Video Assisted Laryngoscope in Difficult Intubation

Essay

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Eman El Shorbagy

Contents

List of Abbreviations

AC	:	Alternating-current
AO	:	Atlanto occipital joint
ASA	:	American Society of Anesthesiologist
BMI	:	Body mass index
BMV	:	Bag mask ventilation
CAFG	:	The Canadian airway focus group
COPA	:	Cuffed oropharyngeal airway
DA	:	Difficult airway
ETT	:	Endotracheal tube
HFJV	:	High frequency jet ventilation
LMA	:	Laryngeal mask airway
PPV	:	Positive pressure ventilation
RGB	:	Red, green, blue
T-M	:	Thyromental
C\L	:	Cormack and lehane

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Introduction

One of the fundamental responsibilities of an anesthesiologist is to maintain adequate oxygenation. Failure to maintain a patent airway for more than few minutes results in brain damage or death ***(Bellhouse, 1997).***

Focusing on the possibility of improving glottis visualization, has rapidly led to new products which can allow intubation to be performed under direct vision, overcoming the restrictions in patient anatomy that make direct laryngoscope difficult or impossible, for example, using fibro optic &video technology ***(Agro, 2009).***

In recent decades, video techniques have been employed in the majority of endoscopic procedures because of several distinct advantages provided. These include the following: The displayed anatomy is magnified. Recognition of the anatomical structures and anomalies is easier, and manipulation of airway devices is facilitated. When assistance is required, the operator and assistant can coordinate their movements because each sees exactly the same image on the video monitor. As a result, video techniques have become the method of choice in teaching ***(Kaplan,2002).***

Aim of the work

This essay will present the anatomical relevant data of the airway, assessment and management of the difficult airway, pass through several traditional & new airway devices especially video assisted laryngoscope and their clinical applications in anesthetic practice.

Chapter (1)

Anatomy of the Upper 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 et al., 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 et al., 2002).***

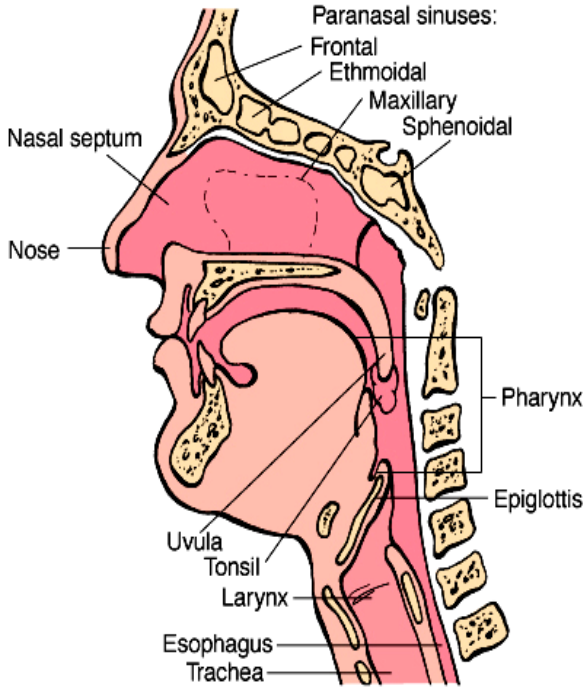

Fig. (1): Major structure of upper airway ***(Morris,1998)***

The Mouth

The mouth is made up of the vestibule and the mouth cavity, the former communicating with the latter through the aperture of the mouth.

Nerve supply: The palatine nerves provide sensory fibers from the trigeminal nerve to the hard and soft palate. The lingual nerve (a branch of the mandibular division of the trigeminal nerve) and glossopharyngeal nerve provide general sensation to the anterior two-third and posterior third of the tongue, respectively ***(Ellis et al., 2004).***

Tongue:

Muscles of the tongue:

There are two groups; intrinsic muscles that alter the shape of the tongue and extrinsic muscles which move the tongue, they include styloglossus (retracts), genioglossus (protruds), hyoglossus (depresses), and palatoglossus (narrows oropharynx).

Nerve supply of the tongue:

Sensory; by trigeminal nerve for general sensations. Motor; all muscles are innervated by hypoglossal nerve except palatoglossus supplied by vagus nerve.

The palate:

Palate is the partition which separates the nasal cavity from the oral cavity and made of two parts; hard palate.***(Ellis, 1997).***

Nerve supply of the palate:

Sensory nerve supply; soft palate is supplied by lesser palatine nerve and hard palate is supplied by greater palatine nerve. Motor nerve supply; All muscles of palate are supplied by cranial root of accessory nerve through the vagus nerve except tensor palati which is supplied by mandibular nerve ***(Ellis, 1997).***

The Nose

The nose is divided anatomically into the external nose and the nasal cavity ***(Ellis et al., 2004).***

The External Nose is formed by an upper framework of bone, a series of cartilages in the lower part, The cartilage of the nasal septum comprises the central support of this framework. ***(Ellis et al., 2004).***

The Cavity of the Nose is subdivided by the nasal septum into two separate compartments Each side of the nose presents a roof, a floor and a medial and lateral wall. ***(Ellis et al., 2004)***.

Nerve supply:

The olfactory nerve supplies the specialized olfactory zone of the nose, which occupies an area of some 2 cm in the uppermost parts of the septum and lateral walls of the nasal cavity. The ordinary sensory nerves are derived from the nasociliary branch of the 1st division of trigeminal nerve and also from the 2^{nd} or maxillary division ***(Ellis et al., 2004).***

The pharynx

The pharynx is a wide muscular tube that forms the common upper pathway of the respiratory and alimentary tracts. Anteriorly, it is in free communication with the nasal cavity, the mouth and the larynx, which conveniently divide it into three parts, termed the nasopharynx, oropharynx and laryngopharynx, respectively. In extent, it reaches from the skull (the basilar part of the occipital bone) to the origin of the oesophagus at the level of the 6th cervical vertebra (C_6). Posteriorly, it rests against the cervical vertebrae and the prevertebral fascia ***(Ellis et al., 2004).***

The Nasopharynx

The nasopharynx lies behind the nasal cavity and above the soft palate. It communicates with the oropharynx through the pharyngeal isthmus, which becomes closed off during the act of swallowing. ***(Ellis et al., 2004)***.

The oropharynx

The mouth cavity leads into the oropharynx through the oropharyngeal isthmus, which is bounded by the palatoglossal arches, the soft palate and the dorsum of the tongue. ***(Ellis et al., 2004)***