Comparison of blind tracheal intubation through the intubating laryngeal mask airway (LMA-Fastrach™) and the

Air-Q™

Thesis

Submitted for partial fulfillment of M.Sc degree in anaesthesia

BY

Ahmed Mohamed Ali Abd Al-Wahab

M.B.B.Ch.

Faculty of medicine,Cairo University

Under supervision of

Prof.Dr.Randa Ismail Badawy

Professor of Anaesthesia,Surgical Intensive Care&Pain Management

Faculty of medicine,Cairo University

DR.Gihan Mohamed Obaya

Assistant prof. *of Anaesthesia,Surgical Intensive Care&Pain Management*

Faculty of medicine,Cairo University

DR.Mohamed Mohamed Abd Al-Haq

Lecturer of Anaesthesia,Surgical Intensive Care&Pain Management

Faculty of medicine,Cairo University

Cairo University

Cairo University

2012

بسم الله الرحمن الرحيم

قَالُوا سُبْحَانَكَ لاَ عِلْمَ لَنَا إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ

صدق الله العظيم

سورة البقرة الآية (٣٢)

Abstract

This study was conducted a 40 patients asa physical status (1,2) scheduled for elective surgery under general anaesthesia planned to include tracheal intubation. all patients where assessed by elganzoury score. after induction of anaesthesia patients where primary ventillated .then the endotracheal tube was inserted blindly. successful intubation was confirmed by chest wall movement, auscaltation and capnogram. after two trials of blind intubation the procedure was abandoned. twenty-four hours post intubation, patients were questioned on the accurance of sorethroat and hoarseness.

Key word: *lma-fastrach*™- *blind tracheal- air-q*™- anaesthesia

Acknowledgment

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. Randa Ismail Badawy*** *Professor of Anesthesia, Cairo University for her faithful supervision and guidance.*

I am also deeply indebted to ***Dr. Gihan Mohamed Obaya,*** *Assistant Professor of Anesthesia, Cairo University for her great support throughout the whole work.*

I would like to express my great thanks to ***Dr. Mohamed Mohamed Abd Al-haq,*** *Lecturer of Anesthesia, Cairo University for the tremendous effort he has done in the meticulous revision of this work.*

Special thanks to ***Prof.Dr.Sahar Marzouq,*** *Professor of Anesthesia, Cairo University and* ***Dr.Norhan Salh*** *Lecturer of Anesthesia, Cairo University,for their great support.*

At last, I am indebted for my family and my lovely fiancee.

Ahmed Abd Al Wahab

List of Figures

List of abbreviations

ASA	American society of anaesthioelogists
BMI	Body mass index
EAD	Elisha Airway Device
ET	Endotracheal tube
ETC	Esophageal-Tracheal Combitube
ESAM	Egyption Socity Of Airway Mangment
GTC	gastric tube channel
IC	intubation channel
ILA	intubating laryngeal airway
ILMA –TM	intubating laryngeal mask airway
LMA Fastrach-TM	laryngeal mask airway
LT	Laryngeal Tube
LTS	Laryngeal tube suction
OETT	oral endo tracheal tube
PLA	Perilaryngeal –Airway
PLMA	proseal laryngeal mask airway
SGADs	supraglottic airway devices
TTs	Tracheal tubes
VC	ventilation channel

List of Tables

Table No. ***Title***

List of Contents

Introduction

Supraglottic airway devices are common airway management tools. However, there are many situations in which a supraglottic device is neither desirable nor sufficient, and where tracheal intubation is required.

Traditionally, tracheal tubes are placed under direct vision via direct laryngoscopy. However, a number of supraglottic airways have been developed to facilitate the passage of tracheal tubes. The intubating laryngeal mask airway ILMA-TM (Intavent; Orthofix Ltd, Maidenhead, Berkshire, UK) is also known as LMA Fastrach-TM (LMA North America, San Diego, CA, USA) .It is specifically designed to facilitate intubation either blindly or via fibreoptic assistance **(1).**

However, the LMA Fastrach has certain limitations. For example, the rigidity of its breathing tube makes it inadvisable for prolonged use as a supraglottic airway out of concern for posterior pharyngeal pressure necrosis. It also requires the use of a special and expensive tracheal tube, adding to the overall cost. Finally, it is not available in paediatric sizes.

One alternative device is the Air-Q **(2)**, also known as the Intubating Laryngeal Airway-TM (ILA; Cookgas, St Louis, MO, USA) The Air-Q is the disposable version of the reusable ILA. (To limit the confusion between ILMA and ILA we will refer to the airways as the LMA Fastrach and the Air-Q).

While sharing some of the rigidity of the LMA Fastrach, it can be used to pass a standard tracheal tube. However, the LMA Fastrach has never been compared with the Air-Q in terms of intubation, nor the ease with which it can be removed after intubation.

The current study was designed to assess the relative success rate for blind tracheal intubation using these two devices.

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**(3)** .

