



AIRWAY MANAGEMENT

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OBJECTIVE OF LECTURE

- **Non Anesthesia Sedation Providers**
- **Review for CRNA's**
- **Informal**
- **Questions encouraged**

AIRWAY MANAGEMENT

• **AWARENESS**

• **BASICS OF ANATOMY**

• **EQUIPMENT**

AIRWAY MANAGEMENT

• CLINICAL PEARL

- **02 SAT**
 - **MONITOR CHANGES ARE DELAYED**
 - **APNEA - THEN DECREASED SATURATION**
 - **DEEP BREATH - DELAYED INCREASE IN 02 SAT**

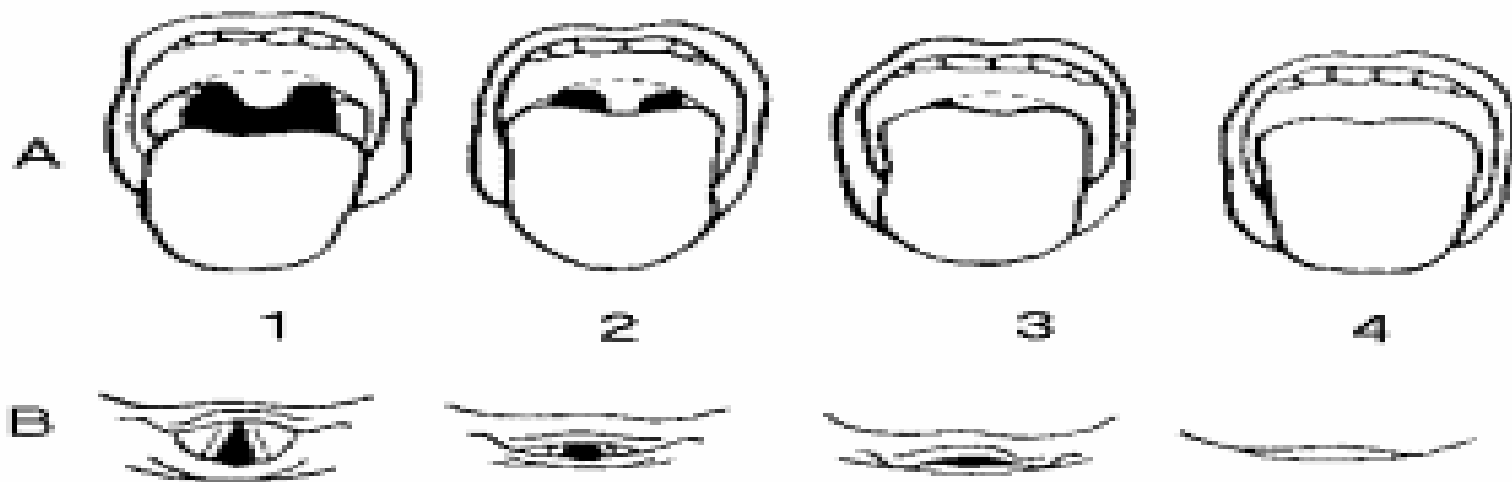


AIRWAY MANAGEMENT

ASSESS POTENTIAL PROBLEMS







⚙ *M = Mallampati*

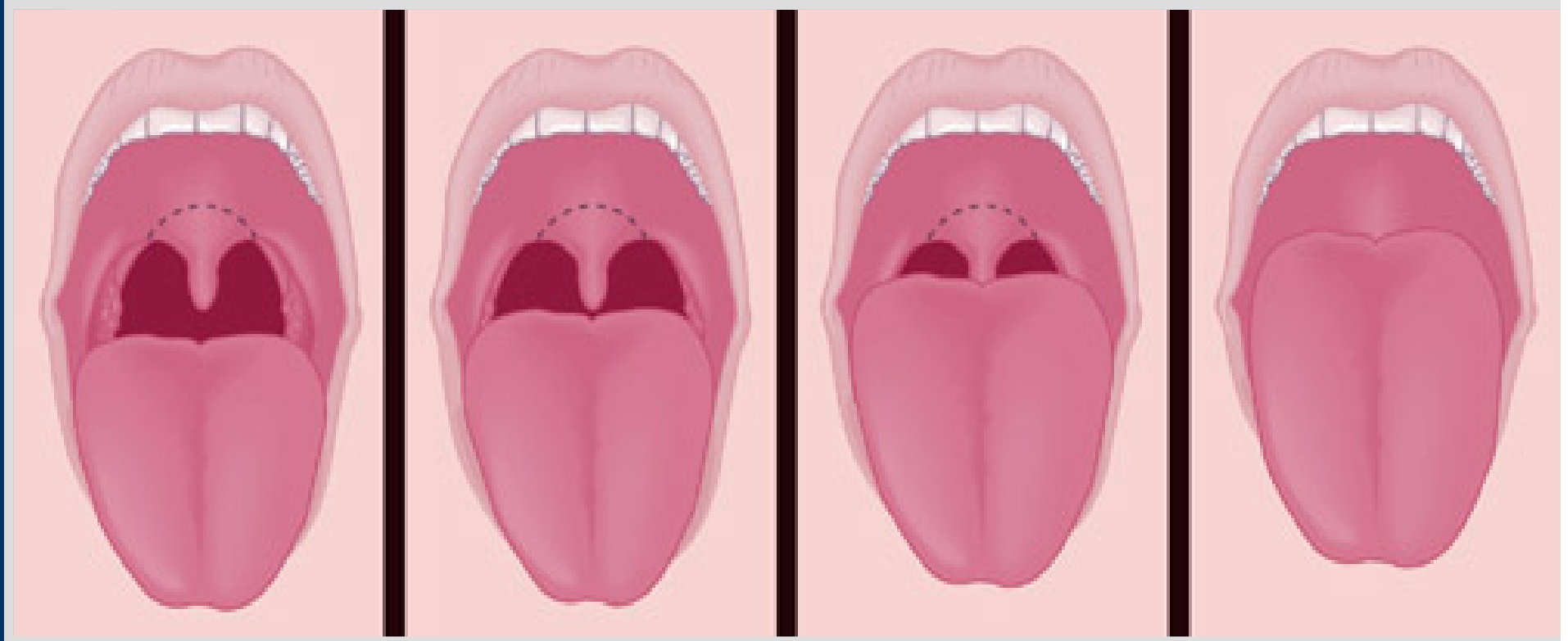
⚙ **Class I** = visualization of the soft palate, uvula, anterior and posterior pillars.

Class II = visualization of the soft palate, and uvula.

Class III = visualization of the soft palate and the base of the uvula.

Class IV = soft palate is not visible at all.

