

Management of Airway Complications

Essay

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In Anesthesia

By

Islam Mohamed Fathy

(M.B., B.Ch.)

Faculty of Medicine, Tanta University

Under Supervision of

Prof. Dr. Mohamed Saied Abd El Aziz

Professor of Anesthesiology and Intensive Care

Faculty of Medicine- Ain Shams University

Dr. Ayman Anis Metry

Assistant Professor of Anesthesiology and Intensive Care

Faculty of Medicine- Ain Shams University

Dr. Mostafa Mohammed Serry

Lecturer of Anesthesiology and Intensive Care

Faculty of Medicine- Ain Shams University

Faculty of Medicine

Ain Shams University

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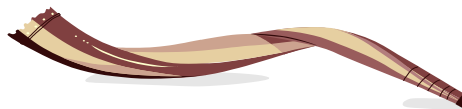
*First of all, I wish to express my sincere thanks to **ALLAH** for his care and generosity throughout my whole life.*

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List of Abbreviations

LIST OF ABBREVIATIONS

Abb.	Meaning
ACS	Anterior cricoid split
ASA	American society of anesthesiologists
BVM	Bag-valve-mask
COPD	Chronic obstructive pulmonary disease
CT	Computed tomography
CTR	Cricotracheal resection
EBSLN	External branch of the superior laryngeal Nerve
ETT	Endotracheal tube
GER	Gastroesophageal reflux
GIT	Gastro intestinal tract
ICP	Intracranial pressure
ICU	Intensive care unit
IOP	Intra ocular pressure
LMA	Laryngeal mask airway
LTP	Laryngotracheoplasty
LTS	Laryngotracheal stenosis
MRI	Magnetic resonance imaging
NPPE	Negative-pressure pulmonary edema
PEEP	Positive end expiratory pressure
RLN	Recurrent laryngeal nerve
SGS	Subglottic stenosis
TEF	Tracheosophageal fistula
TMJ	Temporo mandibular joint
VCP	Vocal cord paralysis

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Introduction

Anesthesiologists are notoriously creatures of habit. Every one of us has a specific way we organize our medications, airway equipment, lines, and so forth. The key word is organization, and this filters down through every aspect of the field. Much of our training is spent learning algorithms and protocols, which are designed to bring a semblance of order into potentially chaotic situations (*Dean, 2012*).

Airway management is a skill required of every anaesthesiologist. Difficult airway management is always a challenge. Efficient management of such clinical situations not only requires experience, but also utilization of safer techniques where feasible (*Pradeep et al., 2012*).

Evaluation of the airway is as crucial as choice of drug, and addressing anatomical problems and syndromes that may compromise it. Unexpected airway management may be required. To ensure patient safety, it is crucial that the airway is safeguarded. The single most important responsibility is to protect it. An unobstructed airway, with intact protective reflexes and respiratory drive, is essential to avoid complications. In some procedures, e.g. dental, the airway may need to be shared with the surgeon (*Roelofse et al., 2012*).

Lead investigator Tim Cook and his team analyzed data from a United Kingdom national registry that included 2.9 million general anesthesia procedures conducted between September 2008 and September 2009. The data included 184 serious airway complications that led to death, brain damage, emergency airway surgery, unanticipated admission to the intensive care unit (ICU) or prolonged ICU stay (***Herculean et al., 2011***).

Of the complications, 133 occurred during anesthesia; 36 occurred in the ICU; and 15 events took place in an emergency department. Sixteen cases of anesthesia-related airway complications resulted in death; three led to brain damage; six were associated with a partial recovery; and 106 ended with complete recovery. Two patients with anesthesia-related airway complications died from complications not related to the airway (***Herculean et al., 2011***).

Aim of the Work

To recognize airway complications and to provide a rapid intervention in such critical situation.

Anatomy of the Airway

A knowledge of anatomy has always played a vital role in medicine, and is especially important in the everyday practice of anaesthesia. The anaesthetist requires a particularly specialized knowledge of anatomy. Successful airway management requires detailed understanding of upper and lower airway structure and function (**Boon et al., 2004**).

Upper Airway:

The human upper airway (fig. 1,2) has two openings: the nose and the mouth. The floor of the nose is the roof of the mouth. The nose leads to the nasopharynx and the mouth leads to the oropharynx. Both are separated anteriorly by the Palate, these two passages join posteriorly in the Pharynx. At the base of the tongue, the epiglottis separates the oropharynx and the laryngopharynx/ hypopharynx. The larynx extends from the lower part of the pharynx to the trachea (**Harold et al., 2004**).