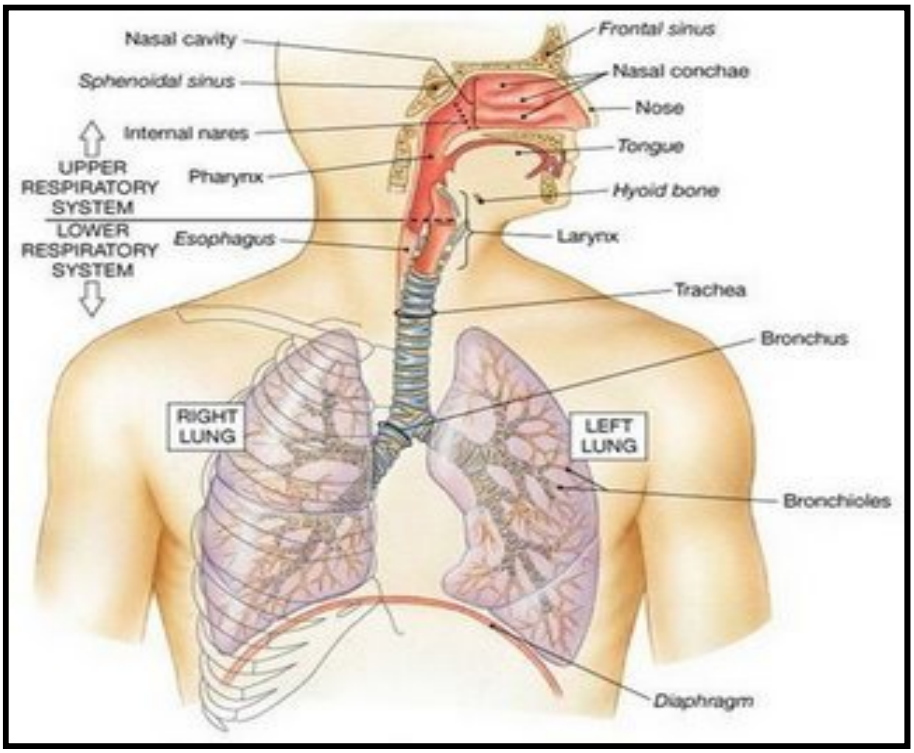

Fig (1): The Human Airway (Hutton,2002)

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 **(3).**

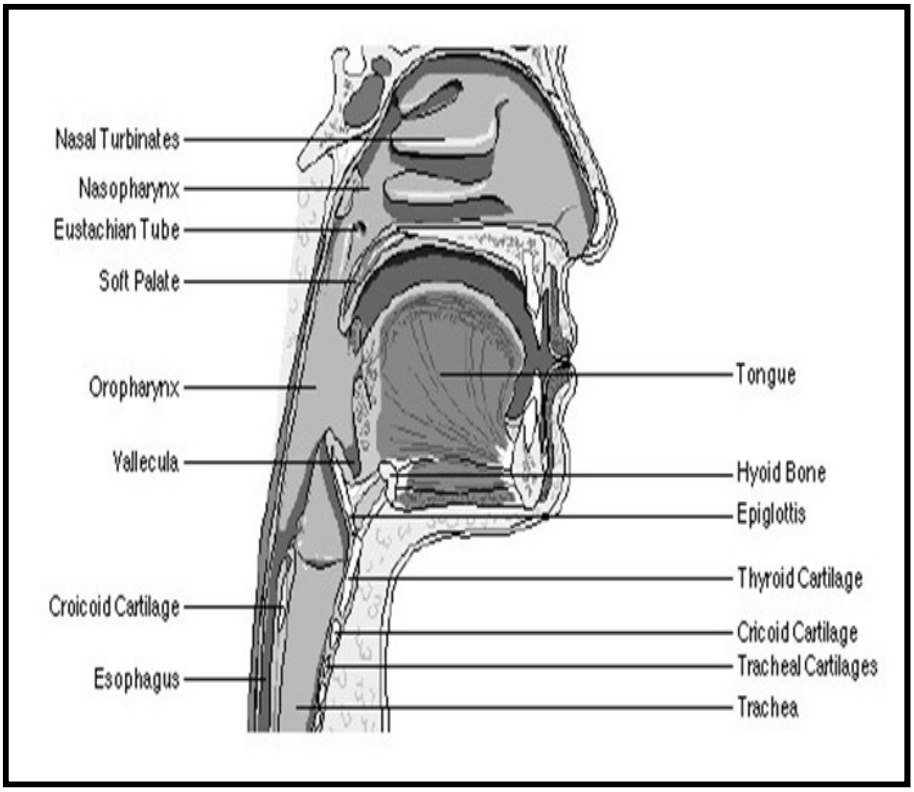

Fig (2): Sagittal section in Nasal Cavity, Mouth, Pharynx and Larynx(Hutton,2002)

Nasal cavity:

It is divided into right and left halves by nasal septum. They open on the face through nostrils. They open posteriorly into the nasopharynx through the posterior nasal aperture.

Nerve Supply of the Nose:

The mucous membrane of the nose is innervated by olfactory nerve fibers which carry smell sensation,and by ophthalmic division of trigeminal nerve which carries ordinary sensations.

Blood Supply of the Nose:

It is supplied by branches of maxillary artery **(3).**

Tongue:

It consists of a buccal and pharyngeal portions, separated by V-shaped groove (sulcus terminalis).The under aspect of tongue bears median frenulum linguae with lingual veins on each side of it and lingual artery medial to the vein, but not visible.

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.

Blood supply of the tongue:

It is supplied by lingual branch of the external carotid artery**(4).**

The palate:

Palate is the partition which separates the nasal cavity from the oral cavity and made of two parts; hard palate, which is a bony septum between nose and mouth and soft palate,which is a flesh septum between nasopharynx and oropharynx**(5).**

Muscles of soft palate:

There are two muscles; tensor palati muscle and levator palati muscle.

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**(5).**