Mallampati Grades



Class I

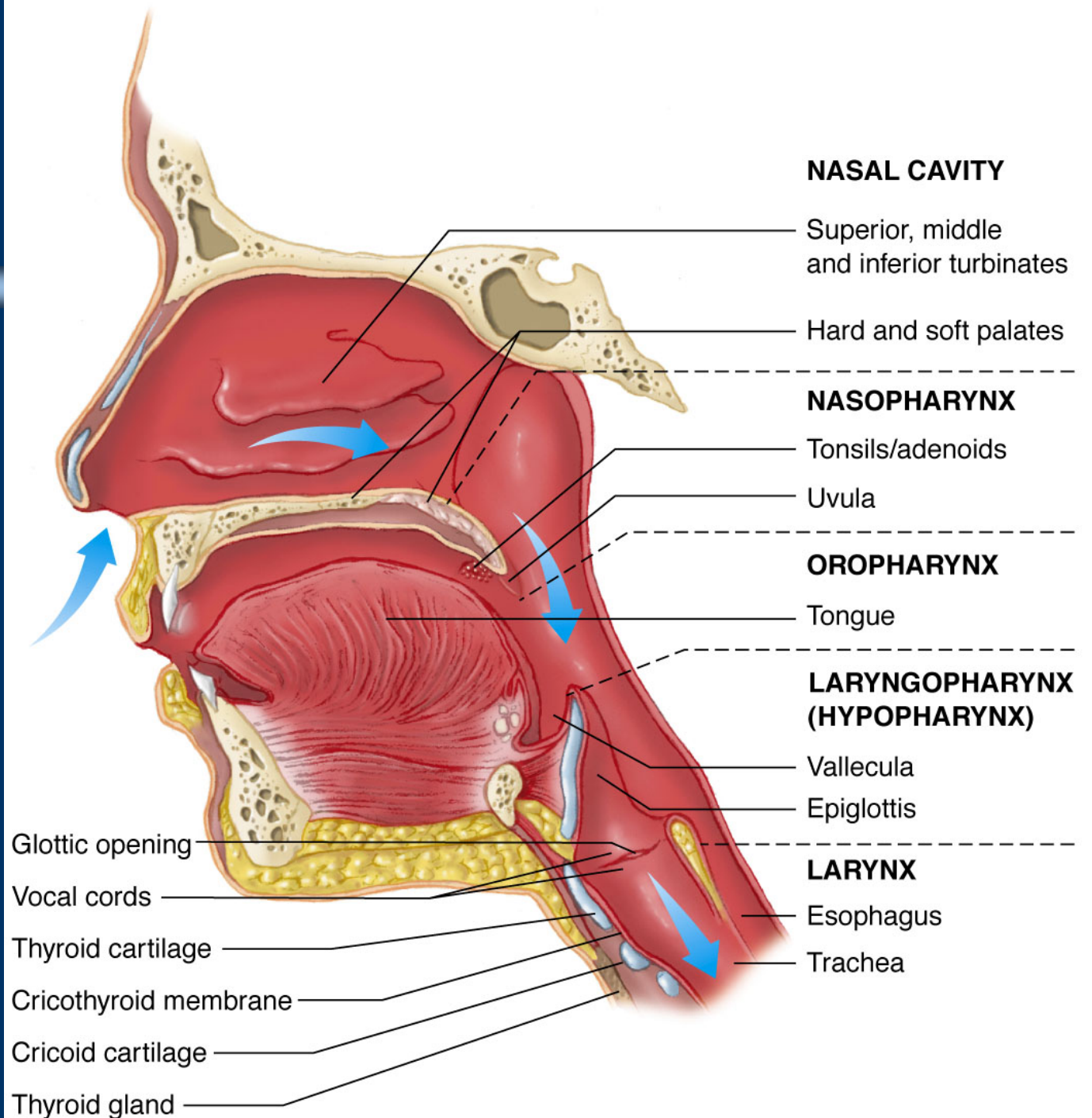
Class II

Class III

Class IV

↑ *Difficulty* →

Anatomy of the Upper Airway



Upper Airway Anatomy

- **Functions: warm, filter, humidify air**
- **Nasal cavity and nasopharynx**
 - **Formed by union of facial bones**
 - **Nasal floor towards ear not eye**
 - **Lined with mucous membranes, cilia**
 - **Tissues are delicate, vascular**
 - **Adenoids**
 - **Lymph tissue - filters bacteria**
 - **Commonly infected**

Upper Airway Anatomy

• Oral cavity and oropharynx

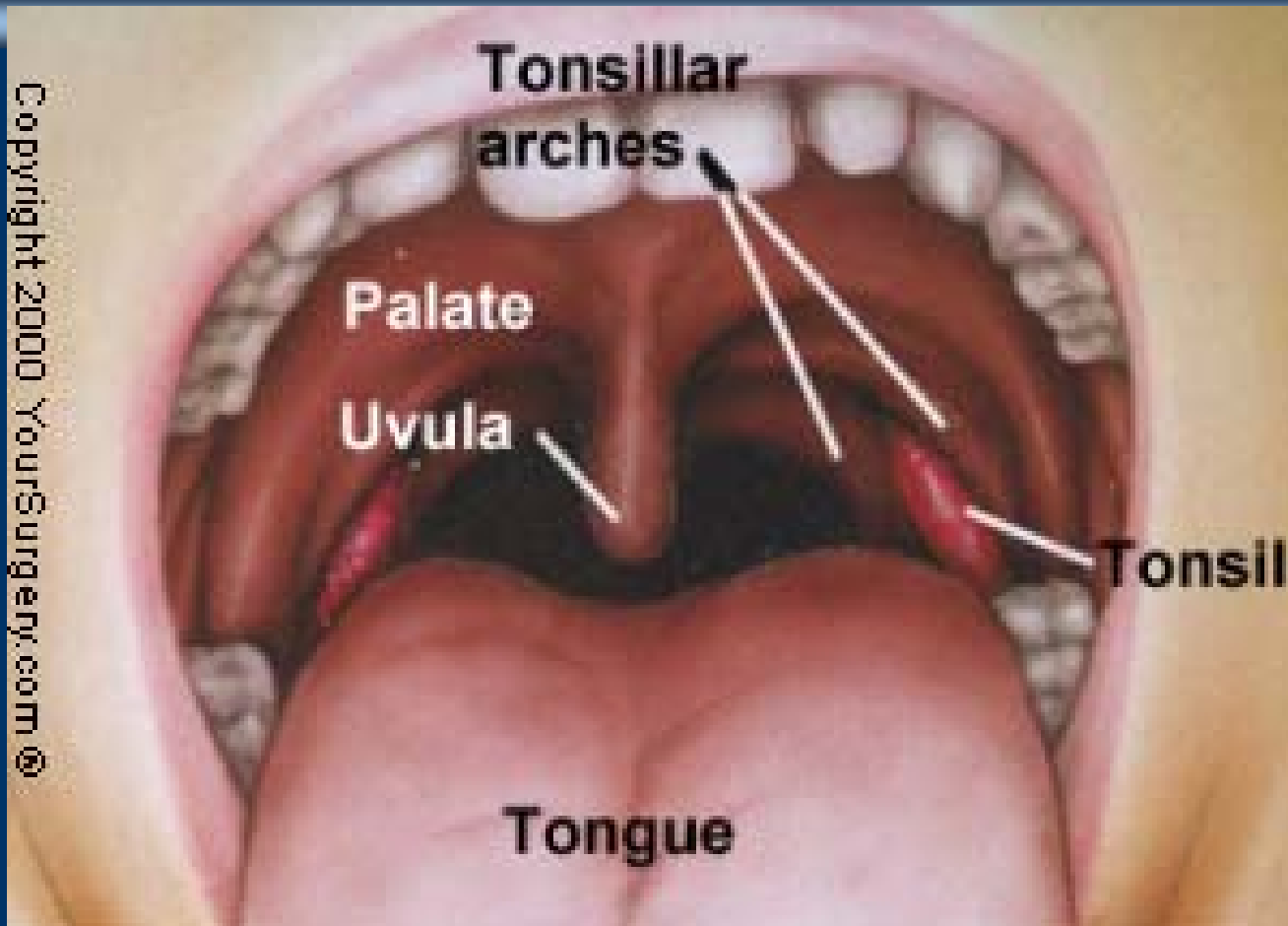
- **Tonsils**
 - Lymph tissue - filters bacteria
 - Commonly infected
- **Epiglottis**
 - Leaf-like structure
 - Closes during swallowing
 - Prevents aspiration
- **Vallecula**
 - “Pocket” formed by base of tongue, epiglottis

