

Techniques of Difficult Airway Management

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- ❖ **In general surgical patients, evaluation will pick up only 15-50% of patients who are true clinical difficult intubations**
- ❖ **The incidence of difficult facemask inflation associated with difficult intubation in the general surgical population is, at 1:10,000. Difficulty in mask ventilation was experienced in 15% of patients who were clinically difficult to intubate.**
- ❖ **Prevalence of very difficult or abandoned intubations in general surgical patients is approximately 1:2000, but in obstetrics 1:300**
- ❖ **Hypoxia – most common reason of critical incidence**



❖ **The American Society of Anesthesiologists (ASA) suggested that difficult facemask application occurred when signs of inadequate ventilation could not be reversed by mask ventilation or the oxygen saturation could not be maintained above 90%, if it was above this figure preoperatively.**

❖ **Difficult tracheal intubation occurred when, using a conventional laryngoscope, more than 3 attempts at laryngoscopy or more than 10 minutes were required to complete tracheal intubation.**



Basic airway evaluation in all patients

- ❖ **Previous anaesthetic problems**
- ❖ **General appearance of the neck, face, maxilla and mandibula**
- ❖ **Jaw movements**
- ❖ **Head extension and movements**
- ❖ **The teeth and oropharynx**
- ❖ **The soft tissues of the neck**
- ❖ **Recent chest and cervical spine x-rays**
- ❖ **Risk of aspiration**



Range of test results from various studies

Test	Sensitivity %	Specificity %	PPV %
Mallampati	42-81	60-90	4-20
Thyromental	60-90	25-80	15-20

Combining studies

Group	Sensitivity %	Specificity %	PPV %
A	53	98	87
B	51	99	93
C	49	99.5	96

A: Mallampati grade 3 and limited jaw protrusion

B: Group A plus reduced craniocervical movement

C: Group B plus thyromental distance <3 fingers



Patients with difficult airway

<ul style="list-style-type: none">- Abnormal Anatomy	OSAS
<ul style="list-style-type: none">- Limited Mouth Opening	<ul style="list-style-type: none">-
<ul style="list-style-type: none">- Dental Abscess	<ul style="list-style-type: none">- Receding Mandible



Causes of difficult intubation

Anaesthetist

- ❖ **Inadequate equipment preparation**
- ❖ **Inexperience**
- ❖ **Poor technique**

Equipment

- ❖ **Malfunction**
- ❖ **Unavailability**
- ❖ **No trained assistance**



Expected difficulty

Findings from various studies with some degree of association with difficult airway management

- ❖ **Previously noted difficulties**
- ❖ **Male, aged 40-59, obesity**
- ❖ **Diabetes, acromegaly, rheumatoid arthritis, obstructive sleep apnoea**
- ❖ **Trauma, burns, swelling, infection, haematoma of mouth tongue pharynx larynx trachea or neck**
- ❖ **Large tongue, receding jaw, high arched palate, prominent upper incisors, short thick neck, large breasts, microstomia, fixed larynx**
- ❖ **Stridor, inability to lie flat, drooling of saliva**



The Unexpected Difficult Airway

- ❖ **Experienced help may not be immediately available**
- ❖ **Special equipment may not be immediately available**
- ❖ **A general anaesthetic has usually been administered**
- ❖ **A long acting relaxant may have been given**
- ❖ **Backup airway management plans may be poorly thought out**



Why does it happens?

- ❖ **No critical discussion with colleagues about proposed management plan**
- ❖ **No request for experienced help**
- ❖ **Exaggerated idea of personal ability**
- ❖ **Ill-conceived plan A and/or plan B**
- ❖ **Poorly executed plan A and/or plan B**
- ❖ **Persisting with plan A too long, starting the rescue plan too late**
- ❖ **Not involving, and preparing, surgical colleagues**



Techniques for managing the unexpected difficult airway include:

Manipulation of the patients airway and position e.g. more or less pillows, laryngeal pressure,

Oral airways, nasal airways in a range of size

Different laryngoscopy blades e.g.