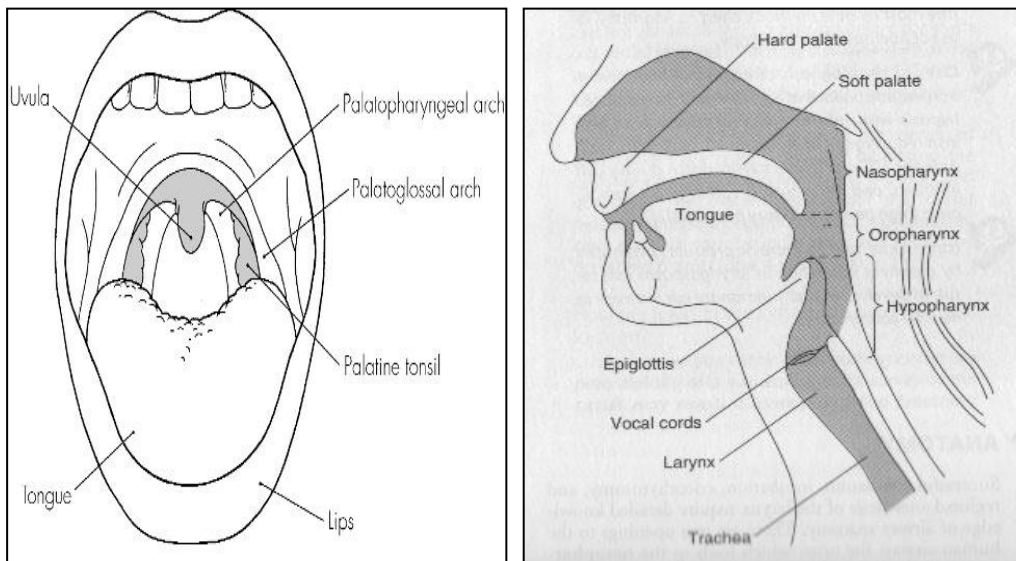


Fig. (1): Anatomy of the mouth.

Fig. (2): Anatomy of the airway.

(Harold et al., 2004)

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.

The Palate: The palate forms the roof of the mouth and the floor of the nasal cavity.

The Nose: The peripheral olfactory organ or organ of smell consists of two parts: an outer, *the external nose*, which projects from the center of the face; and an internal, *the nasal cavity*, which is divided by a septum into right and left nasal chambers.

(Harold et al., 2004)

Anatomy of the pharynx:

The pharynx is that part of the digestive tube which is placed behind the nasal cavities, mouth, and larynx which conveniently divide it into three parts, termed the nasopharynx, oropharynx and laryngopharynx, respectively. It is a musculomembranous tube, somewhat conical in form, with the base upward, and the apex downward, extending from the under surface of the skull to the level of the cricoid cartilage in front, and that of the sixth cervical vertebra behind.

A) The Nasal Part of the Pharynx (pars nasalis pharyngis; nasopharynx): lies behind the nose and above the level of the soft palate.

B) The Oral Part of the Pharynx (pars oralis pharyngis; oropharynx): reaches from the soft palate to the level of the hyoid bone.

C) The Laryngeal Part of the Pharynx (pars laryngea pharyngis; laryngopharynx): Reaches from the hyoid bone to the lower border of the cricoid cartilage, where it is continuous with the esophagus.

(Mikhail et al., 2006)

Anatomy of the larynx:

The larynx or organ of voice is placed at the upper part of the air passage. It is situated between the trachea and the root of

the tongue. On either side of it lie the great vessels of the neck. Its vertical extent corresponds to the fourth, fifth, and sixth cervical vertebræ, but it is placed somewhat higher in the female and also during childhood (**Andreas, 2001**).

Size of the larynx: is almost the same in boys and girls till puberty. After puberty the antero posterior diameter of the larynx virtually doubles in males.

Dimensions of larynx:

Table (1): Dimensions of larynx:

Sex	Length	Transverse Diameter	Antero Posterior Diameter
Male	44mm	43mm	36mm
Female	36mm	41mm	26mm

(Andreas, 2001)

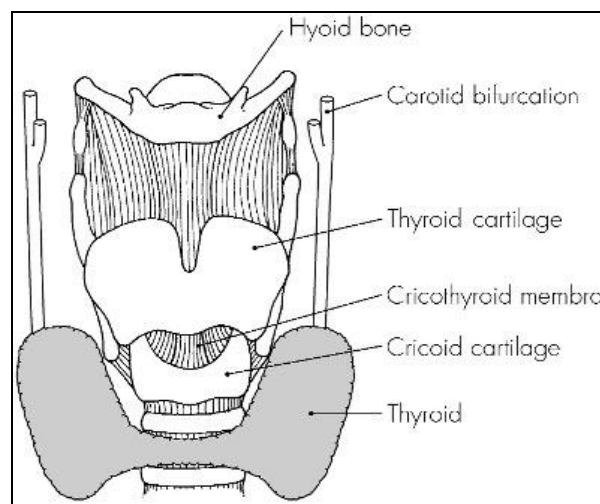


Fig. (3): Anatomy of larynx (**Andreas, 2001**).