Upper Airway Anatomy

• Oral cavity and oropharynx

- Teeth
- Tongue
 - Attached at mandible, hyoid bone
 - Most common airway obstruction cause
- Palate
 - Roof of mouth
 - Separates oropharynx and nasopharynx
 - Anterior= hard palate; Posterior= soft palate

Upper Airway Anatomy



Upper Airway Anatomy

Larynx

- **Attached to hyoid bone**
 - Horseshoe shaped bone
 - Supports trachea
- **Thyroid cartilage**
 - Largest laryngeal cartilage
 - Shield-shaped
 - Cartilage anteriorly, smooth muscle posteriorly
 - “Adam’s Apple”
 - Glottic opening directly behind

Upper Airway Anatomy

• Larynx

- **Glottic opening**
 - Adult airway's narrowest point
 - Dependent on muscle tone
 - Contains vocal bands
- **Arytenoid cartilage**
 - Posterior attachment of vocal bands

Upper Airway Anatomy

• Larynx

- **Cricoid ring**
 - First tracheal ring
 - Completely cartilaginous
 - Compression (Sellick maneuver) occludes esophagus
- **Cricothyroid membrane**
 - Membrane between cricoid, thyroid cartilages
 - Site for surgical, needle airway placement

Upper Airway Anatomy

• Larynx and Trachea

• Associated Structures

– Thyroid gland

- below cricoid cartilage

- lies across trachea, up both sides

– Carotid arteries

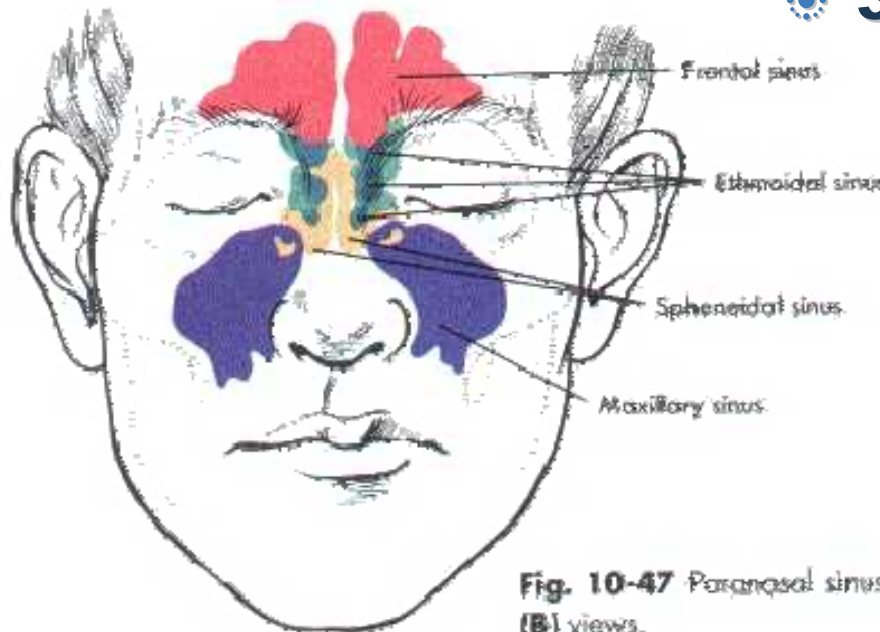
- branch across, lie closely alongside trachea

