

New concepts in airway Management in cases of difficult intubation

Essay

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وَقُلْ رَأَيْتُ النَّارَ يَنْزِلُ مِنْ سَمَاءٍ سَمَاءٍ

فَضَرَبَتْ عَلَى الْكَلْبِ الْعَظِيمِ

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ABSTRACT

The airway begins with the facial skeleton which is conventionally divided into thirds; the frontal bone, the maxilla with the nasal bone and the mandible. The nasal passages communicate with the pharynx, larynx and the trachea airway trauma can be classified into incomplete and complete which are either penetrating or blunt trauma injuries . Fractures at different sites of the airway includes, maxillofacial fractures, mandibular fractures and cervical spine.

KAY WORDS

Concepts_ Management_ intubation

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List of Abbreviations

ant	Anterior
Post	Posterior
Lat	Lateral
Med	Medial
ASA	American society of anesthesiologists
CAFG	Canadian airway focus group
ETT	Endotracheal tube
TMJ	Tempromandibular joint
ACLS	Advanced cardiac life support
PALS	Pediatric advanced life support
MAIT	Manual axial inline traction
DA	Difficult airway
FOB	Fibreoptic bronchoscope
LMA	Laryngeal mask airway
TTJV	Transtracheal jet ventilation
GCS	Glasgow coma scale
PLA	Perilaryngeal airway
ED	Emergency department
PTLA	Pharyngo-tracheal lumen airway
CPP	Cerebral Perfusion pressure

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Introduction

Clinicians involved in airway management have an enormous selection of resources to choose from .The various supraglottic airways have revolutionized surgery and videolaryngoscopy may do the same for both inpatient & outpatient surgery .(1)

Clinicians interested in airway management have an enormous selection of resources to choose from . Almost every imaginable form of laryngoscope is available to those with the funds to secure them .(2)

Airway complications are among the most feared situations by anesthesiologists as they may occur even in elective conditions and require immediate management to avoid severe hypoxic sequelae. (3)

The flexile fiberoptic laryngoscope is the most useful instrument for difficult airway . Its flexibility allows one to use intraorally,even in patient with limited mouth opening it allow direct visualization of nasal passages when nasal intubation and direct visualization of placement of single lumen , double lumen or univent tube. (4)

The fundamental responsibility of an anaesthologist is to maintain adequate gas exchange . In order to do this 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 a brain damage or death . Thus, its not surprising that more that **85%** of all respiratory-related closed malpractice chaims involve a brain damaged or dead patients .(5)

Anatomy of the upper airway

Surface anatomy of the neck:

- 1-**The hyoid bone:** at the level of **C3**.
- 2-**The notch of the thyroid cartilage:** at the level of **C4**.
- 3-**The cricothyroid ligament:** important in cricothyroid puncture.
- 4-**The cricoid cartilage:** terminating in the trachea at **C6**.
- 5-The isthmus of the thyroid overlies the second, third and fourth tracheal rings.
- 6- Suprasternal notch . (6)

*Important notes:

- The lower border of the the cricoid cartilage is an important landmark as it corresponds to the level of **C6** and related to the following:
 - 1-The junction of the larynx with the trachea.
 - 2-The junction of the pharynx with the esophagus . (7)

The Palate:

The palate separates the nasal and buccal cavities and compromises:

1-The hard palate:is made up of bone, periosteum and a squamous mucosa in which are embedded tiny accessory salivary glands.

It is a vault shaped and made up of palatine palate of the maxilla and the horizontal plate of the palatine palate its bounded by the alveolar margin anteriorly and laterally and merges posteriorly with the soft palate. **(8)**

2-Soft palate: hanging as a curtain between the naso- and oropharynx; centrally it bears the uvula on its free posterior edge; laterally it blends into the anterior and posterior pillars of the fauces.**(6)**

The framework of the soft palate is formed by the aponeurosis of the tensor palati muscle; which adheres to the posterior border of the hard palate.**(8)**

Nerve supply:

-**Sensory** : largely from the maxillary division of the trigeminal nerve .

-**Motor**: the palatine muscles are innervated from fiber transmitted by the vagus fibers. The tensor palate is supplied by the mandibular division of trigeminal nerve.(9)

The development of the faces ,lips and palate with special references to their congenital anomalies:

Around the primitive mouth ,develop the following:

1.The frontonasal process: which projects down from the cranium, 2 olfactory pits develop in it and rupture into the pharynx to form the nostrils .Definitively, this process forms the nose ,the nasal septum, nostril the philtrum of the upper lip(the small midline depression) and the premaxilla (the V shaped anterior portion of the upper jaw which usually bears the four incisor teeth).(10)

2.The maxillary process: on each side, which fuse with the frontonasal process and becomes the cheeks ,upper lip, upper jaw and palate.