- Miller
- Magill
- Robershaw
- Mackintosh

Bougies and stylettes

Laryngeal mask airways

Combitube



Techniques for managing the unexpected difficult airway include:

- ILMA
- Cricothyroid puncture
- COPA
- More specialized techniques using fibrescopes



If it is difficult with masc ventilation

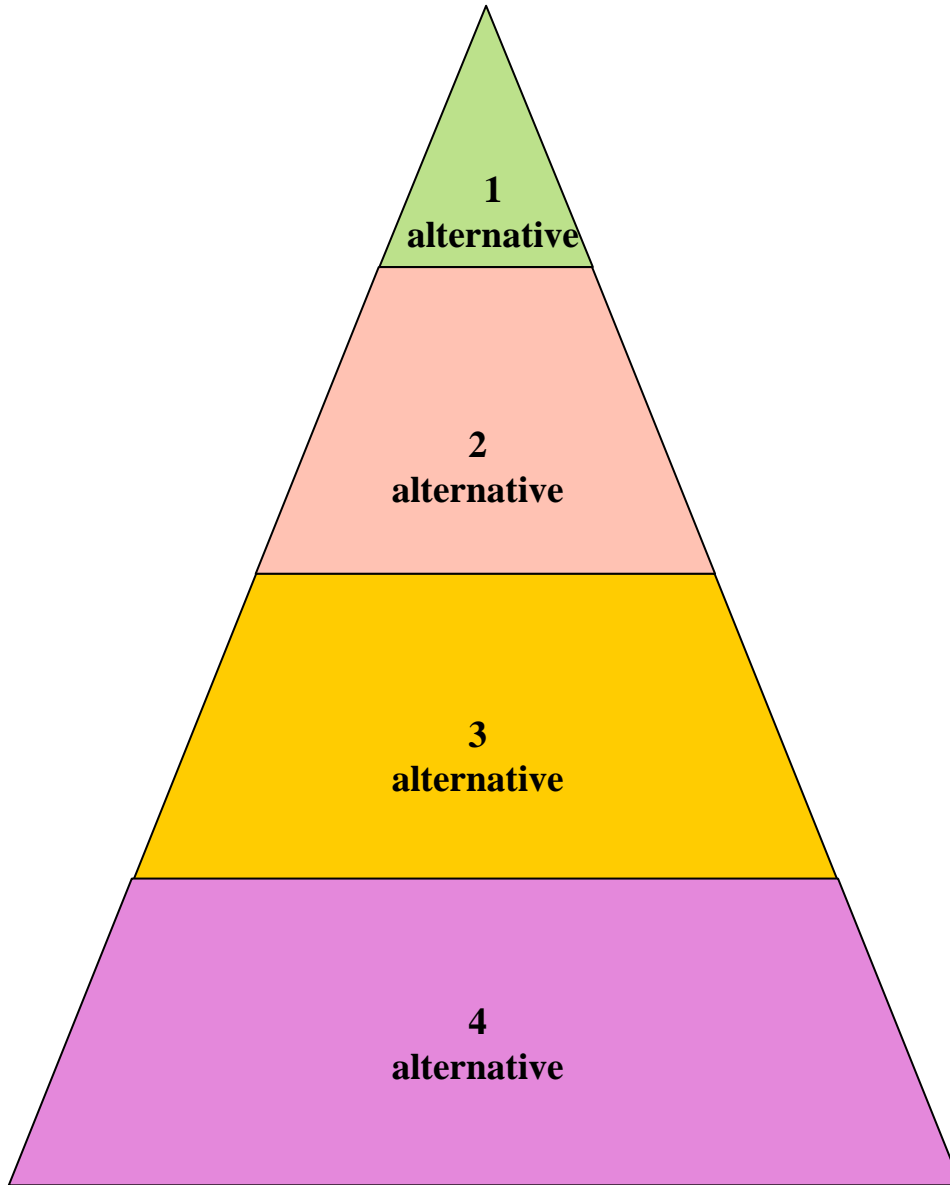
- ❖ **Big oral airway**
- ❖ **Triple thrust manoeuvre (your two hands on mask/face, assistant squeezing the bag)**
- ❖ **Laryngeal mask (often very effective)**
- ❖ **Releasing cricoid pressure (if applied)**
- ❖ **Cricothyroidotomy**