– Jugular veins

- branch across and lie close to trachea

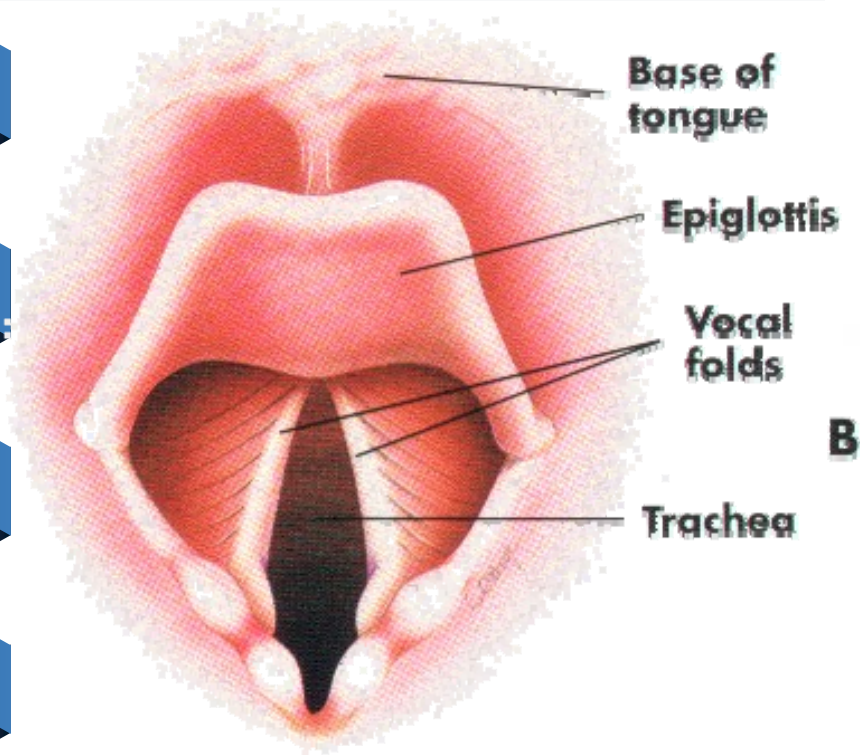
Upper Airway Anatomy

☼ Sinuses

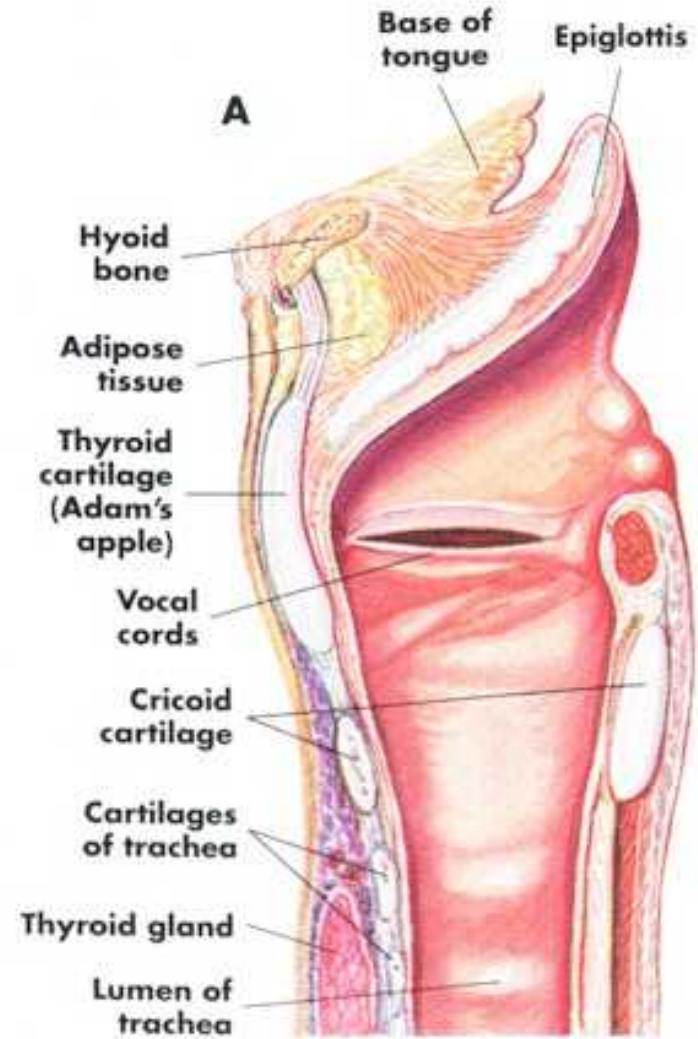


- cavities formed by cranial bones
- act as tributaries for fluid to, from eustachian tubes, tear ducts
- trap bacteria, commonly infected

Upper Airway Anatomy



B



AIRWAY MANAGEMENT

- **ASSESS POTENTIAL PROBLEMS**

- **SLEEP APNEA**

AIRWAY MANAGEMENT

• QUICK CLINICAL AIRWAY ASSESSMENT

- SMALL MOUTH OPENING
- RECESSIVE CHIN
- MISSING NOSE
- HARDWARE

AIRWAY AT RISK??

- **Defer to Anesthesia**
- **Very Light Sedation**

AIRWAY MANAGEMENT

- AIRWAY REMINDERS
- VERBAL - TAKE A DEEP BREATH
- JAW TUG
- POSITION HEAD
- TOUCH SHOULDER



JAW THRUST – BETTER WAY



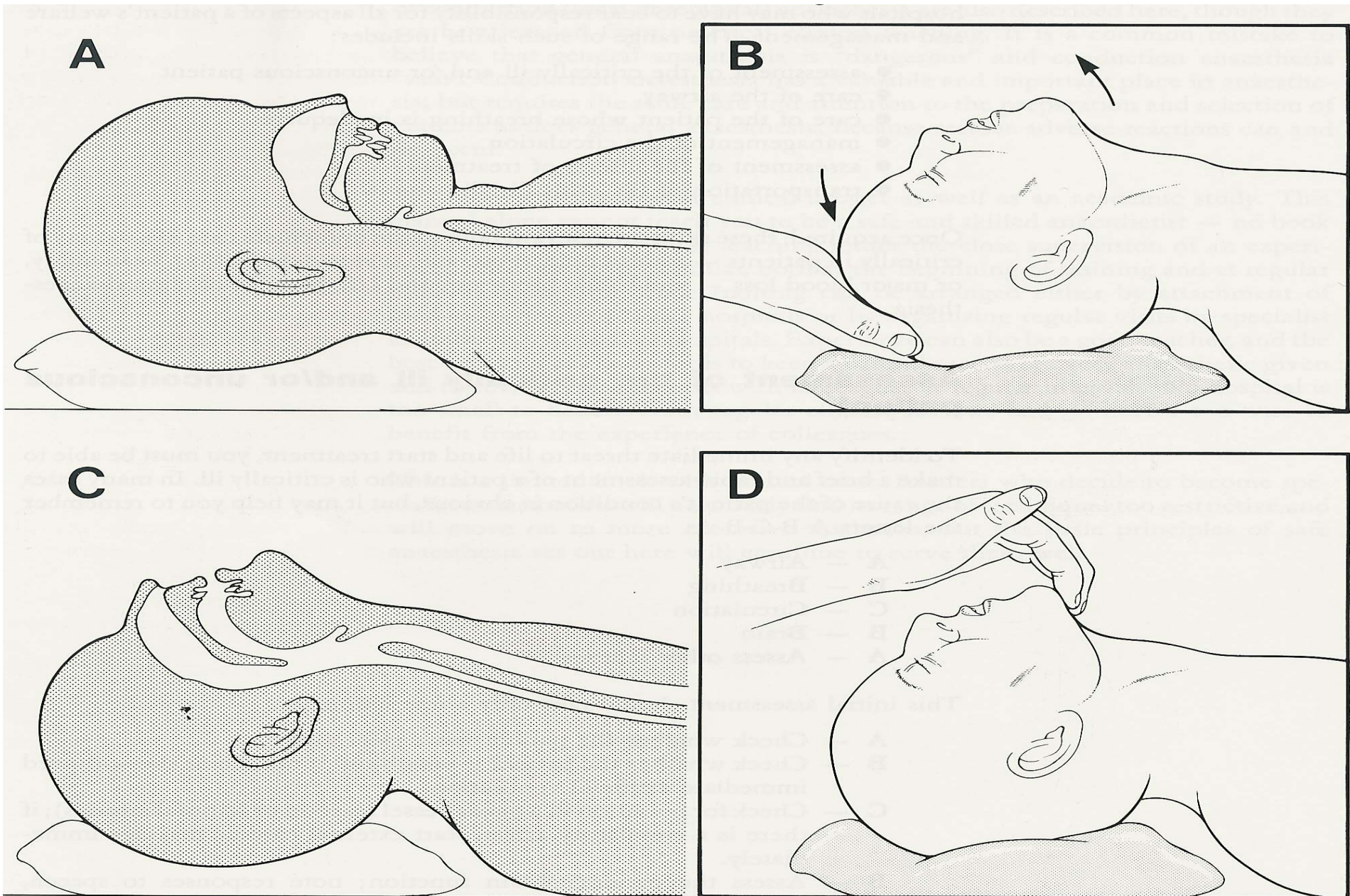


Fig. 2.1. Clearing the airway by extension of the head. (A) Mechanism of airway obstruction when supine; (B,C) extension of the head; (D) maintaining a clear airway by supporting the jaw.