3.The mandibular process:which meet in the midline to form the lower jaw.

Failure of the above processes results in presence of congenital anomalies such as the followings;

1*macrostoma or microstoma: are conditions where either too little or too great closure of stomadaeum occurs . **(10)**

2*cleft upper lip (hare lip) it may be either:

A #median; as a failure of development of the philtrum from the frontonasal process.

B #at one side; which is either unilateral or bilateral these occur due to failure of fusion of the maxillary and frontonasal processes. The cleft may be a small defect in the lip or may extend into the nostril, split the alveolus or even extend along the sides of the nose far as the orbit. There may be an associated cleft palate.**(6)**

3*cleft lower lip: rarely occurs and maybe associated with cleft tongue and cleft mandible.

4*cleft palate: is a failure of fusion of the segments of the palate the following stages may occur.

5*partial cleft: which may involve the soft palate only or the posterior part of the hard palate.

6*complete cleft: which may be unilateral or bilateral . **(7)**

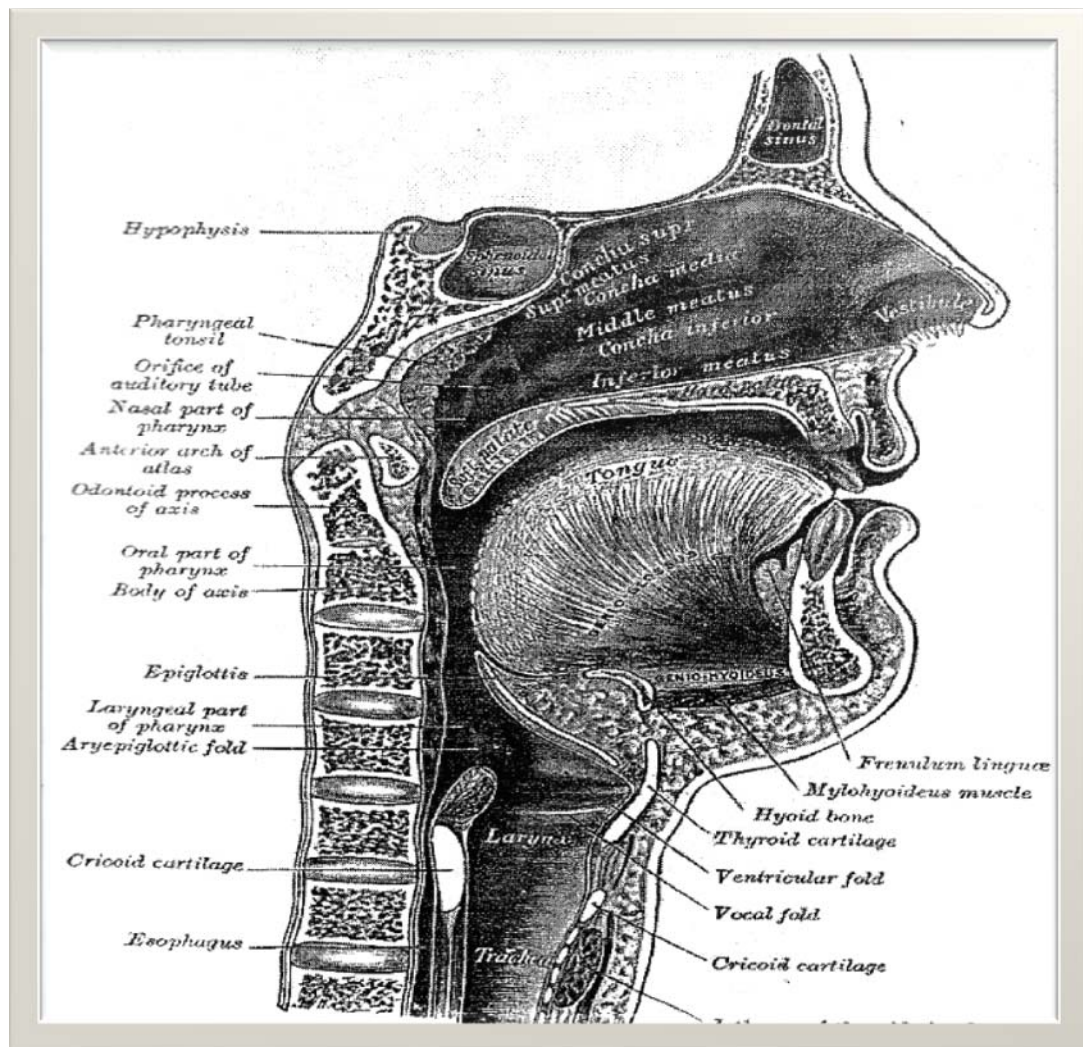


Figure (1) sagittal section illustrating the upper airway

Anatomy. (11)