If it is difficult to intubate

- ❖ **Optimize head/neck position (neck flexed, maximal head extension on neck)**
- ❖ **Change laryngoscope**
- ❖ **blade length or shape - straight, curved etc**
- ❖ **Optimal external laryngeal manipulation**
- ❖ **Bougie**
- ❖ **(maximum of 2 attempts?)**
- ❖ **Alternative technique of intubation**





1. Manipulation of the patients airway and position , laryngeal pressure, different l. blade, bugie

**2. LMA
ILMA
Combitube**

**3. Transtracheal oksigenation
Jet ventilation
Percutaneus cricothyreotomy**

**4. Cricothireotomy
Tracheostomy**



The Anticipated Difficult Airway management plan(s)

- ❖ Discussion with colleagues in advance
- ❖ Play-acting those techniques which may be required
- ❖ Experienced, informed help in the anaesthetic room
- ❖ Equipment ready to hand
- ❖ Definite initial plan (plan A) for ventilation and intubation (if required)
- ❖ Definite backup plan (plan B) for ventilation and intubation
- ❖ The option of awake, sedated intubation
- ❖ The availability of prepared surgical colleagues, should their intervention be required



Indications for awake intubation

- ❖ **Difficult intubation and difficult facemask**
- ❖ **Difficult intubation and full stomach**
- ❖ **Difficult fiberoptic intubation**
- ❖ **Cervical spine trauma**
- ❖ **Prior to self-positioning of patient**



1 Step : Patient Assessment

- ❖ **Informed consent**
- ❖ **Reassuring the patient about the comfort of the technique**
- ❖ **Anaesthetic history and examination of the airway**
- ❖ **Mark the vital surface anatomy**
- ❖ **Plan for failure.**
- ❖ **Premeditation**



2 Step: Preparation of Theatre and Patient













- ❖ **Full resuscitation facilities**
- ❖ **Emergency drugs**
- ❖ **Ensure patient oxygenation continues**
- ❖ **Monitoring and I.V. access**
- ❖ **Position the patient comfortably allowing them to optimize their airway. This is usually sitting. Never force a patient to adopt an uncomfortable position as the airway may be compromised**
- ❖ **Sedation**



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	Inervation	Equipment	Technique
3. step Mouth	 <p>Glossopharyngeal Nerve (IX)</p>		
4. Step Nose	 <p>Sphenopalatine ganglion (V2)</p>		
5. step Supraglottis	 <p>Internal Branch of superior laryngeal nerve (X)</p>		
6. step Infraglottis	 <p>Recurrent Laryngeal Nerve (X)</p>		

6. Step Preintubation preparation

- ❖ **Dab up secretions**
- ❖ **Soften and warm the tube and endoscope.**
- ❖ **Insufflate oxygen down the suction port of the endoscope**
- ❖ **Attach an angle piece with suction port to the scope before placing the tube over the endoscope.**



- ❖ **Step 7: Intubation , Oral and Nasal**
- ❖ **Step 8: Confirmation of Tube Position**
- ❖ **Step 9: Induction**



ASA practice guidelines for difficult airway management

- ❖ **Evaluation of the airway**
- ❖ **Preparation for difficult airway management**
- ❖ **Strategy from the start of anaesthetic care**
- ❖ **Strategy at termination of anaesthetic care**
- ❖ **Follow-up of patients**



Thank You for attention!