AIRWAYS

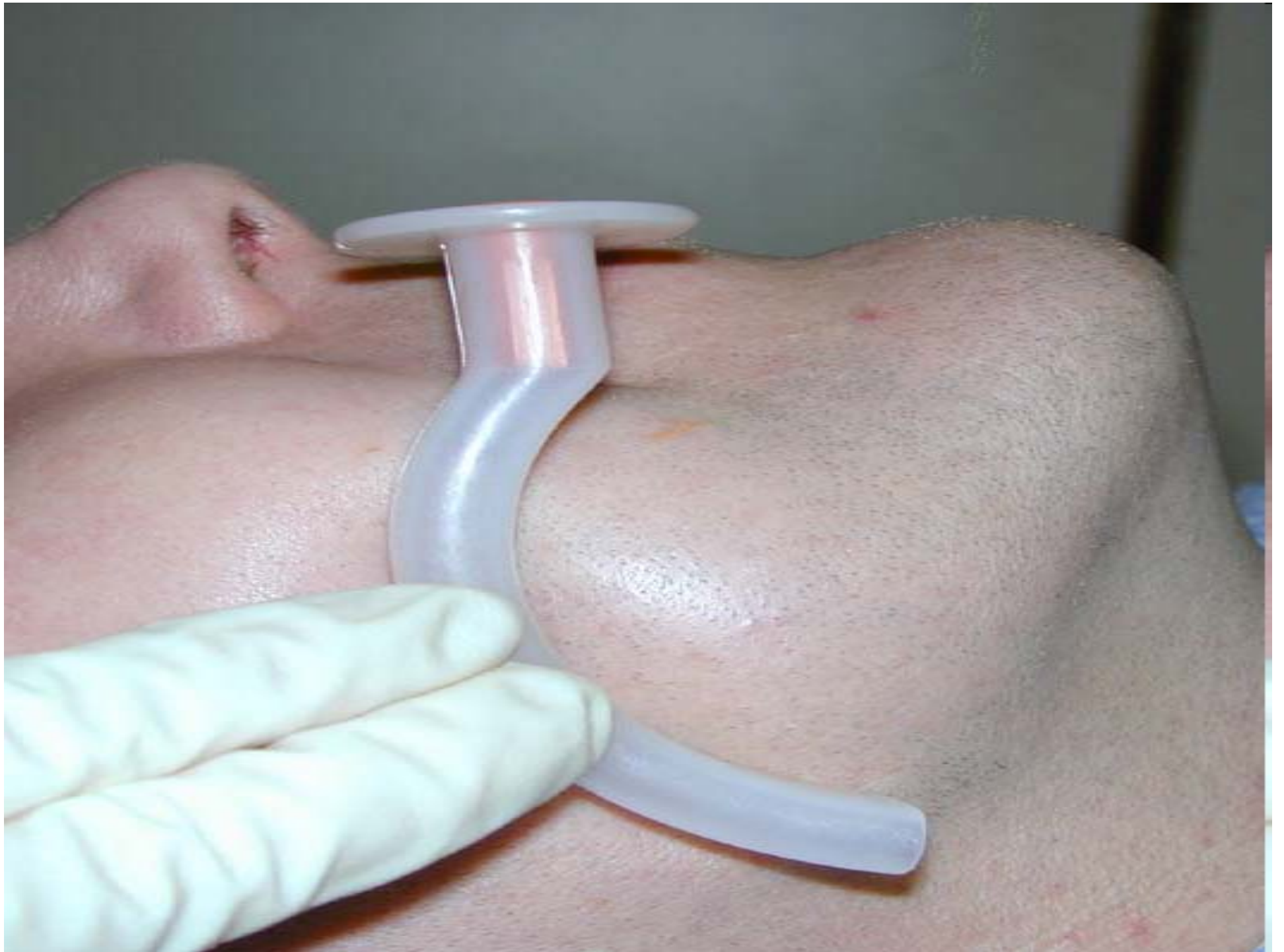
- **USEFUL WITH OBSTRUCTION**
- **POTENTIAL FOR DAMAGE TO TEETH -ORAL**
- **NASAL - NOSE BLEEDS**
- **POSSIBLE LARYNGOSPASM**
- **CAN BLOCK AIRWAY**

AIRWAYS - ORAL

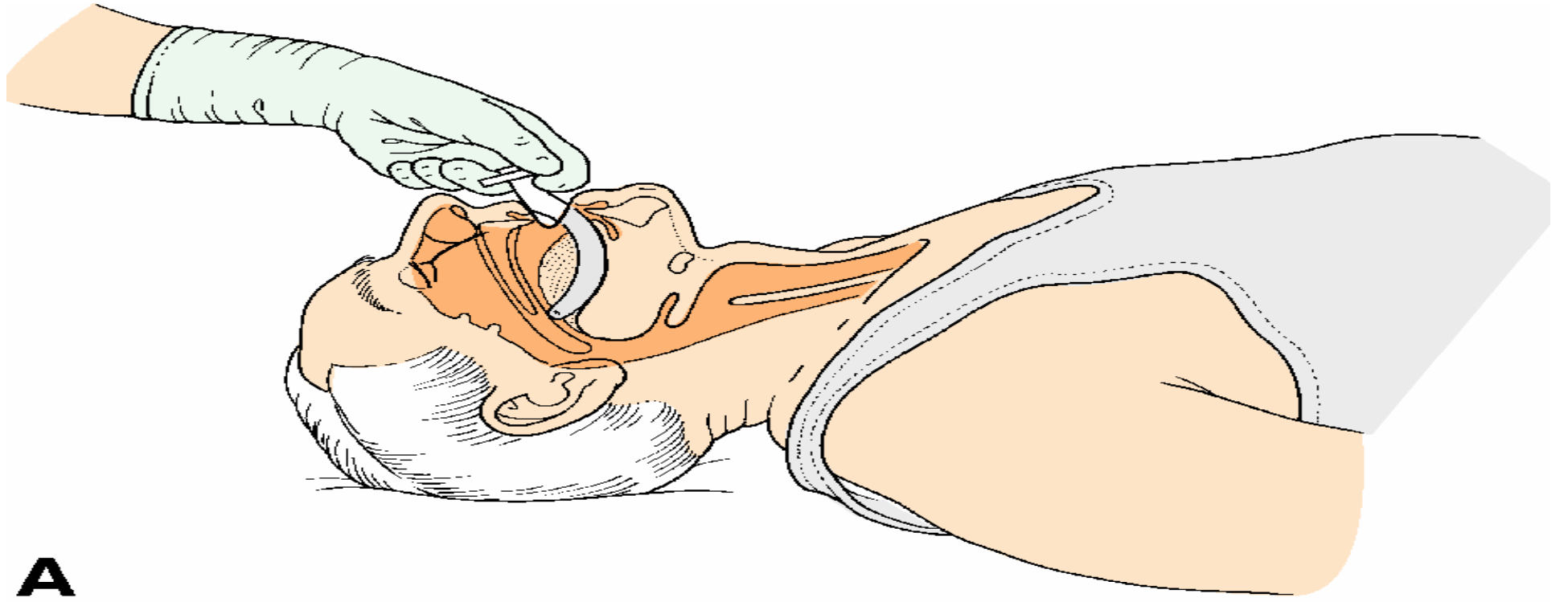
- **SIZE**
- **MEASURE FROM MOUTH TO JAW**
- **USUALLY A 3 TO 4 MOST ADULTS**
- **CAN INJURE TEETH**

