal mask airway
LTS	Laryngeal tube suction
NMBAs	Neuromuscular blocking agents
PCV	Pressure controlled ventilation
PEEP	Positive end expiratory pressure
PLA	Perilaryngeal airway
PPIs	Proton pump inhibitors
PPV	Positive pressure ventilation
PSV	Pressure support ventilation
SAD	Supraglottic airway device
SGAs	Supraglottic airways
SLIPA	Streamlined pharynx airway liner

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Introduction

The fundamental responsibility of an anesthesiologist is to maintain adequate gas exchange. In order to do this, the airway must be managed in such a way that it is almost continuously patent. Failure to maintain a patent airway for more than a few minutes results in brain damage or death. Thus, it is not surprising that more than 85% of all respiratory-related closed malpractice claims involve a brain damaged or dead patients.

It has been estimated that inability to successfully manage very difficult airways has been responsible for as many as 30% of deaths totally attributable to anesthesia. In any patient, the greater the degree of difficulty in maintaining airway patency the greater the risk of brain damage or death **(Miller, 2000).**

William Maceven first performed tracheal intubation 140 years ago in a patient who had a large tumour in his oropharynx. Several more years would elapse before this technique became a routine procedure during general anesthesia. Although a large number of individuals contributed to the evolution of this technique, two very important events sparked the routine use of endotracheal

anesthesia; the introduction of Macintosh laryngoscope and the neuromuscular blocking agent **(Benumof, 1994).**

The wide variety of airway devices available today may broadly be classified as intraglottic and extraglottic airway devices, which are employed to protect the airway in both elective as well as emergency situations.

Supraglottic airway devices are widely used in the pre-hospital environment because of their simplicity, speed of insertion, and efficacy. Some argue the term extraglottic airway device is more appropriate since portions of many of the devices lie below the level of the glottis. Regardless, and in the interest of simplicity, this article will use the term supraglottic airway device (SAD) to describe the family of orally inserted devices whose distal end lies in the hypopharynx or esophagus **(Brimacombe, 2004).**

One of the first SADs to come on the market was the Laryngeal Mask Airway (LMA), invented by an anesthesiologist named Archie Brain in England. Brain was attempting to find a handsfree approach to ventilation that did not involve inserting a tube into the patient's trachea.

Other SADs like laryngeal tube and Cobra perilaryngeal airway were also used. Then they developed rapidly to seconed generation like Proseal LMA, i-gel,

Supreme LMA and Laryngeal tube suction mark II **(Cook and Howes, 2011).**

From the 1st guidelines on the management of airway that were published by the American Society of Anesthesiologists (ASA) in 1993 till the last one several types of airway devices were included. Together with other devices that have been developed in the past years represent an important subject that an anesthesiologist should know.

Therefore, the aim of this essay is to identify and discuss the upper airway anatomically and physiologically, knowing the different methods and scores used for evaluating the airway and review supraglottic airway devices properties then show their uses in different aspects in anaesthesia.

Aim of the Work

The aim of the work is to identify and discuss the larynx physiologically and anatomically and review supraglottic airway devices properties then show their uses in different aspects in anaesthesia.

Chapter (1):

Anatomy of the Airway

The human airway could be divided by an imaginary line passing through the larynx at the level of the vocal cords into upper airway including "oral and nasal cavities, pharynx and supra-glottic part of the larynx" and lower airway including "sub-glottic part of the larynx, trachea, right and left main bronchi and bronchopulmonary segments **(Hutton, 2002).**