Oral Airways – Size matters

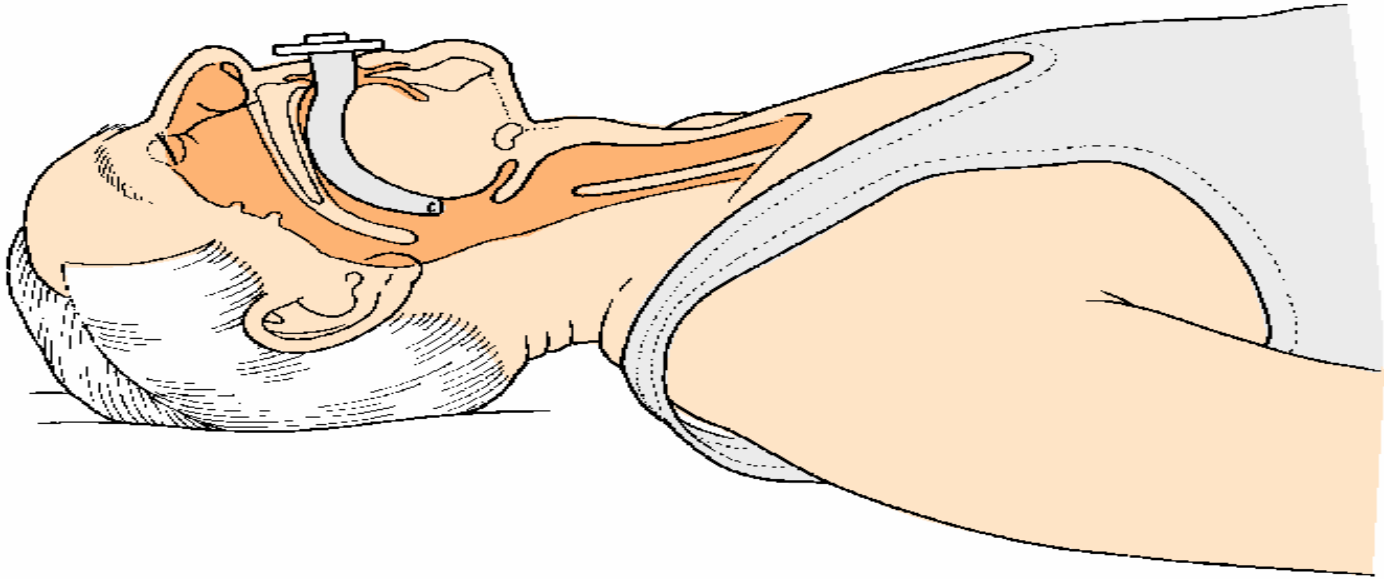








A



B

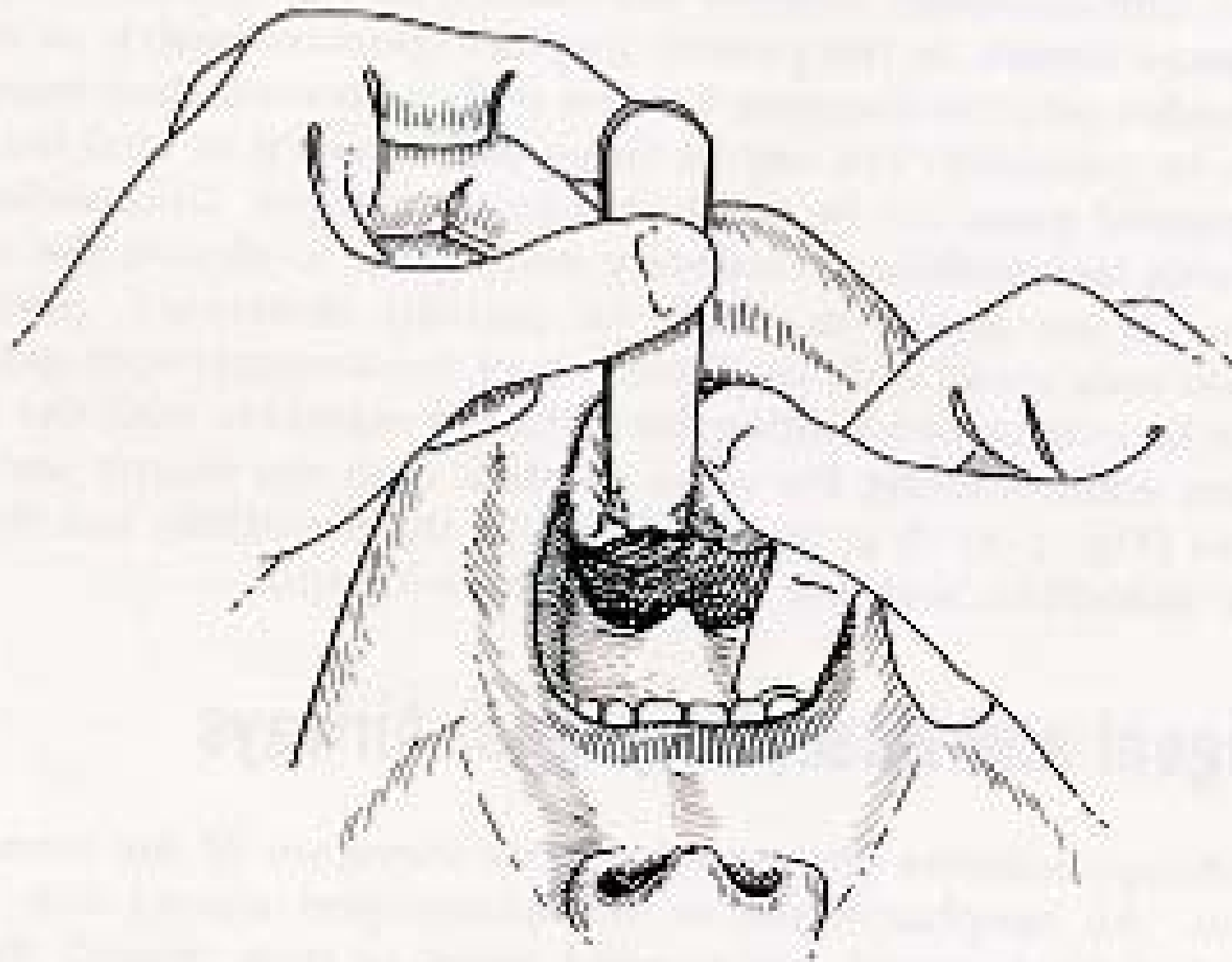


FIGURE 1-2

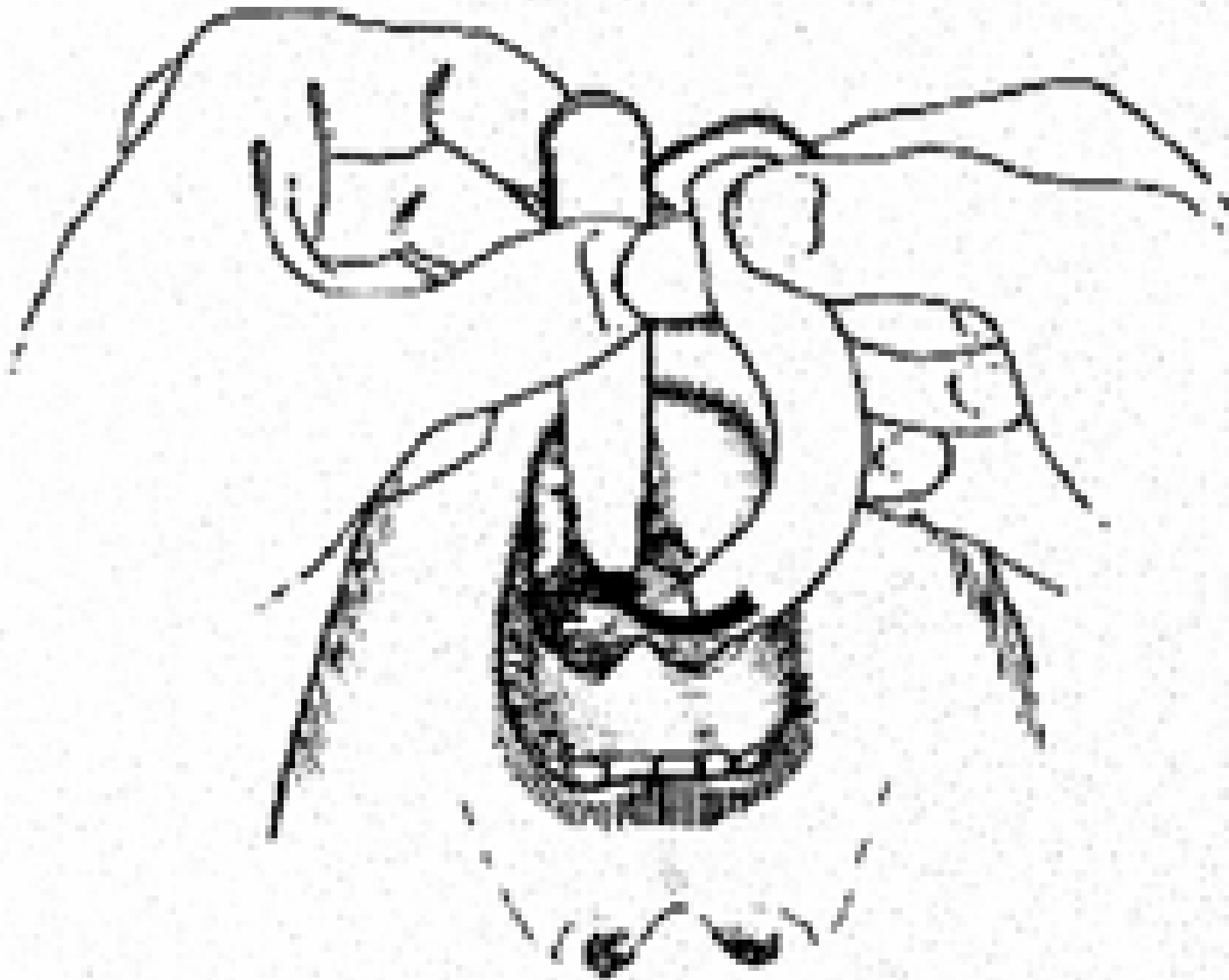


FIGURE 1-3

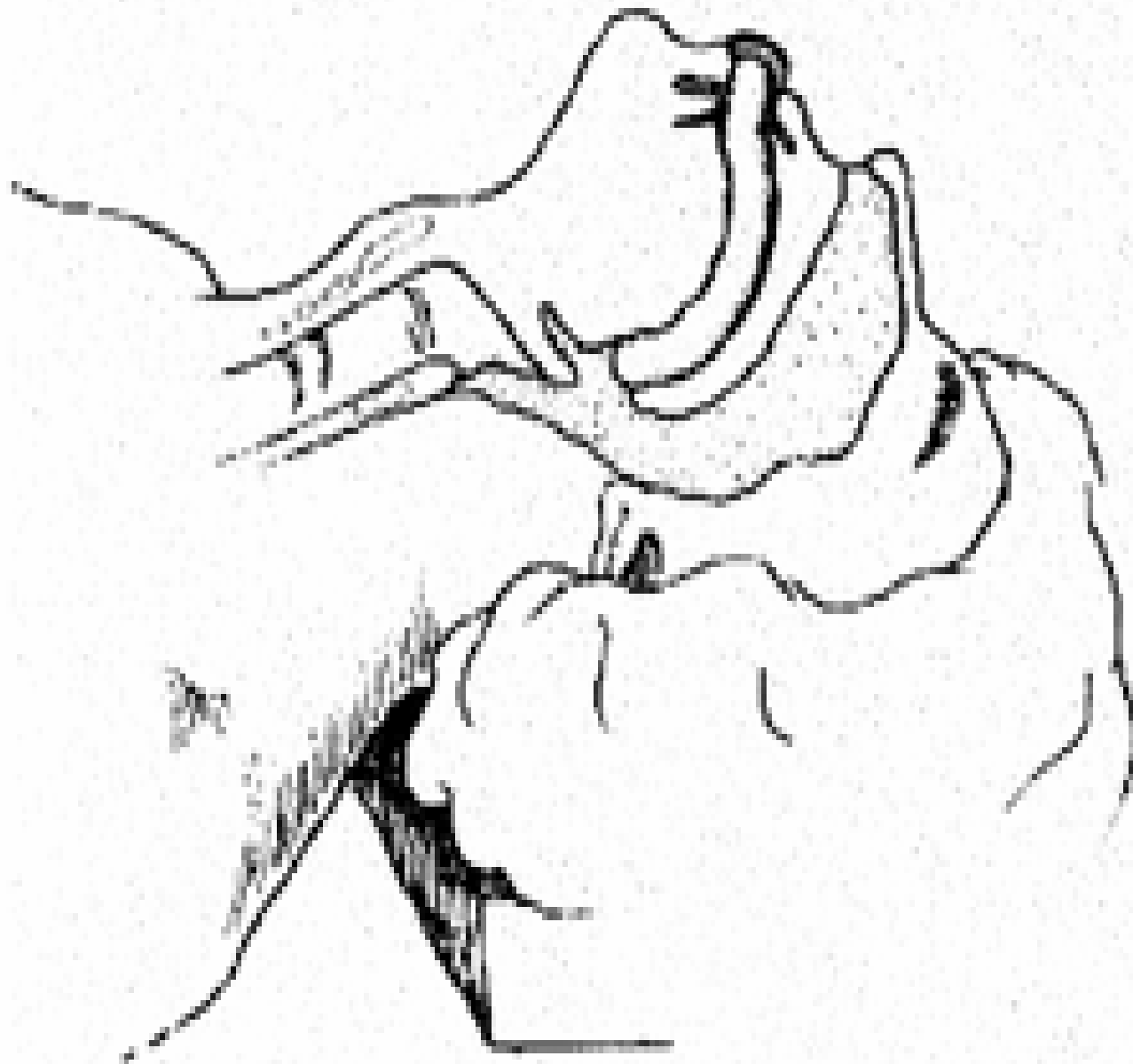


FIGURE 1-4

NASAL AIRWAYS

- **SIZE**
 - **30, 32**
- **INSERT DOWN THE NOSE, NOT UP**
- **CAN CAUSE NOSE BLEEDS**
- **EASIER FOR BEGINNERS**
- **Less Likely to cause Laryngospasm**