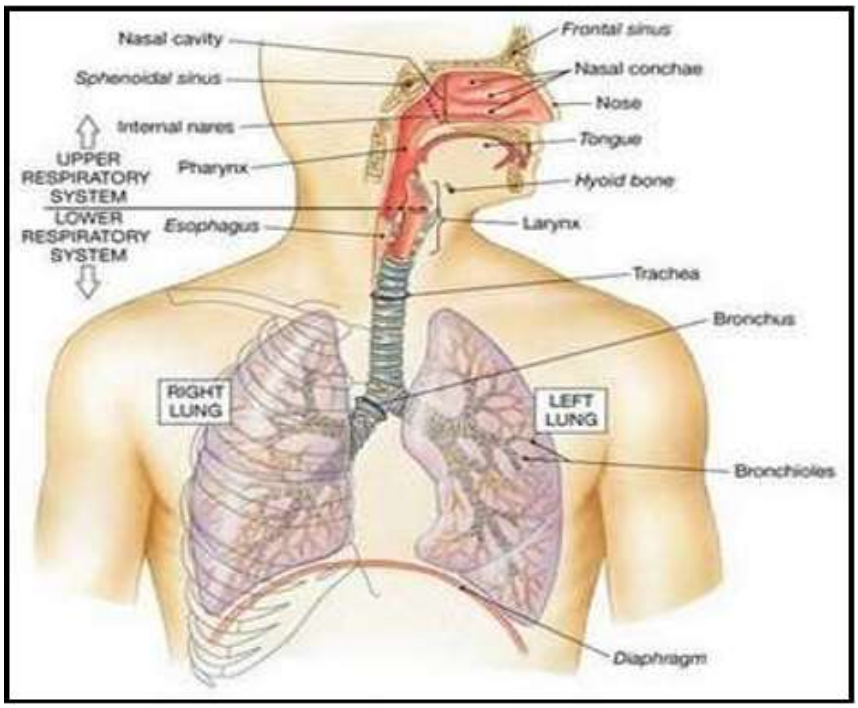

Figure (1): The Human Airway **(Hutton, 2002).**

A) The Upper Airway:

There are two openings to the human airway, the nose and the 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 where the epiglottis prevents aspiration by covering the glottis during swallowing **(Hutton, 2002).**

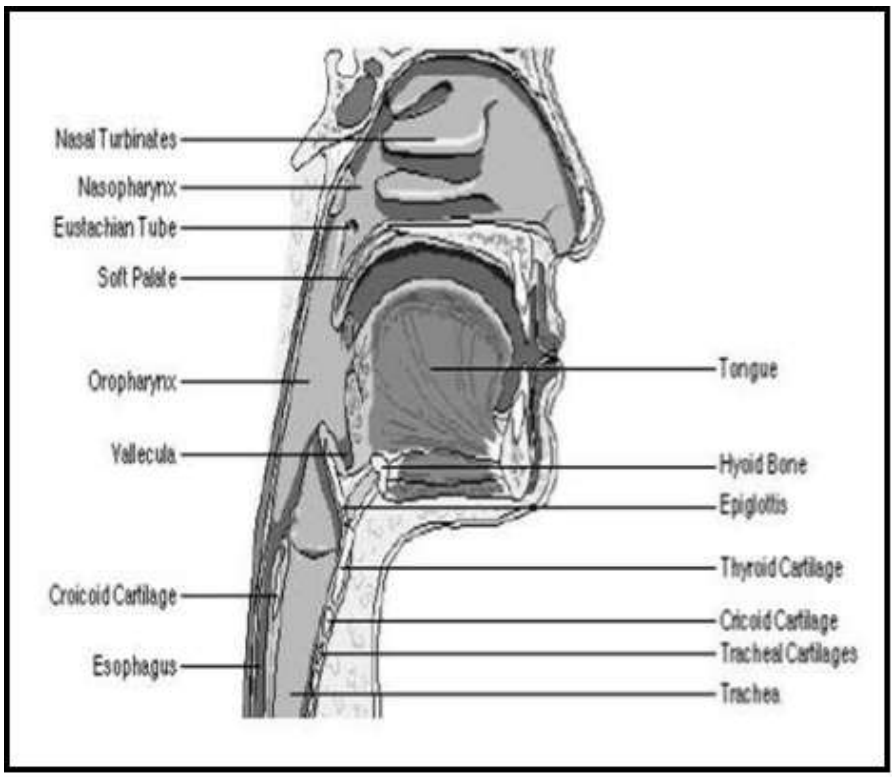

Figure (2): Sagittal section in Nasal Cavity, Mouth, Pharynx and Larynx **(Hutton, 2002).**