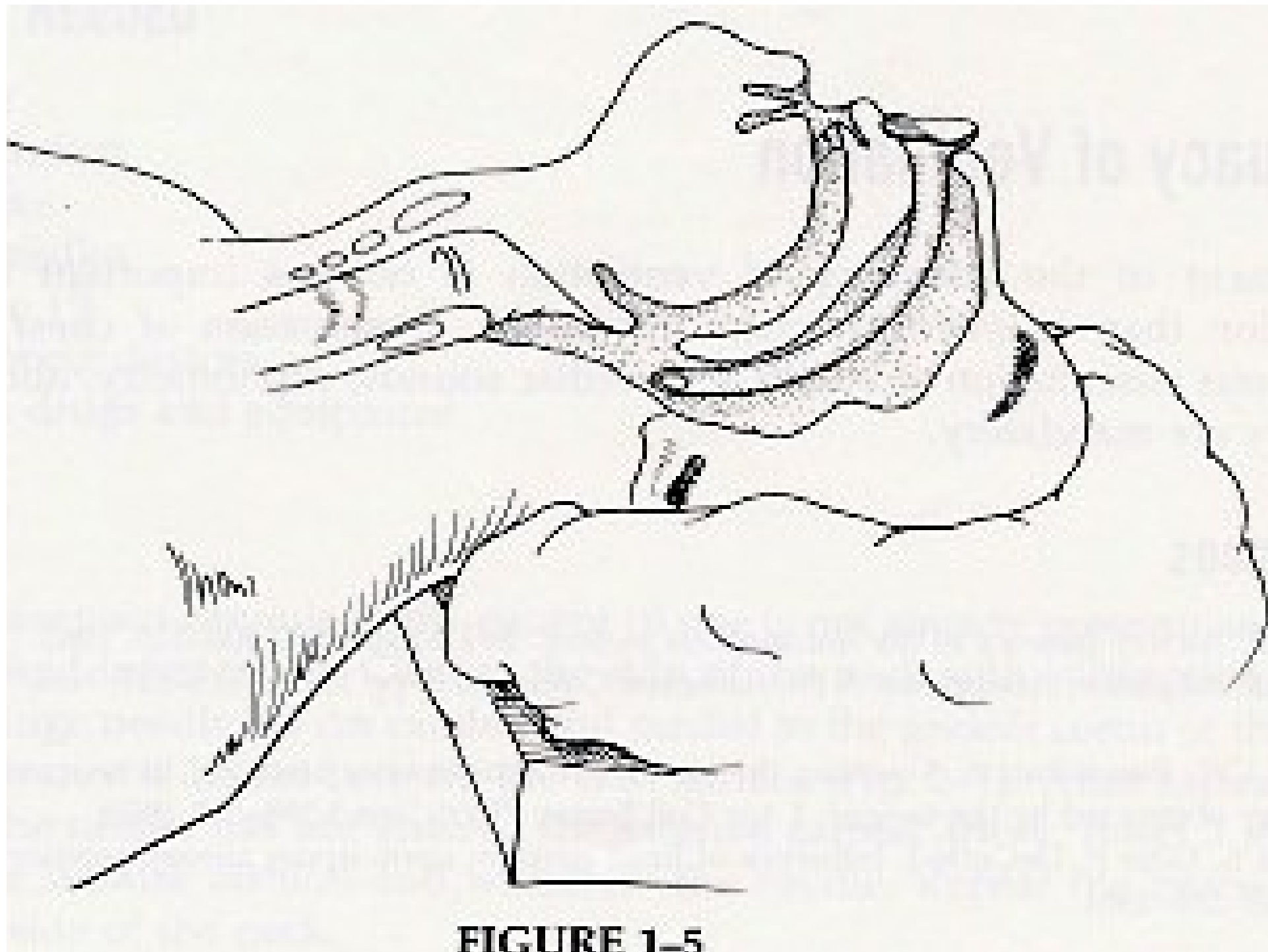


FIGURE 1-5

Delivery Devices

- **Nasal cannula**
- **Simple face mask**
 - **Partial rebreather mask**
 - **Non-rebreather mask**
 - **Venturi mask**
 - **Small volume nebulizer**

Nasal Cannula

- **Optimal delivery 40% at 6 LPM**
- **Usually use 3-4 liters**
- **Contraindication**
Mouth breathers

Simple Face Mask

- **Range 40-60% at 10 LPM**
- **Volumes greater than 10 LPM does not increase O₂ delivery**
- **Patient Comfort**

MASKS - AMBU

- **SIZE TO FIT**
- **ONE SIZE FITS ALL ??**
- **CUFF OF MASK INTACT**

AMBU BAGS

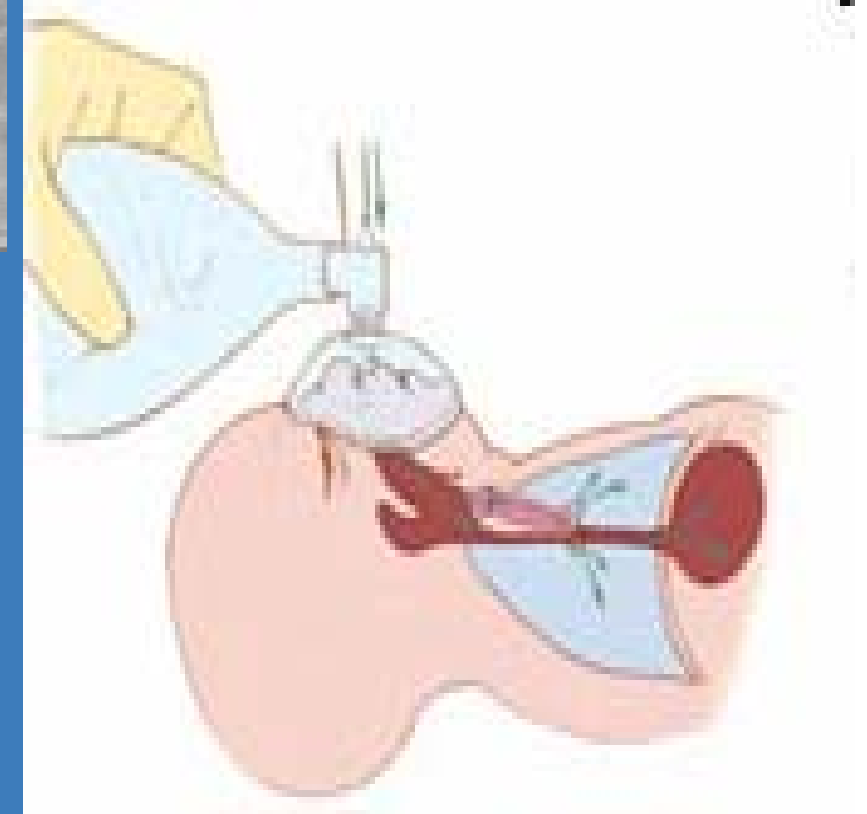
- **LIMITED PRESSURE**
- **NEED PROPER MASK FIT**
- **POSITION IMPORTANT**











AMBU BAGS

- CHECK FOR CHEST RISE
- O2 SOURCE ATTACHED

APNEA

- **AWARENESS**
- **ASSESSMENT**
- **STIMULATE**
- **POSITION HEAD, OPEN AIRWAY**

APNEA

- **THINK ABOUT AMBU**
- **VENTILATE**
- **DETERMINE NEED FOR AIRWAY**
- **FEW BREATHS - REASSESS**

AIRWAY MANAGEMENT

- **PATIENT WHO HAS HAD RESPIRATORY ASSISTANCE SHOULD BE OBSERVED LONGER POST PROCEDURE**